



## Research note

## Do subjects from high and low context cultures attribute different meanings to tourism services with 9-ending prices?

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## HIGHLIGHTS

- 4 symbolic meanings associated with 9-ending prices were identified.
- There were no differences in their relative influence on purchase decisions in high and low-context cultures.
- No evidence that 9-endings influenced purchase-decision in the forced-choice questions between two different price-levels.
- In all three cultures, a 9-ending discount disproportionately increased the perceived value of a hotel room.

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## ABSTRACT

Four symbolic meanings have been associated with 9-ending prices: Discount price, enhanced value, low quality, and misleading action. Scales were developed to measure each meaning and the relative strength of these meanings in influencing tourists' purchases among samples from the U.S., Korea and China was investigated. The analyses found no differences in the likelihood of tourists selecting 9-ending rather than even-ending prices when purchasing a sandwich, a pizza or show tickets; in their relative importance across cultures; or in the influence on purchase decisions of different symbolic meanings associated with 9-endings. However, a 9-ending discount was perceived to be more effective when compared to even-ended price discounts in the context of a hotel room. Again, however, its effectiveness could not be explained by the different symbolic meanings associated with 9-ending prices.

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## 1. Introduction

In an earlier paper published in this journal, the authors examined tourist suppliers' use of price endings in the U.S., Korea and China. In the contexts of hotels, restaurants, live theaters, sport events, and music concerts it was found that while 9-endings were dominant in the U.S., they were underrepresented in Korea and China. In those countries 0 and 8 ending prices dominated, respectively (Jeong & Crompton, 2017). In the U.S., the use of 9-ending prices has been a long-standing practice (Bader & Weinland, 1932; Friedman, 1967; Ginzberg, 1936; Rudolf, 1954; Schindler & Kirby, 1997; Twedt, 1965). It remains omnipresent (Levy, Lee, Kauffman, & Bergen, 2011; Suri, Anderson, & Kotlov, 2004). For example, surveys reported between 30 and 65 percent

of all retail prices ended in the digit 9 (Schindler & Kirby, 1997). This reflects a belief that they are an effective strategy for increasing purchases (Bhattacharya, Holden, & Jacobson, 2012; Gendall, Fox, & Wilson, 1998; Kalyanam & Shively, 1998; Manning & Sprott, 2009; Quigley & Notarantonio, 1992; Schindler & Kibarian, 1996; Stiving & Winer, 1997; Thomas & Morwitz, 2005, 2009). Indeed, an analysis of eight studies published over a 17-year period reported that prices ending in the 9 digit increased sales by an average of 24 percent (Holdershaw, Gendall, & Garland, 1997). However, our findings that the 9-digit is not widely adopted in China or Korea (Jeong & Crompton, 2017) were consistent with those reported in Asian contexts by Nguyen, Heller, and Taran (2007), Schindler (2009) and Simmons and Schindler (2003).

China is the primary source of foreign tourism-related spending in the U.S. In 2016 this amounted to \$34.8 billion which accounted for 65% of all U.S. services exports to China. Korean tourists are also prominent contributors to the U.S. economy. Their aggregate annual expenditures of \$8.9 billion ranked eighth among foreign tourists and accounted for 41% of all U.S. services exports to Korea

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(U.S. Department of Commerce, 2017). It has been noted that, “To optimally manage price-ending choices, it would be helpful to understand the psychological mechanisms by which price endings can influence sales” (Schindler, 2009, p. 17).

Given the prominence of 9-ending prices in the U.S., their infrequent use in Korea and China, and the importance of tourists from those two countries to the U.S. economy, the goal of this study was to explore whether there were any negative cultural differences among prospective tourists from those countries in their interpretations of prices ending in the 9 digit. If such differences were identified, it would have pricing strategy implications for U.S. tourist suppliers who targeted these foreign guests.

This study's exploration of prospective Korean and Chinese tourists' reactions to 9-ending prices was informed by Hall's (1976, 1983) conceptualization of high and low cultural contexts. In Hall's taxonomy, Korea and China are characterized as high-context cultures, whereas the U.S. is a low-context culture. In high-context cultures, focus is not on a message's content *per se*. Rather, interpretation of its meaning is covert, indirect and implicit. Effort is invested in “reading between the lines” to understand what is being communicated. In contrast, in low-context cultures like the U.S., meaning is attached to the messages themselves and they are more likely to be taken at face-value. They are considered to be direct, and explicit words that convey unambiguous meaning.

These differences suggest that high-context cultures are likely to mitigate the effect of 9-digit endings so they are less effective in influencing purchase decisions, since in those societies people will tend to more carefully scrutinize the messages and ‘read’ their true meaning which is to create an illusion. They will be more likely to realize a price of \$199 (what is stated) is really \$200 (what is meant) and that it involves a real gain of only \$1. Further, they are more likely to perceive them as a manipulative marketing practice and so consider the service supplier to be distrustful. Hall's taxonomy and the results of our earlier study revealing the lack of use of 9-endings by suppliers in Korea and China suggested the following hypothesis:

**H1. Subjects in the high-context cultures of Korea and China are less likely to select tourism services with 9-ending prices than those from the low-context culture of the U.S..**

## 2. The role of symbolic meanings

For the most part, patrons of services such as hotels and restaurants can only assess the real value of their attributes after experiencing them. In these types of contexts, signaling theory (Spence, 1974) suggests visitors are likely to use pre-purchase signals to distinguish high-quality from low-quality, or trustworthy from non-trustworthy service suppliers. These signals often are processed as heuristics which are cues that simplify the cognitive process of decision-making. The heuristics are formulated from individuals' imperfect memories, different cultural heritages, and selective past experiences and contexts. Since heuristics are a simplified thinking process, they frequently have systematic cognitive biases (Kahneman, 2011). Service suppliers are aware of this and so symbolic meanings for the most part do not occur randomly, rather they are used intentionally to take advantage of those biases (Parsa & Naipaul, 2007).

