

An empirical analysis of consumers' perception about smartphones in India

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Abstract

The main objective of the current study is to analyze the perception of Indian consumers about smartphones. A questionnaire was designed and circulated, both offline and online, in order to obtain the responses of the customers. A final sample size of 325 responses was obtained. The data collected has been analyzed by deploying the technique of factor analysis. The results reveal that there are four most important factors that are relevant in shaping the perception of Indian customers towards smartphones. These factors include aesthetic appeal, add-ons, economy and eliteness. Thus, marketers of smartphones in India should focus on these factors. Further, managerial implications and study limitations have also been presented.

Keywords: Smartphones, Indian Customers, Factor Analysis, Emerging Economy

Introduction

Analyzing the consumers' attitude toward a brand is of high importance because that is what comes nearest to revealing the point if a consumer intends to buy the brand in question. Within the study of the attributes, it is vital to ascertain the implications of 'attitude towards the object'. In the modern era where technological innovations are taking place very frequently, the purchasing decisions have also changed at the same pace and the consumers are adopting the latest gadgets which are available in the market. One of the most popular gadgets include the smartphones. One such high end phone with various unbelievable features was launched in India. This was the long awaited "Apple iPhone". Its launch was remarkable from the point of view of the mobile phone industry. Since then, there has been a rapid growth in the overall smartphones market in India. The growth of smartphone segment in India necessitates further research into this area. Hence, the main questions worth analyzing are, what factors influence buying behavior for smart phones; and what are the various target markets for this segment.

In pursuit of these questions, the key objective of the current study is to determine the factors that have a bearing on consumers' buying behavior with respect to smartphones. The study also tries to analyze the factors that contribute to brand preferences for smartphones. The study contributes to the existing literature by analyzing the determinants of consumers' preferences towards smartphones in India. The findings provide valuable insights to the marketers of smartphones in India. The rest of the paper is organized as follows. Section 2 presents a review of related literature. Section 3 describes the data and the methodology used. Section 4 presents the empirical findings. The final section concludes the study and presents the key implications.

Literature Review

Smartphones include a line of internet and multimedia-enabled mobile phones marketed by different companies (Park and Chen, 2007; Oulasvirta et al., 2012). The initial entrants in the smartphones market include Apple iPhone and Samsung Galaxy. The iPhone brand was unveiled by Steve Jobs on January 9, 2007 and was released on June 29, 2007. The launch of iPhone marked one of the most happening phenomenon's in the global technology world. Later on, many different smartphones entered the market. Smartphones have changed the way consumers think about cell phones. Smartphones integrate cell phone, music players, camera, text messaging, email and web browsing, while introducing innovative features such as multi-touch screen, visual voicemail, and virtual keyboard.

There has been some studies in the past regarding consumers' perception of smartphones in various contexts. For instance, Verkasalo et al. (2010) study the impact of perceived technological barriers in the adaptation of smartphones and various applications. The authors find that perceived benefits and enjoyment are affected by behavioral control. Further, the intention to use is also directly impacted by perceived benefits and enjoyment. Wagner (2011) analyzes the manner in which consumers integrate smartphones into their normal life. The author conducts the study for consumers in the UK and in Germany. The author finds that there is a noteworthy difference between consumers of smartphones in the UK and in Germany.

The studies discussed so far have mostly been conducted for the advanced markets. However, it is also very important to study emerging markets (Dawar and Chattopadhyay, 2002; Eckhardt and Mahi, 2004; London and Hart, 2004; Awasthy et al., 2015; Jaisinghani, 2015; Jaisinghani, and Tandon, 2015). This is because there are certain fundamental, socio-cultural and economic, differences between advanced economies and emerging economies (Peng et al., 2008;

Meyer et al., 2009; Jaisinghani, 2016; Karwowski and Stockhammer, 2017). Cui and Liu, 2001 study the manner in which segmentation should be done in the emerging markets. The authors find that multinational companies that are entering emerging markets should focus on local conditions in order to segment their consumers.

