Consumer-Based Brand Equity Measurement: Lessons Learned from an International Study

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Abstract

Purpose – The paper examines the performance of Aaker's dominant conceptualization of consumer-based brand equity (brand awareness, brand associations, perceived quality and brand loyalty) in a multi-national and multi sector European context and highlights important lessons vis-à-vis the measurement of brand assets across countries.

Design/methodology/approach – Cross-category data was collected through a survey over a period of two months from a representative sample of consumers in three European countries (n=1829), the UK (n=605), Germany (n=600) and Greece (n=624).

Findings – The findings suggest that Aaker's dimensions of consumer-based brand equity cannot be clearly separated. More specifically the dimensions of brand awareness, brand associations and brand loyalty could not be always clearly discriminated in all national contexts.

Originality/value – The paper contributes to the limited amount of cross-national research on brand equity by assessing the most widely used conceptualization of consumer-based brand equity. Contrary to previous research, this study has used data from real consumers who evaluated a range of brands across product categories (including goods, services and Internet).

Keywords: Consumer-based brand equity, Aaker, cross-national, awareness, associations, perceived quality, loyalty

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Introduction

Brand equity is a key concept for marketing academics and one of the most prized assets for firms (Ambler, 2003; Christodoulides and de Chernatony, 2010). According to Interbrand (2013), Apple is presently the most valuable brand in the world with its value estimated at 98.3 billion dollars. This market-based intangible asset reflects the value of the brand for different stakeholders the main of which have been identified as the consumer and the firm. Marketing practitioners and academics alike regard brand equity as a platform upon which to build a competitive advantage, secure future cash flows, and grow shareholder wealth (Keller, 1998; Kerin and Sethuraman, 1998).

Brands are no more 'unique' than various other intangible assets and although they are often treated differently from tangible assets they, in fact, possess characteristics that allow them to be managed similar to other tangible and intangible assets (El-Tawy and Tollington, 2008). It is, therefore, important to define brand equity, to identify its constituent dimensions and to assess the suitability of various conceptualizations and measurements in multi-country environments.

The conceptualization and measurement of brand equity, including its sources and outcomes, are challenging tasks, particularly in an international context (Kish, Riskey and Kerin, 2001). In principle, there is no agreement on the dimensionality of brand equity. In their literature review, Christodoulides and de Chernatony (2010) have identified several dimensions of consumer-based brand equity used in previous research. Similarly, practitioners suggest a number of aspects that could be considered dimensions of consumer-based brand equity (Veloutsou, Christodoulides and de Charnatory, 2013). Despite the multiplicity of voices with regards to the composition of brand equity, it appears that the most commonly adopted model of consumer-based brand equity's conceptual domain in empirical studies is Aaker's (1991). He identified brand awareness, brand associations, perceived quality and brand loyalty as the consumer-based components of brand equity but has never operationalized his model. The lack of generally accepted scales to measure the brand assets means that it is more difficult for practitioners to justify investment in brand building initiatives.

The majority of the published research on consumer-based brand equity has focussed primarily on a single country – namely the United States (see, Christodoulides and de Chernatony, 2010; Lehmann, Keller and Farley, 2008). With the increasing globalization of markets and brands it becomes more important than ever to adopt measures of brand equity that can be applied in an international context allowing valid comparisons between domestic and foreign markets. The conditions within which brands are competing in various contexts may vary greatly from country to country and from category to category. Valid measures of brand equity that work across foreign markets and product categories would allow practitioners to more accurately inform their brand positioning and communications strategies and researchers to advance knowledge of international branding. Research on consumer-based brand equity measurement in an international context

remains extremely limited, focussed on goods brands and reliant on undergraduate student samples (e.g. Yoo and Donthu, 2001). Given the limitations of the previous research, it is not surprising that researchers are calling for *substantially* more research in varying product categories (Whitelock and Fastoso, 2007) including service and Internet brands that prominently feature in the 'Top 100 Global Brands' ranking published annually by Interbrand (2013).

This paper contributes to the scarce research on international brand equity measurement by looking into the performance of a scale around Aaker's dominant conceptualization of consumer-based brand equity in a European context through data from three European countries, the UK, Germany and Greece. Whilst previous research (e.g. Buil, de Chernatony and Martinez, 2008; Yoo and Donthu, 2001) has attempted to examine a scale of consumer-based brand equity using the Aaker's conceptualization and using cross-national data, the sample used in some occasions comprised undergraduate students rather than real consumers whilst the brands assessed were pre-specified and from a limited number of product categories. This paper provides an assessment of consumer-based brand equity using data from a varied sample of real consumers in three European countries involving a range of different brands from six product categories spanning goods, service and internet domains.

The paper opens by reviewing the conceptualization of consumer-based brand equity and the limited research on brand equity in an international context. It then goes on to present the methodology adopted for collecting data around Aaker's dimensions of consumer-based brand equity from three European countries. The analysis reveals issues with the applicability of Aaker's conceptualization of consumer-based brand equity in a cross-national setting as well as with the discriminant validity of its constituent dimensions. The paper concludes with a discussion of the key lessons learned, and a call to researchers to revisit the consumer brand equity construct, re-evaluate how its measurement is approached, and to think more creatively about how consumer-based brand equity can be integrated into international marketing theories in order to provide richer insights for marketing practice.

