Article

Examining a hierarchical model of Australia's destination image

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Abstract
This study presents a hierarchical model of a country's destination image (DI). The model is empirically tested in the context of Australia as a tourism destination. Data were collected from 600 residents in four countries representing Australia's main market segments for inbound visitors – China, the United Kingdom, the United States and South Korea. Partial least squares structural equation modelling confirmed that DI is best operationalized as a second-order factor model, which is formed by six first-order factors (destination attributes) of natural and well-known attractions, variety of tourist services and culture, quality of general tourist atmosphere, entertainment and recreation, general environment and accessibility. More specifically, the cross-sectional standardized regression/loadings demonstrate that 'natural and well-known attractions' as well as 'accessibility' had the largest effects on overall image formation. The attribute of 'general environment', on the other hand, had lowest effect on the country's DI. Thus, the findings from this study advance existing knowledge on DI formation. Through a greater understanding of how DI is formed, the findings are of benefit to both tourism researchers and destination managers. New insights into how DI is formed among Australia's key inbound markets present opportunities for new and effective marketing strategies.

Keywords
Australia, destination attributes, destination image, hierarchical models, PLS-SEM

Introduction

Despite recent downturns in the global economy, international tourism remains resilient and is one of the largest and fastest growing economic sectors in the world. According to the World Tourism Organization (UNWTO, 2013), international tourist arrivals increased from 278 million in 1980 to 1.35 billion in 2012 – and this is forecast to reach 1.8 billion by 2030. In Australia, tourism activities generated over 908,000 jobs and contributed A$87.3 billion to gross domestic product during the 2011–2012 period. It is Australia's largest services export industry and has a total output multiplier of 1.9 – which means for every dollar that tourism earns, it generates an extra 90 cents to other parts of economy (Australia Tourism Research, 2012). In response to this growth, Australia's tourism authorities have implemented several marketing strategies in recent years that are aimed at building the country's image as a tourism destination and increasing tourist inflows (Dwyer et al., 2007; Wang and Davidson, 2010).

A major policy initiative has revolved around the branding and creation of Australia's destination image (DI) to overseas markets. DI refers to individuals' mental representation of knowledge, feelings and overall perception of a particular destination (Assaker and Hallak, 2013; Fakeye and Crompton, 1991). It is widely recognized as 'one of the key building blocks of successful tourism marketing' (Dolnicar and Grun, 2013: 3). The image of a destination as perceived by tourists 'plays an

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important role in their decision-making, destination choice, post trip-evaluation, and future behaviours' (Chen and Tsai, 2007: 1115). This also includes traveller's intentions to visit a destination in the future (Court and Lupton, 1997).

Empirical studies, including those conducted in association with industry stakeholders, have sought to identify the critical attributes of Australia's image. Research has advanced our understanding of the relevant components and attributes of DI as perceived by international visitors (e.g., Murphy, 1999; Reisinger and Turner, 2000; Ross, 1993; Son and Pearce, 2005; Wang and Davidson, 2008). Despite these efforts, significant gaps remain in this area. First, most of these studies were conducted on specific market groups such as backpackers (Amalia, 1996; Murphy, 1999), Chinese nationals (Huang and Gross, 2010; Wang and Davidson, 2010), international students (Son and Pearce, 2005; Wang and Davidson, 2008) and Japanese tourists (Reisinger and Turner, 2000). As such, the results from these previous studies are limited to specific markets of visitors to Australia, thus, they cannot be relied upon to assess the critical attributes of Australia's overall markets. Second, previous studies have often relied on exploratory methods of analysis (e.g., Wang and Davidson, 2008, 2010). Although such an approach does have its merit and can identify important destination attributes, the extent to which these attributes are linked to the formation of overall DI remains uncertain (Kim and Yoon, 2003). Thus, there is insufficient knowledge about how the weighting of each identified attribute impacts the formation of overall image of a destination. Clearly, this limits our understanding of how certain attributes impact overall DI.

The current study addresses these gaps to advance existing knowledge on the determinants of DI. By drawing on previous studies and using Australia as the context for the model, we empirically examine a theoretically derived higher order model of DI (Figure 1). In this model, DI is operationalized as a second (higher)-order factor formed by first-order attribute constructs, each measured by a set of directly observed components (or items). In particular, the model examines the composition of the various attributes used to measure Australia's DI and tests the structural relationships among these attributes (first-order factors) and overall DI (second-order factor). This hierarchical modelling approach will identify the attributes with the greatest effect on overall DI.

In this study, we examine Australia's DI as perceived by residents of its four main market segments for inbound visitors – the United Kingdom, the United States, China and South Korea. These four countries are substantial, growing market segments for Australia. For example, visitors from Korea have increased from 128,000 in 2000 to over 180,000 in 2013. Australia has also experienced growth from Chinese visitors who numbered over 647,000 in 2013 – increasing from just 99,000 in 2000 (Australia Tourism Research, 2013).

