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MARKETING | RESEARCH ARTICLE

Using best-worst scaling method to examine consumers' value preferences: A multidimensional perspective

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Abstract: Unlike most prior studies, this study reconceptualizes the perceived value construct from the multidimensional perspective by incorporating the aesthetic and altruistic values from Holbrook's value typology with the Theory of Consumption Value. Moreover, this study is a pioneer in measuring the construct of multidimensional perceived value with the Best-Worst Scaling method instead of rating scales to fill methodological deficiency in the literature. This study collected data through web-based survey using online consumer panels. Hierarchical cluster analysis used as the major data analysis technique. Results indicate consumers can be segmented on the basis of their preferences. Therefore, the use of the cluster analysis of the value dimensions would permit practitioners to develop more effective market segmentation strategies in order to attain sustainable competitive advantage in the growing hospitality and tourism industry.

Subjects: Marketing; Marketing Research; Services Marketing; Tourism, Hospitality and Events

Keywords: best-worst scaling (BWS); perceived value; services market segments; clusters

1. Research background

The services sector, over recent decades, has become a contributory sector to growth in GDP globally. Since the 1970s, the global economy has been shifting towards a service-based economy at a double

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PUBLIC INTEREST STATEMENT

Due to recent substantial advancement in the services sector globally, this study reconceptualized the construct of perceived value from the multidimensional perspective to contribute to the literature by expanding the understanding of existing knowledge. In addition, this study has made a pioneer attempt to measure the multidimensional perceived value with the Best-Worst Scaling method, especially in the restaurant services sector. The proposed seven consumption-related perceived value dimensions can help restaurant marketers to analyse their market and explore what customers seek in their dining experiences. The findings of the study are expected to have substantial implications in service-providing firms: specifically in restaurant performance, and will provide new insights for the advancement of the growing global tourism and hospitality industry.

digit rate (Lages & Fernandes, 2005) and approximately 63.3% of the gross domestic product (GDP) of the developed countries is generated by services (CIA The world Factbook, 2015). Therefore, no doubt, the rapid advancement of the services sector has recently led to significant changes in the global economic structure (Atilgan & Kara, 2015). Consequently, academic researchers and service practitioners are focusing on influencing constructs to examine consumers' satisfaction and behavioural intention (Jin, Lee, & Lee, 2015). Among them, more and more attention is being concentrated on understanding consumers' perceived value. From the 1990s to the current century, the concept of perceived value has received significant attention as a top-most business topic for marketing researchers in both academia and industry (Sánchez-Fernández & Iniesta-Bonillo, 2007; Sánchez-Fernández, Iniesta-Bonillo, & Holbrook, 2009). Perceived value is one of the recognized marketing fashions to sell in the market and is continuously given importance in the twenty-first century. Currently, value creation has become a weapon in strategic management and considered as a competitive advantage for the organization (Hong & Zhuqing, 2012). Slater (1997, p. 166) noticed that "... the creation of customer value must be the reason for the firm's existence and certainly for its success".

Despite a growing consensus on the importance of this research topic, the concept of perceived value is still vague and that there is also little consensus on the operationalization of perceived value. Sometimes, there is confusion between the definition of consumer value and perceived value. Oliver (1997) stated that consumer value can be understood as perceived value and both these terms should be assumed as synonymous concepts from the perspectives of consumer research (Gallarza & Gil Saura, 2006). Even though consumers' loyalty is strongly linked to the value generated by the organization for their customer, it is one of the most overworked and misrepresented concepts in the social sciences and especially in the services marketing studies (Boksberger & Melsen, 2011; Khalifa, 2004; Sánchez-Fernández & Iniesta-Bonillo, 2007). Therefore, a fragmented view of the value construct creates a vague interpretation of the key dimensions of perceived value, subsequently leading to inappropriate value measurement. To fill this knowledge gap, this study adopted a cognitive-affective approach to conceptualize the constructs of perceived value that originated in consumer-behaviour psychology (Sánchez-Fernández & Iniesta-Bonillo, 2007). With regards to the value measurement technique, the best-worst scaling (BWS) method (Louviere, Lings, Islam, Gudergan, & Flynn, 2013) has been well established as the preferred method for the measurement of consumer value orientation in general. It has been effectively employed to replicate Schwartz's (1992) values circumflex structure and the list of values (LOV) theory (Kahle, 1983) in overcoming the inherent biases and shortfalls of traditional rating scales (Lee, Soutar, & Louviere, 2008). However, it has not yet been applied to measure the multidimensional perceived value construct, especially in the restaurant setting, with most methods of measurement of perceived value having primarily centred on single binary or rating scales (Long & Schiffman, 2000; Petrick, 2002; Sheth, Newman, & Gross, 1991; Teng & Chang, 2013). Hence, this study has applied the BWS method to measure the multidimensional construct of perceived value to contribute methodologically as the collection of value-related data using the BWS method adds a new dimension to the value literature.