Conceptualization of consumer-based brand equity

Brand equity is a key intangible asset that arises from past brand building activities and encompasses the added value endowed by the brand to the product (Farquhar, 1989). Research has, hitherto, established a link between brand equity and desired business outcomes including a brand's extension potential (e.g. Aaker and Keller, 1990), WOM recommendation (e.g. Vázquez, Del Rio and Iglesias, 2002), price premium (e.g. Ailawadi, Lehmann and Neslin, 2003), attitudes (e.g. Yoo and Donthu, 2001) and purchase intentions (e.g. Yoo and Donthu, 2001). One of the first and most widely used definitions of brand equity is from Aaker (1991), who defines it as a "a set of assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service to a firm and/or that firm's customers" (p.15). This definition suggests two main recipients of brand value based on which two streams of research have been developed: consumer-based and firm-based brand equity. Whilst the majority of research on brand equity has approached the brand asset from either the firm or the consumer perspective some researchers have also examined the value of the brand for other internal (such as employees –

see, for example, King and Grace, 2010) as well as external stakeholder groups (such as channel members – see, for example, Nyadzayo, Matanda and Ewing, 2011).

Firm-based brand equity is primarily concerned with placing a financial value to the brand asset (Simon and Sullivan, 1993) and is often perceived as an outcome of consumer-based brand equity which in turn focuses on the (additional) value that the consumer derives from the brand name (Farquhar, 1989). Consumer-based brand equity elaborates largely on the idea that the strength of a brand lies in the minds of consumers (Leone et al., 2006). Keller (1993, p.8) draws on cognitive psychology to define consumer-based brand equity as the "differential effect of brand knowledge on consumer response to the marketing of the brand". The development of consumer-based brand equity thus necessitates consumers to be aware of the brand name and moreover to hold strong, favorable and unique associations of the brand in memory. Similar to Aaker (1991, 1996), Keller has never operationalized the two dimensions of consumer-based brand equity.

Although a substantial body of research on brand equity exists, there is little consensus on what brand equity is and what its constituent dimensions are (Christodoulides and de Chernatony, 2010; Maio Mackey, 2001; Veloutsou et al., 2013). However, the majority of researchers agree that the concept is multidimensional whilst the divergence of views as to its conceptualization may arguably be the product of the three blind men and elephant syndrome (Ambler, 2003; Christodoulides and de Chernatony, 2010).

Based on their literature review, Christodoulides and de Chernatony (2010) identified various dimensions of consumer-based brand equity used by researchers including but not limited to social image (Lassar, Mittal and Sharma,, 2005), performance (Lassar et al., 2005), trust (Burmann, Hegner and Riley, 2009; Christodoulides et al., 2006), relationships (Blackston, 1992; Sharp, 1995), awareness (Aaker, 1991; Berry, 2000; Im et al., 2012; Keller, 1993), perceived quality (Aaker, 1991; Kamakura and Russell, 1993; Netemeyer et al., 2004; Pappu, Quester, and Cooksey, 2005; Yoo and Donthu, 2001), loyalty (Aaker 1991; de Chernatony et al., 2004; Im et al., 2012; Pappu et al. 2005; Washburn and Plank, 2002; Yoo and Donthu, 2001), image (Im et al., 2012; Keller, 1993; Sharp, 1995), associations (Aaker, 1991; Im et al., 2012; Keller, 1993; Netemeyer et al., 2004; Pappu, Quester and Cooksey, 2005; Yoo and Donthu, 2001), brand meaning (Berry, 2000), brand benefit uniqueness/clarity (Burmann, Hegner and Riley, 2009; Netemeyer et al., 2004;), satisfaction (Blackston, 1992; de Chernatony, Harris and Christodoulides, 2004; Ha, Janda, and Muthaly, 2010), reputation (de Chernatony et al., 2004), willingness to pay a premium (Netemeyer et al., 2004), value (Shankar, Azar and Fuller, 2008) and symbolic and functional utility (Kocak, Abimbola and Ozer, 2007; Vázquez et al., 2002).

Although there are several conceptualisations, Aaker's (1991) dimensionality of consumer based brand equity is indeed the most commonly used in empirical research. Aaker (1991, 1996) identifies the dimensions of consumer-based brand equity as brand awareness, brand associations, perceived quality and brand loyalty. Brand awareness is defined as the "the ability of a potential buyer to recognize or recall that a brand is a member of a certain product category (Aaker, 1991, p. 61). Brand associations refer to "anything linked in memory to a brand" (ibid, p. 109). Perceived quality is "the consumer's judgment about a product's overall excellence or

superiority" (Zeithaml, 1988, p. 3) whilst brand loyalty is "the attachment that a customer has to a brand" (Aaker, 1991, p. 39). Aaker himself has never operationalized a scale to measure brand equity but other researchers did (see for example, Atilgan, Aksoy and Akinci, 2005; Bravo, Fraj and Martínez, 2007; Buil et al., 2008; Jung and Sung, 2008; Kim and Hyun, 2011; Konecnik and Gartner, 2007; Lee and Back, 2010; Pappu et al., 2005; Pike et al., 2010; Tong and Hawley, 2009; Washburn and Plank, 2002; Yasin, Noor and Mohamad, 2007; Yoo, Donthu and Lee, 2000; Yoo and Donthu, 2001).

Aaker's aforementioned dimensionality of consumer based brand equity has been applied in several contexts and problems have been reported with regard to the discriminant validity of this conceptualisation, particularly in so far as awareness fails to discriminate with associations (e.g. Kim and Hyun, 2011; Washburn and Plank, 2002; Yoo and Donthu, 2001). Conceptually some researchers also regard brand loyalty as an outcome rather than a dimension of brand equity (e.g. Chaudhury and Holbrook, 2001). In order to be able to make recommendations to managers on how to manage their brand equity, or study the nomological network of its constituent components, we need to generate a better understanding of the composition of brand equity in disparate cultural contexts and distinct product categories.

International Brand Equity: The Research Gap

Companies working in international markets have been trying for years to find ways to measure the equity of their brands across markets in a comparable manner (see Kish et al., 2001; Tiu-Wright and Nancarrow, 1999). The challenges for companies that not only operate across multiple countries but also across multiple sectors are even greater (Kish et al., 2001). Similar challenges are faced by researchers who wish to test marketing theories containing brand equity in cross-national, multi-sector settings.