While tourists' responses to price endings are likely to vary, it has been shown that cultural differences can affect the way in which they consider information (Aaker & Maheswaran, 1997; Cote & Tansuhaj, 1989; Luna & Gupta, 2001). Since people evolve and function within a culture, those around them tend to share the same patterns of thinking and behavior, so the meanings of heuristics are reinforced and widely understood by most others in that

culture. Hence, the meaning communicated by a price ending may be interpreted in the different way by people in different cultures. They are likely to use different cultural criteria, thought structures, and reasoning processes and so may attribute different symbolic meanings and interpretations to price communications. This suggested the second hypothesis:

**H2. Decisions relating to the selection of tourism services with 9-ending prices will be influenced by the symbolic meanings associated with them.**

The literature suggests there are four different symbolic meanings that purchasers may attach to a 9-ending price. First, it has long been recognized that for many people a 9-ending price connotes a sale price, a low price, or a discount price (Berman & Evans, 1986; Bizer & Schindler, 2005; Bliss, 1952; Choi, Li, Rangan, Chatterjee, & Singh, 2014; Dodds & Monroe, 1985; Guido & Peluso, 2004; Kleinsasser & Wagner, 2011; Lambert, 1975; Quigley & Notarantonio, 1992; Schindler & Kibarian, 2001; Schindler & Kirby, 1997; Schindler & Wiman, 1989; Schindler, 1991, 2006; Stiving & Winer, 1997). More recently, for example, Schindler (2009) in an analysis of U.S. retailing advertisements empirically demonstrated that use of the 9-ending was considerably higher in advertisements that were promoting a discount, than in those for which no such claim was made.

Several explanations have been offered to explain the illusion of substantially lower prices created by 9-endings, but the most convincing is “truncation” (Quigley & Notarantonio, 1992) which postulates that people cut off reading a price's digits before all of them have been recognized and encoded. Thus, the price perception is anchored by the left-most digit(s). Odd-ending pricing has most impact on price perceptions when the difference in the right-most digit alters the left-most digit. That is, \$19.99 (vs \$20) is more effective than \$17.99 (vs \$18), because the left-most digit changes from 2 to 1 (Thomas & Morwitz, 2009). Further, it is likely to be more effective at higher price levels, because the perceived dollar gain is much greater. Thus, the gain from a \$39.99 price if only the first digit is processed would be \$10, compared to a \$1 gain for a \$3.99 price.

A second and related symbolic meaning is that a 9-ending price is perceived as communicating enhanced value (Choi, Lee, & Ji, 2012), which emanates from prospect theory (Kahneman & Tversky, 1979). One of prospect theory's central tenets is that a price perceived as being lower than its latitude of acceptance is regarded as a gain. Thus, a 9-ending is a gain-framed message rather than a loss-framed message creating the illusion of a substantially lower price, so it is perceived to offer enhanced value (Crompton, 2016).

While truncation offers a strong and viable explanation for why use of the 9-digit is effective in communicating these two meanings, it is not complete. It has been reported, for example, that when a service was offered at \$34, \$39, and \$44 not only were sales disproportionately larger at the \$39 compared to the \$44 price, but they were also higher at \$39 than at \$34. Truncation and mental rounding cannot explain such results. If only the first digits were considered, then sales at both price points should be the same, instead of being greater at the substantially higher \$39 price than the \$34 price (Stiving & Winer, 1997).

A third symbolic meaning emanates from the price/quality relationship (Scitovszky, 1945). Since the 9-ending has connotations of low price, some may also associate it with low quality (Gedenk & Sattler, 1999; Kreul, 1982; Schindler & Kibarian, 2001; Schindler, 1991). The antithesis of an odd-ending price is an even-ending price. Several studies have reported that ending a price with the 0 digit symbolizes “classiness” (Spohn & Allen, 1977) or high quality (Kleinsasser & Wagner, 2011; Quigley & Notarantonio,

1992; Schindler, 2006; Stiving, 2000; Whalen, 1980; Wingate, Schaller, & Miller, 1972). Its effectiveness in conveying this meaning has been demonstrated in the contexts of restaurants (Naipaul & Parsa, 2001, 2004; Parsa & Naipaul, 2007) and retailing (Bray & Harris, 2006; Schindler & Kibarian, 2001; Spohn & Allen, 1977; Stiving & Winer, 1997; Wieseke, Kolberg, & Schons, 2016).