The remainder of the paper is organized as follows: First we provide a theoretical background of different perspectives to conceptualize perceived value followed by background of the BWS method. We then discuss the research objectives and research method used to collect data in Australian restaurant services sector. Next, we present cluster analysis results from the empirical study using the BWS method to measure multidimensional perceived value. Finally, we conclude the paper by discussing the significance of the study and avenues for future research.

2. Theoretical background

2.1. Background on perceived value

A review of value-related literature reveals two different perspectives in conceptualizing perceived value. One perspective theorizes perceived value as a uni dimensional concept that is grounded in

neoclassical economic theory (Sweeney, Soutar, Whiteley, & Johnson, 1996) and is focused on utilitarian value for the customer. One of the most frequently cited definitions of perceived value is given by Zeithaml (1988, p. 14) who defined it as “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given”. This perspective has dominated the unidimensional perspective on the study of value, and most of the prior research in this area has emphasized this economic and cognitive-based consumer utilitarianism to describe perceived value.

Although analysing value from the uni-dimensional perspective has the advantages of simplicity, it overlooks the intangible, emotional and intrinsic perception of consumers’ assessment of a product or service. Drawing on this broader understanding, it can be said that incorporating both utilitarian and hedonic components in the conceptualization of perceived value is more meaningful and robust. The multidimensional perspective of perceived value is more comprehensive and complex than the uni dimensional perspective (Nikhashemi, Tarofder, Gaur, & Haque, 2016) and is grounded in consumer psychology. For example, the customer value hierarchy proposed by Woodruff and Gardial (1996) has provided a detailed framework to managers for rethinking the concept of customer value. They have provided a broader view of customer experiences (higher level) rather than focusing only on product attributes (lower level). Another mentionable contribution in this research stream is “axiology or value theory” proposed by Hartman (1967, 1973) who conceptualized value in terms of extrinsic value (utilitarian or instrumental aspects of service), intrinsic value (emotional value) and systemic value (rational or logical phenomena of inherent relationships among concepts).

2.1.1. *Theory of consumption value*

The broadening of the “value” concept was most notably formalized into the theory of consumption values by Sheth et al. (1991). According to this theory, consumers are motivated by five independent dimensions of value in a specific choice situation, including functional (utilitarian), social, emotional, epistemic and conditional sources of value. The theory of consumption values proposed by Sheth et al. (1991) is one of the most significant contributions to the study of perceived value. It covers a complex multidimensional structure for defining this concept and includes both utilitarian and hedonic values; and has strong theoretical and empirical evidence across many disciplines such as economics, sociology, and psychology and consumer behaviour.

2.1.2. *Holbrook’s typology of perceived value*

However, prior studies pointed out that theory of consumption value ignores some sources of value such as ethics and spirituality (Holbrook, 1994, 1999). Drawing on the importance of the multidimensional and behaviour perspectives of perceived value, in this regard, another milestone study was undertaken by Holbrook in 1994. He conceptualized perceived value as an interactive relativistic preference experience Holbrook (1994, p. 22, 1996, p. 138, 1999, p. 5) and proposed a “typology of consumer value” grounded on three dichotomies:

Extrinsic versus intrinsic—a means-end relationship where consumption is functional, utilitarian and instrumental serving as a way to achieve purpose versus a consumption experience valued for its own sake just like self-justifying as an end unto itself.

Self-oriented versus other-oriented—consumption experience valued by virtue of the selfish effect or for individual’s own sake versus consumption experience prized for someone else.

Active versus reactive—consumption experience entails a physical or mental manipulation of some tangible or intangible object by its user versus the appreciation or admiration of some consumption involvement wherein an object impacts on oneself rather than vice versa.

The above-mentioned three distinct dichotomies can produce eight types of value according to Holbrook (1999) such as efficiency, play, excellence, aesthetic, status, esteem, ethics and spirituality. Holbrook (1999) pointed out that in any consumption experience these eight types of values have a tendency to occur together to varying degrees. Basically, Holbrook's value typology partially emphasizes the axiology of value and posits an interaction between a subject (the consumer) and an object (the product): it is specific to the situation and personifies a preference judgement.