Empirical research on brand equity has focussed largely on single country data, particularly from the United States, resulting from evaluations of brands in goods domains. With the increasing globalisation of markets and the need to develop strong global brands to compete in international environments (Hsieh, 2004), it is indeed surprising that only little research exists on the role of (consumer-based) brand equity in international marketing using consumer data, summarized in table 1.

Following an etic approach (Berry, 1969), Yoo and Donthu (2001) purported to develop a scale of consumer based brand equity around Aaker's four dimensions using data from a sample of American, Korean American, and Korean students. The resultant scale, which was developed to be invariant across the three samples, failed to discriminate between awareness and associations – two theoretically distinct concepts. When the study was replicated with 3 samples of college students (Americans in the US, South Koreans in the US and South Koreans in South Korea), some differences in the importance of the various dimensions of brand equity were reported (Jung and Sung, 2008). Also, the application of this scale in both studies was limited to goods brands (athletic shoes, television sets and films in the first study and clothes brands in the second study).

Buil et al. (2008) followed the procedure of Steenkamp and Baumgartner (1998) to establish the invariance of a scale around Aaker's consumer-based brand equity dimensions using data from real consumers in the UK and Spain. However, similar to the study of Yoo and Donthu (2001), only goods brands were used in this research (soft drinks, sportswear, consumer electronics and cars) rendering the scale's applicability in other domains questionable. Other cross-national research on brand equity has focussed on models to decompose brand equity (e.g. Hsieh, 2004), the functional and the experiential component of brand equity (Broyles, Leingpibul, Ross and Foster, 2010) or on dimensions of brand metrics (Lehmann et al., 2008) with an emphasis again on goods categories (e.g. automobiles, soft drinks and toothpaste) and comparative data from the United States and other countries such as China.

In summary, only a few studies have examined (consumer-based) brand equity across countries. All of the existing cross national research of brand equity that has as a starting point the conceptualisation of the construct has data collected from two national contexts that appear to be selected on the basis of convenience, while pre-specified brands were given to the respondents. Furthermore, there is no evidence available on the validity and/or invariance of the scales used beyond goods brands. However, service and Internet brands such as Google, McDonalds, Disney, HSBC and Amazon are consistently recognized amongst the world's most valuable brands (Interbrand, 2013). This paper focuses on testing the measurement invariance of the most dominant conceptualisation of consumer-based brand equity (i.e. Aaker's 1991, 1996) by collecting consumer data from three European countries on a range of brands including goods, services and Internet brands.

- Take in Table 1 -

Methodology

Instrument Development

As intimated earlier, despite defining brand equity and specifying its constituent consumer-based dimensions as brand awareness, associations, perceived quality and brand loyalty, Aaker (1991, 1996) never went on to develop a measure for this. Although other researchers have developed and validated scales around Aaker's dimensions (e.g. Buil et al., 2008; Pappu et al. 2005; Yoo and Donthu 2010), none was free of problems. For example, the Yoo and Donthu (2001) scale collapses brand awareness with brand associations whilst Pappu et al. (2005) use a single item measure for brand awareness. Thus, rather than taking a single existing measure of brand equity, we bring together measures from multiple studies to expand the item pool and measure Aaker's notions of brand awareness, associations, perceived quality and brand loyalty. These were turned into a mini questionnaire and were sent to a panel of experts to be judged for face validity (in line with the recommended procedures of Hardesty and Bearden, 2004). Eight experts (senior academics with significant publications in the area of brand equity) responded to our invitation and rated the items based on clarity and representativeness of the content domain. Out of 35 items in the initial pool (6 for awareness, 7 for associations, 11 for perceived quality and 11 for loyalty – Appendix A), 12 items survived this process (3 for each one of the dimensions) and were subsequently included in a survey questionnaire in keeping with previous research on consumer-based brand equity. All items were

measured on 7-point scales. The questionnaire was first pre-tested in the UK using a sample of students. Following that, the instrument was "back translated" into German and Greek by marketing academics native speakers of German and Greek with fluency in English. Two academics with this profile were involved in each country; the first one translated the instrument into the required language while the second one back translated it into English. The two back translated versions were then passed on to a marketing academic who is a native speaker of English to check if they were the same with the original English version and to confirm they have semantic equivalence (Mallinckrodt and Wang, 2004). Where there were queries on the meaning, the Greek and German questionnaires were adjusted. The survey was pre-tested in German and in Greek and then it was administered through face-to-face interviews by trained fieldworkers predominantly in urban centres.

<u>Sampling and Data Collection</u>

Quotas were set for age and gender based on census data from each country to ensure the samples were collected from multiple areas per country representative of national populations. The fieldworkers were asked to recruit respondents who had been residents in each one of the countries. Data was collected from various locations in each country. Each respondent was asked to pick a category (from a list of categories that included goods – e.g. shampoo; service – e.g. coffee shop, bank; and Internet – e.g. retailer) and to identify their favorite (or least favorite) brand from that category. The dilemma we faced was that whilst we wanted our respondents to have knowledge of the brands they would evaluate, at the same time we wanted to avoid having respondents only pick their preferred or currently used brand as this would predominantly capture high equity brands. On the other hand a pre-selection of specific brands from the identified categories would pose problems of equivalence across the countries especially for low equity brands (which may, indeed, be smaller local brands). By asking the respondents to respond to the questions in relation to their most favourite or least favourite brand ensured that (a) a large number of different brands was evaluated (rather than a small number of pre-specified brands) and (b) that the data was not severely skewed towards high equity brands. Consumers were asked to respond to subsequent questions with regard to their chosen brand. The data collection took place simultaneously in the three European countries (over a period of 2 weeks) and produced a total of 1829 fully completed questionnaires as reported in Table 2 (600 in Germany; 605 in UK; and 624 in Greece and 960 for good brands, 736 for services brands and 132 for Internet brands). As an incentive to participate, survey respondents were offered the chance to win one of two gift cards (in each country) worth £100.