This study presents both theoretical and practical implications. Adopting a higher order, hierarchical model is advantageous as it presents a broader construct of DI yet to be examined in the existing tourism literature (Kim and Yoon, 2003). This approach advances theories on DI formation, including construct measurement and validation as well as identifying its key determinants. Furthermore, testing the model in the context of Australia and its key market segments enables tourism authorities to compare their current marketing strategies with the results generated from this study. In other words, the model will demonstrate if the attributes with the strongest influence on DI differ from what is currently being marketed to these segments (Australia's tourism attributes currently promoted include the wildlife, beaches, the reef, the outback, friendly people, vibrant cities and laid-back lifestyle; Australia Tourism, 2010). Understanding the determinants of DI allows for better informed strategies for the marketing of specific destination attributes.

The remainder of this article is organized as follows. First, an extensive literature review on DI is presented to build the theoretical framework for the proposed hierarchical model. The research design, data collection and methods of analysis are then discussed in research method section of this article. The results of the analysis will follow before the findings are discussed in the context of previous studies. The theoretical and practical contributions of this study are then presented followed by the limitations and directions for future studies.

Literature review on tourism DI

The construct of DI

The perceived 'image' of destinations is among the most researched topics in tourism due to its influence on the decision-making behaviour of

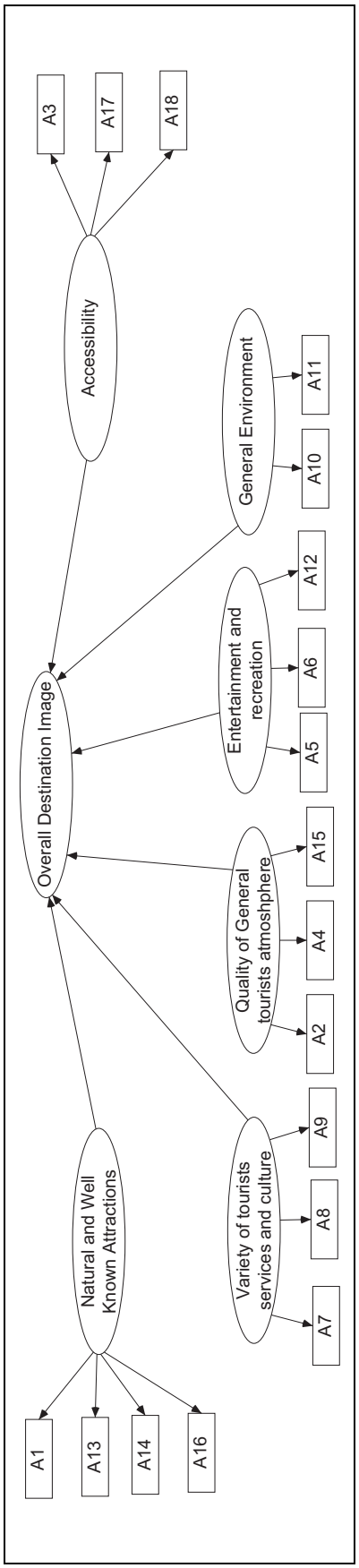

Figure 1. The proposed hierarchical model for Australia's DI. DI: destination image.

potential tourists (Crompton, 1979; Mayo, 1973) and the levels of satisfaction from the travel experience (Chon, 1990). The image of a destination is a critical factor in tourists' choice of where to travel (Mayo, 1975). Images are paramount to a destination because they have the power to change and rearrange tourists' impressions and perceptions and 'give him or her a pre-taste of the destination' (Fakeye and Crompton, 1991: 10). Moreover, whether an image is a true representation of what any given region has to offer to the tourists is less important than the existence of the image in the person's mind (Jenkins, 1999). Whynne-Hammond expanded this concept further and stated that 'perceptions of foreign countries and their inhabitants may be wildly inaccurate' (1985: 264). Probing DIs, however, is an immensely important exercise because actions proceed on the basis of such subjective reality (Mercer, 1971). Subsequently, Gallarza et al. (2002) have been particularly interested in exploring the relationship between DI with destination positioning and destination selection, arguing that the value of DI to the local marketing organization and other promoters is uncontestable due to its power to attract more tourists.

Hong et al. (2006), Um and Crompton (1990) and Walmsley and Young (1998) also examined the role of destination perception in the travel purchase process and the influence of perception on destination choice. Other studies (Murphy, 1999; Pike and Ryan, 2004; Ross, 1993; Sarma, 2003; Son and Pearce, 2005) assessed perceived images of a destination with the aim of identifying strengths and weaknesses in order to recommend positioning and promotion. In addition, many studies have focused on the role and influence of image on satisfaction in the context of the expectation-disconfirmation paradigm (Chaudhary, 2000; Chon, 1990; Pizam and Milman, 1993; Vogt and Andereck, 2003; Weber, 1997). Typically, this approach is used to compare visitors' pre-trip perception of the destination attributes with their post-trip perceptions to confirm either satisfaction or dissatisfaction with the destination. For example, Chon (1990) studied the effects of a mismatch between a person's image and expectations about a destination and his or her actual experience with that destination. Chon (1990) found that a positive image and positive travel experience results in a moderately positive evaluation of a destination, whereas a negative image and a positive experience results in a highly positive evaluation of a destination. The most negative evaluation results from a positive image and negative experience.

The experiential dimension of leisure and tourism trips has also been explored widely in several other studies (e.g., Botterill and Crompton, 1987; Ross, 1993). These studies contrasted travellers' expectations and reactions prior to the visit with their experiences after the visit, enabling the salient attributes of the naive image and the re-evaluated image to be incorporated into tourism marketing planning (Selby and Morgan, 1996). Subsequently, marketers can use the concept of imagery to enhance the decision-making process of first-time visitors but also increase remembered satisfaction and encourage repeat purchases. A major focus of tourist research has focused on the conceptualization of DI. This is discussed in the following section.

