

# Multi-criteria Based Evaluation and Prioritization of Telecom Service Provider Selection Attributes of Indian Consumers

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## Abstract

The telecom sector in India has experienced a rapid growth over the past decade on account of regulatory liberalization, structural reforms and competition, making telecom one of the major catalysts in India's growth story. The growth in the service sector and Information Technology sector has also fueled the growth of the telecom industry in India. The present study aims to categorize various factors that influence consumer preference for selecting telecom service providers and the relative importance of the factors. The present study uses the analytical hierarchy process to develop a multi-criteria based evaluation and subsequent prioritization of telecom service patronage attributes of Indian consumers. The study suggests and recommends the parameters telecom operators must stress on in order to improve customer satisfaction and gain more customers.

## Keywords

Telecom, Indian Customer, Multi-Criteria, Service

## I. Introduction

Mobile communications is one of the fastest growing sectors in India. The fast growth has been supported by astonishingly fast consumer mobile adoption rate and constant deregulation and reformation of telecommunication sector. The growth has made mobile communications industry a new revenue generator for the Indian economy. With the advent of technology, services have become much more flexible and customized according to consumer's preference.

Indian telecom industry contributed around \$400 billion in terms of GDP of country in 2014. From 2000 to 2014 telecom sector has flew in \$ 59,769 in form of FDI, which is 6% of total FDI inflows. Data traffic after onset of 3G networks has grown 146% in India, which is much higher than global average. Although Indian telecom sector is growing at impressive pace but telecom space is fiercely competed. There are three major private players namely Bharti Airtel, Vodafone and Reliance having a total of 54% market share. State owned service provider BSNL and MTNL have also been making their presence felt with 12% market share.

Recent studies suggested that even after having such a large number of customers base Indian telecom market isn't still saturated having year on year growth of 6.80% taking total number of telecom subscriber to 996.49 million. This is second highest in world after China having urban population of 577.18 million and 419.31 million people from rural India. Total numbers of people who have Internet connection have increased from 267.39 million to 302.35 million, showing world's highest growth rate of 14%. Recent trends show dramatic increase in media consumption in last 5 years. Wireless Internet connection exceeds wired connection by far where wired connections only amount to 19.07 million connections against 283.29 million wireless connections. Number of broadband also increased from 85.74 million to 99.20 million subscribers at the end of March 2015.

Like other service sectors consumer satisfaction and loyalty are

essential for telecom operators. Therefore producing more loyal and satisfied consumers is important for the telecom operators as loyal customer pays less attention to the competitors' brand. Loyal customers are less engaged in decision making, for example, whether to buy a product or service among alternates (Rundle-Theile & Bennet, 2001) or whether they are willing to pay more for a particular brand (Reichheld, 1996). The concept of brand loyalty is comparatively more important for services sector, especially for those who provide services with little differentiations and compete in dynamic environment i.e. telecommunication sector (Santouridis & Trivellas, 2010). However the services provided by the telecom operators now a days are more or less the same. So it is quite difficult to assess the consumers' satisfaction on a particular operator. In order to gain competitive advantage, telecom operators are using various strategies to attract and retain customers. Though telecom service providers are making huge investments in developing telecom infrastructure for new customer acquisition and maintenance, the strategic focus of the industry had been to gain market share by providing incentives to customers through low price, deals and discounts leading to a significant reduction in their profitability. Telecom operators have now realized that it is very difficult to prosper following a low price strategy based solely on the notion of attracting new customers, without putting efforts for retaining the present customers. The telecom operators have realized that the key to their success and prosperity will be to sustain the customer's subsequent use of the channel for purchasing a wider variety of services after the customers have initially adopted the channel.

Considering the unique characteristics of the telecom industry, several studies have been undertaken to identify the different attributes customers use to patronize a telecom service provider with an objective to find out the core services. Also, the needs of the customers may be endless and satisfying all those needs may not be always technically and financially viable; therefore capability to grasp the priority of the customer needs would lead success or failure of the online stores. Further, for optimum resource allocation to individual attributes it is crucial to determine the priority of service attributes which lead to service providers success and profitability. However, past studies have neglected this. Hence, there is considerable need for identifying the priority of service attributes for successful understanding of the consumer behavior affecting their telecom service patronage and help the telecom service providers to create focus on service attributes which meets the consumer needs.

The primary objective of the present study is to bridge the gap in literature by using the analytical hierarchy process to determine the relative priority of service attributes of Indian consumers. For achieving this purpose, the objectives of the research are:

- To examine and classify the telecom service provider patronage attributes of Indian consumers.
- To develop priorities of the service provider patronage attributes of Indian customers so that telecom service providers can assess the attributes and re-allocate resources

to improve their success and profitability.