- Take in Table 2 -

Results

It is highly desirable for any scale to possess high levels of measurement invariance, in order to allow findings using the measures to be compared across nations. This is particularly true in the case of brand equity measures given the international nature of markets that most brands operate in. Accordingly, the items were assessed for validity via confirmatory factor analysis (CFA) using LISREL 8.50's multigroup function. In line with procedures outlined in the literature (Steenkamp and

Baumgartner, 1998; Vandenberg and Lance, 2000) for measurement assessment, an omnibus test was undertaken. The omnibus test imposes the strictest level of invariance necessary (as required by the uses the measures will be put to).

In the case of the current measures, we decided to test for a strong level of invariance, and so the omnibus test simultaneously assessed the measures across the three countries for configural, metric, scalar, and factor variance invariance. On running this omnibus test, chi-square was significant ($\chi2 = 1476.93$; df=192; p<.001), indicating that the measurement model does not exactly mirror the data. Moreover, relative chi-square ($\Delta\chi2/\Delta df=7.69$) was greater than the acceptable range of 2-3 as recommended by Carmines and McIver (1981). The approximate fit heuristics indicated mixed results. Although RMSEA was higher than the recommended value of 0.08, the CFI, IFI and NNFI were within reasonable levels (all were .93) and as such, this indicates that the items we recovered from the literature to include as measures of Aaker's measurement structure, under the battery of strict invariance constraints across the three countries, do what might be considered only a moderately good job in describing the data (CFI= .93, IFI = .93, NNFI= .93, RMSEA = .105) (Bentler 1990; Browne and Cudeck, 1993). Table 3 shows the factor loadings for each of the three samples. All loadings were greater than the recommended cut-off value of .5 and were statistically significant (Hair et al., 1998). Composite reliability estimates for each sub-scale of consumer-based brand equity were higher than the recommended .70 value (Bagozzi and Yi, 1988) indicating adequate levels of internal consistency. Likewise, AVEs were greater than the .50 cutoff point supporting the convergent validity of consumer-based brand equity's dimensions. However, further examination into the measures reveals that Aaker's dimensions have discrimination problems with each other in all three countries (AVEs lower than the squared correlations, see Fornell and Larcker, 1981).

Table 4 shows lack of discriminant validity for brand awareness and brand associations in Germany and the UK and also for brand associations, brand loyalty and perceived quality in Germany and in Greece. A closer examination into the lack of discriminant validity led us to repeat this analysis separately for different types of brands: i.e. goods/services and Internet. Tables 4a, 4b and 4c suggest that the issues of discriminant validity amongst dimensions of consumer-based brand equity are more severe for service and internet brands.

- Take in Tables 3, 4, 5a, 5b, & 5c -

Discussion

The reliability and validity of constructs as well as the equivalence of respective measures across national borders are key considerations in international marketing research (e.g. Buil et al., 2008; Cadogan, Diamantopoulos and de Mortanges, 1999; Steenkamp and Baumgartner, 1998). In this paper we examine the most widely used dimensionality to measure consumer-based brand equity, that is Aaker's (1991, 1996), using data from a sample of real consumers in three European countries (Germany, UK and Greece) who evaluated a range of goods, service, and Internet brands.

Our results reveal that in the three countries under investigation the measurement invariant model that was capturing Aaker's dimensions of brand equity did not exactly mirror the data. Even within a seemingly homogenous geographical cluster, such as Europe, the results from the invariance analysis suggested differences in the ways consumers perceived and evaluated brand equity in Germany, UK and Greece. This contradicts previous research from Yoo and Donthu (2001) and Buil et al. (2008) who found consumer-based brand equity to be equivalent across the US and Korea, and the UK and Spain respectively. An explanation for this may be the inclusion and evaluation of a more diverse set of brands in the present study (including service and Internet brands) whilst the aforementioned studies focussed exclusively on goods brands. This may suggest that consumer-based brand equity for goods brands is more uniform, but for more intangible and abstract service/Internet brands (de Chernatony, McDonald and Wallace, 2011), variations between nations are likely to occur. Another possible explanation may be due to the socio-economic differences amongst the three countries amidst the European debt crisis, which has differentially affected consumers' spending power in the countries under investigation. The financial crisis in Europe has inevitably hit Greece more than Germany and the UK, and arguably the rubric of relationships between consumers and brands in Greece may have changed or indeed be different from the other two countries. Many brands in Greece were forced to significantly decrease their advertising budgets (Edgecliffe-Johnson, 2012) which based on previous research may reduce levels of awareness and strength of associations (see for example Yoo, Donthu and Lee, 2000).

Furthermore, issues emerged with regards to the discriminant validity of the constituent dimensions of consumer-based brand equity. More specifically, brand awareness and brand associations failed to discriminate in Germany and the UK, whilst the discriminant validity of brand associations with perceived quality and brand loyalty also proved problematic in both Germany and in Greece. These results are consistent with previous research reporting problems with the discriminant validity of Aaker's model across different country samples (e.g. Yoo and Donthu, 2001) or indeed with single country data (Kim and Huyn, 2011). For instance, brand awareness and brand associations, two theoretically distinct constructs which jointly form brand knowledge (Keller, 1993) were previously collapsed into one dimension by Yoo and Donthu (2001) due to lack of discriminant validity. Therefore, one cannot argue with confidence that the items used to measure these consumer-based brand equity dimensions are doing an adequate job in assessing the constructs. In fact, the dimensions of awareness and associations are conceptually similar, and the results of the current study, taken together with previous efforts to measure these dimensions provides food for thought when it comes to approaching the assessment of consumer-based brand equity dimensions. Specifically, following conventional practice within the academic community (Aaker, 1996; Coleman , de Chernatony and Christodoulides., 2011), we utilized an approach to assess the brand equity dimensions that asked respondents to focus on brand associations at a generic level, in this case in terms of strength/favorability (see Keller, 1993) to allow meaningful comparisons across brands in various product categories. For instance, we used items from the literature that asked respondents how much they agreed with the statement that it is "clear what this brand stands for". We also asked respondents standard questions to assess awareness, such as "I have heard of this brand". On reflection, it seems that Awareness is a condition that consumers need to possess in order for them to be able to also have associations in terms of understanding what the brand stands for. As a result, it seems unreasonable for items that measure