Many studies claim that purchasing behavior of individuals vary with their age (Goldsmith and Reinecke Flynn, 1992; Darian, 1998; Dittmar, 2005; Hooi Ting et al., 2011). Young people are generally more inclined towards the purchase of innovative and technological products such as smartphones. This is because their usage of such phones is not limited to talking, but also includes entertainment, social networking on the internet, and information source. Few past studies and surveys have been done on the broad lines like the inclination of youth towards smartphones and perceived quality of smartphones. However, a mix of various features taken into consideration and how does it overall affect the Consumer Purchasing Behavior and to what extent is going to be the core concern of our study.

Data and Methodology

Secondary data: The Secondary data for our study is collected from various sources such as online databases and other publicly available reports. This data has been mostly utilized for getting an overview of the Indian smartphones' market.

Primary data: The primary data is collected through a questionnaire. The questionnaire is mainly filled by the students of various management colleges in India. Moreover, the questionnaire was also emailed to various users of smartphones. This has given us scope to include the views of all age groups of people.

Data Collection Process

Schedule: The research started with finding out the key consumers of smartphones in India. The respondents were narrowed down on the technologically advanced smartphones' users in India. Information was also gathered about the shortcomings of smartphones. It was also decided to conduct a survey for understanding the buying behavior of smartphones and the factors affecting this buying behavior. A questionnaire was prepared for the purpose. Before circulating the questionnaire, a series of focus group discussions were performed in order to gain more insights about the consumers' perception about smartphones.

Focus group discussion: A series of focus group discussions were conducted to gain insights on the various factors which predominantly influence the buying behavior of high end mobile phone users. The discussions had total participants varying from 10 to 12 members in each of the focused group. When asked what factors they considered while buying a high end mobile phone, the participants listed the following factors.

- Price
- Durability
- Additional Features
- Applications
- Brand value
- User Friendliness
- Design
- Visual and graphic display

Most of the participants said that they go in for high end phones because they also consider it to be a status symbol. They also said that if they wanted to go in for high end phones they wanted it to be exclusive. Promotion and advertising positively influenced their purchase decision by making an impact. Most of them maintain that despite the competition high end smartphones, such as iPhone, still manages to create an impact with their promotion and advertising. Different versions of the smartphones also manage to keep up with rapidly changing trends in technology. Based on these insights a questionnaire was framed that was distributed to the sample, that is, students of different management colleges. The questionnaire was filled-in by 350 respondents out of which only 325 were of usable form.

Results

Factor Analysis: Factor analysis is a method that is generally used to find a few set of important factors from a series of large number of variables. Factor analysis starts with a set of variables and then tries to combine these variables to form fewer groups which are called factors. These factors contain variables that have high correlation among them and less with variables present in other factors. Afterwards, these factors can be used to explain the patterns observed in the data. Factor analysis is a statistical method of reducing a large number of correlated variables into fewer factors. The variables that have been considered for the current study include:

- Price
- Durability
- Added features
- Brand
- After sales service
- Design
- Exclusivity
- Ease of use
- Status symbol

Result of Factor Analysis: Factor analysis provides a detailed insight regarding the data collected from various respondents. The technique helps in grouping the variables, that have some similarity, into a factor that gives the general idea about all the variables. This helps in understanding which factor to work on for improving the performance. In the current study factor analysis has been applied to the data obtained through questionnaires and an attempt has been made to find

convincing patterns from the same in the form of a reduced number of factors.

Correlation Matrix: The correlation matrix provides information pertaining to the correlation between different variables. It shows the degree of association and the similarity that one variable can have with the others. In case of significant correlation between variables, it can be decided to drop one of them and then simplify further analysis. This is usually done because the variables having very high correlation are indeed giving the same information and therefore they cause redundancy. In a majority of cases a correlation of 0.9 is considered to be very high. If the correlation is low, then also we can drop the variables as they don't provide us with much information and can be dropped.

Table 1 presents the correlation matrix for the data collected. The output shows that the maximum correlation is obtained for the pair after sales service and additional features which is 0.457 which is still very less. It is generally not high enough to be considered as reducing one of the variables. The table also shows that the variables chosen for our questionnaire are discrete with minimum or no redundancy. A very low coefficient of correlation among different variables indicates that the questions incorporated in the questionnaire were useful and they convey the correct message. Therefore, it is assumed that the data is free from singularity. The value of the determinant is 0.329 which indicates that multicollinearity is not a problem.

