AN EMPIRICAL STUDY ON FACTORS INFLUENCING BRAND EQUITY TOWARDS LAPTOP BRANDS: SEM APPROACH

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Abstract: *The Indian laptop market is having sophisticated customers in highly competitive market which emphasis on effective branding strategies to acquire & maintain customers. The purpose of research here is to find the relationship between the attributes like gender of laptop user, preferred brand, importance of features & information sources used by them in purchase decision. The study also investigates the relationship between overall brand equity & different brand equity dimensions like perceived quality (PQ), brand awareness (BAW), brand association (BAS) & brand loyalty (BL) referring to Aaker's model. Primary research was done through questionnaire survey in Ahmedabad city, using convenient sampling of 139 respondents. The research reveals that the ownership of laptop is dependent on gender of respondent. Only gender or budget of laptop user, information source or features of product is not related with preference of particular brand. It also reveals that perceived quality & brand loyalty has strong & positive impact on overall brand equity while brand awareness & brand association will not influence overall brand equity directly. The study contributes to test the applicability of customer based brand equity model in Indian laptop market. Further research can be done to expand the results in other regional cities. The result can also be strengthening by adding performance measurement in model.*

Keywords: *laptop, SEM, Amos, Brand equity*

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INTRODUCTION

The Laptop industry has blurred the differentiation of brands in today's era with cut throat competition. Now not a single company dominates the market because of the exclusive products. Each company can provide the required microprocessor, memory, graphics or functionality. Thus we can say that features & functionality are not the only important purchasing criteria.

Laptops were priced higher than the desktop computers, because of wireless technological capabilities. It affected the sales of laptops, but now companies are trying hard to provide laptops at lower cost

There are plenty of laptop brands providing the same set of features. The consumers can easily compare the brands based on the features & functionality. Customers will not be discriminating products based on its functionality; instead they will select the product based on the brand name. So the marketers need to study the consumer buying behavior which is not only based on product specifications. Brand equity should be measured in a way which considers source & scale of emotional components which are added by brand with the functionality of product.

Any laptop company can increase the sales by increasing brand valuation that is brand equity. Brand equity is the value of the brand either defined by strategic/ subjective understanding or as a financial/objective expression (Heding T. et al.). Brand equity can be measured through financial as well as customer's perspective. Customer's perspective will give insights about the important brand equity components increasing over all valuation of brand.

PROBLEM STATEMENT

The commoditization of laptop industry has created a big challenge for marketers to survive in market. They need to find out the purchasing criteria set by the customers on which they are making decisions. They are concerned with motivational factors affecting customer's decision. They need to analyze the relationship between brand selection and customer profile. Here the study will be examining the customer base brand equity components & their interaction with overall brand equity for laptop brands in Indian context.

PURPOSE OF STUDY

The main purpose of this study is to find the important attributes increasing brand equity for laptop brands in Indian market. Study will examine the relationship between customer profile & selection of laptop brand. Whether gender, budget, product features and source of information, etc can influence the choice of brand, should be examined.

It will give insights to the marketer about the type of customers using their brand. They will be able to check whether they were targeting the same customers, if not then misconception will be resolved.

Marketers will be able to design the marketing plan to efficiently & effectively target the customers of their brand.

Some attributes in customer-based brand equity model will be importantly increasing overall brand equity for laptop brands, so the markets of laptop industry will be suggested where to invest the resources in better way to increase brand valuation.

LITERATURE REVIEW

Overview of current Indian laptop market

Laptop & PC Industry is expected to grow fast in developing countries like India & china because of changes in government policies. In 2005, Indian government removed the import duties on Laptops, which resulted in growth of 94% in 2005. (Physorg.com, 2006)

Cyber Media Research (2011) study states that nearly 10 million desktop & notebook personal computers have been installed in 2010 and thus India has estimated to cross 52 million till Dec 2010 for total installation of both.

IDC is India's quarterly PC sales marker, for the quarter ending in Oct-Dec 2010, it suggested that Indian PC market had found recovery from the effect of global recession. Compared to last quarter of 2009, Laptop market has seen the growth of 49%, while with compare to 3rd quarter it has decreased by 7% because of High inflation & low industrial growth. (Shinde J.)