The remaining part of the paper is organized as follows. A review of literature and discussion is presented in the next section on the identification and classification of telecom service attributes followed by the determination of the priorities of service attributes by AHP approach. Finally, analysis of the results and findings are presented and discussed followed by limitations of the study and conclusion.

## II. Literature Review

Industries thrive on the satisfaction derived by the customers from the services delivered by them. Robust service delivery systems provide a host of opportunities for satisfying consumer demand leading to patronage intentions from customers. A business delivering high service quality will meet customer needs whilst remaining economically competitive (Brady & Cronin, 2001). Improved service quality can be achieved by understanding and improving operational processes, identifying problems quickly and systematically, establishing valid and reliable service performance measures and measuring customer satisfaction and other performance outcomes.

Extensive studies have been made in the consumer satisfaction and service quality literature to identify the relationship between consumer satisfaction and its antecedents ((Oliver, 1977); (Oliver, 1980); (Churchill & Suprenant, 1982); (Parasuraman, Berry and Zeithaml, 1991); (Anderson & Sullivan, 1993). A review of literature on consumer patronage intention for telecom operators shows that numerous studies have been undertaken to understand consumer behavior of Southeast Asian countries like Malaysia, Indonesia, India, and Pakistan and so on. The findings of those studies are more or less consistent in determining the variables affecting consumers' preference.

An examination of literature on consumer behavior towards telecom services reveals different streams of research. One stream of research focuses on the theme that service quality of telecom service providers helps them to create competitive advantage by differentiating their service offerings from their competitors. Delivering effective service quality is essential and important to maintain loyal and profitable customers (Leisen & Vance, 2001). Besides service quality factors branding and brand perception of the customers regarding the telecom operators affect the customers' preference for selecting telecom operators (Foxall, Goldsmith & Brown, 1998). (Anckar & D'Incau, 2002) examined and found that besides voice call and network coverage, the value added services namely games, icons, ringtones, messages, web-browsing, SMS coupons and electronic transaction provided by telecom operators brought five values to the consumers namely time-critical needs and arrangement, spontaneous needs and decisions, entertainment needs, efficiency needs and ambitions, and mobility-related needs. Thus, mobile value-added services can throw new opportunities for telecom service providers and help them differentiate their service offerings from the competitors. Past studies in various service industries have confirmed that the enhancement of service quality, perceived value, and customer satisfaction is the key of corporate success and competitive advantage ((Patterson & Spreng, 1997); (Khatibi, Ismail & Thyagarajan, 2002); (Landrum & Prybutok, 2004); (Wang, Lo & Yang, 2004); (Yang & Peterson, 2004)). (Rahman, Haque & Ahmad, 2011) examined and found that variables like service quality, call rate and brand image are important criteria for customers' perception in selecting mobile phone operators. (Shah, 2008) found empirically that customer care, call charges,

network, tariff schemes, Value Added Service (VAS), billing system, voice clarity are some of important parameters that customer consider while developing their preference about any mobile phone operators.

## III. Data Collection and Methodology

### A. Data Collection

A questionnaire was developed on the basis of the AHP format. The respondents were asked to do pairwise comparisons on various parameters and mark their preference on the AHP scale. Questionnaire is administered offline in Delhi and NCR region on sample of 240 respondents. Non-probability convenience sampling technique was used to find respondents. Respondents who had an experience of using more than one telecom operator were requested to fill questionnaire. Questionnaire was hand delivered to the respondents who qualified for sample and were willing to be part of study. Though the questionnaire include the directions for filling in AHP format input, adequate first hand attention was paid so that they are able to complete the questionnaire in a desired manner.

### B. Methodology

AHP methodology was adopted for prioritizing the telecom service provider selection criteria of Indian customers of telecom services. A three step approach was applied for implementation of the AHP approach. First step consisted of decomposing and organizing the critical aspects of the multi-criteria decision making problem into a hierarchical structure of different levels constituting the goal or objective, criteria, sub-criteria and alternatives. The second step consists of developing the priorities within each level of the hierarchy among all the criteria and sub-criteria by comparing each criteria in the corresponding level through pair wise comparisons. The third step, consists of generating the ranks of the alternatives on the basis of the overall priorities of the decision makers by using the eigenvalue method. The process flow chart for implementation of the AHP approach is presented in fig. 1.

