Original Article

Evaluating Aaker's sources of brand equity and the mediating role of brand image

Received (in revised form): 9th August 2010

Manpreet Singh Gill

is Faculty Marketing at LGC Ludhiana. His primary research interest is in theoretical and empirical modeling focusing on branding and advertising. As a part of his research for PhD, he has developed an interesting model in the area of advertising effectiveness.

Jagrook Dawra

is a PhD from ICFAI Business School, Hyderabad (India). He worked in the industry for about 6 years, before his teaching assignment with ICFAI. His research interest lies in the area of product and brand management, with special emphasis on store brands. He has some national and international publications to his credit.

ABSTRACT Brand equity has been defined and measured by different researchers in different ways. While one school of thought measures brand equity as the additional preference a consumer has for a branded product over a similar no-name product, another school of thought led by Aaker defines it in terms of a set of assets, popularly called the sources of brand equity. This study measures brand equity using both methods and tries to establish the extent to which they reconcile. We first measure brand equity using conjoint, establishing the part-worths of attribute 'brand' as brand equity. We then go on to measure Aaker's sources of brand equity. Regressing brand equity on these sources of brand equity, we found that Aaker's sources were inadequate in explaining brand equity fully. Moreover, some of these sources were highly correlated. Factor analyzing Aaker's sources resulted in two factors – cognitive factor and image factor. Further analysis revealed that the image factor plays a mediating role between awareness and brand equity.

Journal of Targeting, Measurement and Analysis for Marketing (2010) 18, 189–198. doi:10.1057/jt.2010.11;
published online 13 September 2010

Keywords: brand equity; conjoint analysis; regression analysis; factor analysis

INTRODUCTION

Marketers endeavor to reduce marketing expenses and increase sales. Their objective is to increase the efficiency of the marketing effort. They continuously look for the factors that increase marketing efficiency. Strong brands enjoying high brand equity can help managers to relish higher margins, greater customer loyalty, less vulnerability

to competitive attacks, better customer response to communications, and more cooperation from trade and other intermediaries. In order to keep track of the strength of their brands, managers need to be able to quantify brand equity. However, measuring brand equity is a challenge for managers. The measure of brand equity should reflect the construct it is measuring, should capture the changes in brand equity and should be applicable to different markets and products.

Brand equity has been defined by researchers in different ways. Aaker defines brand equity as

Correspondence: Manpreet Singh Gill
H.No 7-G, Sarabha Nagar, Ludhiana, 141001 Punjab, India
E-mail: manpreetgill1981@yahoo.co.in

‘a set of assets (and liabilities) linked to a brand’s name and symbol that adds to (or subtracts from) the value provided by a product or service to a firm and/or that firm’s customers’.¹ Keller, however, defines brand equity as ‘the differential effect of the brand knowledge on consumer response to the marketing of the brand’.² Similarly, Yoo and Donthu define brand equity as ‘consumer’s different response between a focal brand and an unbranded product when both have the same level of the marketing stimuli and product attributes’.³ According to Srinivasan *et al*, ‘Brand equity is defined as the incremental contribution (\$) per year obtained by the brand in comparison to the underlying product (or service) with no brand-building efforts’.⁴

Researchers have carried out a lot of work in identifying the dimensions to capture and measure brand equity. Some of them have come up with perceptual dimensions. For instance, according to Keller,² brand awareness and brand image constitute brand equity. As per Park and Srinivasan,⁵ brand equity consists of attribute-based and non-attribute-based components. Researchers like Kamakura and Russell⁵ used actual consumer purchase behavior or market behavior to ascertain brand equity. Considering both perceptual and market behavior measures, Aaker⁶ proposed that brand loyalty, perceived quality/leadership, associations/differentiation, awareness and market behavior are the various dimensions acting as sources of brand equity. Using perceptual dimensions from the studies of Keller² and Aaker,⁶ Yoo and Donthu³ developed a scale for measuring brand equity comprising brand loyalty, perceived quality and brand awareness/associations as various dimensions. Because this scale is based on Keller’s² and Aaker’s⁶ dimensions, we do not know whether this scale is sufficient to explain brand equity or whether some more items representing additional sources of brand equity are required to be identified. This is so because Keller² does not explain the relationship between brand awareness and brand image and has only provided a framework to measure these dimensions, and does not provide a concrete measure of brand equity. Similarly, Aaker⁶ provides only an indication towards a set of items that can

contribute to brand equity. Nobody knows how these items and which of these items should be combined to capture brand equity. Whether these items are exhaustive and what is the reliability and validity of these items are some of the other questions left unanswered by the study.

