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# DETERMINANTS OF BRAND EQUITY: AN EMPIRICAL STUDY OF IT INDUSTRY

Empirical  
study

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## Keywords

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Advertising & Promotion,  
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## JEL Classification

M31, M37, O33, G32

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## Abstract

*The performance of any brand can be measured by many methods. One of the widely used ways to calculate brand performance is through brand equity. Brand equity can be observed by customer's perspective as well as financial perspective. This research paper investigates the impact of advertising & promotion, research & development (R&D) and profitability (return on assets) on brand equity. In this research paper data is used from 20 international IT brands for a period of 5 years from 2011 to 2015. The results show that advertising & promotion and profitability have statistically significant impact on brand equity whereas R&D doesn't make significant impact on brand equity. Based on the findings, it is observed that advertising is having the strongest impact on brand equity.*

## INTRODUCTION

In the marketing literature the connection between consumers and brand creates the terminology “brand equity”. There are different approaches which have been applied to define the term brand; brand has been described from consumers point of view or from owners frame of reference. American Marketing Association (1960) define brand as a name, term, sign symbol or design, or a combination of them. The intention is to classify goods and services of one company along with distinguishing them from competitors.

Developing strong brands can be used as an effective tool to compete with competitors in the industry. Feldwick (1996) simplified the brand equity in different ways (i) brand value is recognized as a separate asset in the balance sheet when it is sold. (ii) It determines the power of attachment of consumers with brand (iii) it also described the affiliation and beliefs of consumers with the brand.

Keller & Lehmann (2006) stated that brand is considered as most valuable intangible asset for the company, and in past managers were very concerned about brand development. Keller (1993) approached the brand equity from consumers’ point of view. He emphasized that brand power is dependent on the customer beliefs; actually what they have in their minds and hearts. Kotler (2003) define advertising is any paid form of non-personal presentation and promotion of ideas, goods and services and it is required price.

The plan of study is to empirically explore the association between brand equity as dependent variable and independent variables that are advertising & promotion, R&D and profitability measures. The question is whether advertising & promotion, R&D and profitability measures contribute to determine the value of brand equity or not? The earlier studies on brand equity have furnished sound help for the current study. In this study; the direct relationship between dependent variable and independent variables has been investigated. Although; different variables has been designed mostly on primary data to determine the value of brand equity. Moreover; this study is based on historical data to see the relationship of defined variables.

The quantitative method is used to analyze the data. The fixed effect and random effect models have been applied to panel data to observe the influence of advertising, R&D and profitability on brand equity. Since, the results indicate that independent variables advertising, R&D and profitability are positively correlated with brand equity. The results are statistically significant in case of advertising and profitability.

## LITERATURE REVIEW

Aaker (1991) initially offered the determinants of brand equity on the bases of customer measures. It has been suggested that the brand equity is determined by the perceptions of end users regarding the brand name, awareness, perceived quality and brand associations. The determinants were measured directly by surveying the consumer’s perceptions and satisfaction about a brand. The role of mental state of consumer is very significant for the valuation of brand equity. Keller (1993) added one more step further in Aaker research. He defined consumer supported measurement brand equity methods and motivated manager to consider more strategic view about brand equity.

Park and Srinivasan (1994) designed a survey base approach. The approach was planned to collect the consumers’ views and attitudes to decide the potential factors those contribute towards the development of brand equity value. These factors in turn will help managers to make informed decisions about brand. Lessar et al. (1995) developed another customer based scale to investigate the aspects that are related to brand equity namely value of brand, social image in the society, trustworthiness and loyalty. Agarwal et al. (1996) examined the predictive power of 11 factors those are primarily based on consumer brand equity. These are mainly related to consumers brand awareness, perceptions, preferences, the difference of choice intentions and actual choice.

Simon and Sullivan (1993) examined brand equity on financial basis. He presented a financial method that is mark-to-market; currently prevailing market profits associated with brand. The current market profits truly represent the economic value of brand equity. The financial technique includes mainly expenditures on R&D, advertising, market capitalization of firm, number of years in the market (age) and market penetration. The study confirmed that advertising and arranged marketing events have statistically significant effect on brand equity.

