Original Article

A framework for assessment of brand loyalty score for commodities

Received (in revised form): 8th November 2011

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ABSTRACT Commodity product marketers are increasingly resorting to branding in response to growing competition. Despite this commodity branding issues have not been adequately addressed. In this article we propose an Analytical Hierarchy Process (AHP) based model to assess customer loyalty scores for commodity brands. We also propose a methodology using Structural Equation Modeling to systematically collect data from customers and suitably incorporate it into AHP for computing the loyalty scores. The scores of the constructs in the model could be used by the commodity marketers to ascertain customers brand preference pattern and the relative importance of the factors in the purchase decision. From such an understanding, the commodity marketers could adjust the elements of the marketing and delivery process and incentivize the customer to

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be loyal to their brand. The developed model could be used for any commodity. We demonstrate the usefulness of the model with a numerical illustration from the cement industry. On the basis of the data we observe that the commodity brand, which has the highest loyalty score, is able to provide better perception of offerings in those constructs considered important by the customers. On the other hand, the weakest brand has been unnecessarily concentrating on price worthiness factors like lower price, higher discounts and long credit period. As per this study this construct is viewed relatively less important by the customers. Perhaps, customers perceive it as a lower quality product owing to this over focus on this construct.

Journal of Targeting, Measurement and Analysis for Marketing (2011) 19, 243–260. doi:10.1057/jt.2011.23;
published online 5 December 2011

Keywords: commodity brand loyalty; Analytical hierarchy process; Structural equation modeling; questionnaire survey

INTRODUCTION

Commodities such as rice, wheat, sugar, salt, vegetables, cement and steel are bought based on the nature of the basic product for mass consumption. By its very nature, consumers find it difficult to compare the features of a commodity offered by multiple players. Further, they also find it difficult to differentiate among competing offerings owing to lack of brand names. However, the competitive business environment has exerted enormous pressures on commodity manufacturers and has threatened to erode their market shares and margins. Loyal customers can help an organization build market share, obtain higher margins, provide greater resistance against competing brands, reduce the marketing costs and gain a long-term loyal customer base.

Therefore, in order to maintain their market shares manufacturers of commodities need to achieve some degree of customer loyalty. This will also help them improve the customers' level of involvement in the decision making process. Branding, involving a multidimensional construct, is the most common approach to convince the customer that the commodity provides her total solution towards her need satisfaction. Convincing the customers provides the marketer an opportunity to gain customer loyalty.

Unlike products, branding commodities have gained importance only in the recent past. Intel marketed their processors as commodities to

begin with. However, the generic identification of the Intel processors as 8088, 80286 and 80386 were later replaced with brand names such as Pentium and Celeron. One sees several such trends in marketing steel, cement, agro products and many other commodities. The traditional view in commodity branding was often limited to merely creating awareness.^{1–3} The company communicated the name to its target customers and then extended the name to its corporate identity as well as to a set of other products of the same company. However, at a later stage commodity branding was viewed as a mechanism to create a competitive advantage.^{4,5} Recent studies point to a change in the mindset of consumers with respect to commodities and branding.⁶ This provides an opportunity for marketers also to shed 'marketing-a-commodity' mindset. By leveraging on the brand, marketers of commodity goods will be able to realize greater margins and make their commodity and company stand out positively from others. Such a transition implies that for a commodity marketer the multi-dimensional construct associated with product branding will be as relevant, albeit in a different manner. An understanding of the multidimensional nature of value and the delivery of it will be at the heart of successful commodity branding.

The importance of brand loyalty has been recognized three decades back and well studied in the case of products. However, developing

a conceptual model to explain how the loyalty develops as a result of branding commodities has not been well-attempted, primarily because commodity branding is a recent phenomenon. Our main motivation for this article lies in this aspect. In this article we make the following contributions to the literature on commodity branding:

- (a) We develop a framework to identify the constructs and their relationships to developing loyalty for commodity brands.
- (b) Provide a solution methodology to assess the loyalty scores for commodity brands.

In our opinion, the suggested framework provides a means for objective comparison of competing brands and helps organizations position their commodity brands among the competition. It further facilitates them to devise strategies for improving loyalty of their target customers.

COMMODITY BRANDING LITERATURE

One of the initial papers on commodity branding, by Saunders and Watt,¹ studied the use of brand names in industrial fibers. They concluded that commodity brand names tend to be confusing and not effective. Shipley and Howard² found that companies in the United Kingdom used brand names widely and brand naming was important to the manufacturers of commodity products. They have found that these manufacturers perceived commodity branding as very important in establishing their marketing position. In another study conducted on electrical products, it was found that brand equity was highly prevalent in commodity markets.³ The initial studies on commodity branding suggest that commodities tend to be branded with firm names, loyalty tends to be more global in nature extending across all the firms' product lines. Owing to this, the efforts to position new variations of the commodity in a different manner from the existing ones would prove to be very difficult.

Further studies on commodity products argue the need to create brands in commodities

to establish a competitive advantage. Sinclair and Seward⁴ found that the primary reason for branding in paper board industry was to provide some degree of differentiation, emphasize it as a specialty product and to develop a loyal customer base. They reported that a number of manufacturers failed to give enough importance to educate the intermediaries and end users about the uniqueness of the brand. In another study in the steel industry, McQuiston⁷ showed how Rautaruuki Steel, a Finland-based company, successfully developed an effective marketing strategy through commodity branding with the help of a case study of RAEX LASER Steel brand. McQuiston concluded that commodity branding will be successful only if the brand is perceived as providing a total solution to the customer. On the basis of a study in the agricultural commodity industry Stanton and Herbst⁶ concluded that consumers want to place their trust in branded companies to give an official endorsement that the product is indeed good and worthy of purchase. Betts⁸ conducted a study for a leading manufacturer of wall coverings in the United Kingdom to understand consumer awareness of, and preference for, brands within the wall covering market. It was found that merely maintaining market position on the basis of volumes may not provide sustainable long-term competitive advantage.