Hence, the choice of items to measure brand equity is arbitrary and we do not know to what extent these dimensions actually contribute to brand equity. The present study is an attempt to find the explanatory power of these dimensions in the toothpaste product category. This study investigates to what extent the dimensions identified by the various authors in general and by Aaker in particular are able to explain, or measure, brand equity.

The rest of the study is arranged as follows. We first present different studies explaining the measurement of brand equity along with their critiques. We then go on to explain the different dimensions that we considered for our study and the reasons for them. Finally, the methodology is explained and the results are presented, interpreted and discussed.

MEASURING BRAND EQUITY

Researchers have adopted different approaches to quantify or measure brand equity. Some of them, like Keller,² Park and Srinivasan,⁵ and Yoo and Donthu³ used perceptual, or psychological, measures to measure brand equity. Kamakura and Russell⁷ used actual consumer and market behavior to arrive at brand equity. Aaker⁶ combines both market behavior-related measures and perceptual measures to provide a framework to capture brand equity. Below we provide the results of different studies (along with their critique) carried out over a period of time explaining different ways to measure brand equity.

According to Keller,² brand image and brand awareness constitute brand equity. The study provided indirect and direct approaches to measure brand equity. The indirect approach attempts to assess the sources of brand equity in terms of brand recognition and brand knowledge. As the indirect measure is unable to capture the strength and favorability of associations, direct measures are employed. On the other hand, the

direct approach measures brand equity directly by assessing the impact of brand knowledge on consumers' response to the marketing program. Although the study contributes immensely to the literature by providing a mechanism to think of brand knowledge in terms of an associative memory network model, it does not explain the relationship between brand awareness and brand image, and has only provided a framework to measure these dimensions, not a concrete measure of brand equity.

Aaker⁶ introduced the concept of 'brand equity *Ten*', comprising 10 items spread across five dimensions, to measure brand equity. He did not mention a single measure of brand equity, but expressed it as a set of five dimensions: brand loyalty, perceived quality/leadership, associations/differentiation, awareness and market behavior. Brand loyalty was captured in two elements: the price premium and satisfaction/loyalty. Perceived quality/leadership dimension consists of two components: perceived quality and leadership. The third dimension comprises associations and differentiation measures. The fourth dimension is brand awareness, consisting of brand recognition and recall, and the last dimension is market behavior measures, consisting of market share and distribution depth of the brand. This study attempts to operationalize brand equity and create a standard measure of it that could be used across products and markets to measure brand equity. However, this study also provides only an indication towards a set of items that can contribute to brand equity. Nobody knows how and which of these items should be combined to capture brand equity. Whether these items are exhaustive and what their reliability and validity is are some of the other questions left unanswered.

Using perceptual dimensions from the studies of Keller² and Aaker,⁶ Yoo and Donthu³ developed a multidimensional scale to measure brand equity across different products and markets. Their scale consisted of brand loyalty, perceived quality and brand awareness/associations as different dimensions to capture brand equity. But we do not know whether this scale is sufficient to explain brand equity or whether some more items representing

additional sources of brand equity are required to be identified.

According to Park and Srinivasan,⁵ brand equity consists of two components: one is an attribute-based component and the other is a non-attribute-based component. Hence, brand equity is the sum of the attribute-based component and the non-attribute-based component. The attribute-based component is the difference between subjectively measured attribute preference and objectively measured attribute preference, and the non-attribute-based component is the difference between the preference of an individual towards a brand and his subjective attribute-based preference. This study provides an excellent method to capture brand equity and that too at the individual as well as aggregate level; however, acquiring an objective attribute rating from the experts is a somewhat tedious task and, secondly, as objective attribute ratings provided by experts are not really objective, these ratings may be influenced by their own biases.