Having studied the numerous multidimensional approaches presented in the value literature, this study found a gap in the formation of perceived value dimensions from the multidimensional perspective, especially value components such as ethical and spiritual values which are comparatively ignored in consumer behaviour (Holbrook, 1999; Sánchez-Fernández & Iniesta-Bonillo, 2007). Consequently, this study has suggested using the Theory of Consumption Value originated by Sheth et al. (1991) with its five dimensions to measure the "get" component of perceived value. In addition, this study intended to extend the Theory of Consumption Value by incorporating "altruistic value" and "aesthetic value" from Holbrook's (1999) value typology to measure the "get" component of perceived value in the Australian restaurant environment.

Whilst the restaurant industry has an increasing influence on the development of society nowadays; it is also one of the main contributors to environmental degradation, contamination and societal issues such as food quality, food safety or public health. The extant studies pointed out that food consumption is linked with several kinds of environmental impacts and a collaboration of production-consumption system is desirable for sustainable food consumption (Zhu, Li, Geng, & Qi, 2013). Moreover, under emerging ethical consumerism, some consumers are more concerned about "where it came from", food's environmental effect, employees' rights and whether animals were ill-treated or neglected than about the price and quality of the product in their purchase decision (JingJing, Xinze, & Sitch, 2008). These groups of people are more concerned about their choices based on environmental and societal issues that ultimately reflect their personal inherent values in their choice of whether or not to buy (Shaw, Grehan, Shiu, Hassan, & Thomson, 2005). Alex Steffen, the co-founder and executive director of worldchanging.com, aptly defines the movement of purchasing towards a better future for future generations to lessen ecological damage:

We cannot buy ourselves a better future, the kind of future (a sustainable one), that itself has a future, is not available for purchase. You won't find this on shelves, and you can't custom order one, no matter how much money you're willing to spend. But that's not to say that you can't assist in creating a more sustainable future through your purchasing decisions. (Steffen, 2007)

On the other hand, food safety is extremely vital as it relates to food quality, in turn, affecting public health. Accordingly, food safety relates to ethics as the quality of food delivered to the consumer can greatly influence their individual health. Moreover, in some cultures, foods are forbidden or accepted reflecting consumers' spiritual beliefs. Some consumers want a spiritual atmosphere that matches their spiritual beliefs. No doubt, Australia is a multicultural country. Thus, investigating altruistic value has extensive implications for restaurant marketers helping them to think, create and promote the ethical and spiritual aspects of value. Moreover, beauty or the aesthetic value of service brings gratification and pleasure to consumers' experiences (Sánchez-Fernández, Iniesta-Bonillo, & Holbrook, 2008). Most of the prior research on the aesthetic value has been done in the context of art or culture (Venkatesh & Meamber, 2006). Although it has been ascertained that the aesthetic value is one of the key determinants of purchase decisions (Gallarza & Gil Saura, 2006) and a significant dimension of consumer value (Mathwick, Malhotra, & Rigdon, 2001; Monroe, 1990; Sánchez-Fernández et al., 2008), a few research studies have investigated the concept of the aesthetic value in the study of consumer behaviour. No doubt, confusion can arise between aesthetic and emotional values. Consequently, this study has acknowledged that aesthetic components can provide pleasure, joy and happiness to the consumer. Hence, the aesthetic value produces emotional value for consumers. Finally, to fill this knowledge gap, this study incorporated the aesthetic

and altruistic value from Holbrook's (1999) value typology with the Theory of Consumption Values from Sheth et al. (1991) to the perceived value construct.

2.2. Background on best–worst scaling method

BWS, also known as maximum difference scaling (Cohen, 2003), was first proposed by Louviere and Woodworth (1990), and the formal statistical and measurement properties were proven by Marley and Louviere (2005). BWS is rooted in the well-established random utility theory (RUT) in psychology (Thurstone, 1927) and economics (McFadden, 1986). The BWS method is a comparatively new method of measurement that has a number of advantages in any research study (Louviere, Flynn, & Marley, 2015; Louviere et al., 2013). Basically, the BWS method is a choice modelling experimental procedure that requires a list of attributes that need to be expressed as having a particular magnitude along some kind of continuum (such as “importance”) (Finn & Louviere, 1992). The BWS method effectively permits respondents to evaluate all pairwise combinations of alternatives presented in a particular subset leading to the assumption that their “best” and “worst” choices represent the maximum difference in utility between all attributes. Therefore, the BWS method has been found to achieve comparatively the most accurate and reliable data which has provided researchers with the highest level of discrimination between variables, thus having a higher tendency to predict what they are intended to predict (Cohen, 2003).