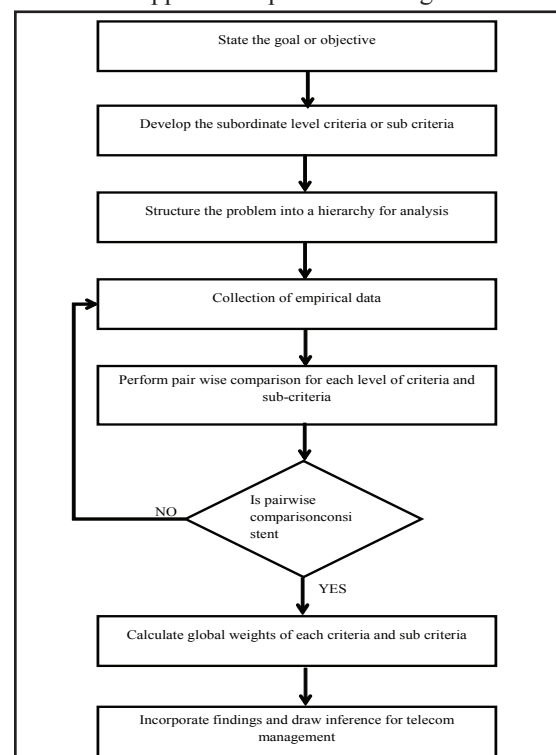


Fig. 1: AHP Process Flow Chart

The steps of the AHP methodology are detailed as follows:

- Step 1: State the objective
- Step 2: Develop the subordinate level criteria or sub-criteria
- Step 3: Structure the problem into a hierarchy for analysis
- Step 4: Collect empirical data for pair-wise comparison
- Step 5: Perform pairwise comparison between each level of criteria and sub-criteria
- Step 6: Checking for consistency in the pair wise comparison
- Step 7: Compute the global weights of each criteria and sub-criteria
- Step 8: Repeat steps 5 and steps 6 for all given criteria.

The levels of the hierarchy constituting the goal, criteria and sub-criteria was developed based on the framework suggested by Satty(2000) and presented in fig. 2. Fig. 2 depicts the three-level decision hierarchy consisting of the goal, criteria and sub-criteria developed for facilitating this study. The top level of the hierarchy consists of the goal of the study i.e. prioritize the e-tail attributes for e-tail store patronage of Indian customers. The five main criteria of e-tail stores which influence the customer e-tail store patronage intentions namely are depicted at level 2 of the hierarchy. The store attributes relevant to level 3 sub-criteria are listed below the relevant criteria of store attributes at level 2.

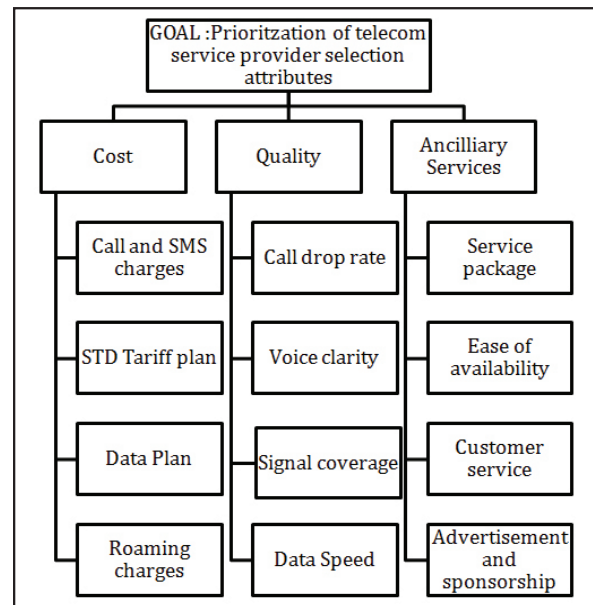


Fig. 2: Modelling the Hierarchy Structure of e-tail Store Selection Attributes

#### IV. Discussion and Analysis

The Table 1 shows the global and local weights of three factor categories and 12 telecom service selection parameters that are normalized based on the AHP analysis. The ranking of these parameters in both local and global weights are shown in Table 1. In level 2 of the hierarchy dealing with the sub criteria, the result shows that the Indian customer considers ‘quality’ as the most important criteria in selecting telecom operator, followed by ‘cost’. Third preference is given to ‘ancillary services’.