According to Vadlamani S.(2011), Desktop & laptop market has achieved the growth of 6% (2.6 million units) in India in first quarter of 2011. the growth was driven by laptop vendor by 23%. Top five brands are Dell, HP, Acer, Lenovo and HCL with combined market share of 57.5%.

IDC(2011) wrote that, in the second quarter of 2011, the sales of laptop & desktops has decreased by 4.2% at 2.44 million units, compared to Q1 2011; Dell has again leaded the

market share by 17.4%, while top 5 companies cumulating 60% market share; companies are targeting tier-3 & tier-4 cities now through large-format retails.

Brand equity concept & model

Branding will add value to the product which will influence the customer's purchase decisions; the brand which gives strong, optimistic & enduring impression in customer's mind can become successful (Kotler, 2003).

According to Aaker (1991), A brand is name and/or symbol used to identify the goods/services of sellers, and to differentiate it from the competitors.

Brand equity is an impact on mental association created by customers for different brands; He gave the model to measure customer based brand equity, involving six brand building blocks, namely brand salience, brand performance, brand imagery, brand judgment, brand feeling, brand resonance (Keller 1998)

Brand equity assets can help customers interpret process & store huge quantities of information about products & brands; he proposed the model to measure brand equity based on consumer's point of view, including perceived quality, brand awareness, brand association & brand loyalty components. (Aaker 1991).

Perceived quality

Aaker (1991, p.7) defined Perceived quality as "the customer's perception of overall quality or superiority of a product or service with respect to the intended purpose, relative to alternatives"

Consumers always want to spend less time & efforts in selection of brand, so they mostly rely on feelings about the characteristics of products of particular brands. Here their perception is driving the decision making process. It also depends on the willingness of the customer for purchase decision.

Tsai (2004) Suggests those brands with lower emotional ratings may redirect marketing resources and efforts to increase consumer's emotional perceptions, which will give higher satisfaction.

Brand Awareness

According to Aaker (1991, p.61), brand awareness is "the ability of potential buyer to recognize or recall that a brand is a member of a certain product category"

It will lead customers to select the most familiar brands under their knowledge. When customer takes decision, he considers many alternatives based on brand recall. So brands those are not recalled will not be considered in selection process. It will also increase the familiarity of brand with customers, thus the customers will be able to recognize the brand among the group of brands.

Brand Association

Aaker (1991, p.109) claimed that brand association is "the category of brand's implication which include anything linked in memory to a brand". According to Keller (1998), it is set of information nodes attached with the brand in mind of consumers, which can be classified as attributes, attitudes & benefits related to the brand.

It is helpful to customers to retrieve information about some brands from their memory. When they are confronted with the brand, the associated benefits or experience or features will be reflected in customer's mind.

Laptop firms need to increase brand awareness to increase the familiarity of brands in the mind of consumers; high level of brand association can moderately work to increase buying behavior of Chinese customers. (Liu Z., 2007)

Brand Loyalty

It is the inclination of customer to purchase the same brand every time (Collin et al, 1991). Gilbert (2003) wrote that when customer purchases the same brand of products on regular basis it is brand loyalty.

It costs six times more to gain the new customer than to retain the old customers (Kotler, 2000). Brand loyalty will be helpful to increase the market share. The existing old customers can be effective communication to prospects for assurance of brand commitment. So brand loyalty can also attract new customers.

Because of brand loyalty customers will purchase the same brand, recommend it to others, and choose it over the competitors even if provided at lower price & better features/services.

College students are loyal to higher priced brands (Lodes M., 2010). The post purchase services are extremely important as they are directly related to customer's brand loyalty; the companies should also invest in technology through R & D and create differentiation at utmost level. (Nasir V.A., Yoruker S., Giines F., & Ozdemir Y., 2006)

RESEARCH HYPOTHESIS

H1: The ownership of laptop is independent of Gender.