With an appropriate experimental design, such as a balanced incomplete block design (BIBD) where items within the experiment are balanced, orthogonal and adequately randomized under the assumption of RUT (Green, 1974), the error component of the utility of the maximum difference pair in the subset can be estimated. The major benefit of using a BIBD design is its capability of greatly decreasing the number of choice sets to be evaluated while maintaining the balanced appearance and co-appearance of items across the sets: the number of items that appear in each set ideally must be fixed at three or more (Green, 1974; Raghavarao & Padgett, 2005).

For instance, for a set of k items, a BIBD design will generate s choice sets; each choice set will have m items. To minimize the task difficulty, m should always be less than the k items; each item appears r times and each pair of items appears (λ) times. In a BIBD design, no object appears more than once in a block; every pair of objects appears in the same number of blocks; each block is of equal size; and every object appears equally. A BIBD experiment must satisfy an integer's lambda value and the $r(m-1)/(k-1)$ equation will calculate the lambda value (Massey, Wang, Waller, & Lanasier, 2013). If s is equal to k , the design is known as symmetrical BIBD (Raghavarao & Padgett, 2005). While a symmetrical design is always favoured, it is not always arithmetically possible because of the three required restraints for this design. Therefore, there should be positional balance in an ideal BWS design that controls possible order effects with each respondent seeing each item in the first, second, third, etc. position across the sets (Lee, Soutar, & Louviere, 2007). When the BIBD experiment is not symmetrical, it is required to randomize the order of items that are seen in each choice set to control for possible order effects (Massey et al., 2013).

In summary, the BWS method offers the chance of a new theoretically valid method of data collection and it has also been confirmed to be easy for respondents to understand in comparison with other methods such as rating scales and ranking workouts (Chrzan & Golovashkina, 2006). The BWS questions have been proven to be simple and easy to complete and do not require too much thought or knowledge to undertake them (Flynn, Louviere, Peters, & Coast, 2007). In addition, the BWS method has been proven to have relatively low financial costs in its administration that, in turn, can boost managerial practicalities for the use of this scaling method in any situation (Finn & Louviere, 1992). For that reason, the BWS method has been applied in a wide range of contexts and to investigate a wide variety of problems. The BWS method was first introduced by Finn and Louviere (1992) to assess the relative importance of food safety against other areas of public concern. Marley and Louviere (2005) later offered formal mathematical proof relating to its measurement properties. The BWS method has since been applied in various contexts including studies in marketing and consumer

behaviour (e.g. Auger, Devinney, & Louviere, 2007; Massey et al., 2013); personality research (Lee et al., 2008); health economics (Lancsar, Louviere, & Flynn, 2007); and education (Burke et al., 2013).

In exploring techniques for value measurement, Lee et al. (2007) compared the BWS method with rating scales in the study of personal values which is known as Kahle's (1983) LOV. Findings have confirmed that rating scales lead to greater skewness in the data than the BWS method, resulting in a positive bias in which respondents rate all of these personal values as significant. Similarly, the BWS method has been applied to another well-known personal values instrument which was named the Schwartz Values Survey (Schwartz, 1992; Schwartz & Bilsky, 1987) by Lee et al. (2008) and it was found that the BWS method produced a far better fit compared to rating scales to the theoretical quasi-circular structure of values proposed by Schwartz (1992).

Although the BWS method has been proven as a better method than rating for measuring personal values (Lee et al., 2007, 2008), the BWS method has not been applied before to measure the multidimensional concept of perceived value where most methods of measurement of perceived value have primarily centred on binary or rating scales (Long & Schiffman, 2000; Petrick, 2002; Sánchez-Fernández et al., 2009; Sheth et al., 1991; Sweeney & Soutar, 2001; Teng & Chang, 2013). Hence, to fill this gap in the restaurant context, this study has applied the BWS method to measure the multidimensional concept of "perceived value" in order to contribute methodologically to the value measurement literature.

3. Research objectives

As the importance of the above issues is still fragmented in the literature, recent attention by academicians and practitioners is focused on understanding consumers' behavioural intention. In contrast to attributes, value is the upper-level end goal in the consumption situation that reflects the actual reason for consumers' purchase decisions (Woodruff, 1997). Therefore, understanding consumers' perceived value can provide accurate information on consumers' real reasons for purchase, especially in restaurant dining (Ha & Jang, 2013). For that reason, unlike the majority of prior studies, this study has reconceptualized perceived value from the multidimensional perspective for the purpose of advancing the knowledge of behavioural intention determinants from the consumer perspective in a service environment. Along with its core objectives, this study has measured the multidimensional perceived value with the BWS method to fill a methodological deficiency in the value literature in which the BWS method has been proven as a better method than rating scales for measuring personal values (Lee et al., 2007, 2008).