Awareness to *not* cross-load with items that also measure Associations, and so on reflection, it is likely that there is a good chance that there will always be some discrimination problems with Awareness and Associations measures.

A solution to this problem may be to make the measurement less generic, and more specific to certain brands. For instance, by forcing respondents to consider a specific brand, and consider highly brand specific association information (e.g. the brand's positioning strategy or product characteristics), we may be able to capture awareness at the abstract level, and associations at a more tangible level. In so doing, one may be able to discriminate more easily the two constructs. Whilst this might potentially overcome problems of discriminant validity, it would at the same time hinder the applicability of the scale across brands and product categories, and thus comparability. This is a particular challenge for researchers who often use a wide range of brands from various market contexts to test their theories.

Furthermore, there is no guarantee that such an approach would overcome the conditionality effect completely, since awareness is a precondition for associations. As a result, even by modifying the item wording strategy (i.e., by capturing a Associations at a very specific brand level), problems with discriminant validity may still emerge.

The way in which brand equity is built and nurtured might differ from country to country and from context to context, due to various differences in the micro and macro environment. The measurement of certain characteristics of brands, such as brand personality, may need to be adjusted in different cultural environments so as to be valid (see Aaker et al., 2001; Rojas-Mendez et al., 2004). Contrary to the desire of international marketers to apply a consumer-based brand equity scale across markets this study corroborates previous research suggesting that brand equity may indeed be culture specific (e.g. Kocak et al., 2007). This finding raises concerns about the discretionary application of the consumer-based brand equity construct and its measures from one context to another without an assessment of equivalence.

Alternatively, a more statistical solution would be to statistically orthogonalize the Awareness and Associations measures following Cadogan et al. (2001). Specifically, one could partial out the variance in the Associations items that is shared with the Awareness items – the resulting Associations scores could be used as purified measures of Associations that are free of Awareness information. The partialing out of variance may work at a statistical level, but it is a cumbersome approach, and the resulting numerical values obtained for the Associations scores would be hard to understand in an intuitive sense (since they are essentially transformations of the original data). As a result, it becomes hard to use the scores for practical purposes, or to interpret their meaning in substantive tests of theory.

In the following section, we reflect further on the issue of measuring brand equity using Aaker's conceptualization as a platform.

Lessons learned and implications for future research:
In this paper we explain how we have applied Aaker's framework of brand equity in a cross-national context. In keeping with previous research, this application suggested

some issues with the discriminant validity of consumer-based brand equity's dimensionality (as per Aaker). In this section we reflect on our findings and provide suggestions to help researchers improve the measurement of brand equity, particularly in an international environment. The section concludes with the limitations of the study and some ideas for further research.

A possible explanation for the issue with discriminant validity may be that the dimensions we are trying to capture are conceptually close, and creating measures that discriminate will always prove problematic. This challenge is further exacerbated in cross-national settings where translation and culture specific brand meanings and associations create additional concerns for international researchers seeking to measure consumer-based brand equity. Furthermore, respondents may find it hard to discriminate their responses when the questions are using relatively abstract expressions (e.g. "The brand has strong associations"). What an association is could be a complex, brand specific as well as individual and culture specific concept. This kind of abstract questions might be great as entry level questions for qualitative researchers – but it is difficult, on reflection, to see how in a questionnaire of a quantitative study they can tap potentially a unique concept (in this example brand associations) that is different, from other concepts (in this example, say, brand awareness). These seem to be causally linked to the extent to which a person has encountered the brand or experienced it.

Researchers often model consumer-based brand equity as a higher-order factor comprising of brand awareness, brand associations, perceived quality and brand loyalty as underlying dimensions. Whilst treating this, as such, would solve the discriminant validity problems it would not solve the associated conceptual problem and can raise questions. Can researchers argue with confidence that the higher-order construct is indeed brand equity? And, to what extent is it meaningful to aggregate individual dimension scores into a composite brand equity score, rather than keep them separate as distinct facets of the brand asset? Researchers are encouraged to revisit the conceptualization of brand equity as a construct and consider alternative conceptualizations including that of brand equity as a *process* which if successful, would result in certain benefits for firms and consumers. Consumer-based brand equity, in particular, is about responses to brand knowledge (Keller, 1993), so a view of this as simply a set of factors ignores the dynamic nature of its components. Dimensions of brand equity (e.g., awareness or associations) are expected to lead to changes in brand equity outcomes (e.g., attitudes or purchase intentions, see Yoo and Donthu, 2001), and it is, in fact, this change (the response – the relative change in attitudes or purchase intentions) that represents consumer-based brand equity rather than the absolute value of dimensions or outcome variables). As a result, it might be best to invest research effort into trying to understand the brand equity process including the consumer-based brand equity variables that bring about a consumer response, and under what conditions the process is observable. Critically, of course, in cross-national settings, the processes by which consumer-based brand equity facets (such as images features and so on) bring about brand equity outcomes (such as differential purchase intentions or willingness to pay a price premium) may differ across countries. Therefore, theory testing needs to be undertaken with a view to identify and explain potential differences.