Advertising is considered a strong predicator of brand equity. It is applied as a tool to educate the customers about the different features of brand and can be used to create awareness and knowledge. Advertising is useful as verbal or non verbal communication of products, that mainly attract the attention of current users or prospective consumers. Aaker (1991) view advertising is a key tool to build consumer perceptions in five dimensions. He also suggested that advertising is a key driving force of brand equity if it is continued on cumulative bases and if it captured the large share of industry advertising. Walgren et al. (1995) concluded that brand equity value is positively correlated with

advertising; firms with high advertising budget allocations have higher brand equity value as compared to those firms with lesser advertising budgets. Therefore, it can be assumed that investment in advertising yields positive return for the firms. Yoo and Donthu (2000) examined the regular price promotion policy is negatively correlated with brand equity value; whereas high price, high advertising investment, excellent store image and large distribution channels are key variables to increase the value of brand equity.

Chu and Keh (2006) have analyzed the impact of advertising and R&D on brand value and found that advertising effect was negative on brand value. They also reported that total effect of R&D was positive but weaker than advertising. The customer based approach of brand equity is relied on the response of consumers; whereas the financial approach is based on valuing brand equity on financial performance. Winters (1991) provided three ways that accountants apply while they are determining the worth of brand like-(i). Market technique is basically discounting the expected future benefits to calculate the present value; it measures today's worth for owners. As this concept is related with time value of money; today's dollar value is greater than tomorrow's dollar value. Thus, today's return may be compared with tomorrow's returns. (ii). Cost technique how much money is needed to replace a brand, including development cost, sales promotion & advertising and marketing costs. In this approach accountants emphasize on rationalization of cost. (iii). Income technique is related with the relationship of risk and return. How much risk is associated with income and what is the net gain?

Net profit represents high brand equity value since it indicates the customer is eager to pay more than the cost of production of goods. The return on assets is a good measure to compare the performance of brand with competitors to gauge the key variation in profitability measures. The higher profitability signifying the higher brand performance. Farquhar (1989) suggested that high brand equity helps the firms to charge premium price for product. It is also observed that firms with superior brand management have higher value of brand equity and can charge added price for their products and in turn receive higher profitability when compare with competitors.

## METHODOLOGY

The key idea of study is to understand the key determinants of brand equity that will enable the IT industry to increase their brand equity. We examine the association between advertising & promotion, research & development, profitability and brand equity based on framework studied by Smith et al.

(2011). Figure 1 graphically presents the overall model proposed in this study. In figure 1, the brand equity is dependent variable and advertising & promotion, research & development and profitability are independent variables. This research is based on quantitative secondary data.

### 3.1 Sample Selection

The Interbrand ranking is based on world's most valuable 100 brands. The sample is mainly related to 20 IT firms; which are continuously listed in top 100 brands since 2011 to 2015. Five years data 2011 to 2015 come from the published annual reports of world brands. In total, 100 observations have been gathered from internationally recognized IT companies mainly IBM, MS, HP, Intel, Sony and Apple.

### 3.2 Hypotheses and Variables

#### *Dependent Variable*

**Brand Equity:** The dependent variable in this study is brand equity. The values of brand equity is taken from individual firm amounts being reported by Interbrand Corporation in its annual ranking of world best brands. Interbrand annual reporting is considered the most relevant and reliable source of brand equity.

#### *Independent Variables*

**Advertising & Promotion:** This variable is measured by advertising & promotion expenditures to brand equity. The advertising expenditure is positively correlated with brand equity.

**Research & Development:** This variable is measured by research & development expenditures to brand equity. The research & development expenditure is positively correlated with brand equity.

**Profitability:** The profitability is measured by Return on Assets (ROA). The ROA is calculated as "net income by total assets". It is a well-known measure to evaluate the firm's performance.

- **H1:** Advertising & promotion has statistically significant affect on brand equity.
- **H2:** Research & Development has statistically significant affect on brand equity.
- **H3:** Profitability has statistically significant affect on brand equity.