4. Research methodology

4.1. Research context

In recent times, a growing services sector is considered as an important indicator of a country's economic progress. In particular, the Australian economy is currently led by the services sector and around 67.4% in GDP contribution comes from the services industry (CIA The world Factbook, 2015). With this growing trend in the economic structure, the restaurant services sector is one of the fastest growing industries and is having an increasing impact on the development of the society in a service-based economy (Ramseook-Munhurrin, 2012). The growth is also attributed to the development of the tourism and hospitality industry (Australia, 2011). Along with this economic importance, the restaurant is an ideal research setting in which to investigate the value concept from the consumers' perspective as it represents both tangible and intangible features of consumer value (Ha & Jang, 2013). Therefore, this study has chosen the "Australian restaurant context" to advance the understanding of existing knowledge of consumers' behavioural intention.

4.2. Survey method

The current study employed the survey method as it has the capacity to accurately identify the extreme information from a larger sample size, to explain causal relationships between variables in a simple way and then to provide generalizable statements on the research setting (Gable, 1994). In

addition, for the purpose of the survey, this research adopted cross-sectional design which includes the collection of information on only one occasion from any given sample of population elements (Malhotra, 2004). This cross-sectional design has some benefits over longitudinal studies such as higher feasibility (Anderson, 1995), minimum response bias (Dabholkar, Shepherd, & Thorpe, 2000), proper use of time and resources, and representative samples with greater response rates with these providing the main logic for accepting a cross-sectional design rather than a longitudinal one (Malhotra, 2004). Moreover, this study chose to use the online survey method to collect data for the same reason. Firstly, online survey methods are able to reduce costs compared with door-to-door surveys, telephone surveys or mail surveys. In addition, the online survey method saves time, improves total response numbers due to instant findings and modification of malfunctions, and ensures accuracy of data input and analysis more than other survey methods.

4.3. Sample selection procedure

It is evident that selecting samples across countries increases the validity and authenticity of data: this study selected its required sample from Australia only due to resource limitations. Moreover, respondents were not considered if they were first-time visitors with only repeat consumers considered for the sample for this investigation. As mentioned above, this study has adopted the online survey method through a quality online research company that distributed questionnaires to panel members who were repeat visitors to restaurants. It is widely accepted in the marketing, hospitality and tourism literature that understanding the difference between first-time and repeat visitors can provide a better reason for segmenting the market as both groups differ in their motivation and activities towards the purchase decision (Morais & Lin, 2010). In addition, experienced consumers can provide a better explanation of planning behaviour and post-experience evaluation (Li, Cheng, Kim, & Petrick, 2008; Mckercher & Chan, 2005); hence, they are perceived as a preferable market segment in the tourism and hospitality service sectors with higher priority than first-time visitors. Ryu and Han (2011) stated that repeat customers can easily evaluate their understanding of dining based on their past experiences with salient perceptions whereas first-time visitors can only judge their overall dining experience from whatever information they may have received (e.g. word-of-mouth reports, advertising and price). Therefore, it is expected that the evaluation of perceived value by repeat visitors is more realistic and convincing than that made by first-time visitors (Jin et al., 2015). Finally, due to the different characteristics of and perceptions held by repeat visitors and first-time visitors, this study expected that collecting data from repeat consumers who had visited a restaurant in the past 30 days could provide better information regarding perceived value.

4.4. Measurement of construct

Regarding the research instrument construction, the measurements items used to operationalize the perceived value construct were mainly sourced from the relevant prior literature where reliability and validity were evident. A BIBD was used as the experimental design for the measurement of the five value dimensions of the Theory of Consumption Values and two value dimensions from the Holbrook's value typology. Items for measuring the functional (quality), functional (price), social, emotional, epistemic, aesthetic and altruistic values were adopted from the relevant previous studies. For instance, Functional value (quality): healthy option & tasty food (Kivela, Inbakaran, & Reece, 1999), high quality (Ryu, Lee, & Kim, 2012); functional value (price): reasonable price, economical, value for money (Sweeney & Soutar, 2001); social value: social approval, feeling acceptable, good impression (Sweeney & Soutar, 2001); emotional value: happiness, sense of joy, gives pleasure (Petrick, 2002); epistemic value: variety of menu (Raajpoot, 2002), satisfy curiosity, new and different experience (Sheth et al., 1991); aesthetic value: design and decoration, appearance of staff, table arrangement (Sánchez-Fernández et al., 2009) and altruistic value: ecologically produced, coherent with ethics and moral value, spiritual atmosphere (Sánchez-Fernández et al., 2009).