Table 1: Correlation Matrix

		Price	Durability	Addfeat	Brand	AfterSales	Design	Exclusivity	Easeofuse	Status	
Correlation	Price	1.000	.320	.205	.200	.138	.113	.192	.060	.140	
	Durability	.320	1.000	.004	.094	.075	.128	-.084	.040	.145	
	Addfeat	.205	.004	1.000	.170	.457	.007	.216	.124	.048	
	Brand	.200	.094	.170	1.000	.276	.310	.050	.132	.291	
	AfterSales	.138	.075	.457	.276	1.000	.269	.123	.219	.094	
	Design	.113	.128	.007	.310	.269	1.000	.156	.312	.070	
	Exclusivity	.192	-.084	.216	.050	.123	.156	1.000	.166	.211	
	Easeofuse	.060	.040	.124	.132	.219	.312	.166	1.000	.101	
	Status	.140	.145	.048	.291	.094	.070	.211	.101	1.000	
	Sig. (1-tailed)	Price		.002	.002	.002	.026	.056	.003	.198	.024
		Durability	.000		.476	.092	.145	.035	.119	.266	.020
Addfeat		.002	.476		.008	.000	.459	.001	.040	.249	
Brand		.002	.092	.008		.000	.000	.243	.031	.000	
AfterSales		.025	.145	.000	.000		.000	.042	.001	.093	
Design		.056	.035	.459	.000	.000		.014	.000	.163	
Exclusivity		.003	.119	.001	.243	.042	.014		.010	.001	
Easeofuse		.198	.266	.040	.031	.001	.000	.010		.077	
Status		.024	.020	.249	.000	.093	.163	.001	.077		

Table 2 presents the results of the Bartlett's Test and also the KMO statistics. The table shows that the KMO statistic is close to 0.583. This signifies that the data size is adequate enough for factor analysis with respect to the number of variables. Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. For factor analysis, it is required that there exist some relationships amongst the different variables. Therefore, it is necessary that the test is significant at the conventional levels. For the current data set, the Bartlett's test is significant with $p < 0.001$. Thus, it can be concluded that factor analysis is a suitable analysis.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.583
Bartlett's Test of Sphericity	Approx. Chi-Square	216.85
	Df.	36
	Sig.	0.000

Communalities: Factor analysis works on the assumption that all variances are common, and hence, all the communalities are equal to one before the factors are extracted. The extraction reflects the common variance in the data structure. Table 3 presents the communalities for the current data. The extraction shows what proportion of the total variance of a

particular variable is shared with all the factors extracted. For instance, it can be said that 60.1% of the variance associated with "price" is common or shared variance. It gives the extent to which the variance has been accounted for by the extracted factors.

Table 3: Communalities

	Initial	Extraction
Price	1.000	0.601
Durability	1.000	0.707
Add feat	1.000	0.800
Brand	1.000	0.423
After Sales	1.000	0.699
Design	1.000	0.684
Exclusivity	1.000	0.713
Ease of use	1.000	0.499
Status	1.000	0.619

Extraction Method: Principal Component Analysis.

Total Variance Explained: Table 4 lists the Eigen values associated with each linear component after extraction and after rotation. Before extraction nine components have been identified within the data set, which is equal to the number of original variables. The Eigen values associated with each factor represent the variance explained by that particular linear component. On the other hand it explains the extent of coverage of the critical factors included in the analysis. The first factor has the highest significance as it explains

25.449% of the total variance. It has been decided to extract the factors with Eigen values greater than 1. Hence, a total of four factors have been obtained. After

extraction the factors have to be rotated so that all variables load to only one factor.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.290	25.449	25.449	2.290	25.449	25.449	1.578	17.539	17.539
2	1.257	13.970	39.418	1.257	13.970	39.418	1.497	16.634	34.173
3	1.140	12.665	52.084	1.140	12.665	52.084	1.409	15.651	49.823
4	1.056	11.736	63.820	1.056	11.736	63.820	1.260	13.996	63.820
5	.945	10.497	74.317						
6	.761	8.465	82.772						
7	.639	7.104	89.876						
8	.487	5.411	95.287						
9	.424	4.713	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix: The rotated component matrix contains the same information as explained by the component matrix, except for the fact that this matrix shows us the result after rotation. Table 5 presents the output containing the rotated matrix. The Rotated Component Matrix is used to interpret the loading of variables into the respective factor that explains it in the best possible way.

