# The use of odd-ending numbers in the pricing of five tourism services in three different cultures 

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## H I G H L I G H T S

- The most frequent price endings in each city were culturally specific.
- The prominence of the 0 and 5 digit endings suggested they were universally accepted.
- 9-endings were not used more frequently when the leftmost digit was lowered by using them.
- Dominant culturally specific endings were not used more frequently in lower priced services.


## A R T I C L E I N F O

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#### Abstract

The study measured the extent to which the 1 through 9 digits were used as price endings by suppliers of five tourism services in three different cultures represented by New York City, Seoul, and Shanghai. Four results emerged. The first confirmed the hypothesis, but the other three results were contrary to expectations. First, 9 and 8-ending prices were dominant in New York City and in Shanghai, respectively. Second, these culture specific endings were complemented by the universality of the 0 and 5 - digit endings of prices which were ranked first and second, respectively, in Seoul, second and third in Shanghai, and third and second in New York. Third, 9-ending prices were not used more frequently when they resulted in a lowering of the leftmost digit. Fourth, dominant cultural specific price endings were not used more frequently in lower than in higher priced tourism services.


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## 1. Introduction

Beyond its allocative function, price also has an informational role. The most widely recognized manifestation of this role is the relationship of level of price with quality of service. This was first identified more than 70 years ago (Scitovszky, 1944) and has been described as "one of the most commonly studied extrinsic cues in marketing" (Volckner \& Hofmann, 2007, p. 182). The study reported here addresses the use of price endings to communicate information, which is a less explored aspect of the informational function of price. The information that price endings connote may be independent of that communicated by price level. Strategies that effectively embrace consumers' interpretations of the price ending heuristic are not likely to result in such substantive revenue gains

[^0]as may be forthcoming from effective use of the price-quality relationship. Nevertheless, they have the potential to contribute meaningfully to profitability, since the high fixed costs which are typical of many tourism services means that a relatively small increase in revenues of (say) $1 \%$ is likely to result in a disproportionate increase in profits.

This study investigates the odd-ending heuristic through analyzing the patterns of price endings used by managers of tourism services in three different cultures. This supplier oriented perspective is consistent with the approach used by others in other marketing contexts (Aalto-Setala \& Halonen, 2004; Schindler \& Kirby, 1997; Schindler, 2009). Complementary studies by the authors have explored the heuristic from the perspectives of prospective tourists' in the three cultures. It is anticipated that addressing the heuristic from both supply and demand perspectives will provide holistic insights into its utility.

Over 50 years ago, Friedman (1967) reported that more than $80 \%$ of American retail food prices ended in the numbers 5 or 9. Subsequently, the widespread use of 9 -ending prices in the U.S.
has been demonstrated across a broad range of products including gasoline (Bacon, 1991; Lewis, 2015), retail food (Baumgartner \& Steiner, 2007), women's clothing (Schindler \& Kibarian, 1996), and fast food restaurants (Parsa \& Naipaul, 2007). Multiple psychological explanations for this prevalence have been proposed, but it is generally accepted that odd-ending prices enhance price competitiveness in two ways: (i) they lower leftmost digits; and (ii) odd-numbered rightmost digits have connotations of discounting (Hackl, Kummer, \& Winter-Ebmer, 2014; Nguyen, Heeler, \& Taran, 2007).

Odd-ending prices are frequently used on online shopping sites where price comparisons are relatively easy. Because many tourism services are purchased online, it seems likely that tourists may be particularly influenced by odd-number ending prices when selecting a service from an array of differently priced options. However, little is known about the effects of odd-ending prices on tourism services, because empirical studies reported in the literature have been conducted almost exclusively on relatively lowpriced retail products (Kleinsasser \& Wagner, 2011).