Finally, the 9-ending price may symbolize “sneaky, slick, doesn’t play it straight” (Schindler, 1991, p. 798). Thus, in high-context cultures, it has been suggested that a 9-ending price may be perceived as a misleading, manipulative market practice that creates distrust: “Relative to their counterparts in low context, western cultures, consumers in non-western high context cultures may be less prone to the illusion of cheapness or gain created by odd endings, and more likely offended by such attempts to ‘fool’ them. Thus, odd endings are predicted to operate at a higher level of value significance to consumers, and to occur less frequently relative to even endings, in high than low, context cultures” (Nguyen et al., 2007, p. 206). This symbolic association was affirmed by the findings of Diller and Brielmaier (1995) and Suri et al. (2004). The potential differences in the symbolic meanings associated with 9-endings suggested hypothesis 3:

**H3. Subjects from the U.S., Korea and China will use different symbolic meanings to ascribe value to tourism services with 9-ending prices.**

Tourism experiences are comprised of a portfolio of tangible products (such as meals) and less tangible experiences (such as shows); and utilitarian purchases (such as sandwiches and pizzas) and hedonic purchases (such as shows). Hence, the first three hypotheses were tested by providing subjects with odd and even price options relating to inexpensive utilitarian items (buying a sandwich alone and a pizza with a travel companion) and an expensive hedonic option (purchasing tickets with a travel companion for a show). The experiments’ scenarios were designed to address these differences and respond to the findings of Choi et al. (2014) that odd-ending prices are more effective when purchasing hedonistic than utilitarian products.

The study was extended beyond restaurants and shows to hotels which might be conceptualized as higher priced utilitarian services. In this case, subjects were asked to respond to a scenario involving discounted hotel rooms to see if a 9-ending discounted price was effective when compared to even-ended price discounts.

**H4. In the context of a hotel room, a 9-ending price will be perceived as offering a significantly greater discount than an even-numbered price by the U.S. sample, but not by the Korean and Chinese samples.**

**H5. The effectiveness of a hotel 9-ending discount price will be attributable to different symbolic meanings that subjects ascribe to 9-endings.**

### 3. Data collection

Subjects were drawn from three cultures: U.S. (low-context, individualistic culture), and Korea and China (high-context, collectivist cultures). The questionnaires were translated into Chinese by a colleague who was a native of China. It was subsequently reviewed by another colleague who was a visiting scholar from China. The Korean translation was done by the senior author of this paper and verified by another native Korean colleague.

To test the first three hypotheses, subjects were presented with the same travel scenario in all four questionnaires: “Please assume you are on a trip to New York City for a three-day pleasure vacation which will involve staying at a hotel, dining, shopping and

sightseeing.” The standardized scenario was intended to remove variance in assumptions relating to the context. Subjects in each culture were presented with one of four different questionnaires. On each questionnaire subjects were requested to make a decision to purchase a lower or a higher priced option for a sandwich, show and pizza. In questionnaires 1 and 2 the lower price had a 9-ending price, while the higher price had an even-ended number (e.g. the two option prices for the sandwich were \$7.99 and \$8.40). In questionnaires 3 and 4 this was reversed, so subjects were asked to select either a higher price option with a 9-number ending or a lower price option with an even-ended number (e.g. the sandwich option prices were \$7.60 and \$7.99).

It is recognized that although price level is likely to have a more substantive impact on decision-making than price endings, price endings have the potential to independently influence decisions (Jeong & Crompton, 2017). The focus of the study was on price endings, but there was concern that responses to the design adopted to test the first three hypotheses may reflect price level rather than the price ending format. Hence, a different design was used to test the price-ending effect in the context of a hotel. This alternate format measured the influence of 9-ending price *while controlling the price level*. To test hypotheses 4 and 5 all subjects responded to the following scenario with a different price inserted on each of the four questionnaires:

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You are a college student and the nightly rate for the Hotel New York in New York City is discounted for college students if you provide a student card. This hotel is in a central location in New York City convenient for all the city’s attractions. It offers all guests free Internet service and a free breakfast buffet. A cable TV and fridge are included.

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Compared with the **regular price of \$240**, do you consider this hotel’s student **discounted X** price to be (check one):

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| [1]                             | [2]                        | [3]                          | [4]                      |
|---------------------------------|----------------------------|------------------------------|--------------------------|
| Very <b>slightly</b> discounted | <b>Slightly</b> discounted | <b>moderately</b> discounted | <b>highly</b> discounted |

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The different discounted X prices in the scenario were: \$220, \$200, \$199, and \$180. They were randomly assigned to all subjects. A between-subject design was used to avoid memory-based responses biasing the results.

The data were collected by colleagues at multiple academic institutions; two in the U.S., eight in Korea, and four in China. The logistical challenges of collecting the data from so many sources meant that questionnaires had to be used for the study, rather than a more rigorously controlled lab environment. A total of 2346 usable questionnaires were collected from convenience samples of college students: 486 from the U.S.; 866 from Korea; and 994 from China. Only those questionnaires in which all of the questions were fully answered were considered usable.

Even though probability sampling is always preferred, it is difficult and expensive to operationalize. For this reason, convenience samples of college students were used. Traditionally, there has been some divergence of opinion on the appropriateness of using undergraduate college students in social science research. However, this practice has been increasingly accepted in the major journals. Peterson (2001) reported that in the *Journal of Consumer Behavior* over a quarter century the percentage of articles using college students increased from 29% to 89%, while in the *Journal of Consumer Psychology* it was 86%. Similar large percentages were

reported in the *Personality and Social Psychology Bulletin* (86%) and the *Journal of Personality and Social Psychology Bulletin* (63%) (Sherman, Buddie, Dragan, End, & Finney, 1999).

**4. Development and reliability of the scales**

The literature review suggested that price endings had four different symbolic meanings: low quality, discounted price, enhanced value and/or misleading action. Items representing each of these domains were collected from that review. They were formed into Likert-type seven-point scales anchored by strongly disagree (1) and strongly agree (7), and were randomly ordered. The instrument was pilot tested using a sample of U.S. undergraduate students. As a result of the pilot test, each of the domains was operationalized by the items which are shown in Table 1.