Table 5: Rotated Component Matrix

	Component			
	1	2	3	4
Design	0.821	-0.001	0.095	0.002
Ease of use	0.671	0.117	-0.134	0.129
Brand	0.507	0.152	0.337	0.171
Add feat	-0.038	0.882	0.051	0.132
After Sales	0.391	0.731	0.095	-0.054
Durability	0.088	-0.066	0.823	-0.135
Price	-0.040	0.265	0.676	0.269
Exclusivity	0.076	0.229	-0.161	0.793
Status	0.163	-0.145	0.312	0.689

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The results show that there are four factors and all the variables load highly into only one factor. The result pertaining to the final factors obtained is mentioned below.

1. The first factor consists of Design, Ease of Use and Brand.
2. The second factor consists of Additional Features, and After Sales.
3. The third factor consists of Durability, and Price.
4. The fourth factor consists of Exclusivity, and Status.

Component Score Coefficient Matrix: Table 6 presents the component score matrix. This matrix shows the coefficients of the variables in the equation that is made for all the factors when the factor analysis is conducted. These values are used to calculate the factor value for each of the individual sample.

Table 6: Component Score Coefficient Matrix

	Component			
	1	2	3	4
Price	-0.169	0.131	0.474	0.150
Durability	0.004	-0.090	0.622	-0.187
Additional Features	-0.177	0.635	-0.017	0.009
Brand	0.283	-0.002	0.178	0.041
After Sales	0.167	0.481	-0.004	-0.189

Design	0.573	-0.127	-0.014	-0.104
Exclusivity	-0.058	0.071	-0.207	0.660
Ease of use	0.458	-0.021	-0.187	0.028
Status	0.023	-0.230	0.168	0.566

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The overall results suggest that a four factor solution is optimal. Hence the marketers of smartphones in India should primarily focus on these four factors obtained. The four factors along with their variable loadings and their naming are presented next.

- Aesthetic Appeal – Design, Ease of use, and Brand
- Add-ons – Added features, after sales service
- Economy – Price, and Durability
- Eliteness – Exclusivity, and Status Symbol

A manager needs to focus on these four factors in order to make the product run successfully in the market. The managers need to focus on aesthetic appeal the most as it is the first factor that emerged out from the analysis. This is considered most important by the survey respondents. Then the next focus should be on the “add-ons”, that is, the added features or service or freebies that are available with the product. The results depict that the customers are positive towards the additional benefits they get along with a high end mobile phone. The third factor is economy, that is, the price and durability. As far as Indian markets are concerned, price and durability are very important in determining the buying behavior of customers. The price of smartphones can be reduced after a few months of launch so that the large customer base can be attracted towards the product. The fourth factor is eliteness. Most of the high end mobiles are exclusive. They are a symbol of luxury. Therefore, the manager can conclude that it is an important factor, but the relative importance of this factor related to aesthetic appeal, add-ons and eliteness is less. So the manager should give more importance to the add-ons and aesthetic appeal of the product. This will help in boosting up the sales as the resources will be utilized in the right direction.

Conclusion

The current study makes an effort to study the buying behavior of Indian customers in terms of their preferences towards smartphones. The overall results show that consumer behavior towards buying smartphones depends on four factors named as aesthetic appeal, add-ons, economy and eliteness. Hence, the marketer should lay emphasis on the outward appearance and add on features that make it different from the other player in the market. The study also revealed that consumers are ready to pay a premium for good quality products. Besides, it is also found that people associate smartphones to aesthetics and value the pricing. The main catalyst for the sales of

smartphones in India have been the younger generation and the technology-savvy customers. These results bear certain important implications for the marketers. They should try to work on the four major factors obtained.

The study has certain limitations that can also act as scope for future research. The study has only been conducted for India. Similar studies can be conducted for other emerging economies. Further, the study has focused only on smartphones. There is a wide scope to conduct such studies for other technology intensive products such as electrical notepads, laptops, and music players.

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