Kamakura and Russell⁷ proposed a method to measure brand value using the actual purchase behavior of consumers. The actual purchase behavior was captured using the scanner panel data. This behavior reflects the 'regular market conditions' under which a brand is purchased. Therefore, the measure of brand value attained should be the actual brand value. The brand value was thought of as the value attached by the consumers to the brand 'after discounting the current price and advertising exposures'. Brand value was considered to consist of two components, namely brand intangible value and brand tangible value. Brand tangible value was considered as a function of physical attributes, and the value not arising from physical attributes was termed brand intangible value. Brand intangible value consisted of the value derived by the consumer from brand name associations. This study aims to provide one of the best measures for brand equity, as it is based on actual purchase incidence. It should be borne in mind, however, that a particular brand could have been purchased as a competing brand was not available or a particular brand was purchased from a retail outlet with a limited range, as it did not stock

the brand of choice. Further, this method cannot be used in countries where the presence of organized retail is meager.

According to Srinivasan *et al.*,⁴ brand equity is 'the incremental contribution per year obtained by the brand in comparison to the base product'. The authors assumed that the choice probabilities of an individual would be different for the branded and unbranded base product. The choice probability for the branded product would be higher than that for the unbranded base product. The incremental contribution of a brand for a particular person would depend upon the difference between the choice probabilities of a branded and non-branded version of the product. The brand equity for an individual was calculated as the product of customer *i*'s total category-level purchase, brand *j*'s contribution margin and the customer *i*'s incremental choice probability. It was also conceptualized that the incremental choice probability would depend upon the difference between brand awareness, attribute perceptions and non-attribute preference for the unbranded and branded versions of the same product.

Over the years researchers have recognized Aaker's⁶ dimensions as sources of brand equity, assuming that these five dimensions fully and completely explain the construct brand equity. The literature shows that different researchers have defined, and therefore measured, brand equity differently. We feel that irrespective of the approach, triangulation mandates that all methods should measure the construct brand equity accurately.

In this study the brand equity is measured using conjoint analysis (which we propose is a better measure to capture brand equity) and also by using different dimensions identified by Aaker⁶ to ascertain the extent to which these sources of brand equity can explain brand equity.

Although this study uses the sources of brand equity as defined by Aaker,⁶ we feel that they need to be operationalized by further studying the available literature. The following section outlines how these constructs were defined and operationalized by different authors.

On the basis of these studies various dimensions have been identified that contribute to enhancing brand equity. A questionnaire was formulated based on these dimensions. These dimensions and the reasons for their incorporation in the questionnaire have been discussed below.

BRAND LOYALTY

Oliver⁸ defined loyalty as 'an attained state of enduring preference to the point of determined defense'. The definition consists of two parts: one is the enduring preference and the other is the point of determined defense. Enduring preference means that a person purchases the product again and again, and 'the point of determined defense' means that the person defends himself from the attacks of competitors. Mellens cited the definition of brand loyalty as 'The biased behavioral response expressed over time by some decision making unit with respect to one or more alternative brands out of a set of such brands and is a function of psychological process'.⁹

Sheth¹⁰ developed a factor analytic model for finding individual-level brand loyalty. In this model, loyalty has been considered as the frequency and the pattern of purchases made by the consumer. This model was able to segregate the buyer's manifested behavior into two components – the behavior owing to environmental effects and the behavior owing to the individual buyer himself. This premise is based on the S-O-R model, where 'S' means stimulus, 'O' means organism and 'R' means response. The response, that is, the manifested behavior, depends upon stimulus that could be provided by the environment or by the individual himself. The importance of this measure of brand loyalty is that it is able to provide individual-level brand loyalty, as against the aggregate-level provided by stochastic models of brand loyalty.

A closer look at these definitions can help to conclude that loyalty consists of both the behavioral and attitudinal dimensions. Behavioral loyalty means that there is repeated purchase by the consumers, whereas attitudinal loyalty means the attitude, beliefs and intentions of the consumer towards the brand.