H2: The preference of laptop brand is independent of Gender of Laptop user

H3: The preference of laptop brand is independent of Budget of Laptop user

H4: The preference of laptop brand is independent of features required to Laptop user

    H4a: The preference of laptop brand is independent of screen size feature

    H4b: The preference of laptop brand is independent of Battery life feature

    H4c: The preference of laptop brand is independent of Media capabilities

    H4d: The preference of laptop brand is independent of Portability feature

    H4e: The preference of laptop brand is independent of Wi-Fi feature

    H4f: The preference of laptop brand is independent of Fill keyboard feature

H5: The preference of laptop brand is independent of Information source used by Laptop user

H5a: The brand of laptop purchased is independent of how important the laptop owner sees the use of Manufacturer or retail websites as an information source for laptop purchasing.

H5b: The brand of laptop purchased is independent of how important the laptop owner sees the use of retail store visits as an information source for laptop purchasing

H5c: The brand of laptop purchased is independent of how important the laptop owner sees the use of friends, family member or neighbors as an information source for laptop purchasing

H5d: The brand of laptop purchased is independent of how important the laptop owner sees the use of magazine or newspaper reviews as an information source for laptop purchasing

H5e: The brand of laptop purchased is independent of how important the laptop owner sees the use of TV/Radio advertisement as an information source for laptop purchasing

H6: Perceived quality has a significant positive direct effect on brand equity for Indian Laptop brands

H7: Brand Awareness has a significant positive direct effect on brand equity for Indian Laptop brands

H8: Brand association has a significant positive direct effect on brand equity for Indian Laptop brands

H9: Brand Loyalty has a significant positive direct effect on brand equity for Indian Laptop brands

RESEARCH METHODOLOGY

A research framework was developed to test the above stated hypothesis for Indian Laptop market. As states in literature, India is fastest growing market for laptops.

Sample & Data Collection:

Post graduate students were selected from Ahmedabad city through convenient sampling. Out of 150 students who had been approached, 139 had given responses in considerable manner

Instrument & Measures:

The questionnaire was prepared to measure the brand equity. First few questions were related to demographic attributes, and then questions became specific to technical knowledge, ownership of laptop & brand preference of respondent. It also had the set of statements to measure the components of brand equity & overall brand equity. They were measured on five-point Likert scale (1: strongly disagree to 5: Strong Agree).

Perceived quality, Brand Awareness, Brand Association, Brand Loyalty are exogenous factors of brand equity & each factor will be measured with some set of statements, while Brand equity is endogenous factor.

Data Analysis:

For hypothesis H1 to H5, the chi-square test was applied using SPSS, while for the rest of the hypothesis, confirmatory factor analysis was performed using structural equation modeling concept by Amos 16.0. Firstly, measurement model was analyzed for reliability & validity which is having correlations of all the constructs including exogenous & endogenous factors. Then, construct hypothesis were tested. Model fit criteria suggested by Hu and Bentler (1999) were used for both the measurement and the structural model: ($\chi2$)/df, goodness of fit (GFI), adjusted goodness of fit (AGFI), comparative fit index (CFI), root mean square residual (RMR), and root mean square error of approximation (RMSEA). Acceptable models should have ($\chi2$)/df $\leq$ 3, AGFI $\geq$ .80, RMR $\leq$ 0.1, RMSEA $\leq$ 1.0, and GFI and CFI greater than 0.90.

ANALYSIS

Figure-1 about here

Around 32% respondents prefer Dell Brand for Laptop, followed by Sony & HP.

Table-1 about here

H1: since the p-value is 0.001 the null hypothesis will be rejected. So it can be concluded that the ownership of laptop is dependent on gender.

H2: here the p-value is 0.425 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Gender of Laptop user

H3: here the p-value is 0.827 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Budget of Laptop user

H4: The preference of laptop brand is independent of features required to Laptop user

H4a: here the p-value is 0.763 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to screen size feature

H4b: here the p-value is 0.258 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Battery life feature

H4c: here the p-value is 0.875 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Media capabilities

H4d: here the p-value is 0.164 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Portability feature

H4e: here the p-value is 0.071 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Wi-Fi feature

H4f: here the p-value is 0.613 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the preference of laptop brand is related to Fill keyboard feature

H5: The preference of laptop brand is independent of Information source used by Laptop user

H5a: here the p-value is 0.618 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the brand of laptop purchased is related to how important the laptop owner sees the use of Manufacturer or retail websites as an information source for laptop purchasing.