To confirm the dimensionality of the scales, an exploratory factor analysis was undertaken on the whole sample. Four factors with an eigenvalue higher than one emerged. The salient loadings are reported in Table 1. The factor analysis confirmed the dimensionality of the scales. To evaluate the stability of the scales across cultures, independent exploratory factor analyses were undertaken on each of the three samples. The salient loadings on the Korea and China samples confirmed those that emerged from the overall factor analysis. The U.S. analysis generated only three factors. It confirmed the Low Quality, Enhanced Value, and Misleading Action domains, but the two items comprising the Discount Price domain saliently loaded on the same factor as the three items on the Enhanced Value domain (Table 1).

Despite the widespread use of Cronbach's alpha (Sijtsma, 2009), there is surprisingly little guidance as to what constitutes an "acceptable" or "sufficient" coefficient (Peterson, 1994). However, most studies cite Nunnally's (1978) recommendation of 0.7 as meeting this criterion. Nunnally recognized this criterion was relatively arbitrary, and so it seemed reasonable to conclude that the 0.74, 0.74, and 0.68 alphas reported in Table 1 were acceptable.

Scales with as few as two items are not uncommon in contexts where the phenomenon being measured is mono-dimensional (Eisinga, te Grotenhuis, & Pelzer, 2013). In such cases, the marginal and low alphas such as those on the Misleading Action (0.68) and Discount Price (0.54) domains are quite likely to occur. Nunnally (1978) pointed out that the fewer the number of items in

a scale, the smaller would be the magnitude of Cronbach alpha. It has consistently been confirmed in the literature that it is difficult to achieve the 0.7 criterion with a small number of scale items (Schmitt, 1996). Peterson (1994) in his meta-analysis empirically demonstrated that the major difference in mean alpha scores was between scales with two or three items and those with more than three items. Similarly, Cortina (1993) empirically demonstrated: "The number of items had a profound effect on alphas ... Alpha is very much a function of the number of items in a scale" (p. 102).

This characteristic of alpha has led some to suggest that an alpha greater than 0.6 is acceptable for scales comprised of so few items (Hair, Anderson, Tatham, & Black, 1995), while others have suggested 0.55 (Van de Ver & Ferry, 1979). Nevertheless, the low alpha for the Discount Price scale together with its lack of distinctive identify on the U.S. factor analysis suggests the scale is problematic and results associated with it should be regarded as tenuous (Schmitt, 1996).

**5. Results**

**H1.** Subjects in the high-context cultures of Korea and China are less likely to select tourism services with 9-ending prices than those from the low-context culture of the U.S.

The hypothesis was tested by comparing the responses to each of the three purchase scenarios that required subjects to select either a 9-ending or an even-number ending price. Questionnaires 1 and 2 posited a lower price with a 9-number ending and a higher price with an even-ended number, while questionnaires 3 and 4 reversed this by asking subjects to select either a higher price option with a 9-number ending or a lower price option with an even-ended number.

Compared with 52.4% (255) in the U.S. sample, 51.6% (447) and 52.7%(497) of the Korean and Chinese samples elected to eat the 9-ending priced sandwich. Similarly, 47.7% (232), 49.3% (427), and 51.9% (490) of the U.S., Korean, and Chinese samples selected the 9-ending priced pizza, while 52.7% (256), 51.9% (449), and 53.0% (500) of the U.S., Korean, and Chinese samples selected the 9-ending priced show tickets. These results indicated that the Korean and Chinese samples were not less likely than the U.S. sample to select

**Table 1**  
Exploratory factor analysis of items measuring the symbolic meanings of 9-ending prices.

| Domains and Items   | Salient Factor Loadings |                   |       |       |
|---|-------------------------|-------------------|-------|-------|
|   | All                     | U.S. <sup>a</sup> | Korea | China |
| <b>Factor 1 (Low Quality)</b>   |                         |                   |       |       |
| 4. A price ending in 9 suggests the service is poor quality   | 0.60                    | 0.74              | 0.71  | 0.50  |
| 6. A price ending in 9 makes me doubt it is good quality  | 0.66                    | 0.71              | 0.67  | 0.62  |
| 11. A price ending in 9 means the service's quality is not reliable                                     | 0.81                    | 0.85              | 0.85  | 0.70  |
| <i>Cronbach's alpha</i>   | 0.74                    | 0.85              | 0.79  | 0.63  |
| <b>Factor 2 (Enhanced Value)</b>  |                         |                   |       |       |
| 3. Ending a price in 9 make it more acceptably I will buy it  | 0.71                    | 0.66              | 0.72  | 0.74  |
| 5. I prefer to buy services with a price ending in 9.   | 0.69                    | 0.56              | 0.74  | 0.69  |
| 7. A 9-ending price is more likely to capture my attention when selecting a service                     | 0.69                    | 0.62              | 0.73  | 0.68  |
| <i>Cronbach's alpha</i>   | 0.74                    | 0.69              | 0.77  | 0.75  |
| <b>Factor 3 (Discount Price)</b>  |                         |                   |       |       |
| 9. A price ending in 9 suggests it is being discounted  | 0.66                    | 0.47              | 0.77  | 0.61  |
| 12. A price ending in 9 indicates it has been recently reduced  | 0.69                    | 0.46              | 0.42  | 0.73  |
| <i>Cronbach's alpha</i>   | 0.68                    | 0.73              | 0.52  | 0.69  |
| <b>Factor 4 (Misleading Action)</b>   |                         |                   |       |       |
| 2. Ending a price in 9 is a trick to mislead consumers  | 0.54                    | 0.62              | 0.58  | 0.44  |
| 8. Ending a price in 9 is unfair because it is used to make the price look smaller than actually it is. | 0.68                    | 0.50              | 0.65  | 0.82  |
| <i>Cronbach's alpha</i>   | 0.54                    | 0.46              | 0.55  | 0.53  |

<sup>a</sup> The 5 items measuring Enhanced Value and Discount Price loaded on the same factor in the U.S. sample.