Additionally, consumer-based brand equity dimensions that bring about desirable outcomes may vary from context to context (Christodoulides and de Chernatony, 2010). For instance, "image" will comprise certain associations in a non-profit situation (e.g., there may be ethical image facets – see, Michel and Rieunier, 2012) but may have different image facets in a luxury marketing context (where image features such as of exclusivity or hedonism may be important – see, Vigneron and Johnson, 2004). Yet in different countries, the extent to which an image of hedonism results in changes of outcome variables (such as purchase intentions) may differ – perhaps because of cultural norms and pressures (e.g., individualism levels or religiosity may impact the extent to which an image facet can be considered an "asset"). Likewise, image facets may be more or less salient across national contexts. For example, Stella Artois may not be seen as a premium beer in France but may be perceived as such in the UK. This potential incongruity raises a number of questions, which can stimulate future research, including how image and associations come about in different countries and how they might be influenced by various factors such as country of origin effects and personal traits such as consumer ethnocentrism and world mindedness. Also, the extent to which global brands enjoy consistent consumer-based brand equity dimensions across national contexts is uncertain. If some of the brand equity dimensions are, indeed, inconsistent across countries (brand image/associations may be thought about as a dimension lacking conceptual equivalence) then measurement invariance may not be so relevant in that context. On the other hand, if we are to develop measures that are of practical and theoretical value allowing meaningful comparisons amongst countries then high levels of invariance is required. Future research is invited to look into this tension and advise researchers on the best course of action. Researchers are also encouraged to test theories across a large number of countries to test stability and to identify boundary conditions.

The findings also suggest that in the context of services and/or Internet where the element of intangibility is prevalent, consumers may find it even harder to discriminate between the various dimensions of consumer-based brand equity. This may be due to brand knowledge *per se* being more abstract in this context where the lack of a tangible product around which associations can anchor may drive consumers to formulate an overall attitude (e.g. towards the brand) (see 'halo' theory), but be unable to deconstruct this into individual dimensions. Researchers as well as practitioners are encouraged to move away from "off-the-rack" measures of consumer-based brand equity and consider developing their own measures on the basis of their specific industry's competitive environment as well as the brand's unique positioning.

This research is subject to limitations that, in turn, may stimulate further research. Given the concerns expressed in this study over the stability of Aaker's conceptualization of consumer-based brand equity across European countries and product categories, our findings should be verified in other, e.g. more diverse contexts. Also, rather than adopting an *ad hoc* approach to measuring their consumer-based brand equity, many firms monitor their brand assets over time by means of tracking studies. This allows them to identify fluctuations in their brand equity levels and take corrective action, if needed. It would, thus, be useful to observe the stability of Aaker's conceptualization over time particularly since the time we collected the data was affected by the European debt crisis. Finally, given the limitations with Aaker's conceptualization of consumer-based brand equity,

researchers are encouraged to revisit the concept and its dimensionality and to develop and validate new measures using multi-country data.

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Appendix A: Item pool

BRAND AWARENESS	
I am generally aware of this brand	Lehmann et al. (2008); Yoo and Donthu (2001)
I am aware of this brand	Bravo et al. (2007); Im et al. (2012); Lehmann et al. (2008); Washburn and Plank (2002); Yoo and Donthu (2001); Yoo et al. (2000)
I am quite familiar with this brand*	Lehmann et al. (2008); Shah, (2012); Tong and Hawley (2009)
I have heard of this brand*	Lehmann et al. (2008)
Most people are aware of this brand	Lehmann et al. (2008)
I can recognize this brand among other brands*	Atilgan et al. (2005); Bravo et al. (2007); Im et al. (2012); Shah (2012); Tong and Hawley (2009); Washburn and Plank (2002)
BRAND ASSOCIATIONS	
Some characteristics of this brand come to my mind quickly	Bravo et al., (2007); Washburn and Plank (2002); Yoo et al. (2000)
I have a difficulty imagining this brand in my mind (r)	Yoo and Donthu (2001); Yoo et al. (2000)
This brand has strong associations*	Coleman et al. (2011); Keller (1993)
This brand has unique associations	Tong and Hawley (2009); Shah (2012)
This brand has favorable associations*	Coleman et al. (2011); Keller 1993
I can quickly recall the symbol, logo or colour of this brand	Kim and Hyun (2011); Yoo and Donthu (2001); Yoo et al. (2000);
It is clear what this brand stands for*	Aaker (1991)