H5b: here the p-value is 0.316 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the brand of laptop purchased is related to how important the laptop owner sees the use of retail store visits as an information source for laptop purchasing

H5c: here the p-value is 0.221 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the brand of laptop purchased is related to how important the laptop owner sees the use of friends, family member or neighbors as an information source for laptop purchasing

H5d: here the p-value is 0.919 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the brand of laptop purchased is related to how important the laptop owner sees the use of magazine or newspaper reviews as an information source for laptop purchasing

H5e: here the p-value is 0.995 which is greater than 0.05, the null hypothesis was not rejected. There are insufficient evidences to conclude that the brand of laptop purchased is related to how important the laptop owner sees the use of TV/Radio advertisement as an information source for laptop purchasing

Reliability & Validity of Measure

First, Cronbach's alpha coefficients were used to measure the internal consistency of each identified dimension of construct, and items with adequate Cronbach's alphas were retained for the scales. The general criteria for the cronbach coefficient alpha should be greater than 0.6. Table-2 gives the details of constructs of the model & the number of items representing

each construct along with the alpha value. As all the constructs have alpha value satisfying the criteria, all of the constructs were acceptable and a total of 22 items were retained for the five constructs in the study.

Table-2 About here

Table-3 represents the convergent validity of all the constructs using Composite Reliability. Individual item's reliability will be checked using Cronbach Alpha, while to test the reliability of construct or latent variables composite reliability (CR) & Average Variance Extracted (AVE) is used. The composite reliability varied from 0.73 to 0.89, satisfying the criteria of 0.6. Average Variance Extracted varied from 0.48 to 0.69, almost satisfying the criteria of 0.5.

Table-3 about here

Next, a confirmative factor analysis (CFA) with Amos 16.0 Graphics software (SEM package) for the measurement model with five constructs was performed. All factor loadings were significant and varied from 0.52 to 1.00, satisfying the convergent validity criteria as per Table-4. The goodness-of-fit statistics indicated that most criteria met the recommended values in the measurement model ((χ2)/df =1.935 at p=0.00; GFI=0.807; AGFI=0.76; CFI=0.88; RMR=0.062, and RMSEA=0.082).

Table-4 about here

Structural Model

According to our hypotheses, a structural equation modeling was developed to assess the statistical significance of the proposed relationships between overall brand equity and its dimensions. Perceived quality, brand awareness, brand association, and brand loyalty were all taken as the exogenous variables, and brand equity was the endogenous variable. Here, all of the four exogenous variables were proposed to be intercorrelated.

All of the fit measures indicated that the structural model was moderately acceptable ((χ2)/df =1.935 at p=0.00; GFI=0.807; AGFI=0.76; CFI=0.88; RMR=0.062, and RMSEA=0.082). Along with the model's general fit for the data, its parameters were tested to decide whether to accept the proposed relationships between exogenous and endogamous constructs (Hair et al., 1998). Although the four exogenous constructs (perceived quality, brand awareness, brand

association, and brand loyalty) were proposed to be the antecedents of brand equity, the estimated model results supported for two of the four hypotheses (Table-5).

Table-5 about here

The result provided strong support for H6 & H9, which indicated the positive & direct role of Perceived Quality (PQ) & Brand Loyalty (BL) in affecting brand equity (OBE). However brand awareness (BAW) and brand association (BAS) were found to have either very low or negative parameter estimates. Therefore it was concluded that they did not have a direct significant influence on brand equity.

In structural model, the correlations among dimensions were specified as well. Table-6 gives the correlation among exogenous variables. Here the inter correlation between brand awareness and perceived quality ($\gamma = 0.46$, t=3.41) and Brand loyalty ($\gamma = 0.21$, t=2.35), and the inter correlation between brand association and perceived quality ($\gamma = 0.33$, t=2.6) and Brand loyalty ($\gamma = 0.36$, t=3.29) were significant and all positive. So brand awareness and brand association might affect brand equity by influencing perceived quality and brand loyalty first.