The conceptualization of DI

Given the impact of image on both behaviour variables, such as destination choice and satisfaction, numerous tourism scholars have attempted to conceptualize this construct. DI is often described simply as 'impressions of a place' or 'perceptions of an area' (Baloglu and Brinberg, 1997; Crompton, 1979; Kotler et al., 1993). As such, there is some ambiguity with regard to the components of DI and how these are perceived by travellers (Jenkins, 1999). Although the multiattribute nature of DI has been well received in the literature (e.g., Huang and Gross, 2010), DI, however, has been conceptualized in various ways. For example, in one of the earliest empirical studies of DI, Mayo (1973), based on the results of a multidimensional model, concluded that DI has multiple physical aspects (measurable or tangible traits) that can affect travel experiences and destination selections. Anderssen and Colberg (1973), also using a multidimensional model, found that destination perceptions and preferences vary according to the physical dimensions and attributes of a destination's image.

Functional (physical, tangible or measurable) and psychological (abstract or intangible) attributes have often been used to develop scales to measure DI constructs (Ahmed, 1991; Crompton, 1979; Gartner and Shen, 1992; Hunt, 1975; Milman and Pizam, 1995; Pearce, 1982). To understand the complexity of DI, Echtner and Ritchie (1991) posited the following three suggestions to conceptualize and measure it more effectively: (1) DI must be viewed as having attribute-based

and holistic components, (2) these components have functional (tangible) and psychological (abstract) characteristics and (3) images range from common and functional to unique. These suggestions were based on previous frameworks for measuring DI (MacCannell, 1989; Martineau, 1958; Reilly, 1990; Um and Crompton, 1990).

Echtner and Ritchie (1993) compiled their suggestions from these frameworks and then further developed them. These developments were subsequently adopted by other researchers (e.g., Amalia, 1996; Murphy, 1999; Son and Pearce, 2005). However, Echtner and Ritchie (1993) noted that, although the graphic design of their model appears to divide the concept of image into three different and independent dimensions, the line dividing them is unclear, and overlap exists, thereby forming several dimensions of DI. The authors provided several examples of such dimensions, including common functional attributes (i.e., general traits by which most destinations can be compared, such as price, climate and types of accommodation), unique functional attributes that consist of the specific icons and special events that form part of a destination's image (e.g., the Sydney Harbour Bridge or the Glastonbury music festival) and common psychological or abstract attributes (e.g., friendliness of the locals, notoriety or beauty of the landscape and unique psychological attributes, including feelings associated with places of religious pilgrimage or places associated with an historic event). Following the work of Echtner and Ritchie (1993), the 'cognitive–affective' image model was proposed by Dann (1996) and Gartner (1993) in their model of DI formation. This model is based on the notion of conceptualizing attitude in consumer behaviour studies as initially proposed by Fishbein (1967). According to Dann (1996) and Gartner (1993), image has two distinct but interrelated dimensions: affective (feelings) and cognitive (beliefs). Affective image deals with the emotional response individuals may have to a place or a product. Cognitive image, on the other hand, represents knowledge of place or product features (O'Neill and Jasper, 1992). The cognitive–affective model for DI has been widely adopted in tourism research (e.g., Baloglu, 1999; Baloglu and McCleary, 1999; Beerli and Martin, 2004; Lin et al., 2007). This was later expanded upon by Baloglu (1999) who argued that in addition to cognitive and affective attributes, there is a conative dimension, mostly in the form of visit intention, which can be applied either inside or outside the image framework.

Huang and Gross (2010) argued that the cognitive–affective image model has been applied more frequently in causal studies that examine relationships between DI and other constructs of interest, whereas studies adopting the 'three dimension continuum' (Echtner and Ritchie, 1991) are more descriptive in nature. Baloglu (1999) argued that holistic or overall impressions of a destination are based on combinations and interactions of cognitive and affective attributes as well as common/specific and holistic/individual attributes.

Drawing on previous research (e.g., Baloglu, 1999; Dann, 1996; Echtner and Ritchie, 1993; Gartner, 1993), this study conceptualizes DI as a higher order concept comprising several primary first-order factors that co-vary to determine the overall image of a destination. The three dimension continuum model (Echtner and Ritchie, 1991) is used to infer the various components associated with the first-order factors (attributes), which combine to determine the overall image of a destination. These determining factors, or attributes, and their underlying components are discussed in the following section.

Developing a hierarchical model for DI

Several theorists (Beerli and Martin (2005); Echtner and Ritchie, 1991; Gallarza et al., 2002) reviewed tourism DI studies in terms of the attributes included in measuring image. The most common attributes included 'scenery/natural attractions', 'hospitality/friendliness/receptiveness', 'cost', 'climate', 'tourist sites/activities', 'nightlife/entertainment' and 'sport facilities/activities' (Echtner and Ritchie, 1991). Another review of 65 DI studies between 1971 and 1999 by Gallarza et al. (2002) revealed that the psychological attribute of locals' receptiveness as viewed by tourists was the most widely used destination attribute, followed by the functional attributes of landscape and cultural attractions. 'Nightlife and entertainment', 'sport facility', 'price', and 'gastronomy' were also frequently adopted to gauge DI.