9-ending priced services. Hence, hypothesis 1 was not supported.

**H2.** Decisions relating to the selection of tourism services with 9-ending prices will be influenced by the symbolic meanings associated with them.

In all three purchase scenarios, t-tests were undertaken on the item means of the four scales in each of the three cultures between those who selected the odd and the even-ended price (Table 2). Significant differences on the 36 tests emerged on only 1, 2 and 1 of the scales in the sandwich, pizza and show ticket scenarios, respectively. Thus, in 89% of the cases those who selected 9-ending priced services and those who selected even ending priced services did not perceive there to be differences in symbolic meanings attributed to 9-ending prices. These results suggested that hypothesis 2 was not supported.

**H3.** Subjects from the U.S., Korea and China will use different symbolic meanings to ascribe value to tourism services with 9-ending prices.

The means of items comprising each of the four scales were calculated for each of the three samples. Table 3 shows there were significant differences ( $p < 0.01$ ) on each of the scales. In all three cultures, Misleading Action was the most salient symbolic meaning, while the least salient was Low Quality in the U.S. and Korean samples, and Discount Price among the Chinese sample.

When responses on the four scales in each of the three cultures were independently measured in each of the three different contexts (i.e. eating a sandwich alone, a pizza with a travel companion, and a show with a travel companion) the results replicated those shown in Table 3. Irrespective of the social context and the functional or hedonic nature of the purchase, the orderings, magnitude and range of scale responses remained remarkably consistent.

**Table 3**  
Results of ANOVAs and Duncan's tests on the 7-point scale grand means of the three cultures.

| Domains           | Mean Value            |                 |                 | F-Value (p-value) |
|-------------------|-----------------------|-----------------|-----------------|-------------------|
|                   | U.S. (n = 486)        | Korea (n = 866) | China (n = 994) |                   |
| Low Quality       | 2.58 (C) <sup>a</sup> | 3.14 (B)        | 3.27 (A)        | 60.22 (p < 0.01)  |
| Enhanced Value    | 3.36 (B)              | 3.64 (A)        | 3.47 (B)        | 8.45 (p < 0.01)   |
| Discount Price    | 2.82 (C)              | 4.21 (A)        | 2.97 (B)        | 264.91 (p < 0.01) |
| Misleading Action | 4.81 (B)              | 5.35 (A)        | 4.91 (B)        | 38.80 (p < 0.01)  |
| <b>Range</b>      | 2.23                  | 2.21            | 1.94            |                   |

<sup>a</sup> Different letters in the same row indicate significant differences in grand means.

Ostensibly, the results supported the hypothesis. However, there were patterns that suggested this might not be the most appropriate interpretation of the data. It has been demonstrated that sometimes systemic bias leads to results that are an artifact of the scale response process, rather than a measure of real differences (Greenleaf, 1992). The data in Table 3 show evidence of such a bias, since there was a consistent trend in the scale item means. The U.S. scores were lowest and the Korea scores were highest on three of the scales, (the exception being the Low Quality scale). In other words, the importance of each symbolic meaning was reported at a different point along the scales by each culture, but the order and range of differences between the four meanings was similar. The last row in Table 3 shows the ranges between the highest and the lowest means in each sample were similar: U.S. 2.23 (4.81–2.58); Korea 2.21 (5.35–3.14); China 1.94 (4.91–2.94). It has been

**Table 2**  
T-tests to evaluate if strength of symbolic meanings associated with 9-ending prices influenced purchase decisions.