Note: * item included in the final scale

PERCEIVED QUALITY	
This brand is good quality*	Atilgan et al. (2005); Im et al. (2012); Kim and Hyun (2011); Lehmann et al. (2008); Pappu et al. (2005); Washburn and Plank, 2002;
This brand is consistent quality	Kim and Hyun (2011); Pappu et al. (2005); Tong and Hawley (2009)
This brand has excellent features*	Pappu et al. (2005); Shah (2012)
Compared to other brands in its category, this brand is of very high quality*	Atilgan et al. (2005); Tong and Hawley (2009)
This brand is the best brand its category	Netemeyer et al. (2004)
This brand consistently performs better than all the other brands in its category	Kim and Hyun (2011); Netemeyer et al. (2004)
I can always count on this brand for consistent high quality	Lehmann et al. (2008); Netemeyer et al. (2004)
This brand performs well	Lehman et al. (2008)
This brand is effective	Lehman et al. (2008)
This brand lives up to its promises	Lehman et al. (2008)
This brand has served me well	Lehman et al. (2008)
BRAND LOYALTY	
I feel loyal to this brand *	Bravo et al. (2007); Im et al. (2012); Pappu et al. (2005); Yoo and Donthu (2001)
This brand is my first choice*	Im et al. (2012); Pappu et al. (2005); Shah (2012); Tong and Hawley (2009); Washburn and Plank (2002); Yoo and Donthu (2001); Yoo et al. (2000)
I would be willing to pay a higher price for this brand over other brands	Im et al. (2012); Lehmann et al. (2008); Shah (2012); Sung and Kim (2010); Tong and Hawley (2009); Yasin et al. (2007)
I intend to keep purchasing/using this brand	Sung and Kim (2010)
I am committed to this brand*	Sung and Kim (2010)
I will buy/use this brand the next time I need this product/service	Shah (2012); Sung and Kim (2010); Yasin et al. (2007)
I consider myself loyal to this brand	Bravo et al. (2007); Lehmann et al. (2008); Yoo and Donthu (2001); Yoo et al. (2000)
I will not buy/use other brands if this brand is not available	Washburn and Plank (2002); Yasin et al. (2007); Yoo and Donthu (2001)
If this brand were not available, it would make little difference to me if I had to choose another brand	Raju, Unnava and Montgomery (2009)
I can see myself as being loyal to this brand	Raju, Unnava and Montgomery (2009)
I will more likely purchase a brand that is on sale than this brand (r)	Raju, Unnava and Montgomery (2009)

Note: * item included in the final scale

Table 1: Studies of Brand Equity with International Samples

Paper	Countries	Product Categories	Conceptualization of brand equity	Sample	Sample Size
Yoo and Donthu (2001)	US and South Korea	Preselected brands of: athletic shoes, film and colour TV sets	Aaker's dimensions resulting to: Brand Loyalty, Perceived Quality, Awareness/associations	Undergraduate Students	US – 196 South Korea - 218
Hsieh (2004)	Australia, Belgium, Brazil, Canada, China, France, Germany, India, Italy, Japan, Mexico, The Netherlands, Russia, South Korea, Spain, Taiwan, Thailand, Turkey, UK and US	Preselected brands of: Automobiles	Data from a data set owned by MORPACE International, a multinational research firm with measures for: Brand recognition, Brand attachment, Market size	General public living in various cities in each country	From 44 to 189 in each country, a total of 2828 respondents
Buil et al. (2008)	UK and Spain	Preselected brands of: soft drinks, sportswear, cars and consumer electronics	Aaker's dimensions and in particular: Brand awareness, Perceived quality, Brand loyalty, Brand associations: perceived value, Brand associations: brand personality, Brand associations: organisation	Birmingham (UK) Zaragoza (Spain) quota sampling	UK – 411 Spain - 411
Jung and Sung (2008)	US and South Korea	Three preselected brands (Polo, Gap and Levi's)	Used the multidimensional brand equity (MBE) and overall brand equity (OBE) models developed by Yoo and Donthu (2001)	College Students	Americans in the US 100 South Koreans in the US 100 South Koreans in South Korea 100
Lehmann et al., (2008) Study 1	US and China	Preselected brands of: Soft drinks	27 dimensions of brand performance were suggested. They were generated from the literature, including Aaker (1996), Fournier (1998), Ambler (2003), Keller (2002, 2008) and Keller and Lehmann (2003) and reports from commercial brand tracking approaches, including Young and Rubicam's Brand Asset Valuator (BAV), Millward Brown and Research International.	Chicago (US) Shanghai (China)	US -100 China – 100
Lehmann et al., (2008) Study 2	US and China	Preselected brands of: Soft drinks, Toothpaste, Fast Food	The same dimensions of Study 1, measured with 3 items per dimension	Chicago (US) Shanghai (China)	US -150 China – 150
Broyles et al., (2010)	US and China	Preselected brand: KFC	Functional aspect consisting from perception of a brand's performance and quality (perceived performance and perceived quality) Experiential component consisting from brand's resonance and imagery	University students	US – 278 China – 300

Table 2: Sample Profile

		Germany		UK		Greece	
		N	%	N	%	N	%
Gender	Male	305	50.41	289	48.17	311	49.84
	Female	300	49.59	310	51.67	312	50.00
	N/A	0	0.00	1	0.17	1	0.16
Age	18-24	78	12.89	81	13.50	91	14.58
	25-44	213	35.21	190	31.67	226	36.22
	45-64	200	33.06	190	31.67	184	29.49
	65+	114	18.84	139	23.17	122	19.55
	N/A	0	0.00	0	0.00	1	0.16
Years in the country	All my life in	560	92.56	502	83.67	551	88.30
	More than 10	2	0.33	71	11.83	61	9.78
	5-10	33	5.45	19	3.17	6	0.96
	Less than 5 years	10	1.65	8	1.33	5	0.80
	N/A	0	0.00	0	0.00	1	0.16
Education	Higher degree/postgraduate	78	12.89	21	3.50	53	8.49
	Degree, or degree equivalent	218	36.03	152	25.33	236	37.82
	School leaving certificate	151	24.96	345	57.50	211	33.81
	Other	111	18.35	79	13.17	116	18.59
	No qualification	37	6.12	3	0.50	8	1.28
Employment	In full-time employment	259	42.81	239	39.83	284	45.51
	In part-time employment	72	11.90	88	14.67	79	12.66
	Retired	111	18.35	137	22.83	131	20.99
	Unemployed	23	3.80	12	2.00	60	9.62
	Other	126	20.83	124	20.67	70	11.22
	N/A	1	0.17	0	0.00	0	0.00
Income	Lower than €10,000	0	0.00	141	23.50	0	0.00
	€10,000-20,000	49	8.10	139	23.17	0	0.00
	€20,001-30,000	75	12.40	91	15.17	109	17.47
	€30,001-40,000	47	7.77	76	12.67	39	6.25
	€40,001-50,000	44	7.27	78	13.00	21	3.37
	€50,001-60,000	32	5.29	49	8.17	8	1.28
	€60,001-70,000	9	1.49	24	4.00	3	0.48
	€70,000+	131	21.65	2	0.33	13	2.08
	N/A	141	23.31	0	0.00	5	0.80
Product category	Goods	332	55.33	326	53.88	302	48.40
	Services	214	35.67	236	39.01	286	45.83
	Internet Brands	54	9.00	42	6.94	36	5.77
	Total	605	100.00	600	100.00	624	100.00