For measuring brand loyalty, both the dimensions (that is, behavioral as well as attitudinal) of loyalty have been incorporated into the questionnaire. To incorporate the 'determined defense' component as mentioned by Oliver¹⁰ in his definition of loyalty, the price premium component has been considered.

BRAND PERSONALITY

Like human beings, a brand also has a personality. It is important to understand brand personality, as consumers use brand personality to express themselves. According to Sirgy,¹¹ the greater the congruity between brand personality and self or ideal self, the greater will be the preference for the brand. Moreover, the personality traits that become associated with the brand are enduring and unique, and, as a result, the brand personality can be used to differentiate a brand in the market. Aaker,¹² while conducting a study to determine different dimensions of brand personality, defined brand personality as 'the set of human characteristics associated with the brand'. She identified five dimensions of brand personality: sincerity, excitement, competence, sophistication and ruggedness. In this study, these dimensions of brand personality have been considered because these dimensions can help us understand which personality type is related to the brand under consideration instead of merely concluding whether or not a personality is associated with it, as is the case with Aaker.¹²

BRAND ASSOCIATIONS

Aaker¹ defined brand identity as 'a unique set of brand associations that the brand strategist aspires to create or maintain. These associations represent what the brand stands for and imply a promise to customers from the organization members'. This means that brand association is something that provides meaning to a brand. Aaker⁶ mentioned three types of brand associations while providing a measure for brand equity. The three types of associations are brand as a product, brand as an organization and brand as personality. Keller² defined brand associations as 'the other informational nodes linked to the brand node in memory and contain the meaning of the brand'.

It is the strength, favorability and uniqueness of the brand associations that are responsible for the differential effect of the consumers towards the brand. In this study, the associations related to the product in the form of perceived value, associations related to personalities (which have been discussed above) and associations related to organizations have been taken into consideration and incorporated into the questionnaire.

BRAND AWARENESS

According to Keller,² brand awareness involves brand recognition and brand recall. Brand recognition is the extent to which a person is able to recognize a particular brand given a set of brands. Brand recall is the extent to which a person is able to remember a brand, given a product category or need. As per Aaker,⁶ brand awareness consists of many levels. These levels are brand recognition, brand recall, top of mind, brand dominance, brand knowledge and brand opinion. As one moves from brand recognition to brand opinion, the brand awareness increases. In this study, questions related to brand opinion and brand knowledge were used to capture brand awareness.

PERCEIVED QUALITY

Perceived quality is related to a consumer's opinion on the extent to which a particular product will be able to meet his expectations. In this regard perceived quality has nothing to do with the actual performance of the product. But perceived quality can have a great impact on a brand's equity: the higher the perceived quality of a brand, the greater will be its brand equity. It is important that a customer perceives a brand to be of high quality because it will increase the brand preference and build brand equity. Kirmani and Rao¹³ discussed the presence of uncertainty in the minds of consumers regarding the quality of the products offered by the sellers. This uncertainty is caused by information asymmetry. The sellers have more information than the buyers. The buyers will make inference depending on the information provided by the sellers. Therefore, the type of inference required by sellers will decide the type of information to

be communicated to the buyers. In this regard brand name, product design, packaging, advertisements and other brand identities are the types of information that communicate the unobservable quality. These elements can help build favorable perceived quality in the minds of the consumers. In this study, perceived quality was captured by asking a person about the extent to which he feels that a brand is of the best quality and is consistent in quality. The responses were captured on a five-point Likert scale.

Although the dimensions suggested by various authors such as Aaker⁶ and Keller² seem very captivating, and owing to the way these authors have put forward these dimensions, one would be forced to believe that these dimensions would be able to capture 100 per cent of the brand equity. Investigation needs to be carried out to assess whether these dimensions are able to explain brand equity and to what extent they can do so.

To be able to explore the above-mentioned issue, both brand equity and its sources need to be appropriately operationalized.