In the research instrument, this study designed a symmetrical BIBD of seven perceived value dimensions, consisting of seven subsets and asked consumers to select the most important and least important attribute in each set based on their recent experiences in the past 30 days. In this experimental design, each value dimension was seen an equal number of times (shown three times in the

questionnaire) with every other item to control context effects; also respondents saw each attribute in a chronological order across subsets (Lee et al., 2007). Here, $k = 7$, $s = 7$, $r = 3$, $m = 3$, $\lambda = 1$. The design has been included in the Appendix 1.

4.5. Data collection

This study used a web-based survey and hired an online marketing research company in Australia. The questionnaires were distributed online by the research company in Australia to panel members comprising regular visitors to restaurants; therefore, the online survey was nationwide. The online research company's panel members were 18 years of age or older and the proportions of male and female were 51.3 and 48.7% respectively. To ensure quality of data, the research company sent their members an invitation seeking responses including the online survey link. The survey questionnaire was distributed online to a total of 610 Australian consumers and from this distribution, 317 responses were collected exceeding a 50% response rate. Prior to analysis, the data were checked for accurateness such as missing data, finally, the data-set found 20 outliers due to the missing responses. These could be considered outliers that appeared to be random in the data-set and were finally deleted. Responses from a total of 297 respondents were left for final analysis.

4.6. Data analysis technique

The BWS method is popular for creating more concrete and more discriminating findings compared to ratings methods due to the trade-off opportunities in respondents' responses (Lee et al., 2007). Therefore, BWS-scored data are free from response style bias. Although measuring the multidimensional perceived value construct with the BWS method was a methodological contribution to the value literature, prior research pointed out that measuring consumer preferences using the BWS method was revolutionary in the marketing literature (Mueller & Rungie, 2009). In addition, in terms of personality measurement, the BWS method has also been a more favoured method than rating scales (Lee et al., 2007, 2008). Most of the BWS studies have had an emphasis on mean differences on an aggregated level (Burke et al., 2013; Lee et al., 2007) or have formed a priori segments based on socio-demographic variables (Goodman, Lockshin, & Cohen, 2006). In this regard, Auger et al. (2007) used Ward's linkage clustering method on individual BMW scores to reveal consistent patterns in ethical beliefs across various countries. Mueller and Rungie (2009) applied a quite powerful analysis of the variance-covariance matrix on individual BMW scores to find which attributes were influential in value components and used the latent clustering method to identify distinct consumer segments in wine purchase behaviour. Cohen and Neira (2003) also applied latent class modelling with the BWS method to discover clusters to reveal analogous utility components related to drinking coffee.

In addition, the prior literature has pointed out that two different segmentation approaches are common, namely a priori segmentation grounded on prior known groups such as gender, education or age and *post hoc* segmentation constructed on prior data analysis such as personality or attribute measures or other imperative concepts to classify distinct clusters (Wedel & Kamakura, 1999). Wedel and Kamakura (1999) recommended the supremacy of *post hoc* segmentation using the importance of attributes or attitudes revealed by respondents as it resulted in steadier and more time-consistent clusters than a priori clustering variables. In particular, demographic information has been proven to provide weak variables related to differences in purchase behaviour (Aurifeille, Quester, Lockshin, & Spawton, 2002).

Having reviewed the acceptability of cluster analysis with the BWS, this study decided to conduct hierarchical cluster analysis. The square root of the best count divided by the worst count ($\sqrt{B/W}$) scoring procedure (Lee et al., 2008; Marley & Louviere, 2005) was used in this study to measure the seven consumption-related consumer values. Based on the $\sqrt{B/W}$ score, this study used Ward's method on the constructs of multidimensional perceived value in order to understand the underlying assumption of *post hoc* segmentation and to provide meaningful information to restaurant practitioners in adopting the study's findings for their strategy determination and market analysis.