This study is based on panel data. The panel data is also called longitudinal data; N (companies) units are analyzed for T time. It is a combination of time series and cross sectional data.

The quantitative method is used to analyze the data. The fixed effect and random effect models are commonly used to analyze the panel data. The panel regression technique is applied to examine the influence of advertising, R&D and profitability

on brand equity. To decide between fixed effects and random effects model, Hausman test is needed to run. The Hausman test provides the decision criteria which is the preferred model either fixed or random effects. According to Hausman test if probability value is less than ( $p < 0.05$ ); in that case fixed effect model is preferred.

## RESULTS

The data was analyzed by using STATA 11 and panel regression is used to study the impact of advertising & promotion, R&D, profitability on brand equity of IT industry.

The results of the correlation analysis are presented in table 1. The correlation coefficient between advertising & promotion and brand equity turned out to be 0.398. Furthermore, the correlation between research & development and return on assets with the brand equity is 0.318 and 0.498 respectively. So table 1 confirmed that a significant positive correlation exists between all independent variables and the dependent variables.

Table-2 includes p-values, t-statistics, R square ( $R^2$ ) and F significance value. It is observed that  $R^2 = 0.2076$  or 20.76% variation in brand equity is observed. The  $R^2$  is coefficient of determination; it measures the variation of dependent variable due to independent variables. Thus, the advertising & promotion, R&D and profitability, as used in the model as independent variables, have 20.76% impact on the brand equity which is dependent variable. The above table shows the impact of advertising & promotion, R&D and profitability on consumer shopping styles.

The significance F measures overall fitness of model whether the model is statistically significant or not? The F-significance value is 17.05 ( $p < 0.0000$ ); it shows the overall fitness of model. This confirms the fitness for prediction, of the model used. In this study, fixed effect model is preferred, according to Hausman test the probability value is less than ( $p < 0.05$ ) i.e. significant.

The coefficient table is providing estimates of the t-statistics and p value. In this coefficient table t value is also mentioned. It is showing the influence ability of independent variables on brand equity. All the independent variables can be ranked with the help of this t value. Variables with a high t value are more influential as compare to those with lower t value. Advertising is having the highest rating among other variables because t value is higher so in this study it is the most influential variable that impacts on brand equity.

Table 2 also shows the impact of advertising & promotion, R&D and return on assets on brand equity. The t value of advertising & promotion is 3.14 ( $p < 0.005$ ) which is highly significant. This

statistically significance value leads us towards the acceptance of the first hypothesis. This confirms that advertising and promotion has a significant impact on brand equity. Hence the first hypothesis has been accepted. This confirms that the IT companies who spend more on advertising and other marketing communication techniques will increase brand awareness and brand image. Thus, the print and electronic advertising matters for IT companies; more investment in advertising leads to more brand value, in turn it rewards in increasing revenue and good will for the companies. So the results of the general study of brands by Peterson & Jeong (2010) regarding the significance role of advertising expenditure for enhancing the brand value also proved in the IT industry for the latest data from 2011 to 2015. The customers will prefer IT products of the companies who have higher brand awareness and high brand image thus resulting in higher brand equity of the brand.

The t value of R&D is 1.47 ( $p > 0.05$ ) which is not statistically significant. This non significance value leads us towards the rejection of the second hypothesis. This confirms that research and development has non-significant impact on brand equity. Thus the second hypothesis has been rejected. So it shows that research and development in IT industry will not have significant impact on brand equity but still it has a positive relationship with brand equity. Research and development sometimes leads to product failures in technological industry as well (King, Slotegraaf, & Kesner, 2008) so this may be one of the primary reason that R&D is not showing significant impact on brand equity though it has its role in its equity. The positive relationship suggesting that R&D expenditure may produce positive returns in the long run; payoffs may take a longer time to reward R&D investment.

The t value of profitability is 2.13 ( $p < 0.05$ ) which is statistically significant. The significant value guides us towards the acceptance of the third hypothesis. Hence this shows that return on assets has significant impact on brand equity. The result confirmed that higher return on assets will increase the value of the brand thus making a significant role in its brand equity. So the results about the relationship of strong brand value and financial performance derived by Madden et al. (2006) are also reconfirmed for the strong brands of the IT industry.