| Domains                                       | U.S.                             |                                   |                          | Korea                            |                                   |                          | China                            |                                   |                      |
|---|----------------------------------|-----------------------------------|--------------------------|----------------------------------|-----------------------------------|--------------------------|----------------------------------|-----------------------------------|----------------------|
|   | Those Who Selected an Odd ending | Those Who Selected an Even ending | t-value (p-value)        | Those Who Selected an Odd ending | Those Who Selected an Even ending | t-value (p-value)        | Those Who Selected an Odd ending | Those Who Selected an Even ending | t-value (p-value)    |
| Sandwich to Eat Alone                         |                                  |                                   |                          |                                  |                                   |                          |                                  |                                   |                      |
| Low Quality                                   | 2.58                             | 2.59                              | -0.13 (0.90)             | 3.14                             | 3.14                              | -0.02 (0.98)             | 3.22                             | 3.33                              | -1.63 (0.10)         |
| Enhanced Value                                | 3.44                             | 3.27                              | 1.63 (0.10)              | <b>3.74</b>                      | <b>3.54</b>                       | <b>2.42 (0.02*)</b>      | 3.55                             | 3.39                              | 1.87 (0.06)          |
| Discount                                      | 2.77                             | 2.88                              | -0.90 (0.37)             | 4.26                             | 4.15                              | 1.34 (0.18)              | 2.94                             | 3.01                              | -0.85 (0.40)         |
| Misleading Action                             | 4.81                             | 4.81                              | -0.03 (0.97)             | 5.30                             | 5.40                              | -1.25 (0.21)             | 4.89                             | 4.92                              | -0.39 (0.70)         |
| Pizza to Share with a Travel Companion        |                                  |                                   |                          |                                  |                                   |                          |                                  |                                   |                      |
| Low Quality                                   | 2.56                             | 2.60                              | -0.38 (0.70)             | 3.15                             | 3.14                              | 0.15 (0.88)              | <b>3.20</b>                      | <b>3.35</b>                       | <b>-2.02 (0.04*)</b> |
| Enhanced Value                                | 3.46                             | 3.27                              | 1.79 (0.07)              | <b>3.82</b>                      | <b>3.47</b>                       | <b>4.18 (&lt;0.01**)</b> | 3.55                             | 3.39                              | 1.82 (0.07)          |
| Discount                                      | 2.90                             | 2.76                              | 1.16 (0.25)              | 4.27                             | 4.14                              | 1.48 (0.14)              | 2.95                             | 3.00                              | -0.57 (0.57)         |
| Misleading Action                             | 4.81                             | 4.80                              | 0.08 (0.94)              | 5.33                             | 5.36                              | -0.45 (0.66)             | 4.86                             | 4.96                              | -1.18 (0.24)         |
| Show Tickets to Share with a Travel Companion |                                  |                                   |                          |                                  |                                   |                          |                                  |                                   |                      |
| Low Quality                                   | 2.59                             | 2.58                              | 0.12 (0.91)              | 3.08                             | 3.20                              | -1.56 (0.12)             | 3.28                             | 3.26                              | 0.24 (0.81)          |
| Enhanced Value                                | <b>3.53</b>                      | <b>3.20</b>                       | <b>3.19 (&lt;0.01**)</b> | 3.69                             | 3.60                              | 1.14 (0.26)              | 3.51                             | 3.43                              | 0.98 (0.33)          |
| Discount                                      | 2.83                             | 2.81                              | 0.20 (0.84)              | 4.13                             | 4.28                              | -1.82 (0.07)             | 3.01                             | 2.93                              | 1.04 (0.30)          |
| Misleading Action                             | 4.85                             | 4.77                              | 0.74 (0.46)              | 5.31                             | 5.38                              | -0.79 (0.43)             | 4.91                             | 4.91                              | -0.05 (0.96)         |

\*p < 0.05.  
\*\*p < 0.01.

suggested that these characteristics are indicative of systemic bias (Hofstede, 2001; Tellis & Chandrasekaran, 2010).

This led the authors to conclude the differences were likely to be an artifact of the measuring instrument, rather than real differences among the cultures. That is, there were cultural biases in assigning a numeric value to a verbal cue which resulted in the U.S. sample recording their diversity of perceptions at the low end of the scales, perhaps reflecting the “law of the excluded middle” that characterizes Western thinking (Peng & Nisbett, 1999); the China sample at middle points of the scales, which is consistent with the Chinese heuristic of adopting a dialectical reasoning style to create compromise when confronted with opposing perspectives (Peng & Nisbett, 1999); and the Korea sample at the highest points along the continuum, which may be consistent with Koreans’ “overall tendency to extreme responses” (Tellis & Chandrasekaran, 2010, p. 334).

**H4.** In the context of a hotel room, a 9-ending price will be perceived as offering a significantly greater discount than an even-numbered price by the U.S. sample, but not by the Korean and Chinese samples.

The different discounted X prices in the scenario used in the four questionnaires were: \$220, \$200, \$199, and \$180. The results for each of the three cultural samples are reported in Table 4 and are graphed in Fig. 1. They show that in each sample the difference between the \$200 and \$199 discounts was significant, even though the absolute dollar difference between them was only \$1. The steepest slope between \$200 and \$199 on the four-point scale in Fig. 1 was in the U.S. sample (0.29, U.S.; 0.28, Korean; 0.25, Chinese). Hence, the 9-ending price effect seemed to be universal and hypothesis 4 was not supported. There was some concern that the significance may be a function of the large sample size, rather than a meaningful difference. However, the effect sizes were 0.28, 0.20, and 0.22 for the U.S., Korea, and China samples, respectively. Since these were similar to the mean level of the size effect for the one-way ANOVA, there was confidence that the significance was not attributable merely to the large sample size.

**H5.** The effectiveness of a hotel 9-ending discount price will be attributable to different symbolic meanings that subjects ascribe to 9-endings.

To facilitate analysis of responses to the \$199 hotel discounted price reported in Table 4, the first two and the last two response categories were collapsed to form two categories: very slightly/slightly and moderately/highly discounted. The results are reported in Table 5. Only one of the twelve t-tests indicated a significant difference. Thus, the effectiveness of the 9-ending discount could not be explained by the different symbolic meanings ascribed to 9-ending prices.