We measured brand equity using conjoint analysis as described by Green and Wind.¹⁴ Conjoint analysis involves the computation of the utilities for different attributes of a product. Brand equity is defined here as the preference that a respondent has for the attribute 'Brand'. The part-worth of the levels of attribute 'Brand', therefore, capture all those reasons that motivate a person to purchase a particular brand. Hence, it should be a true measure of brand equity.

METHOD

Selection of product category and its attributes

The product category is chosen in such a way that the target respondents are aware of it and its features so that it is easy to identify the attributes and their levels in the product category to carry out conjoint analysis. Toothpaste is one such product that is used daily and by everyone. Moreover, toothpaste as a category has also been considered in an earlier related study by Park and Srinivasan,⁵ which

Table 1: Attributes and levels for conjoint analysis

Sr. no.	Attributes	Attribute levels
1	Brand	Colgate, Pepsodent, Close-Up, Meswak
2	Breath freshness	High, Normal
3	Germ protection	High, Normal
4	Teeth strengthening	High, Normal
5	Whitening capability	High, Normal
6	Medicated properties	Present, Absent
7	Price (Rs)	28, 29, 30

further enhances the relevance of this category for this study.

In order to identify the attributes of toothpaste, 40 respondents were interviewed. It was found that brand, breath freshness, germ protection, teeth strengthening, whitening capability, medication properties and price were the attributes that are important to them. Therefore, these attributes were considered for the study. Four different brands, Colgate, Pepsodent, Close-Up and Meswak, were considered. For breath freshness, germ protection, teeth strengthening and whitening capability, the levels were 'normal' and 'high'. For medicated properties the levels were 'absent' and 'present'. Lastly, for price three different levels were considered: 'Rs 28', 'Rs 29' and 'Rs 30'. The attributes and their levels are presented in Table 1.

PROCEDURE

Data were collected using a structured questionnaire that had two parts – the first part consisted of the items that were adapted from those mentioned in the study by Aaker⁶ 'Measuring brand equity across products and markets', and the second part of the questionnaire consisted of the 16 cards generated using fractional factorial design. Four hold-out cards were also generated to check the validity of responses.

The respondents were asked to fill in the questionnaire by rating different items on a 5-point Likert scale (1 being 'highly disagree' and 5 being 'highly agree'). Subsequently, respondents were asked to arrange the cards according to their overall preference for the product concept as reflected in the cards. The first card was the

most preferred, and the sixteenth one the least preferred. A similar procedure was followed for the arrangement of the hold-out cards. In total, data were collected from 260 respondents, out of which 188 responses were usable and taken for analysis. The remaining 72 responses (27.69 per cent) were rejected, as these responses were incorrectly provided by the respondents. In these cases, a portion of the questionnaire was left blank by the respondents, leaving them useless for the analysis. Because the analysis was carried out on a student sample that is homogeneous, the rejection of the responses should not give biased results.

MEASURES

The questionnaire incorporated loyalty measures, measure of price premium, perceived quality measure, leadership measure, brand awareness measure, perceived value, brand personality and organizational association measures. While adapting the items for the questionnaire from the items suggested by Aaker⁶ there were a few deviations, which are worth mentioning. Apart from brand personality and brand loyalty measures, all the measures for the other dimensions were similar to those suggested by Aaker.⁶

Brand personality was captured using the five dimensions of personality mentioned by Aaker.¹² These dimensions include sincere, rugged, sophisticated, excited and competent. The respondents were asked to rate themselves on these five dimensions of personality and were then asked to rate all the four brands based on these five dimensions. Euclidean distance was calculated between the personality of the respondent and the brand personality. This distance was taken as a measure of brand personality.

While capturing brand loyalty both attitudinal and behavioral loyalty measures were used. Satisfaction, as advised by Aaker,⁶ was not considered as a measure of loyalty because according to Oliver⁸ 'satisfaction is a fairly temporal post usage state for one time consumption or a repeatedly experienced state for ongoing consumption that reflects how the product or service has fulfilled its purpose',

whereas 'loyalty is an attained state of enduring preference to the point of determined defense'. Therefore, loyalty and satisfaction are two different things, and it is not necessary that if a person is satisfied he will be loyal as well. Moreover, satisfaction may lead to loyalty but it is not part of loyalty.