Beerli and Martin (2005), in their review of the DI literature, classified attributes into nine dimensions: 'natural resources', 'general infrastructure', 'tourism infrastructure', 'tourism leisure and recreation', 'cultural, history and art', 'political and economic factors', 'natural environment', 'social environment' and 'atmosphere of the place'. They discovered that previous studies have adopted various attributes and there is no universally accepted and reliable

measurement of individuals' perceptions of tourist destinations. The attributes chosen were based on the objectives of each study and the destination being investigated. Thus, tourism destinations differ from one another, and each destination has certain attributes that distinguish it from others. Inevitably, researchers examining the attributes for a destination must consider those that are unique to the destination in question (Echtner and Ritchie, 1993).

Previous studies looking at Australia's DI have used this approach and have selected attributes specific to Australia. For example, Son and Pearce (2005) explored Australia's image based on the perception of international students using a conceptual framework that considered cognitive and affective components of DI. Natural attractions, the variety of water sports and beautiful scenery were perceived as Australia's strongest attributes among this sample. In addition, the images of Australian people, personal safety, climate and transportation were found to be positive attributes. Australia was regarded as relaxing and pleasant destination.

Focusing specifically on backpackers, Murphy (1999) found that Australia was perceived as a safe and friendly country with beautiful natural attractions and a pleasant climate. However, Murphy also discovered Australia was perceived to be lacking in culture and is expensive when compared to other destinations. Ross (1993) examined backpackers' actual DI of wet tropical areas in northern Australia compared with the images of their ideal holiday destination. Ross (1993) concluded that northern Australia's diverse environment, friendly locals and authenticity were some of the main positive images of the destination. Waitt (1996) surveyed Korean tertiary students studying in Australia and found 'spectacular scenic beauty' and 'good sun and beaches' as the most appreciated destination attributes. Waitt's (1996) sample also perceived Australia to be a safe destination but poor in cultural heritage, historical attractions and shopping facilities. Amalia (1996), in her study of Indonesia visitors, found that Australia was perceived to be a safe, quiet, comfortable, relaxing, pleasant and friendly destination. Australia also scored high on destination attributes of general infrastructure and facilities and opportunities for education. However, Amalia's sample viewed Australia to be an expensive tourist destination with limited variety of foods. Reisinger and Turner (2000) investigated the satisfaction of Japanese tourists in Australia's Gold Coast and Hawaii. The Gold Coast was perceived to be better than Hawaii on three dimensions: cost/social standing, followed by transportation and experience. Hawaii performed better in terms of natural environment, information and attractions.

Wang and Davidson (2008), drawing on previous DI studies, examined the important factors defining Chinese students' perceptions of Australia. They identified 22 key DI items/components that were subsequently subjected to a factor analysis using principal components extraction. Their analysis highlighted seven key factors (destination attributes) – 'natural and well-known attractions', 'variety and quality of goods/services', 'general environment', 'cultural and historical attractions', 'recreation and entertainment', 'accessibility' and 'relaxation'. Chinese students consider Australia as a safe and friendly destination with magnificent natural attractions and good living environment. As was found in previous studies (e.g., Murphy et al., 2000), the perceived safety and security of the destination is an important factor determining travellers' choice of destination. However, Wang and Davidson (2008) also found that culture, food and shopping are the attributes on which Australia underperformed. In a follow-up study, Wang and Davidson (2010) found that the most important attributes of Australia as perceived by the Chinese package tourist market are the same as those identified by students in their 2008 study, although not in the same order. The most important attributes of Australia's image were 'The environment in Australia is very clean', 'Australia has magnificent sunny beaches', 'Australia is a good place for rest and relaxation', 'Australia has fascinating native animals' and 'Australia has spectacular natural attractions' (Wang and Davidson, 2010).

The 21 DI items that Wang and Davidson (2010) identified (compared to 22 in their 2008 study) loaded on six factors: natural and well-known attractions, quality of tourist services and culture, quality of general tourist atmosphere, entertainment and recreation, general environment and accessibility. The cultural and historical attractions dimension was combined with variety of goods and services. Table 1 presents an exhaustive list of Australia's destination attribute items drawn from previous studies. Most items are common regardless of the tourist population examined (e.g., Chinese and Koreans students). Subsequently, a list of 18 attribute items was used in the present study to define Australia's image, based on the six-factor model proposed by Wang and Davidson

Table 1. List of attribute items used by researchers to measure Australia's image.