Another set of studies not only emphasized the need for commodity brands but also identified some factors that help consumers differentiate one commodity from another. In a study on the Indian steel industry, Noronha⁹ illustrated how the Tata Steel Company developed branded product in Indian steel industry for both B2B and B2C segments. For the B2B segment, the company focused on factors such as specifications, surface quality, cleanliness, grains inside the steel and physical properties. On the other hand, for the B2C customers, the company focused on the brand value instead of too many technical details. The study highlighted the importance of building the brand by creating customer awareness on quality, company image, reliability and service and making the customer feel that the brand has delivered its brand promise. Prendergast and

Marr^{10,11} conducted a nationwide mail survey in New Zealand for the grocery shoppers for identifying general perceptions of the consumers on generic products. They analyzed how consumers assess a range of individual generic products in terms of quality, value and packaging, and the importance that consumers attach to these attributes.

Morrison and Eastburn¹² examined the factors that influence brand equity in a commodity market in the Australian branded beef market. The authors have found that there is significant evidence that the segments of population are willing to pay price premium for the branded beef. Pennington and Ball¹³ proposed an evolution of commodity brands from a customer-branded product to strong corporate brands. They concluded that, understanding how the customers differentiated between commodities will allow the companies to meet the consumer needs better. Mudambi⁵ found that buyers of the commodities consider three bundles of attributes during their purchasing process namely the commodity, the augmented services and the branding. Paliwal¹⁴ studied pricing issues in the cement industry in India and concluded that maintaining remunerative price is one of the strategic objectives of any cement marketer.

Companies must try to create value proposition in the customers' mind and make them perceive the value for their money from the cement brands purchased by them. It appears that understanding the multidimensional nature of value and the delivery of it will be at the heart of successful commodity branding. Branding is the most common approach to convince the customer that the commodity provides her total solution towards her need satisfaction. Convincing the customers provides the marketer an opportunity to gain customer loyalty. Moreover, growing competition makes customer loyalty important for any organization. Customer loyalty allows an organization build market share, gain higher margins and provide greater resistance to brands of competitors. Therefore, we address the issue of developing loyalty scores for commodities.

CONSTRUCTS FOR BRAND LOYALTY

Brand loyalty has had a rich tradition of research in the field and the construct is identified as being a complex mixture of attitudinal and behavioral elements.¹⁵ Brand loyalty might be viewed as a special case of relationship marketing where the customer has significant psychological attachment to the brand consumed.¹⁶ Researchers have investigated the relational variables, which are at the heart of a consumer – brand relationship that in turn leads to brand loyalty.¹⁷ Gupta *et al*¹⁸ suggested that the brand relationship management process builds up satisfied customers, driving them towards loyalty by developing one-to-one relationships that result in actual market exchanges.

Evolution of brand loyalty measurement started in the 1950s where loyalty was measured in terms of repeat purchase of volumes, which is a one-dimensional measurement. This one-dimensional approach had a limitation that the customer's loyalty must go beyond customers' behavioral measures. Dick and Basu¹⁹ showed that loyalty should not be considered as a result of only repeat purchase behavior of the customers. Further study in this direction by Cooper and Withey²⁰ showed that customers' behavior can be the outcome of situation constructs like lack of alternatives available, high switching cost or a tendency towards inertia. Nearly 75 per cent of customers' decisions with respect to buying are based on their emotion and attitude. Hence, the above findings show that loyalty measurement must include customers' attitude and emotions along with repeat purchase behavior.²¹

Therefore other researchers had measured customer loyalty using both behavioral and attitudinal measures simultaneously.²² Oliver²³ explains brand loyalty as a deeply held commitment to repurchase a preferred product in the face of influences and marketing efforts having potential to cause switching behavior. Jacoby and Chestnut²⁴ proposed a preference behavior model based on two dimensions: behavioral and attitudinal measures for measuring brand loyalty.

Other studies viewed brand loyalty as a multi-dimensional construct. Dodds *et al*²⁵ proposed that perceived value is also one of the key potential determinants of loyalty. They also suggested that customer satisfaction is another major construct that influences brand loyalty as it is found that an increase in the amount of satisfaction contributes to increase in loyalty.²⁶ Park²⁷ argued that attitudinal loyalty and involvement contribute independently to the prediction of different measures of behavioral loyalty. Iwasaki and Havitz²⁸ utilized a path analytical model to show that customers have to go through a sequential psychological process to become loyal customers, which includes (1) the development of high level of involvement; (2) the development of strong attitudes towards resistance to change preference for the brand; (3) the development of psychological commitment towards the brand.