All these dimensions of brand equity suggested by Aaker⁶ were the independent variables for the regression analysis. The dependent variable was the brand equity. Conjoint analysis was run treating brand as one of the attributes with four levels, that is, Colgate, Pepsodent, Meswak and Close-Up. Brand equity was obtained as part-worths of the attribute 'Brand'. This brand equity acted as a dependent variable in the regression analysis.

RESULTS

Conjoint analysis using LINMAP was run for the 188 valid responses and the reliability of the responses was found to be 0.79. In addition, utility scores related to brands were obtained for all the respondents. These utility scores acted as a dependent variable, capturing the brand equity. These utility scores were then regressed on the dimensions suggested by Aaker.⁶ Therefore, our regression model was as follows

$$BE = \beta S' + \epsilon$$

where BE is brand equity obtained as part-worths of the attribute 'brand' in the conjoint study, and S is a vector $(1, S_1, S_2, \dots, S_{14})$. $S_1 - S_{14}$ are defined in Table 2. β is a vector of parameters to be estimated. Although the model was significant at 0.01 per cent, high multicollinearity was reflected in Variance inflation factor (VIF) and Tolerance measures (Gujrati,¹⁵ as shown in Table 3).

ADDRESSING THE PROBLEM OF MULTICOLLINEARITY USING FACTOR ANALYSIS

In order to take care of multicollinearity, factor analysis was used with Varimax rotation. The output of factor analysis is shown in Table 4. Bartlett's test of sphericity is significant at the 5 per cent level of significance and the value of KMO is 0.94, and thus factor analysis is justified.

Factor analysis gave two factor solutions explaining 62.350 per cent variance of the original dimensions with Cronbach α of 0.748 and 0.804, respectively. The values indicate good reliability of the factors. Items 1, 2 and 3 loaded heavily on the first factor, whereas the other items loaded on the second factor. Depending upon the nature of the items included in the first factor it was named brand awareness. The same items were mentioned by Aaker⁶ also to capture brand awareness and the second factor has been named brand image. The output was consistent with the argument of Keller² that it is brand awareness and brand image that contribute to brand equity.

Table 2: Independent variables (S1–S14)

Sr. no.	Name of the item
S1	I know the brand
S2	I know what the brand stands for
S3	I have an opinion about the brand
S4	I frequently purchase this brand
S5	I would buy the brand on the next purchase
S6	I have a favorable attitude towards the brand
S7	The brand is of the best quality
S8	The quality of the brand is consistent
S9	The brand is the most popular brand
S10	I think the brand is number one among all the brands
S11	The brand is worth purchasing it provides value for money
S12	The organization manufacturing the brand is trustworthy
S13	Price premium
S14	Brand personality

As per Pett *et al.*,¹⁶ the factor scores were calculated by summing the scores for only those items that had been selected for inclusion in a given factor. These factor scores for brand awareness and brand image were used as the independent variables and regression was run with brand equity obtained from conjoint analysis as dependent variable.

Table 4: Results of factor analysis

Sr. no.	Name of the item	Factor 1 Brand awareness	Factor 2 Brand image
1	I know the brand	0.797	—
2	I know what the brand stands for	0.790	—
3	I have an opinion about the brand	0.660	—
4	I frequently purchase this brand	—	0.834
5	I would buy the brand on the next purchase	—	0.852
6	I have a favorable attitude towards the brand	—	0.702
7	The brand is of the best quality	—	0.694
8	The quality of the brand is consistent	—	0.610
9	The brand is the most popular brand	—	0.586
10	I think the brand is number one among all the brands	—	0.679
11	The brand is worth purchasing it provides value for money	—	0.625
12	The organization manufacturing the brand is trustworthy	—	0.641
13	Price premium	—	0.598
14	Personality	—	–0.380
15	Eigenvalue	1.78	7.133
16	Percentage of variance explained	13.142	49.182
17	Cronbach α	0.748	0.804

KMO=0.943 and Bartlett test of sphericity (P value 0.000).