## 6. Discussion and conclusions

The authors believe this paper makes four contributions to the literature beyond its specific findings. First, despite the prominence of discussion in the literature relating to the symbolic meaning of odd-ending prices, Schindler (1991) observed, “It is surprising that there is so little published empirical investigation of whether or not such meanings exist in the minds of consumers” (p. 799). He further noted that empirical determination of what effect “each of these meanings may have on consumer decision making” (p. 797) was absent. These sentiments were subsequently endorsed by Bray and Harris (2006) and Wieseke et al. (2016). Second, the paper built on two strands of knowledge relating to high/low context and the symbolic meanings of 9-ending prices. To the best of our knowledge, this is the first empirical investigation of both of these themes in the context of purchase decisions of foreign tourists to the U.S. Third, most published research on odd-ending prices has focused on low priced consumer goods and fast-food eateries (Kleinsasser & Wagner, 2011). This study extended the context to central service components of the tourism industry: fast-food restaurants, high-end theater tickets, and hotel accommodations. Fourth, it has been pointed out that relatively little is known about the effect of price endings on purchase decisions in non-western countries (Nguyen et al., 2007).

The study provides useful insights for developing pricing strategies in the global tourism industry. An overarching conclusion was that there were no meaningful differences in responses across the cultures. Nguyen et al. (2007) reported that the results of their study, “provided additional evidence that patterns observed in western markets about customer behavior in general and of consumer price processing in particular, are not universal” (p. 212). The findings of this study challenge their conclusion.

Three main findings emerged from the study. First, the literature review identified four symbolic meanings: discount price; enhanced value; low quality; and misleading action. The review suggested that tourists in low-context cultures like the U.S. would focus on discounts while those in high-context cultures would be less prone to the illusion of cheapness conveyed by odd-endings and view them as misleading actions to be treated with suspicion (Nguyen et al., 2007). It was anticipated the positive effects on sales of 9-endings would be weaker in high-context than in low-context cultures, and that high-context cultures would be more likely to perceive this price strategy as a manipulative action designed to fool people (Diller & Brielmaier, 1995; Nguyen et al., 2007; Suri et al., 2004). However, contrary to expectations, there were no significant differences in the symbolic meanings attached to 9-ending prices between the U.S. (low-context) and Korean and Chinese (high-context) samples. In all three samples misleading action was the strongest symbolic meaning, while the connotation of low quality was the least salient meaning. As expected, the initial

**Table 4**  
Results of ANOVAs and Duncan’s tests on the 4-point scale measuring perceptions of different hotel discount prices.

| Discounted prices from \$240 | US         |                              |     | Korea      |                 |     | China      |                 |     |
|------------------------------|------------|------------------------------|-----|------------|-----------------|-----|------------|-----------------|-----|
|                              | Mean       | Duncan Grouping <sup>a</sup> | N   | Mean       | Duncan Grouping | N   | Mean       | Duncan Grouping | N   |
| \$220                        | 2.00       | A                            | 127 | 2.26       | A               | 216 | 2.12       | A               | 265 |
| \$200                        | 2.57       | B                            | 122 | 2.72       | B               | 212 | 2.51       | B               | 232 |
| \$199                        | 2.86       | C                            | 115 | 3.00       | C               | 218 | 2.76       | C               | 249 |
| \$180                        | 3.13       | D                            | 122 | 3.13       | C               | 220 | 3.01       | D               | 248 |
| F                            | 62.43      |                              |     | 70.71      |                 |     | 94.19      |                 |     |
|                              | (p < 0.01) |                              |     | (p < 0.01) |                 |     | (p < 0.01) |                 |     |

<sup>a</sup> Means with the same letter are not significantly different.

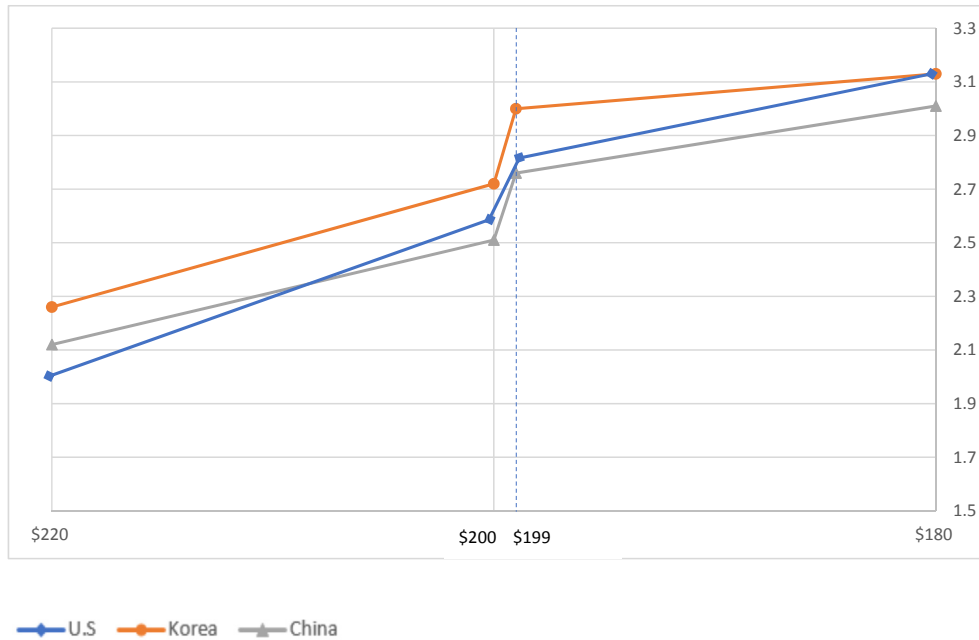


Fig. 1. Perceived value of each discounted price.