Chaudhari and Holbrook²⁹ showed that behavioral loyalty consisted of repeat purchase whereas attitudinal brand loyalty included degree of commitment in terms of some unique value associated with the brand. In addition to commitment, brand trust also acts as a significant construct in influencing brand loyalty.³⁰ Stanko *et al*³¹ proposed a direct link between committed buyers leading to loyalty and resulting in more efficient ordering and purchase processes. Chandrashekar *et al*³² suggested that satisfaction strength plays a pivotal role in the translation of stated satisfaction into loyalty. Turk and Avcilar³³ concluded that perceived service quality affects customer's satisfaction directly and positively and the satisfaction leads to behavioral intentions towards loyalty.

We infer from the above studies that for a commodity marketer the multi-dimensional construct typically associated with product branding will be as relevant, albeit in a different manner. We develop a theoretical model for investigating the influence of these constructs for commodities. From the literature on brand loyalty we are able to identify nine constructs for measuring brand loyalty. These include Involvement, Functional Value, Emotional Value, Price Worthiness, Social Value, Brand

Trust, Customer Satisfaction, Commitment and Repeat Purchase Behavior. Through this research we propose a methodology by which the identified constructs and sub-constructs (indicators) that influence the brand loyalty could be used to arrive at brand loyalty scores using data obtained through a questionnaire.

The scores of the constructs in the model could be used by the commodity marketers to ascertain customers' brand preference pattern and the relative importance of the factors in the purchase decision. From such an understanding, the commodity marketers could adjust the elements of the marketing and delivery process and incentivize the customer to be loyal to their brand. The developed model could be used for any commodity. In order to populate the model with appropriate data, a market survey needs to be done. Once the model parameters are incorporated using the survey data, loyalty scores could be arrived at and specific strategies developed based on the results.

RESEARCH GAP

From the literature survey, it has been understood that a great deal of research has been extensively carried out in the field of brand loyalty study for the past three decades, but the same cannot be generalized to a less attended commodity product. Hence, to address this research gap, an attempt has been made in this article to arrive at a loyalty score for a commodity brand.

Objectives of the study

To address the above research gap, the following objective has been constructed:

- To find out the constructs influencing brand loyalty for a commodity brand.
- To develop a model to measure the brand loyalty by using these constructs.
- To show how organizations can benefit from a knowledge of the score and how they can adjust some of their strategies accordingly.

METHODOLOGY

Methodology for the proposed model is construed as follows:

1. Justifying the framework to assess the loyalty.
2. Estimation of C_j values using SEM.
 - (a) Designing the instrument and validity.
 - (b) Hypothesis formulation.
3. Estimation of B_{ij} values using pair-wise comparison matrix.
4. Deriving an expression for loyalty score.

Justifying the framework to assess the loyalty

The Analytic Hierarchy Process (AHP) is a mathematical decision making technique that allows consideration of both qualitative and quantitative aspects of decisions (Satty 2008–2009,³⁴ Forman and Gass 2001–2007³⁵).

The reason for choosing the AHP technique to arrive at the loyalty score requires the following:

The decision problem (arriving loyalty score for commodity brand) needs to be framed in a hierarchical form.

1. The constructs related to loyalty are to be weighed in order to know the importance of one over another. The construct weightage reflects the value proposition of the commodity users. They are generic in nature irrespective of the commodity branding. To fulfill the above requirement, Structural Equation Modeling (SEM) is used to obtain the value proposition of each construct.
2. Then the alternatives are compared pair-wise with respect to each construct to know the impact of the value propositions.
3. Then through synthesizing, the loyalty score could be arrived. The process is done through a rational and a consistent way.
4. The above requirement forces us to use AHP technique from other decision making technique.

An AHP-based model for assessing loyalty score for commodity brands

We propose an AHP-based model for assessing customer loyalty. AHP was chosen for two

important reasons. AHP allows the modeler to incorporate comparative measures in the analysis. From a customer's perspective two levels of comparisons become inevitable. At one level, customers would want to evaluate the constructs in terms of their relative importance to their choice of the commodity. At another level customers need to evaluate the rating of competing commodity brands against each construct in a relative fashion. Structurally, AHP provides a mechanism to establish these comparisons and incorporate them in the analysis. Another reason for choosing AHP is that the constructs chosen for assessing the loyalty scores are both qualitative and quantitative in nature. For instance, constructs such as customer satisfaction and emotional value could be captured qualitatively whereas repeat purchase behavior could be quantitative in nature. AHP is a mathematical decision making technique that allows consideration of both qualitative and quantitative aspects of decisions.

From an AHP perspective there are alternatives of commodity offerings to be compared. The alternatives will be evaluated with respect to each of the nine constructs. On the basis of this, the scores for each alternative with respect to each construct will be arrived. Finally a single loyalty score for the alternative will be synthesized. The hierarchies in the AHP are set up in the following fashion:

- At the highest level, the scores of the alternatives with respect to each construct are synthesized.
- At the next level the constructs related to loyalty are weighed in order to know the importance of one over the other. The weightages obtained for the constructs will reflect the consumers' assessment of value proposition of the constructs. While the constructs are generic, the weightages arrived at for each construct may be peculiar to the commodity in question.
- At the lowest level the alternatives are compared pair-wise with respect to each construct to know the impact of the value propositions.