Table-6 about here

DISCUSSION & MANAGERIAL IMPLICATIONS

As literature study suggest, Indian laptop market is growing at faster pace like china. The same features and functionalities are being provided by most of the brands, which is reducing the product differentiation among brands. thus they need to differentiate through gaining higher brand value.

Initially the relation was found between the ownership & gender, meaning depending on gender the respondent has the laptop. While the preference of brand is independent of gender of laptop user or budget spared by laptop user. The preferred brand is also independent of product features required by user as well as the information source used by them while taking purchase decision.

The research was aimed to examine the applicability of Aaker's conceptual framework of customer-based brand equity for laptop brands in Indian market.

Here the findings don't support completely to the entire brand equity dimensions of Aaker's model, it was found that perceived quality and brand loyalty had a significant positive direct

effect on brand equity. It had the strongest impact which indicated the essential role of development of perceived quality and brand loyalty in minds of customers to build brand equity for laptop brands.

The empirical data and statistical tests in this study did not provide enough support for the positive and direct relationship for brand awareness and brand association towards brand equity, which indicates that a brand name or association related to brand in minds of consumer directly do not give guarantee for a brand's success for laptop brands.

These findings are based on the evidence from the laptop industry in India, which are also helpful in other Electronics-based industries as well, such as mobile phones, Camera, TV, and Music System. As per findings, in each industry these brand equity dimensions can contribute differently to overall brand equity. Marketing/brand managers do often have limited resources in terms of money, time, and manpower to implement branding strategies, so these findings can help them to prioritize and allocate resources across important dimensions.

The research derives two implications. The marketing and brand managers managing laptop brands in India should concentrate their efforts primarily on perceived quality & brand loyalty, which have high importance in the construct of brand equity. In the highly competitive laptop market, they should work to have better perception in minds of customers about the quality by giving guarantee on physical good quality & innovative technology as well as good service. They should also work to keep their loyalty and gain their repeat business. The second implication is that marketing/brand managers should consider the inter correlations among the four dimensions of brand equity, especially the relationship of each of brand awareness and brand association with perceived quality & brand loyalty. Perceived quality and Brand loyalty can be increased when customer is aware of brand with good brand image, which in turn will increase overall brand equity. As a result, it is recommended that when concentrating on creating perceived quality and brand loyalty, managers should not undervalue the effects of brand awareness and brand association.

LIMITATIONS

The research is generated for small sample size only. That can affect the generalizability of the sample to whole population. The research study to measure brand equity of laptop brands is

limited to Ahmedabad city only, so there is a scope to expand the results in other regional markets of India to avoid the significant regional gaps in consumer's attitude & behaviors. Likert scale which is used in questionnaire can limit the options. Also the discussion addresses the quantitative method only. Because of lack of financial data, there is no performance measurement conducted in this research which is the second limitation. To strengthen the research, performance measurement & financial performance for these brands should be considered.

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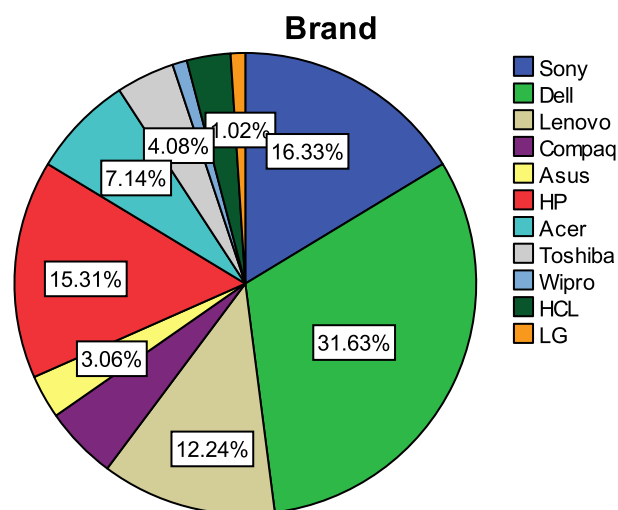
ANNEXURE