Table 3: Beta coefficients and collinearity statistics

	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	SE	Beta			Tolerance	VIF
(Constant)	–15.05	3.928	—	–3.832	0	—	—
S1	–1.082	0.73	–0.054	–1.482	0.139	0.563	1.776
S2	–0.117	0.559	–0.007	–0.21	0.834	0.604	1.656
S3	–0.203	0.605	–0.012	–0.335	0.738	0.559	1.788
S4	1.816	0.703	0.153	2.582	0.01	0.216	4.63
S5	1.783	0.708	0.15	2.519	0.012	0.215	4.661
S6	1.682	0.814	0.111	2.067	0.039	0.263	3.797
S7	0.315	0.88	0.019	0.358	0.72	0.267	3.748
S8	0.057	0.754	0.004	0.076	0.94	0.357	2.803
S9	0.464	0.702	0.032	0.661	0.509	0.328	3.053
S10	1.599	0.694	0.114	2.303	0.022	0.31	3.221
S11	0.256	0.76	0.016	0.337	0.736	0.337	2.97
S12	0.563	0.675	0.034	0.834	0.405	0.464	2.157
S13	0.464	0.141	0.102	3.284	0.001	0.789	1.267
S14	–2.224	0.387	–0.176	–5.742	0	0.812	1.231

Dependent variable: BE (Brand equity); the variables S1–S14 are defined in Table 2.

Table 5: Regression output

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	SE	Beta		
1 (Constant)	-42.11	2.666	—	-15.797	0
Brand image	0.97	0.063	0.567	15.371	0
Brand awareness	0.285	0.257	0.041	1.105	0.269

Independent variables: Brand image and brand awareness; Dependent variable: brand equity.

Table 6: Regression results to check the mediating role of brand image

Dependent variable	Independent variables (Beta coefficients)		P-value (Model)	Adjusted R ² (%)
	Brand awareness	Brand image		
Brand image	0.598 (0.000)	—	0.000	35.7
Brand equity	0.380 (0.000)	—	0.000	14.3
Brand equity	—	0.591 (0.000)	0.000	34.8
Brand equity	0.041 (0.269)	0.567 (0.000)	0.000	34.9

The regression model was significant at the 5 per cent level of significance with adjusted R^2 equal to 34.9 per cent. Moreover, it is clear from Table 5 that the coefficient of brand image is significant but the regression coefficient of brand awareness is insignificant.

BRAND IMAGE AS A MEDIATOR BETWEEN AWARENESS AND EQUITY

Brand image seemed to explain brand equity. One possibility could be that brand image acts as a mediating variable between brand awareness and brand image. To identify the mediating role of brand image, the following conditions should be satisfied as per Baron and Kenny.¹⁷

- (i) Regression model consisting of brand image as dependent variable with brand awareness as independent variable should be significant.
- (ii) Regression model consisting of brand equity as dependent variable with brand awareness

as independent variable should be significant.

- (iii) Regression model consisting of brand equity as dependent variable with brand image as independent variable should be significant.
- (iv) Regression model consisting of brand equity as dependent variable with brand awareness and brand image as independent variable should be significant, but the coefficient of brand awareness should not be significant.

Four separate regressions were run to check the mediating role of brand image. The results of these regressions are shown in Table 6. The results indicate the mediating role of brand image between brand awareness and brand equity. From the output it seems that brand awareness does not have a direct impact on brand equity. Rather, it has an indirect impact, which is through the brand image.

The mediating role of brand image revealed by the analysis could be used to integrate the two dimensions of brand equity, that is, brand awareness and brand image, for which no empirical relationship was provided previously. Keller² argued that brand awareness and brand image are two distinct dimensions that lead to brand equity. Similarly, Na *et al*¹⁸ presented a brand power model whereby they discussed the brand awareness power dimension and the brand image power dimension as being the two dimensions to brand equity. However, the results of our analysis reveal that it is brand awareness that leads to brand image, which further leads to brand equity. Therefore, brand awareness and brand equity cannot be considered as distinct dimensions.