Figure 1 has a graphical representation of the schema. Although we use nine constructs in this

Figure 1: An AHP model for brand loyalty score for commodities.

study, we provide a generalized notation for M number of constructs while developing the AHP model. The following notations are useful for representing the model:

- $i = 1, 2, 3, \dots, N$ is the index of commodity brands to be evaluated
- $j = 1, 2, 3, \dots, M$ is the index of constructs for brand loyalty score of a commodity
- $C_1, C_2, C_3, \dots, C_M$ denote the relative importance of the constructs for estimating the brand loyalty score of a commodity
- B_{ij} denote the evaluation of the i th brand with respect to the j th construct
- $L_1, L_2, L_3, \dots, L_N$ denote the brand loyalty score of the commodity brands evaluated

From the basics of AHP we know that

$$L_i = \sum_{j=1}^M C_j \times B_{ij} \quad (1)$$

We now provide a methodology to estimate the C_j and B_{ij} values so that the brand loyalty scores L_i could be computed for the brands in comparison.

Estimation of C_j values using SEM

Ascertaining the relative importance of each construct is a process that requires perceptual data. The importance of these constructs can vary from one commodity to another. Therefore, we propose a questionnaire-based survey to obtain this information and incorporate this into the AHP model. We propose the use of *SEM* to analyze the questionnaire data and arrive at the relative importance of the constructs. SEM is preferred over other techniques because of the following reasons:

- (a) SEM unlike other methods does not have a limitation on the number of variables. Furthermore, there is no difficulty in hypothesis testing in SEM because it takes the confirmatory approach rather than the exploratory approach for factor analysis.
- (b) As SEM enables testing the significance of the constructs as well as the indicators the relative importance arrived through SEM is valid than through any other approach. Moreover, SEM also takes measurement error into account when analyzing the data statistically.

Before we explain the methodology, we list down the relevant notations.

- N_E Total number of experts involved in content validity of the brand loyalty questionnaire
- n Number of experts indicating essential
- d Number of indicators pertaining to the m constructs (in the lower order model in SEM)
- Y Matrix of observed variables (indicators)
- Λ_γ Matrix of factor loadings
- η Unobserved construct matrix
- Γ Matrix of construct loadings
- ξ Matrix of construct variables
- ε, ζ Error terms in the models

As a first step a set of indicators are identified based on the existing literature for each of the constructs. A questionnaire could be used to solicit responses with respect to the indicators from a group of experts in the commodity domain for which loyalty scores are to be arrived at. On the basis of the data from the experts these indicators are tested for content validity and then included for further analysis. Each expert will be requested to rate each indicator using a three-item scale (essential, essential but not useful and not essential). The Content Validity Ratio (CVR)

of the questionnaire is established based on Lawshe³⁶ as follows:

$$CVR = \left(\frac{n - \frac{N_E}{2}}{\frac{N_E}{2}} \right) \quad (2)$$

The calculated CVRs are then compared to the levels necessary for statistical significance at $P < 0.05$. For example, for a group of 10 experts, the CVR of each variable needs

Table 1: Constructs and indicators of brand loyalty

Sl. no	Constructs	Indicators	Variable
1	Involvement	1. Personal interest	Y_1
		2. Careful selection	Y_2
		3. Perceiving brand differences	Y_3
		4. Comparing brand characteristics	Y_4
		5. Brand preference	Y_5
2	Functional value	1. Reliability and credibility	Y_6
		2. Consistent quality	Y_7
		3. Grade acceptability	Y_8
		4. Package	Y_9
		5. Color	Y_{10}
		6. Technical inference	Y_{11}
		7. Strength, durability and resistance	Y_{12}
		8. Informative advertisements	Y_{13}
3	Price worthiness	1. Value for money	Y_{14}
		2. Affordability	Y_{15}
		3. Economical	Y_{16}
4	Emotional value	1. Feel good construct	Y_{17}
		2. Confidence	Y_{18}
5	Social value	1. Status symbol	Y_{19}
		2. Feeling of pride	Y_{20}
6	Brand trust	1. Honest and sincere delivery of promises	Y_{21}
		2. Brand dependency	Y_{22}
7	Satisfaction	1. Meeting expectations	Y_{23}
		2. Justification of expectation	Y_{24}
8	Commitment	1. Strong brand preference	Y_{25}
		2. Unwillingness to change brand	Y_{26}
		3. Difficulty in shifting brand	Y_{27}
		4. Resistance to change	Y_{28}
9	Repeat purchase	1. Consistent purchase	Y_{29}
		2. Loyal customers	Y_{30}
		3. Recommending the brand to others	Y_{31}
		4. Postponement of purchase in case of non-availability of brand	Y_{32}
		5. Future purchase intention	Y_{33}
		6. Continue to be loyal	Y_{34}

to be at least 0.62. Such indicators that meet this requirement could be retained for development of data collection instrument for commodity brand loyalty score. In this study we have identified 34 indicators pertaining to the nine constructs. Table 1 has the details of these. Table 2 has a format for soliciting responses for the 34 indicators from the respondents using a 5 point Likert type scale.

SEM consists of a two-fold model; lower order model and higher order model. In the lower order model, the data collected through the instrument for each indicator is fed into the LISREL software. Let the number of respondents to the questionnaire is NR . The construct loading for each indicator against each construct is obtained from the lower

order model. The lower order model can be represented as:

$$Y = \Lambda_y \eta + \varepsilon \quad (3)$$

All the indicators need to be tested for their significance. The goodness of fit could be tested using Chi-square. With the help of the construct loadings arrived through lower order model, construct score for higher order model is obtained. The higher order model can be summarized as:

$$\eta = \Gamma \times \xi + \zeta \quad (4)$$

Using LISREL one could arrive at the coefficients. The construct loadings depict the importance of the constructs in determining the

Table 2: Format for soliciting responses from respondents with respect to the 34 indicators