Brand

Figure-1: Preference for Laptop brands

Table-1: Hypothesis testing

Hypothesis	Pearson Chi-square Value	p-value (2-sided)	Results
H1	11.06	0.001	Rejected
H2	10.82	0.425	Accepted
H3	14.08	0.827	Accepted
H4a	33.33	0.763	Accepted
H4b	45.38	0.258	Accepted
H4c	38.77	0.875	Accepted
H4d	48.66	0.164	Accepted
H4e	65.37	0.071	Accepted
H4f	36.84	0.613	Accepted
H5a	8.12	0.618	Accepted
H5b	11.55	0.316	Accepted
H5c	13.04	0.221	Accepted
H5d	4.55	0.919	Accepted
H5e	2.184	0.995	Accepted

Table-2: Cronbach Alpha of Construct

Construct	Number of Items	Cronbach's Alpha
Perceived Quality	3	0.73
Brand Awareness	3	0.80
Brand Association	4	0.80
Brand Loyalty	3	0.83
Overall Brand Equity	9	0.89

Table-3: Convergent Validity of Constructs

Convergent Validity of Construct	Composite Reliability	Average Variance Extracted
Perceived Quality	0.73	0.48
Brand Awareness	0.83	0.63
Brand Association	0.81	0.53
Brand Loyalty	0.87	0.69
Overall Brand Equity	0.89	0.49

Table-4: Parameter Estimates for the Measurement Model

Constructs & Items		Standardized Factor Loading	p-value
Perceived Quality			
PQ1	I agree well-known brands are advanced in innovation	0.81	0.00
PQ2	I agree well-known brands represent better quality	0.70	0.00
PQ3	I will purchase a well-known brand because well-known brands represent better quality and service even I need to pay a price premium	0.54	-
Brand Awareness			
BAW1	I can recognize most of the famous laptop brand in the market	0.55	0.00
BAW2	In the case that there are many laptop brands in the market, I would prefer the one which is well-known	0.99	0.00
BAW3	I will choose a well-known brand when the other brands offer similar feature or price	0.77	-
Brand Association			
BAS1	I agree a well-known laptop brand can match my lifestyle	0.60	0.00
BAS2	I agree the well-known brands present better value (such as attributes, services) for money over competitors	0.52	-
BAS3	I agree the well-known brands' image can somewhat reflect my own self-image and personality	0.84	0.00
BAS4	I will rely on the laptop's brand image than its actual attributes in decision making	0.89	0.00
Brand Loyalty			
BL1	I am satisfied with my past purchase for a laptop	0.56	0.00
BL2	I will recommend my friends with my favorite laptop brand when they consider purchasing a laptop	0.87	0.00
BL3	I would buy the same brand of laptop when I consider purchasing a second laptop	1	-
Overall Brand Equity			
OBE1	The brand is reliable	0.86	0.00
OBE2	It provides high quality products	0.86	0.00
OBE3	It is hip and stylish	0.55	-
OBE4	It is easy to use	0.73	0.00
OBE5	The brand is honest and hides nothing from me	0.66	0.00
OBE6	It is friendly and approachable	0.60	0.00
OBE7	It is a leader in its category	0.57	0.00

OBE8	It offers a wide variety of features	0.74	0.00
OBE9	I frequently tell others good things about brand	0.65	0.00
1.All loadings are significant at 0.001 level			
2."X" means the specific brand			

Table-5: Test Result

Hypotheses	Relationships	Standardized Coefficient	t-value	p-value	Results
H6	PQ → OBE	0.35	2.768	0.006	Supported
H7	BAW → OBE	0.065	0.731	0.465	Unsupported
H8	BAS → OBE	-0.093	-1.006	0.314	Unsupported
H9	BL → OBE	0.424	4.182	0	Supported

Table-6: Correlations among exogenous constructs

Exogenous constructs				
Exogenous constructs	Perceived Quality	Brand Awareness	Brand Association	Brand Loyalty
Perceived Quality	1.00			
Brand Awareness	0.46 (3.41)	1.00		
Brand Association	0.33 (2.6)	0.13 (1.39)	1.00	
Brand Loyalty	0.26 (2.44)	0.21 (2.35)	0.36 (3.29)	1.00
Note: t values are in parentheses; All correlations are significant at 0.001 levels				