	List of attributes	Wang and Davidson (2008)	Wang and Davidson (2010)	Amalia (1996)	Murphy (1999)	Reisinger and Turner (2000)	Son and Pearce (2005)	Waitt (1996)	Total number of studies using the attribute
A1	Scenery/natural attractions	✓	✓	✓	✓	✓	✓	✓	7
A2	Hospitality/ friendliness/ receptiveness	✓	✓	✓	✓	✓	✓		6
A3	Costs/price levels	✓	✓	✓	✓	✓			5
A4	Personal safety	✓	✓		✓		✓	✓	5
A5	Nightlife/ entertainment	✓	✓			✓	✓		4
A6	Sports facilities/ adventure activities	✓	✓	✓			✓		4
A7	Shopping facilities	✓	✓				✓	✓	4
A8	Historic sites/ museums	✓			✓	✓		✓	4
A9	Aboriginal culture	✓	✓		✓	✓			4
A10	Climate	✓	✓		✓				3
A11	Restful/relaxing	✓	✓				✓		3
A12	Accommodation facilities/ restaurants/ tourism infrastructure	✓	✓	✓					3
A13	Tourist sites/activities	✓	✓			✓			3
A14	Beaches	✓	✓					✓	3
A15	Cleanliness	✓	✓	✓					3
A16	Wildlife	✓	✓	✓					3
A17	Tourism information/ communication	✓	✓		✓				3
A18	Accessibility	✓	✓	✓					3
A19	Museums	✓	✓						2
A20	Theme parks	✓	✓						2
A21	Casinos and gambling facilities	✓	✓						2
A22	Quality of duty-free goods and souvenirs	✓	✓						2

(2010) as this was validated on tourists rather than students (who tend to stay for a longer period). The six factors (DI attributes) include (1) natural and well-known attractions, (2) variety of tourist services and culture, (3) quality of general tourist atmosphere, (4) environment and recreation, (5) general environment and (6) accessibility.

These six DI attributes are identified in our hierarchical model as the first-order constructs, which form the Australia's overall DI (Figure 1). The model also includes the items used to measure each of the DI attributes. The formative scheme for DI is supported by the fact that six attributes are independent of each other and do not necessarily co-vary. For example, tourists may perceive the natural environment of Australia positively while holding a negative perception of its culture or recreation. In such cases, where variables in a model do not vary together, a formative scheme is best to relate these constructs or indicators to a higher order construct (Jarvis et al., 2003).

Research method

Research design and data collection

Data collection for this study took place from June to August 2012. A self-administered (online) questionnaire was used to collect data from residents in the United Kingdom, the

United States, China and South Korea – these represent Australia's main market segments for inbound visitors (Australia Tourism Research, 2013). We deliberately collected data from origin countries (rather than from visitors currently in Australia) in order to include both individuals who have visited and those who have not. Both groups, especially those who have not visited Australia, are target markets for Australian destination managers. In building the sample frame for this study, we utilized the services of online market research organizations including MARKETEST and iPanelOnline. The sample was drawn from established panels of individuals representative of the population in each country. This approach ensures the collection of reliable and credible data across countries in a time-efficient and cost-effective manner.

The questionnaire was developed in English and then translated into Mandarin and Korean for use among the Chinese and Korean participants. Information was gathered about individuals' trip-related characteristics, social demographics and perceptions of Australia as a tourist destination. Perceptions of Australia were operationalized using a validated 18-attribute scale (Wang and Davidson, 2010). Participants were presented with a series of statements about Australia's attributes and asked to respond on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The DI scale was pilot tested on 40 foreign students in South Australia to test for clarity, reliability and consistency of the attributes/factors. Only minimal changes were necessary. The final survey instrument (Appendix 1) was then sent online to 1020 participants across the four countries. The data collection resulted in 600 usable responses (150 from each country), which represents an overall response rate of 59%. Half of the respondents had visited Australia in the past 5 years while the rest had never previously visited.

Method of analysis

Exploratory block factor analysis and reliability analysis were first used to inspect the unidimensionality and homogeneity of each first-order construct (DI attributes) separately. This can verify whether each construct was sufficient for influencing the set of indicators/items identified from previous literature and proposed in the context of this study. Once the unidimensionality and internal consistency of each factor were verified, we examined the loadings (as hypothesized in Figure 1) within each factor and among the various factors using the partial least squares structural equation modelling (PLS-SEM) with the XLSTAT-PLSPM software package (Addinsoft, Paris, France). Although structural models are usually analysed using the traditional covariance-based SEM (CBSEM) method (Byrne, 2001), this requires the model to be identified before it can converge (Kline, 2004). The proposed model for this study (Figure 1) is presented as a higher order formative construct; thus, traditional SEM methods are inadequate. PLS-SEM is recognized as a complementary approach to CBSEM that generates similar results when the traditional assumptions (e.g., model identification criteria) do not hold (Diamantopoulos and Winkholfer, 2001; Jöreskog and Wold, 1982).

For this study, SEM method involves two steps: (1) validating the outer model (i.e., first-order reflective constructs – DI attributes) and (2) fitting the inner model (i.e., validating the second-order loadings of first-order constructs on second-order formative construct – DI; Chin, 1998). Validating the outer model was accomplished primarily through testing for convergent validity, discriminant validity and reliability of the first-order constructs (Wetzels et al., 2009). Fitting the inner model was achieved primarily through content validity for the structural paths between DI attributes and overall DI. The following section reports on the analysis of findings.

Analysis of results

Exploratory block factor and reliability analysis

The first step involved testing the dimensionality of each of the first-order constructs by conducting principal component analysis of the attribute components' six blocks of unstandardized data (i.e., the assigned constructs) for the entire data. All six blocks were unidimensional with each being represented by one factor with an eigenvalue > 1 (Table 2). In addition, all loadings performed well inside each block (>0.7), which further supported their unidimensionality. Finally, Cronbach's α and the Dillon–Goldstein's ρ for all blocks were above the 0.7 cut-off (Nunnally and Bernstein, 1994), indicating high internal consistency and scale reliability (Raykov and Marcoulides, 2000).