No.	Influencing factors	5 ^a	4	3	2	1
1	I have strong interest in selecting good commodity for my work					
2	I am selecting my brand of commodity carefully					
3	I have known significant perceived differences among different commodity brands					
4	I have compared the characteristics among various commodity brands					
5	I have a preferred brand in commodity.					
6	This commodity brand is highly reliable and credible					
7	This brand sticks to its rich heritage of providing consistent quality					
8	This brand provides mean acceptable grade as per BIS					
9	I like the package of this commodity brand					
10	I like the color of this commodity brand					
11	The various technical seminar and brochures of this brand are very informative and useful					
12	This brand offers me the required strength, durability and resistance to atmospheric chemical attack to the structure					
13	The variety of advertisements coming from this brand is very informative					
14	This brand offers me value for money					
15	This brand is reasonably priced					
16	The brand is economical for my construction work					
17	The usage of this brand makes me feel good and safe					
18	This brand gives me confidence as it provides durable construction					
19	I'll consider my commodity brand as a status symbol					
20	I feel proud of being consumer of this brand					
21	I can say, my brand has been honest and sincere in delivering its promise					
22	I depend on my commodity brand and it never disappoints me					
23	I believe that my brand always meets my expectations					
24	Overall in buying this brand, I believe that I would be pleased with it					
25	I have strong preference for this brand					
26	My preference for this commodity brand will not change					
27	To change my preference from this brand would require major thinking					
28	Even if close friends recommend another brand, I would not change my preference for this brand					
29	I have been buying this brand for a long time					
30	I consider myself to be a loyal customer for this commodity brand					
31	I'll recommend this brand of commodity to my friends and relatives					
32	If I don't get this brand readily available, I'll wait till I get the new stock					
33	I intend to keep purchasing this commodity brand.					
34	I will continue to be a loyal customer to this commodity brand.					

^aScale description:

5 – Strongly agree; 4 – Agree; 3 – Neither agree nor disagree; 2 – Disagree; 1 – Strongly disagree.

Brand Loyalty Score. The significance of the j 's could be assessed using t -test. The relative importance of each construct (C_j) is obtained by normalizing the values using the following expression:

$$C_j = \frac{\gamma_j}{\sum_{j=1}^M \gamma_j}, \quad \forall j = 1, 2, 3, \dots, M \quad (5)$$

The schematic representation of lower order and higher order model has been shown in Figure 2.

Hypothesis formulation

Involvement

Product involvement includes an ongoing commitment by the customer with regard to thoughts, feelings and behavioral response

to a product category.^{37,38} Research findings provide additional proof that involvement is closely related to intentions and behavior.^{27,39}

Hypothesis 1: Higher level of involvement leads to higher level of brand loyalty.

Functional value

The utility derived from the product quality and the expected performance of the product is termed as functional value.^{40,41}

Hypothesis 2: Higher level of functional value will lead to higher level of brand loyalty.

Emotional value

The utility derived from the feelings that the product generates is termed as emotional value⁴²

Hypothesis 3: Higher level of emotional value will lead to higher level of brand loyalty.

Price-worthiness construct

The utility derived from the product owing to the reduction of its perceived cost is termed price-worthiness construct.^{41,43}

Hypothesis 4: Higher level of price worthiness construct will lead to higher level of brand loyalty.

Social value

The utility derived from the product's ability to enhance social self-respect.⁴²

Hypothesis 5: Higher level of social value will lead to higher level of brand loyalty.

Brand trust

Brand trust is the central construct for any long-term positive and favorable relationship, which leads to loyalty.⁴⁴

Hypothesis 6: Higher level of brand trust will lead to higher level of brand loyalty.

Figure 2: SEM model for establishing the relative importance of constructs.

Customer satisfaction

Customer satisfaction has a significant influence on repeat purchase and post purchase behavior.⁴⁵

Hypothesis 7: Higher level of customer satisfaction will lead to higher level of brand loyalty.

Commitment

Customer commitment is a central construct because it is the key psychological force that links the consumer to the selling organization.⁴⁶

Hypothesis 8: Higher level of commitment will lead to higher level of brand loyalty.

Repeat purchase behavior

Repeat purchase behavior is the extent to which the customers repurchase the same brand in any equal period of time.⁴⁷

Hypothesis 9: Higher level of repeat purchase will lead to higher level of brand loyalty.

Obtaining B_{ij} values using pair-wise comparisons

Pair-wise comparison matrix is used to compare the brands with respect to each construct. As there are N brands considered for the evaluation, an $N \times N$ matrix will be used to compare brands against each construct using the Saaty scale. As per this scale, each entry in the matrix will have values varying from 1/9 to 9 depending on the relative strengths *vis-à-vis* weaknesses of the two brands in comparison with respect to the construct for which the matrix is constructed. It is obvious therefore that if a cell (i, k) is strong then (k, i) is a weak cell in the matrix. Once the matrix is filled in for a construct j , the B_{ij}

values with respect to the j th construct is computed using the normal AHP process. For the M constructs, we will have M such $N \times N$ pair-wise comparison matrices in all. An illustrative pair-wise comparison matrix for construct j is shown in Table 3.

Deriving an expression for loyalty score

The Value proposition of construct j (C_j) and the impact of value proposition of brand i with respect to construct j (B_{ij}) are substituted to deduce the loyalty score for Brand i by substituting in equation (1). Similarly, by substituting B_{ij} and C_j value of each brand their loyalty score is found out.