DISCUSSION

From this study it is evident that in the case of the toothpaste product category Aaker's⁶ sources of brand equity are inadequate in explaining the brand equity. The dimensions proposed by Aaker were able to explain only 34.9 per cent of the brand equity. This means that in case of toothpastes, there are other sources of brand equity that will further contribute to the brand equity, apart from Aaker's brand equity ten. Brand managers should identify these sources in order to build their brands accordingly and more effectively. The same is applicable to other brand managers managing brands in various product categories across different geographical boundaries. They should be aware of the extent to which Aaker's sources contribute and about the additional sources of brand equity.

Aaker's sources of brand equity for the toothpaste product category are also correlated. These variables have been shown in Table 4 to factor as awareness and image factor. This result is consistent with studies such as those by Keller² and Na *et al.*¹⁸ The research further shows that the image factor plays a mediating role between awareness and brand equity. It implies that brand image can be formed using brand awareness, which will further build brand equity. The managers should bear in mind that to build brand equity they should first build brand awareness and only then focus on building brand image. This study also highlights the existence of interrelationships between the sources of brand equity – strong quality perceptions could mean higher loyalty and *vice-versa*; high satisfaction could mean higher loyalty and *vice versa*, and so on.

Although the present study cannot be generalized to other product categories, it has important implications not only for research, but also for working managers. Managers need to understand how their brand is being built and how they should invest in these sources of brand equity to maximize their returns.

Further exploratory research needs to be conducted to establish other factors that build up brand equity. The interrelationships between these sources of brand equity also need to be studied in detail.

REFERENCES

- 1 Aaker, D. (1996) *Building Strong Brands*. USA: The Free Press.
- 2 Keller, K.L. (1993) Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing* 57(1): 1–22.
- 3 Yoo, B. and Donthu, N. (2001) Developing and validating a multidimensional consumer-based brand equity scale. *Journal of Business Research* 52(1): 1–14.
- 4 Srinivasan, V., Park, C.S. and Chang, D.R. (2005) An approach to the measurement, analysis and prediction of brand equity and its sources. *Management Science* 51(9): 1433–1448.
- 5 Park, S.U. and Srinivasan, V. (1994) A survey-based method of measuring and understanding brand equity and its extendibility. *Journal of Marketing Research* 31(2): 271–288.
- 6 Aaker, D. (1996) Measuring brand equity across products and markets. *California Management Review* 38(3): 102–120.
- 7 Kamakura, W.A. and Russell, G.J. (1993) Measuring brand value with scanner data. *International Journal of Research in Marketing* 10(1): 9–21.
- 8 Oliver, R.L. (1999) Whence consumer loyalty. *Journal of Marketing* 63(Special Issue): 33–44.
- 9 Mellens, M., Dekimpe, M.G. and Steenkamp, E.M. (1996) A review of brand-loyalty measures in marketing. *Tijdschrift voor Economie en Management* XLI(4): 507–533.
- 10 Sheth, J.N. (1968) A factor analytic model of brand loyalty. *Journal of Marketing* 5(4): 395–404.
- 11 Sirgy, M.J. (1982) Self concept in consumer behavior: A critical review. *Journal of Consumer Research* 9(3): 287–300.
- 12 Aaker, J.L. (1997) Dimensions of brand personality. *Journal of Marketing Research* 34(3): 347–356.
- 13 Kirmani, A. and Rao, A.R. (2000) No pain, no gain: A critical review of the literature on signaling unobservable product quality. *Journal of Marketing* 64(2): 66–79.
- 14 Green, P.E. and Wind, Y. (1975) New ways to measure consumers' judgments. *Harvard Business Review* (July–August): 107–117.
- 15 Gujarati, D. (2004) *Basic Econometrics*. Singapore: Tata Mc Graw Hill.
- 16 Pett, M.A., Lackey, N.R. and Sullivan, J.J. (2003) *Making Sense of Factor Analysis*. USA: Sage Publications.
- 17 Baron, R.M. and Kenny, D.A. (1986) The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality & Social Psychology* 51(6): 1126.
- 18 Na, W.B., Marshall, R. and Keller, K.L. (1999) Measuring brand power: Validating a model for optimizing brand equity. *Journal of Product and Brand Management* 8(3): 170–184.