Table 2. Factor matrix, Cronbach's α, composite reliability and eigenvalues by variable blocks with component analysis extraction method.

Constructs	Variables	Factor I	Cronbach's α	DG ρ (CR)	Critical value	Eigenvalues
Natural and well-known attractions	A1	0.80	0.82	0.88	1	2.59
	A13	0.79				0.50
	A14	0.82				0.47
	A16	0.81				0.44
Variety of tourist services and culture	A7	0.83	0.75	0.86	1	2.00
	A8	0.84				0.56
	A9	0.78				0.44
Quality of general tourist atmosphere	A2	0.81	0.74	0.85	1	1.98
	A4	0.82				0.51
	A15	0.81				0.50
Environment and recreation	A5	0.83	0.75	0.86	1	2.01
	A6	0.82				0.52
	A12	0.81				0.47
General environment	A10	0.87	0.77	0.87	1	1.52
	A11	0.87				0.48
Accessibility	A3	0.78	0.69	0.81	1	1.78
	A17	0.71				0.74
	A18	0.84				0.48

DG: Dillon–Goldstein; CR: critical ratio.

PLS analysis

PLS-SEM was conducted on the full data set of the unstandardized data using XLSTAT-PLSPM software (XLSTAT, 2011) in Mode A (reflective scheme) for the six first-order attributes and Mode B for the higher order DI construct. Mode B is the estimation method proposed for application with multidimensional constructs. Such constructs are also referred to as 'formative' schemes in the marketing literature (Fornell and Bookstein, 1982), although nothing in the PLS-SEM model equations refers to a formative scheme. The centroid scheme is also indicated for the estimation of inner weights.

Outer model analysis. First, the six-attribute factors were analyzed by assessing their convergent and discriminant validity. Convergent validity was supported as all the item loadings exceeded the 0.7 threshold (see Table 3); thus, more than 50% of the variance in the observed variable was due to the underlying construct (Hulland, 1999). Furthermore, the bootstrap test showed high significance levels for all loadings (bootstrap-based empirical 95% confidence interval does not include zero; see Table 3). The average variance extracted (AVE), which measures the amount of variance in the indicators accounted for by the construct relative to the amount due to the measurement error, exceeded the required 0.5 threshold.

Discriminant validity is established when the average shared variance of a construct and its indicators exceed the shared variance with every other construct of the model. Therefore, the root of AVE should surpass the correlation coefficient of the construct with every other construct of the model. Discriminant validity was supported in our analysis (see Table 4). In addition, reflective indicators/attributes should load higher on their corresponding construct than on others; thus, we further examined the cross-loadings and found that all indicators of the six first-order attributes recorded higher loadings than indicators of other constructs in our model (see Table 5).

Inner model analysis. The inner model represents the second-order loadings of the six DI attributes on overall DI. Content validity of the model was examined at both individual and construct levels. At the individual level, the results of the bootstrap tests showed high significance levels for all six attribute loadings (bootstrap-based empirical 95% confidence interval does not include zero; see Table 6) on DI. The variance inflation factor for the attribute factors showed levels lower than 5.0 for each of the six factors (Kutner et al., 2004), indicating low levels of cross correlations between the factors (Table 6). Therefore, the first-order formative factors (attributes) were retained in the outer measurement model (Kline, 2004).

Table 3. Results of the outer model: first-order latent variables with reflective indicators.

Latent variable	Manifest variables label	Standardized loadings	Standardized loadings (bootstrap)	CR	Lower bound (95%)	Upper bound (95%)	AVE
Natural and well-known attractions	A1	0.725	0.726	17.934	0.631	0.802	0.567
	A13	0.825	0.823	23.738	0.749	0.899	
	A14	0.739	0.727	12.311	0.583	0.828	
	A16	0.718	0.712	12.942	0.584	0.822	
Variety of tourist services and culture	A7	0.782	0.783	21.256	0.666	0.844	0.586
	A8	0.806	0.807	19.875	0.700	0.873	
	A9	0.704	0.693	11.876	0.558	0.788	
Quality of general tourist atmosphere	A2	0.836	0.838	35.924	0.782	0.894	0.607
	A4	0.713	0.705	14.922	0.584	0.796	
	A15	0.784	0.772	15.906	0.657	0.850	
Environment and recreation	A5	0.806	0.803	25.100	0.729	0.855	0.617
General environment	A6	0.818	0.815	23.645	0.708	0.875	
	A12	0.730	0.732	16.820	0.635	0.821	
	A10	0.881	0.878	29.908	0.812	0.933	0.699
Accessibility	A11	0.789	0.791	20.303	0.702	0.880	
	A3	0.801	0.798	25.896	0.722	0.861	0.583
	A17	0.675	0.672	9.234	0.488	0.805	
	A18	0.807	0.805	24.285	0.733	0.865	

CR: critical ratio; AVE: average variance extracted.

Table 4. Results of discriminant validity: first-order latent variables with reflective indicators (squared correlations for any pair of latent variables < AVE).