Brand Loyalty Index for a Brand i ,

$$L_i = \sum_{j=1}^M C_j \times B_{ij} \quad (6)$$

C_j = Value proposition for construct j .

B_i = Brand i

B_{ij} = Impact of Value proposition for Brand i with respect to j th construct.

AN APPLICATION OF THE MODEL

Using the Generic Model developed, an effort has been made to apply it to the measurement of loyalty score of cement brands. Owing to the spurt in the economic activity, new and large infrastructure projects are being taken up in India. Construction is a major aspect of these infrastructure projects. On account of this, cement industry with several brands is an interesting sector to look at.

Table 3: An illustrative example of pair-wise comparison of brands with respect to construct j

	B_1	B_2	B_3	...	B_N	Evaluation of brands with respect to construct j
B_1				...		B_{1j}
B_2				...		
B_3				...		
...	...	...	...	...	...	...
B_N						B_{Nj}

Cement industry – A global overview

The cement industry plays a pivotal role across the world as its products are vital to the construction industry. Cement industry makes a vital contribution to each nation's gross domestic product. The cement demand in a country is generally driven by the growth in per capita income.

Historically, the global cement industry has been fragmented with most markets served by local and national producers. The cement industry has undergone significant consolidation worldwide beginning in Europe in the 1970s, United states in the 1980s and later in Asia in the 1990s.

The cement production is a capital-intensive process and construction of a 1 million ton cement plant requires a significant amount of investment. Today there are about 2020 integrated cement plants and 380 cement grinding plants all over the world. The global cement production capacity has crossed 2990 million tons by the beginning of year 2010.

The world's top five cement producers include China with a capacity of 1400 million tons, India – 300 million tons, USA – 84 million tons, Japan – 68 million tons and Russia – 53 million tons.

The emerging markets, like China, India, Latin America, Central and Eastern Europe, then Middle East and Africa, represent 77 per cent of the world cement markets. North America and Western Europe account for most of the remaining markets. According to the recent Portland Cement Association report, China and India, together, account for 58 per cent of the world's total cement consumption.

In recent years, the cement sector has become more globalized owing to the entry of global cement multinationals into the growing markets of China, India, the Middle East and Latin America. At present there are 15 top cement companies worldwide, which dominate the capacities and markets in their respective areas of operation. They are Lafarge of France, Holcim of Switzerland, CNBM of China, Heidelberg of Germany, Cemex of Mexico, Anhui Conch of China, Italcementi of Italy, Taiheiyo of Japan,

CRH of Ireland, UltraTech cement of India, Buzzi Unicem of Italy, Votorantim of Brazil, Cimpor of Portugal, Jaiprakash associates of India and Vicat SA of France.

The next decade is likely to witness extensive changes in cement supply and demand as different countries present different development profiles.⁴⁸

Indian cement industry – An overview

The Indian cement industries' existence for the last 97 years, since 1914, has undergone a roller coaster ride. It has seen the days of scarcity, rigid controls and imports to the present days of excess supply moving it from sellers' market to a buyers' market.⁴⁸ The indicators and drivers of the economy are showing the right direction for the future with a positive 7–8 per cent growth in GDP with a firm outlook on housing, infrastructure and irrigation projects, which augur well for the future of the Indian cement industry.⁴⁹

Cement industry makes a vital contribution to each nation's gross domestic product. India is the second largest producer of cement in the world. The Indian cement industry has a cement production capacity of over 300 million tones but the per capita consumption of cement in India has been very low at 156 kg as compared to the world average of 396 kg, which indicates a good potential for growth of cement industry in India. But the industry is experiencing a high degree of fragmentation, thus creating intense competitive pressure on price realizations. The marketer of cement with the help of the proper application of marketing strategies based on the outcome of this study can develop a strong loyal customer base as they will perceive the cement brand as offering a total solution towards fulfilling their needs and preferences. Cement companies who endeavor to create and effectively manage their loyal customers for their brands stand to gain both market share and profits.

Hence, this study attempts to understand customers' brand preference pattern and the constructs influencing customers' brand loyalty in the cement industry in India, the second largest cement producing country in the world after China.

In order to numerically illustrate the proposed model a survey was done in the construction industry to assess the customer loyalty towards five brands of cement in the city of Bangalore. A sample size of 500 respondents from the city of Bangalore was selected for the survey. The target group included architects, construction and civil engineers, builders, institutions and government customers. The sampling was done using simple random sampling. The group was requested to provide data in a questionnaire based on Table 2. Before administering the questionnaire to the group the content validity was established as proposed in this study. The data obtained from the survey were utilized to establish the lower order and higher order models using SEM. For this purpose, LISREL 8.8 was utilized. On the basis of these and equation (5), the C_j values for the nine constructs were arrived at (Table 4 has details). It is evident from Table 4 that customers seem to value commitment the most, followed by emotional value, functional value, satisfaction and repeat purchase.

Using pair-wise comparison matrix the priority vectors with respect to the five brands (B_{ij} values) were estimated using AHP. Table 5 has the computed B_{ij} values. A higher value in the table suggests that the customers are able to perceive a construct to offer much better value compared to another and vice versa. An examination of the values reveals that customers have different

perceptions of the commodity brands with respect to each of the construct. For example, while brand 1 has better perception with most of the constructs, in the case of price worthiness and social value the customers perceive it to be relatively inferior to another brand. Several such observations could be made using Table 5. Finally, using equation (1), the customer loyalty scores (L_j values) were computed (see Table 6 for details). The commodity brands are in the decreasing order of customer loyalty scores in this numerical example.