Table 3: Measurement Analysis Results – Parameter Estimates

Items	Germany λ	UK λ	Greece λ	Common λ	t-value
I have heard of this brand	.637	.704	.671	.669	28.71
I am quite familiar with this brand	.861	.835	.890	.861	--
I can recognize this brand among other brands	.762	.725	.743	.743	31.83
This brand has strong associations	.723	.845	.731	.760	25.04
This brand has favourable associations	.846	.869	.875	.863	26.46
It is clear what this brand stands for	.584	.617	.592	.597	--
This brand is good quality	.938	.948	.948	.945	78.49
This brand has excellent features	.945	.959	.613	.782	70.96
Compared to other brands in its category, this brand is of very high quality	.940	.910	.953	.934	--
I feel loyal to this brand	.887	.912	.944	.914	72.32
This brand is my first choice	.915	.944	.946	.935	--
I am committed to this brand	.918	.938	.952	.936	77.08

Table 4: Aaker's brand equity model: Correlations (squared correlation), CR & AVE

Germany

	AWR	ASS	LOY	QLT
AWR	.58			
ASS	.77(.59)	.53		
LOY	.47(.22)	.73(.53)	.82	
QLT	.48(.23)	.76(.57)	.84(.70)	.89
C.R.	.80	.77	.93	.96

United Kingdom

	AWR	ASS	LOY	QLT
AWR	.57			
ASS	.77(.59)	.62		
LOY	.35(.12)	.40(.16)	.87	
QLT	.37(.14)	.51(.26)	.75(.56)	.88
C.R.	.80	.83	.95	.96

Greece

	AWR	ASS	LOY	QLT
AWR	.60			
ASS	.67(.45)	.55		
LOY	.54(.30)	.78(.60)	.90	
QLT	.57(.32)	.79(63)	.87(.75)	.73
C.R.	.82	.78	.96	.88

Note: AWR: Awareness; ASS: Associations; LOY: Loyalty; QLT: Quality; The shaded area in the diagonal shows AVE. C.R.: Composite Reliability

Table 5a: Goods Brands: Correlations (squared correlation), CR & AVE

Germany

	AWR	ASS	LOY	QLT
AWR	.57			
ASS	.74(.55)	.61		
LOY	.49(.24)	.66(.44)	.80	
QLT	.54(.29)	.69(.48)	.82(.67)	.90
C.R.	.80	.82	.92	.96

United Kingdom

	AWR	ASS	LOY	QLT
AWR	.52			
ASS	.78(.61)	.70		
LOY	.45(.20)	.37(.14)	.88	
QLT	.48(.23)	.50(.25)	.68(.46)	.86
C.R.	.76	.87	.96	.95

Greece

	AWR	ASS	LOY	QLT
AWR	.58			
ASS	.67(.45)	.62		
LOY	.63(.40)	.81(.66)	.91	
QLT	.67(.45)	.85(.72)	.89(.79)	.67
C.R.	.80	.83	.97	.85

Note: AWR: Awareness; ASS: Associations; LOY: Loyalty; QLT: Quality; The shaded area in the diagonal shows AVE. C.R.: Composite Reliability

Table 5b: Service Brands: Correlations (squared correlation), CR & AVE

Germany

	AWR	ASS	LOY	QLT
AWR	.59			
ASS	.76(.58)	.47		
LOY	.44(.19)	.80(.64)	.87	
QLT	.43(.18)	.83(.69)	.86(.74)	.84
C.R.	.81	.72	.94	.95

United Kingdom

	AWR	ASS	LOY	QLT
AWR	.62			
ASS	.76(.58)	.53		
LOY	.31(.10)	.45(.20)	.96	
QLT	.36(.13)	.57(.32)	.79(.62)	.97
C.R.	.83	.79	.96	.97

Greece

	AWR	ASS	LOY	QLT
AWR	.61			
ASS	.67(.45)	.50		
LOY	.47(.22)	.74(.55)	.89	
QLT	.50(.25)	.74(.55)	.85(.72)	.92
C.R.	.82	.74	.96	.97

Note: AWR: Awareness; ASS: Associations; LOY: Loyalty; QLT: Quality; The shaded area in the diagonal shows AVE. C.R.: Composite Reliability

Table 5c: Internet Brands: Correlations (squared correlation), CR & AVE

Germany

	AWR	ASS	LOY	QLT
AWR	.56			
ASS	.72(.52)	.47		
LOY	.32(.10)	.76(.58)	.85	
QLT	.44(.19)	.87(.76)	.89(.79)	.91
C.R.	.79	.71	.94	.97

United Kingdom

	AWR	ASS	LOY	QLT
AWR	.64			
ASS	.82(.67)	.57		
LOY	.31(.10)	.32(.10)	.70	
QLT	.34(.12)	.39(.15)	.90(.81)	.89
C.R.	.84	.80	.87	.95

Greece

	AWR	ASS	LOY	QLT
AWR	.61			
ASS	.80(.64)	.50		
LOY	.65(.42)	.77(.59)	.91	
QLT	.60(.36)	.71(.50)	.78(.61)	.92
C.R.	.82	.75	.97	.97

Note: AWR: Awareness; ASS: Associations; LOY: Loyalty; QLT: Quality; The shaded area in the diagonal shows AVE. C.R.: Composite Reliability