	Natural attractions	Variety of services	Quality of general atmosphere	Entertainment and recreation	General environment	Accessibility	Mean communalities (AVE)
Natural attractions	1	0.425	0.450	0.363	0.362	0.212	0.567
Variety of services	0.425	1	0.414	0.389	0.277	0.315	0.586
Quality of general atmosphere	0.450	0.414	1	0.391	0.358	0.341	0.607
Entertainment and recreation	0.363	0.389	0.391	1	0.229	0.361	0.617
General environment	0.362	0.277	0.358	0.229	1	0.209	0.699
Accessibility	0.212	0.315	0.341	0.361	0.209	1	0.583
Mean communalities (AVE)	0.567	0.586	0.607	0.617	0.699	0.583	0

AVE: average variance extracted.

The explained variance (R^2) of DI construct was calculated to determine whether a theoretically sound formative specification was appropriate (Diamantopoulos and Winkholfer, 2001). The R^2 results indicate that 99% of the variances in the DI construct could be explained by its attribute components (Table 6). These findings support the content validity of this model. The R^2 results of the tested model demonstrated that a substantial part of the variance of the endogenous (higher order) latent construct can be explained by the model. In particular, the cross-sectional standardized regressions/loadings (for natural and well-known attractions, quality of tourist services and culture, quality of general tourist atmosphere, entertainment and recreation, general environment and accessibility: 0.241, 0.190, 0.201, 0.216, 0.156 and 0.235, respectively) provided an R^2 of at least 30–40%. Thus, the nomological validity of the model is considered to be satisfactory (Chin, 1998). Moreover, results of cross-sectional standardized regression/loadings demonstrated that *natural and well-known attractions* as well as *accessibility* had the largest influence on overall image, followed by *entertainment and recreation*, *quality of general atmosphere*, *quality of tourist services and culture* and finally *general environment*. All

Table 5. Results of cross loadings: first-order latent variables with reflective indicators.

	Natural attractions	Variety of services	Quality of general atmosphere	Entertainment and recreation	General environment	Accessibility
A1	0.725	0.420	0.470	0.400	0.383	0.297
A13	0.825	0.552	0.559	0.509	0.486	0.391
A14	0.739	0.496	0.521	0.431	0.474	0.321
A16	0.718	0.493	0.466	0.471	0.474	0.379
A7	0.508	0.782	0.485	0.499	0.408	0.479
A8	0.527	0.806	0.533	0.487	0.437	0.483
A9	0.460	0.704	0.456	0.446	0.358	0.313
A2	0.510	0.562	0.836	0.608	0.453	0.558
A4	0.433	0.484	0.713	0.422	0.377	0.410
A15	0.620	0.458	0.784	0.409	0.561	0.380
A5	0.432	0.446	0.469	0.806	0.386	0.498
A6	0.457	0.491	0.457	0.818	0.282	0.492
A12	0.533	0.534	0.553	0.730	0.468	0.425
A10	0.454	0.401	0.454	0.392	0.881	0.419
A11	0.573	0.496	0.567	0.414	0.789	0.340
A3	0.409	0.516	0.547	0.590	0.434	0.801
A17	0.195	0.281	0.250	0.254	0.200	0.675
A18	0.439	0.478	0.526	0.520	0.403	0.807

Table 6. Results of the inner model: first-order latent variables on formative higher order overall image and collinearity statistics for the formative image construct.

Latent variable	Manifest variables label	Standardized loadings	Non-standardized loadings (bootstrap)	CR	Lower bound (95%)	Upper bound (95%)	VIF	R^2
Overall image	Natural and well-known attractions	0.241	0.209	33.937	0.196	0.221	1.326	0.991
	Variety of tourists services and culture	0.190	0.162	29.385	0.149	0.175	1.705	
	Quality of general tourists atmosphere	0.201	0.168	29.218	0.156	0.18	2.083	
	Environment and recreation	0.216	0.173	24.16	0.156	0.188	2.462	
	General environment	0.156	0.115	13.852	0.098	0.131	2.841	
	Accessibility	0.235	0.172	21.068	0.155	0.189	3.22	

CR: critical ratio; VIF: variance inflation factor; R^2: the explained variance.

of these results are further discussed in the following conclusion and discussion section.

Conclusion, discussion and implications

The present study provides empirical evidence supporting a theoretically derived hierarchical model examining the effects of destination attributes on DI. Specifically, a second-order hierarchical model identified a broader construct of DI that, to date, has not been investigated in previous studies (Kim and Yoon, 2003).Tourism DI is operationalized as a second-order model, formed by six first-order attributes – natural and well-known attractions, quality of tourist services and culture, quality of general tourist atmosphere, entertainment and recreation, general environment and accessibility – with the first-order attribute components in turn being measured based on combinations and interactions of cognitive and affective components as well as common/specific and holistic/individual items that represent the most important attributes/natures of a destination, as suggested by previous authors (e.g., Dann, 1996; Echtner and Ritchie, 1991, 1993; Gartner, 1993; Kim and Yoon, 2003; Son and Pearce, 2005). Specifically, the analysis of first-order loadings of destination components on attribute constructs, regression

coefficients between first-order constructs and second-order destination factor and critical values from the PLS-SEM results demonstrated that all attributes identified in this study contribute to forming Australia's DI, albeit to different degrees. Natural and well-known attractions as well as accessibility are the major factors affecting Australia's DI (standardized loadings of 0.241 and 0.235, for natural attractions and accessibility, respectively), followed by entertainment and recreation and quality of general atmosphere (standardized loadings of 0.216 and 0.201, respectively), quality of tourist services and culture (standardized loadings of 0.190) and finally general environment (standardized loadings of 0.156).