The proposed model enables a commodity manufacturer to improve the brand positioning in many ways. In order to understand this it is important to realize that L_j values by themselves do not offer much help. The C_j and the B_{ij} values together help a commodity marketer to understand what are the specific areas in which the marketer needs to improve so that customers develop greater loyalty towards its brand. While the C_j value will point to the attributes that are important the relative magnitudes of the B_{ij} values help the marketer make sustained improvements. On the basis of this understanding the marketer of the commodity brand can develop suitable strategies to improve its brand loyalty score over time.

We are able to infer some of these based on Tables 4–6. It appears that the market leaders in the commodity market generally tend to ensure

Table 4: Computed C_j values based on Structural Equation Modeling

	<i>Involvement</i>	<i>Functional value</i>	<i>Price worthiness</i>	<i>Emotional value</i>	<i>Social value</i>	<i>Trust</i>	<i>Satisfaction</i>	<i>Commitment</i>	<i>Repeat purchase</i>
C_j values using (5)	0.11	0.13	0.05	0.13	0.08	0.10	0.13	0.15	0.13

Table 5: Computed B_{ij} values using AHP^a

<i>Attributes/brands</i>	<i>Involvement</i>	<i>Functional value</i>	<i>Price worthiness</i>	<i>Emotional value</i>	<i>Social value</i>	<i>Trust</i>	<i>Satisfaction</i>	<i>Commitment</i>	<i>Repeat purchase</i>
Commodity brand 1	0.42	0.41	0.31	0.41	0.29	0.40	0.41	0.46	0.41
Commodity brand 2	0.31	0.33	0.40	0.33	0.43	0.33	0.33	0.31	0.33
Commodity brand 3	0.16	0.11	0.07	0.11	0.12	0.12	0.10	0.10	0.10
Commodity brand 4	0.05	0.11	0.09	0.11	0.09	0.09	0.11	0.09	0.11
Commodity brand 5	0.05	0.04	0.12	0.03	0.07	0.06	0.05	0.04	0.04

^aIdeally the column totals for each construct must add up to 1.00. Owing to rounding off to two digits, some of them may add up to 0.99 only.

Table 6: Customer loyalty scores (L_i) for the five commodity brands

Sl. no	Brands	Loyalty score
1	Brand 1	0.460
2	Brand 2	0.340
3	Brand 3	0.116
4	Brand 4	0.099
5	Brand 5	0.049

that they are perceived better with respect to the constructs having stronger influence on loyalty. In contrast, the weak brands unnecessarily concentrate on constructs having a lower value proposition in the minds of the customers. This may be one of the reasons for them not being able to garner adequate market share resulting in poor profitability. We observe a similar phenomenon in this study. Commodity brand 1 has the highest loyalty score and is able to provide better perception of offerings in those constructs considered important by the customers. On the other hand, the weakest brand has been unnecessarily concentrating on price worthiness factors like lower price, higher discounts and long credit period. As per this study this construct is viewed relatively less important by the customers. Perhaps, customers perceive it as a lower quality product owing to this over focus on this construct.

Results and discussions

The findings of the study show that commodity brand 1 enjoys the number one position with 0.46 brand loyalty score followed by brand 2 with 0.34, brand 3 with 0.116, brand 4 with 0.099 and brand 5 at fifth place with 0.049 brand loyalty score.

The above study shows commodity brand 1 has highest score of brand loyalty as it has scored high on constructs that have high influence on loyalty. The brand 1 has scored high on involvement (0.42), functional value (0.41), emotional value (0.41), trust (0.40), satisfaction (0.41), commitment (0.46) and repeat purchase (0.41). These constructs' high score makes brand 1 to get highest brand loyalty score among the five brands considered in this study. But the word of caution for the management

of brand 1 is, it has scored low on social value (0.29) compared to the second highest brand loyalty scored brand 2. Therefore, to retain its number one position, the brand 1 must develop a suitable strategy to improve the bondage and communication system with their customers and make them feel proud for using the commodity brand 1.

In contrast, the next highest brand loyalty scored brand 2 has scored high on price worthiness (0.40) but it has created less impact on loyalty score as this construct has little impact on loyalty (0.05). The brand 2 can improve its loyalty score by focusing on constructs like functional value, emotional value, commitment and repeat purchase as these constructs have higher impact on loyalty. To improve functional value, brand 2 must concentrate on continuously upgrading its quality, color and package of the product as well as by conducting technical seminars and product usage demonstrations at customers' construction sites. Brand 2 can improve emotional value by building emotional bondage with the customers with the help of customer relationship development programs.

Brand 2 can improve commitment and repeat purchase by focusing on providing the right product at the right time for the respective user segments. The on-time delivery of cement consistently is the most crucial construct in the construction industry.

The other two brands in third and fourth positions must work on all the nine constructs by focusing and improving the individual parameters of these nine constructs.

The brand 5 has scored lowest brand loyalty score (0.05) among these five brands considered in this study. Even though brand 5 has scored high on price worthiness construct (0.12) compared to its lower score in other eight constructs, its brand loyalty score has not improved because price worthiness construct has little impact on loyalty (0.05). This shows us that customers are having lower quality perception about this brand and purchasing brand 5, mainly for non-critical construction work like general construction, brick work, wall and plastering work. Hence, brand 5 must improve its

functional value perception with the customers by upgrading its quality standards to change the poor quality image of the brand in customer's mind, which will improve the loyalty score for this brand.