## CONCLUSION

The research study concludes positive association between the independent variables (advertising & promotion, R&D and profitability) on the dependent variable (brand equity). The results from the data of IT industry during 2011-

2015 showed that advertising & promotion and profitability have statistically significant relationship with brand equity. However, findings also showed that research and development has insignificant interaction with brand equity.

The companies who spend more on advertisement and promotion results in creating brand associations in the minds of customers which lead to brand awareness. The advertisement and promotion also create perceived quality for the brand so customers prefer those brands which may lead to brand loyalty. So when companies like Apple have more loyal customers, these customers will enhance the brand equity of the brand.

Research & development is also very important for IT firms but the product failure rate is also high which may increase the overall costs of the firm. So the product failure doesn't make any contribution towards the brand value creation process. Whereas successful technical product are responsible for the brand value creation and hence contribute to the brand equity to some extent. Without research and development expenditure firms cannot develop new technology and products which distinguish them from their competitors. E.g. distinguished technical products like iPad, iPhone and many others have really created brand value of the Apple brand.

The financial performance of any brand is an essential component to determine the brand value in the market. The financial performance measure like sale, profit, return on assets and others have a great effect on brand equity. Moreover; brand equity is always observed by both consumer perspective and financial perspective. So IT companies whose financial performance is high are considered to be the world strongest brands having greater brand equity.

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ANNEXES

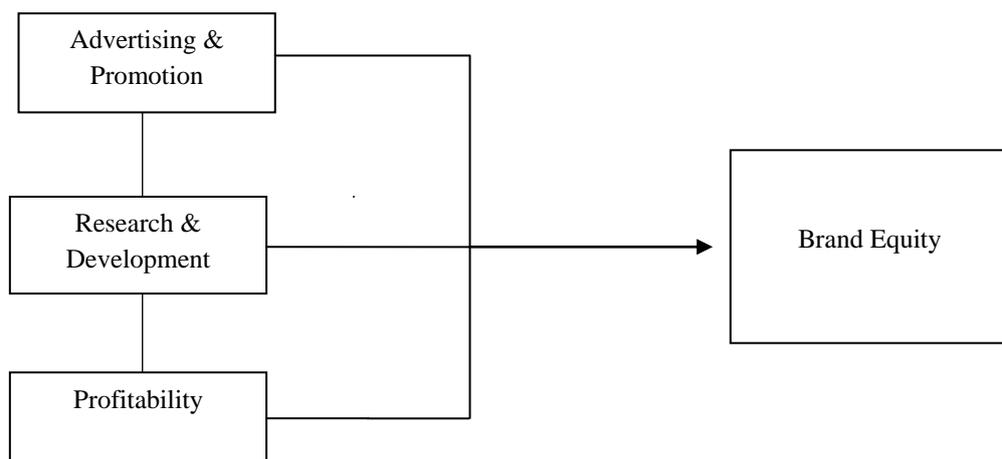


Figure1. Research Model-Determinants of Brand Equity

Table 1: Correlation Coefficients

	<b>Brand equity</b>	<b>Advertising &amp; promotion</b>	<b>Research &amp; development</b>	<b>Profitability (ROA)</b>
<b>Brand Equity</b>	1			
<b>Advertising &amp; Promotion</b>	.398	1		
<b>Research &amp; development</b>	.318	.364	1	
<b>Profitability (ROA)</b>	.498	.165	.143	1

All the correlation coefficients are significant at the 0.01 level (2-tailed).

Table 2: Regression Coefficient Estimates

	<i>P-value</i>	<i>T-statistics</i>
<b>Intercept / Constant</b>	0.000	8.00***
<b>Advertising &amp; Promotion</b>	0.002	3.14**
<b>Research &amp; development</b>	0.145	1.47
<b>Profitability (ROA)</b>	0.036	2.13*
<b>R-square</b>	0.2076	
<b>F-significance</b>	17.05	

Dependent Variable: Brand Equity

Note: \*\*\*, \*\* and \* denote significance at the 1, 5 and 10 per cent level.