Tourism services differ from retail products in at least eight ways. First, services such as hotels, restaurants, music concerts, sports events and live theater performances, are generally more expensive than the retail items that have been the focus of most research on this issue (Baumgartner \& Steiner, 2007). Second, the decision-making process is longer because tourists deal with a higher level of perceived risk attributable to their substantive commitment of time, effort and money (Teare, 1990). Third, tourists plan and save money over a longer time period which makes it likely they will have a greater level of involvement in the selection of tourism services (Gursoy \& Gavcar, 2003; Havitz \& Dimanche, 1997). Fourth, tourism services tend to be more carefully chosen and subjected to more cognitive processing because bad decisions are irreversible, while unsatisfying retail products often can be returned or refunded relatively easily (Mills, 1986). Fifth, the opinions of others often are considered when traveling as a group, so decisions related to tourism services are more complex than when purchasing retail goods for personal use (Pearce, 2005; Ritchie, 1997). Sixth, the fairness of tourism service prices is more difficult to ascertain than general merchandise prices because there is relatively low price transparency in the tourism sector. Tourism services typically engage in dynamic pricing and widespread price differentiation, charging different prices to different customers for the same service. Seventh, people have fewer cues about the costs of services than goods, so it is more difficult to embrace the Principle of Dual Entitlement which posits that people judge price fairness by its relationship to costs (Bolton \& Alba, 2006). Eighth, motives for purchasing tourism services tend to be hedonic whereas those which underlie purchases of retail products tend to be functional, suggesting that consumers' price sensitivities to tourism services are likely to be lower than those associated with retail products (Wakefield \& Inman, 2003). These differences suggested it would be fruitful to expand the empirical investigation of odd-ending price research into the area of tourism services.

## 2. The influence of culture on heuristics and price endings

Tourism is a global phenomenon, so many tourism service suppliers target international visitors from multiple countries. A challenge in setting prices is to enhance visitors' willingness to pay by creating positive feelings about a price. However, people from different cultures may use different heuristics in their decision processes and, consequently, respond differently towards a given price framing.

For several decades, psychologists have recognized there are two modes of thinking (Kahneman, 2011). These dual process
theories identify parallel processors of information. The labels System 1 and System 2 often are used to describe them: "System 1 operates automatically and quickly with little or no effort and no sense of voluntary control", while "System 2 allocates attention to the effortful mental activities that demand it, including complex computation" (Kahneman, 2011, pp. 20-21).

System 1 judgments are made in many contexts because "we think associatively, we think metaphorically, we think casually" (p. 13). Kahneman concludes: "The intuitive System 1 is more influential than your experience tells you, and it is the secret author of many of the choices and judgments you make" (p.13). System 1 makes extensive use of heuristics which are "rules of thumb" that people use to simplify their decision-making. They may be innate which reflects "we are born prepared to perceive the world around us" (p. 21); or they may be learned since "other mental activities become fast and automatic through prolonged practice ... and learned associations" (p. 22).

Odd-ending prices in the U.S. have been widely adopted because they have been effective in triggering a heuristic among consumers that causes them to perceive a price is lower than they would conclude if they invested the cognitive effort of System 2 to investigate it. If this heuristic is innate, then it should be universal across cultures. If it is not universal, then it suggests price endings are learned and interpreted differently in different cultures.

Countries have been classified into high and low context cultures based on consumers' interpretations of communications (Hall, 1976). In general, western/individualist-culture countries, such as the U.S. are categorized as low context cultures, because people in these countries tend to interpret communications literally. In contrast, non-western/collectivist-culture countries, such as China and Korea, are categorized as high context cultures because people in these countries often seek hidden meanings and to identify more implicit, non-verbal cues in communications (Hall, 1976; Copeland \& Griggs, 1985).

The primary reasons suppliers use odd-ending prices in western cultures is to create an illusion of a substantially lower price. Consumers from these cultures tend to understand meanings by what is delivered in the message itself, and so may perceive oddending prices as good deals because those endings connote lower prices and discounts. In contrast, people in non-western/collectivist cultures may be less prone to accept the illusion of cheapness or gain created by odd-endings; be more likely to read the seller's true deceptive intentions of using odd-ending prices; and react negatively to this tactic (Nguyen et al., 2007).

In summary, the literature suggests consumers' responses to odd-ending prices may differ because of culturally different approaches to interpreting communications (Nguyen et al., 2007; Schindler, 2009; Suri, Anderson, \& Kotlov, 2004). Tourists from non-western/collectivist cultures may be less likely than those from individualist cultures to respond positively to odd-ending prices. The connotation of discount associated with odd-ending prices may be much stronger among people from low context and individualist cultures, while connotations of low quality and deceptive practice of odd-ending prices may be stronger among people from high context and collectivist cultures.

## 3. Explanations for the effectiveness of odd-ending prices

### 3.1. Left-digit effect

It has consistently been suggested that the leftmost digit has a relatively greater influence on judgments of prices than other digits. For example, Thomas and Morwitz (2005) demonstrated prices ending in 9 were perceived to be substantially smaller than even-ending prices that were one cent higher. That is because

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