The developed model for brand loyalty score is generic in nature. The model could be tested for different commodity products like steel, sand, wood and so on.

Managerial implications

The application of proposed model in this study has clearly identified that involvement, functional value, price worthiness factor, emotional value, social value, brand trust, customer satisfaction, commitment and repeat purchase has influencing power towards loyalty in cement brands.

On the basis of the outcome of the study, the following recommendations have been made to cement manufacturers to develop suitable strategies to improve their brand loyalty scores on each of these constructs.

Involvement

The manufacturers must highlight important constructs like grade of the cement, type of cement, strength, consistent quality, durability and resistance to chemical attack from the atmosphere to their target customers through their technical seminars, product brochures, product test results of external laboratories. They can also link their cement brands to offer solutions to some of the problems faced by the customers like plastering cracks or surface cracks, which appear in the buildings. They can also link their product to some of the personal needs of the consumer like offering durable and quality construction of buildings with the help of their brand offerings.

These strategies increase the involvement of the customer and develop strong interest while carefully selecting brand of cement which fulfils his needs.

Functional value

The functional value can be enhanced by focusing on production of consistent quality and grade of cement surpassing the minimum

quality standards mentioned by the governing bodies like Indian Standard Institute and International Organization for Standardization. Also highlighting the certifications of these governing bodies on the cement bags will give a confirmation to the customers about the quality of the brand.

Price worthiness factor

The price worthiness construct can be improved by the cement companies by generating the price premium by using higher perceived quality and brand image in the minds of customers through product demonstrations at site, technical service and effective communications proving to the customer that they get better value for their money and, hence, get economy of scale in the total project cost by the optimum usage of a best quality product.

Emotional value

The emotional construct can be improved by giving confidence to the customer on higher durability and safety parameters of the brand. These parameters have to be effectively communicated to the customers through informative advertisements and sales promotional activities.

Social value

The social construct can be developed in the brand by devising strategy to improve the bondage and communication system with their customers and make them feel proud for using their preferred cement brand as a status symbol.

Brand trust

In the cement industry, the most critical aspect is the supply of cement at the right time at the right place. The cement companies must take extra care to ensure this aspect by keeping the channel partners always motivated. The cement companies must introduce many schemes to motivate the channel partners because they are the link between the company and the end consumer. The cement marketer must introduce incentive schemes for higher quantity off-take,

and also special incentives based on quarterly, half yearly and yearly targets.

The cement marketer must always monitor the shelf space in their distributors and retail dealer's outlets to avoid stock out situation. These strategies will build trust in the minds of the customers and makes them feel that their preferred brand has been honest and sincere in delivering its brand promise.

Satisfaction

The customer service team of the cement companies must regularly interact with their customers during post purchase usage period and provide additional technical services during the construction stage of the project. They can also set up customer's panels or user groups to monitor the customer's perceptions and changing needs over time and accordingly modify their strategies as per the feedback from these panels.

Commitment

An effective educational and awareness building program will naturally lead the development of higher customer relationship. Training programs must be conducted on a regular basis for company sales personnel, distributors and retailers. This is important because these people interact with the customers on a regular basis.

On the basis of the on-time delivery, maintaining consistent quality and delivery of brand promise make the customers committed to their preferred brand and hence, they do not switch between the brands and also recommend their preferred brand to their friends and relatives.

Repeat purchase

The cement companies should introduce discount offers, gift coupons, free samples of cement, hand-books of best construction practices, product literature and gift items to different target segments of their customers. They can also conduct technical seminars by the technical team regarding effective use of cement to the target segments namely architects and engineers, builders and contractors, institutional and industrial customers. They should offer free technical assistance and supervision at construction sites for their target

customers. The cement companies should undertake extensive advertisement outdoors and through print and electronic media. The campaigns must highlight the tangible and non-tangible benefits of their cement brands. The cement companies must also introduce special loyalty programs for different user segments linked with benefits on the accumulation of points leading to qualification for leisure tours to foreign countries or white goods or gold scheme. These measures will make the customers repeatedly purchase their preferred brand.

The cement companies must develop a combination of the above-mentioned strategies to get a higher brand loyalty score in each of the above constructs leading to an overall increase in the brand loyalty for their brand.

CONCLUSIONS

There is an increased trend in branding several commodity brands. This is partly because of increased market competition, global recession and economic meltdown. However, developing and sustaining the brand loyalty is a bigger challenge in the highly competitive commodity markets. To sustain, it is necessary for the commodity marketers to build a loyal customer base for their brands. The model developed in this study addresses this issue using a multi-dimensional construct based on the existing literature on brand loyalty. As brand loyalty has both quantitative and qualitative aspects to consider, the use of AHP modeling framework facilitates the process of combining these two into a single objective measure. The proposed methodology paves the way to mitigate the uncertainties in developing and implementing suitable strategies to build a loyal customer base for commodities.

Limitations of the study

The model has certain limitations, which a user must be aware of. The loyalty score values range between 0 and 1. Therefore, if more brands are considered for evaluation then the spread of the loyalty scores will narrow down. Therefore, it may be important to formulate strategies based on the individual construct scores rather than the overall scores.

Scope for future research

The developed model for brand loyalty score is generic in nature. As a future study, the model could be tested for different commodity natured products like steel, sand, wood and so on. As commodity branding is gaining more importance, it would also be worthwhile to study customers' brand switching behavior in commodities.

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