5. Results and discussion

Considering the acceptability of cluster analysis of BWS-scored data (Cohen & Neira, 2003; Mueller & Rungie, 2009) in the extant literature, this study decided to conduct hierarchical cluster analysis on the multidimensional constructs of perceived value. To the best of the researchers’ knowledge, this study is a pioneer in the value literature in clustering consumers on the basis of perceived value construct, particularly in the restaurant setting. Hierarchical clustering is a process of producing clusters that generates a tree-like diagram to represent the combination of clusters to form the complete set of cluster solutions (Hair, Black, Babin, & Anderson, 2010). As shown in Figure 1, it was considered appropriate to separate the data into three clusters. Specifically, by looking at the Dendrogram Distances and scree plot, the coefficient began to level out after Cluster Three demonstrating the second-largest decrease (Hair et al., 2010) and it was also noted that the three-cluster solution appeared to be a better fit to the data. Therefore, due to the small sample size, it seemed appropriate to separate the data into three clusters to understand the multidimensional perspective of perceived value and to break down consumers’ perceived value in this research setting.

The description of the average score based on perceived value dimensions across these clusters is shown in Table 1. Nearly half of the sample (42%) were assigned to the first cluster, 38% of the total respondents belonged to the second cluster and 20% were allotted to the third cluster. The finding of cross-tabulation as shown in Table 2 is that Cluster One comprised 125 respondents of whom 59.2% were female. The largest group of respondents (30.4%) were aged from 55 to 64 and almost 13.6% of respondents were earning from \$250 to \$399 weekly. Cluster Two consisted of 112 respondents of whom 51.8% were female. The largest group of respondents (26.8%) in this segment were also aged from 55 to 64; and the major portion (16.1%) earned from \$1,000 to \$1,299 a week. Cluster Three was made up of 60 respondents of whom 53.3% were female. The largest group (28.3%) was aged from 45 to 54. The largest group (15%) in this cluster had a weekly income of \$400–\$599. Overall, the findings indicated that these three clusters of respondents greatly varied in term of their income.

Based on their mean values as shown in Table 1, the findings found that respondents of Cluster One (the major portion) were more concerned with functional value (price) of restaurant dining whereas those in Cluster Two were more concerned with functional value (quality) and the altruistic components of restaurant dining. On the other hand, social, emotional, and aesthetic values were more important to those in Cluster Three. Therefore, Cluster One were titled “price-sensitive consumers”, Cluster Two were named “utilitarian and ethics-conscious consumers” and Cluster Three were named “hedonic and aesthetic-conscious consumers”.

As a consequence, it is noted that each cluster was dominated by female customers and the average age was 45–64; interestingly, utilitarian and ethics-conscious consumers had higher weekly incomes (\$1,000–\$1,299) compared to hedonic and aesthetic consumers who were earning \$400–\$599 per week. The majority of respondents in the price-sensitive consumer had weekly incomes of \$250–\$399. Therefore, it can be concluded that that lower income people were more price-conscious

Figure 1. Dendrogram distances & scree plot for perceived value.

No of Clusters	Agglomeration Coefficients	% Drop	% Rise
1	272.868	n/a	n/a
2	217.376	-20.3%	25.5%
3	189.796	-12.7%	14.5%
4	172.011	-9.4%	10.3%
5	155.720	-9.5%	10.5%
6	146.147	-6.1%	6.6%
7	136.767	-6.4%	6.9%
8	128.480	-6.1%	6.4%
9	121.699	-5.3%	5.6%
10	116.486	-4.3%	4.5%



Table 1. Post hoc Tukey’s test and anova results for perceived value

	Cluster 1 (125) (42%)	Cluster 2 (112) (38%)	Cluster 3 (60) (20%)	F-value	p-value
sqrtbw1 functional, high quality	1.3326	1.8775**	1.4631	95.328	.000
sqrtbw2 functional, reasonable price	1.9497**	1.3275	.9442	387.169	.000
sqrtbw3 social, feeling acceptable	.8556	.7964	.9292*	3.612	.028
sqrtbw4 emotional, happiness	.9992	.9502	1.3764**	39.151	.000
sqrtbw5 epistemic, satisfy curiosity	1.0218	1.0911	1.1162	2.007	.136
sqrtbw6 aesthetic, design & decoration	.8250	.7259	1.0882**	37.058	.000
sqrtbw7 altruistic, ecologically produced	.7066	.9229**	.6862	16.434	.000

*Indicates significant at .05 level.
 **Indicates significant at .01 level.