These results provide further empirical support for assessing the weight of each attribute in influencing the overall image projected by the destination (here, Australia) and provide partial support to findings from previous exploratory studies. For example, Son and Pearce (2005) surveyed international students about their perceptions of different attributes of Australia and found that natural attractions, variety of water sports and beautiful scenery (i.e., natural attractions and entertainment and recreation factors in the current study) were among the highest ranked attributes. Murphy (1999) and Wang and Davidson (2008, 2010), in their survey of backpackers and Chinese visitors to Australia, respectively, found that respondents ranked safety and security or friendliness (i.e., quality of general tourist atmosphere in our study) highest, followed by natural attractions, infrastructure, beaches and sporting and outdoor activities (i.e., natural attractions and entertainment and recreation in our study).

These findings are of interest to Australia's destination marketers and developers seeking to develop and market appropriate services and products to tourists, thereby creating a more competitive DI for Australia. In particular, understanding how tourist images are formed can help tourism destination marketers develop appropriate DIs in a given market, which will enable the tourism authority in Australia to align their current brand policy and practices with the results of the theoretical model. Ultimately, such efforts will help develop potential strategies for making Australia more competitive as a tourism destination as well as strengthen its international brand.

The results from this study also helped us identify the country's most effective attributes as perceived by the country's main markets. If Australia is to improve its image on the international stage, Australian tourism authorities need to focus primarily on Australia's natural attractions (e.g., scenery, tourist sites, beaches and wildlife and native animals), which were found to have the greatest weight in the current study. The results also demonstrated that accessibility (prices, infrastructure and availability of information about the country) as well as entertainment (nightlife, sport facilities and adventure activities) and general tourist atmosphere (e.g., friendliness of the people, safety and cleanliness) should be considered in Australia's tourism campaign as these factors had a greater influence on how people perceived Australia than other services (e.g., shopping) or general environment (cleanliness and relaxation). As such, these results can facilitate the reassessment of the current strategy of managers and marketers of Australia as a destination in order to identify which advertising, promotions, and marketing activities will be most effective in forming and shaping Australia's image across the main tourist segments. Effectively combining the image of destination products from a set of attributes is of major importance to destination planners, as shown in this study.

Limitations and future extensions

This study's results are subject to certain limitations that need to be considered. First, this study is the first step in understanding the underlying second-order factor of DI and testing the validity and reliability of the image attributes within hierarchical factor orders. Replicating this study using data from different destinations is warranted to determine whether the measurement model is robust across different populations and for different destinations. Future research should be directed towards developing a sound empirical base to extend the results and include other image components and attributes that could be important for other destinations.

This study also provides practical operationalization for measuring Australia's image across a pooled sample of the country's main inbound market segments. A possible extension could be to cross-validate the model across the various segments to determine if the weight/importance of the attribute constructs is the same (invariant) across different segments, or if some segments perceive Australia differently on various attributes. Such studies will help accommodate various Australia destination managers' promotion

and marketing strategies to different segments of the international market.

Finally, the inherent algorithm on which the PLS-SEM is based creates the potential to compute an aggregate score for Australia's DI across different segments. Such research would help determine which segments hold a more positive image of Australia and which segments need attention to improve their perception of Australia as a destination. This could be done on a continuous basis to trace changes in perceived image across segments over time.

Appendix 1

List of measurement attribute items and corresponding measurement scales used in the hierarchical image model

	List of attributes	Attributes measurement items	Attributes measurement scale
A1	Scenery/natural attractions	Australia has spectacular scenery and natural attractions	Each attribute item is measured on a 5-point Likert scale with 1 = *strongly disagree* to 5 = *strongly agree*
A2	Hospitality/ friendliness/ receptiveness	Australia service staff are qualified, helpful and friendly	
A3	Costs/price levels	Australia is a value for money destination	
A4	Personal safety	Australia is a safe destination for travellers	
A5	Nightlife/ entertainment	Australia has a variety of entertainment/nightlife activities for travellers	
A6	Sports facilities/ adventure activities	Australia offers many opportunities for sports and adventurous activities	
A7	Shopping facilities	Australia offers a food variety of souvenirs and duty-free goods for travellers	
A8	Historic sites/museums	Australia has wonderful historical sites and excellent museums/art galleries	
A9	Aboriginal culture	Australia has a unique aboriginal culture	
A10	Climate	Australia climate is good	
A11	Restful/relaxing	Australia is a good place for rest and relaxation	
A12	Accommodation facilities/restaurants/ tourism infrastructure	Australia has good tourism infrastructure facilities (e.g., restaurants, accommodations, etc.)	
A13	Tourist sites/activities	Australia is a country with many well-known tourist sites	
A14	Beaches	Australia has magnificent sunny beaches	
A15	Cleanliness	The environment in Australia is very clean	
A16	Wildlife	Australia has fascinating native animals and vegetation	
A17	Tourism information/ communication	Communication is not a serious problem for non-English speaking tourists	
A18	Accessibility	Australia is easy to access	

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