Table 5

Differences in perceptions of 9-ending prices between those who perceive discounted price of \$199 as slightly and highly discounted.

|                   | U.S.                 |                    |                              | Korea                |                     |                      | China                |                     |                      |
|-------------------|----------------------|--------------------|------------------------------|----------------------|---------------------|----------------------|----------------------|---------------------|----------------------|
|                   | Slightly<br>(n = 27) | Highly<br>(n = 88) | t-Value<br>(p-value)         | Slightly<br>(n = 41) | Highly<br>(n = 177) | t-Value<br>(p-value) | Slightly<br>(n = 80) | Highly<br>(n = 169) | t-Value<br>(p-value) |
| Low Quality       | 2.38                 | 2.59               | 0.75<br>(0.45)               | 3.44                 | 3.19                | -1.27<br>(0.21)      | 3.40                 | 3.19                | -1.46<br>(0.15)      |
| Enhanced Value    | 3.10                 | 3.35               | 0.99<br>(0.33)               | 3.50                 | 3.73                | 1.16<br>(0.25)       | 3.43                 | 3.42                | -0.09<br>(0.93)      |
| Discount Price    | 2.52                 | 2.82               | 1.06<br>(0.29)               | 3.98                 | 4.32                | 1.63<br>(0.10)       | 3.21                 | 2.95                | -1.45<br>(0.15)      |
| Misleading Action | <b>4.31</b>          | <b>5.10</b>        | <b>2.51</b><br><b>(0.01)</b> | 5.57                 | 5.38                | -1.07<br>(0.29)      | 4.72                 | 4.90                | 1.00<br>(0.32)       |

statistical analyses showed there were significant differences in the relative importance tourists assigned to meanings associated with 9-ending prices among the three cultures. However, it was concluded that these differences were an artifact of the measuring instrument, and that there were no real differences among the cultures.

Because behavioral decisions are influenced by subconscious and often biased reasoning, it is challenging to identify reasons that explain behavior (Wilson & Dunn, 2004). Because the responses to odd-ending prices are autonomic, people may be unable to consciously retrieve from memory and articulate the symbolic meanings that explain their reactions. Further, people's attitudes do not always rationally and logically reflect their behavior (Fazio & Roskos-Ewoldsen, 2004). There is frequently an assumption that attitudes predict behavior, but empirical results have revealed this is not necessarily the case (Pager & Quillan, 2005). Because price heuristics are based on instinctive "rules of thumb" rather than on reasoned action, asking rational questions relating to 9-ending prices may not be effective in explaining behavior. It is perhaps more appropriate to recognize people's behavior for what it is instead of trying to understand their reasoning, because there is no cognitive rational process; rather, it results from quick decisions based on the instinctive heuristic mechanisms. Thus, even though no significant differences in the symbolic meanings of 9-ending

prices were found between those who select 9-ending and even-ending priced services, the lack of such a relationship should be regarded as a tenuous conclusion.

The second major finding similarly demonstrated commonalities across the three cultures. A 9-ending price was universally effective in increasing positive perceptions of value when price level was controlled. When presented with a hotel discounted price ending in \$199, samples in all three cultures perceived this promotional price disproportionately more positively than the rounded price immediately above it (i.e. \$200). This result was unexpected since in the authors' earlier study of suppliers' perspectives on price-endings, in China and Korea the cultural specific price endings of 8 and 0, respectively, were most frequently used, while 9-ending prices were conspicuously rare (Jeong & Crompton, 2017). The influence of 9-endings reported here may be attributable to increased familiarity resulting from increased foreign travel by subjects from those cultures. The finding suggests that suppliers in the US targeting Korean and Chinese tourists should continue to use 9-endings, even though in the home cultures of those countries such endings are not prominent. These findings endorse those of Kleinsasser and Wagner (2011) in the context of hotels and reinforce their conclusion that, "Odd endings make sense for sellers of higher-priced guests" (p. 58).

Commonalities were also evident in the third major finding in

that when forced choice questions were used, there were no substantive differences among the samples in their selection of 9-ending prices when purchasing a sandwich, a pizza, or show tickets. In all three samples, approximately 50% opted for both the 9-ending and the even-ending alternatives which is consistent with what would be expected by chance. This finding appears to be antithetical to the positive influence of 9-endings revealed in the above hotel scenario. However, a likely explanation is that the price levels were not controlled in this case and the choices of some subjects were more influenced by price levels than by price endings. In our earlier study we recognized that price endings were not likely to have as much impact on decisions as price levels, but pointed out that, nevertheless, they had the potential to contribute meaningfully to profitability (Jeong & Crompton, 2017).

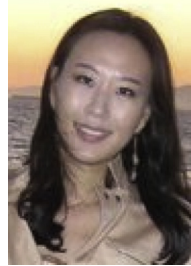
Suppliers in high context cultures have been reluctant to use 9-ending priced services because of their negative symbolic meanings (Jeong & Crompton, 2017), but the findings in this study indicated tourists in high context cultures are no less likely to select 9-ending priced services than those in low context cultures. Indeed, in all cultures the 9-ending discount was perceived to be a greater discount than even-ended prices in the context of a hotel room, even though its effectiveness could not be explained by the different symbolic meanings associated with 9-ending prices. In our earlier study, based on the prevalence of 0 and 8-digit endings in tourist service prices in Korea and China, we suggested it may be more effective for U.S. tourism suppliers to use those price endings when targeting those markets. The finding in this study that all groups responded positively to the 9-ending in the U.S. when price levels were held constant, appears to counter that suggestion. These somewhat confounding results, suggest the next question to be addressed in this research program should be: Are the 0 and 8-ending digits more effective than the 9-ending digit in influencing purchase decisions when price levels are held constant in other cultures?

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