Table 2. Cross-tab results for demographic information

	Cluster 1 (%)	Cluster 2 (%)	Cluster 3 (%)
<i>Gender</i>			
Male	40.8	48.2	46.7
Female	59.2	51.8	53.3
<i>Age</i>			
18-24 years	2.4	.0	1.7
25-34 years	16.8	24.1	10.0
35-44 years	11.2	14.3	15.0
45-54 years	20.0	26.8	28.3
55-64 years	30.4	21.4	25.0
65-74 years	18.4	13.4	15.0
75 years and over	.8	.0	5.0
<i>Income</i>			
Nil income	3.2	.9	.0
\$1-\$7,799 (i.e. \$1-\$149 a week)	2.4	1.8	.0
\$7,800-\$12,999 (i.e. \$150-\$249 a week)	2.4	2.7	.0
\$13,000-\$20,799 (i.e. \$250-\$399 a week)	13.6	4.5	10.0
\$20,800-\$31,199 (i.e. \$400-\$599 a week)	12.0	9.8	15.0
\$31,200-\$41,599 (i.e. \$600-\$799 a week)	11.2	7.1	8.3
\$41,600-\$51,999 (i.e. \$800-\$999 a week)	11.2	14.3	10.0
\$52,000-\$67,599 (i.e. \$1,000-\$1,299 a week)	6.4	16.1	10.0
\$67,600-\$83,199 (i.e. \$1,300-\$1,599 a week)	11.2	11.6	11.7
\$83,200-\$103,999 (i.e. \$1,600-\$1,999 a week)	6.4	7.1	11.7
\$104,000 or more (i.e. \$2,000 or more a week)	8.0	15.2	13.3
Prefer not to answer	12.0	8.9	10.0

whereas higher income people were more aware about ethics and had a greater emphasis on hedonic value components.

Prior literature has pointed out that attributes are at the very bottom of the value hierarchy model whereas value is at the very top (Woodruff, 1997). This indicates that attributes are components that a restaurant must provide regardless of a customer's actual reason for visiting whereas perceived value reflects the real reason of restaurant dining. Therefore, findings from three clusters, their characteristics and differences across three clusters would permit practitioners to better understand customers' needs to develop more effective business strategies in order to attain competitive advantage in this industry. Lastly, this study posits that the empirical findings regarding these three clusters that differed by their consumption dimensions could also be treated as a primary guideline for analysing the market and could provide future researchers with evidence for developing path-by-path hypotheses among these three clusters, particularly in the restaurant setting.

6. Research significance

Understanding the multidimensionality of the perceived value construct via the Theory of Consumption Value (Sheth et al., 1991) and incorporating two value dimensions from Holbrook's (1994) value typology to extend theoretical knowledge were considered prime motivations for this study (Gregor, 2006). Moreover, clustering respondents based on the multidimensional perceived value concepts had not previously been explored in the consumer behaviour literature. Prior literature has indicated that perceived value construct is significant for understanding the importance of product attributes or consumer choice preferences (Sheth et al., 1991). Therefore, segmenting the consumers based on the constructs of perceived value would be insightful for academics and practitioners in this setting. In addition, measuring consumer preferences using the BWS method was revolutionary in the marketing literature and is popular for deriving consumers' stated preferences (Mueller & Rungie, 2009). As a consequence, this study has made a pioneer attempt to measure the multidimensional perceived value with the BWS method to fill a methodological deficiency (Summers, 2001; Whetten, 1989). Finally, the restaurant business within the growing tourism and hospitality industry can gain important managerial insights from the findings of this study. The cluster analysis results provide insightful information to practitioners regarding consumers' characteristics to deepen the understanding of existing unexplored knowledge and segmenting the markets.

7. Research limitations and future research

This study has some shortcomings that are associated with future research directions. Firstly, the study confined its investigation within a single services industry in a single country that may limit the generalizability of the findings to other sectors. Therefore, future research is needed in multiple locations across different services sectors to increase external validity of the outcomes. Second, there are alternative taxonomic methods that future research could use such as archetypal analysis (Cutler & Breiman, 1994) and scale-adjusted latent class models (Magidson & Vermunt, 2007). Furthermore, this study used an online research firm to survey respondents. This means that consumers needed to depend on past memories of dining experiences which may cause a bias. Therefore, future research could use different data collection techniques in this regard to increase the authenticity of this type of research.

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Appendix 1

BIBD design card with 7 dimensions of Perceived value construct

- (1) **Functional value** (high quality, tasty food, healthy option)
- (2) **Functional value** (reasonable price, economical, value for money)
- (3) **motional value** (happiness, sense of joy, gives pleasure)
- (4) **Epistemic value** (satisfy curiosity, variety of menu, new and different experience)
- (5) **Social value** (feeling acceptable, good impression, social approval)
- (6) **Aesthetic value** (design & decoration, appearance of staff, table arrangement)
- (7) **Altruistic value** (ecologically produced, coherent with your ethics & moral values, spiritual atmosphere)

2	6	4
1	4	5
4	7	3
3	2	1
7	5	2
6	1	7
5	3	6



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