Table 1: Local and Global Weights for all the Service Selection Parameters

Hierarchy level	Factor criteria and service selection parameters	Local weights		Global weights	
		Weights	Ranking	Weights	Ranking
<b>Level 2</b>	With respect to implementation priorities of telecom operator selection parameters				
	Cost	0.22	2	0.22	2
	Quality	0.60	1	0.60	1
	Ancillary Services	0.19	3	0.19	3
	Sum	1.00		1.00	
<b>Level 3</b>	<b>With respect to cost</b>				
	Call and SMS charges	0.2849	2	0.0626	7
	STD tariff plan	0.1638	3	0.0360	10
	Data plan	0.4049	1	0.0891	5
	Roaming charges	0.1462	4	0.0322	11
	Sum	1			
	<b>With respect to quality</b>				
	Call drop rate	0.1976	3	0.1186	3
	Voice clarity	0.2982	2	0.1789	2
	Signal coverage	0.1543	4	0.0925	4
	Data speed	0.3498	1	0.2099	1
	Sum	1			
	<b>With respect to ancillary services</b>				
	Service packages	0.2651176	2	0.05037	8
	Ease of availability	0.1340383	4	0.02546	12
	Customer service	0.3948576	1	0.07502	6
	Advertisement & sponsorship	0.2059863	3	0.03913	9
	Sum	1			

### Local weights of the 12 criteria, which influence decision of selecting telecom operator

With respect to level 3 of the hierarchy, containing 12 criteria under the sub goal 'cost' most important criteria comes out to be 'data plan' (0.4049), followed by 'call and SMS charges' (0.2849). Next is 'STD tariff plan' (0.1638) and the last priority under cost is given to 'roaming charges' (0.1462). Under the sub-goal 'quality' the highest priority is given to 'data speed' (0.3498) followed by 'voice clarity' (0.2981), 'call drop rate' (0.1976) and 'signal coverage' (0.1543). Under the sub-goal 'ancillary services' the highest priority is given to 'customer service' (0.3948) followed by 'service packages' (0.26511), 'advertisement & sponsorship' (0.2059) and 'ease of availability' (0.1340).

### Global weights of 12 criteria, which influence decision of selecting telecom operator

The global weights of the 12 criteria shows that 'data speed' (0.2099) is indicated most important factor that influence decision for selecting telecom operator. The results clearly show that telecom providers have to work on developing the infrastructure for providing higher bandwidth. Telecom operators need to invest more in 3G and 4G infrastructure because at present the quality of 3G services, including both data speed and connectivity, has been awful since its launch. For people accessing the Internet over mobile phones or otherwise, 2G-based Internet services - GPRS and EDGE - are still used by default.

The second and third most important factors considered by Indian customers are 'voice clarity' (0.1789) and 'call drop rate' (0.1186) which are again related to telecom infrastructure. Mobile phones work using radio waves in the frequency range of 300 MHz and 3,000 MHz. But the entire range is not available for use. Another reason for call drops is rise in the number of customers. India has 961 million mobile phone subscribers, the most in the world after China. Too many companies are slicing up the available bands into smaller parcels. The lower radio bands need fewer towers to travel longer distances, so when telecom companies offer richer services like 3G or 4G, they have to be at higher frequencies (2,100 MHz or 2,300 MHz instead of 900 MHz), which need more tower support.

Next is the list in descending order of significance of the criteria, are 'signal coverage' (0.0925), 'data plan' (0.089), 'customer service' (0.075), 'call and SMS charges' (0.0626), 'service packages' (0.053), 'advertisement & sponsorship' (0.039), 'STD tariff plan' (0.036), 'roaming charges' (0.032) and 'ease of availability' (0.025).

### V. Limitations of the Study and Future Research

The study has various limitations. First, the present focus of the present study was to develop conceptual dimensions of telecom service provider selection attributes of Indian customers. Future research may extend the current study to various telecom services customers to understand the specific attributes valued by those customers. Second, the study used convenient sampling procedure in selecting the sample so the results of the study cannot be generalized and applied in practice without comprehensive validation through a large sample study. Third, difference of culture in various countries may become a deterrent in generalizing the results in other countries. Future research should attempt to include more countries in their frame of reference to make the results generalizable in different cultural settings.

### VI. Conclusion

Telecom sector plays a vital role in the economic development of India. Telecom industry is one of the fastest growing industries and it has changed how people communicate and business is conducted. Over the years the telecom operators focused on the consumers' satisfaction as the consumers are more concerned about the services provided by different operators. This study is made to analyze the consumers' preference on selecting telecom operator in India using AHP model. This study emphasizes on the AHP ranking of the criteria customer value most while selecting telecom operator. Telecom operators must stress on improving these parameters in order to increase customer satisfaction and gain more customers. Study suggests that telecom operator should focus on quality of service because it turns out as most influential factor. Hence operators should devise effective ways to improve quality. Telecom companies should not hesitate to invest in building infrastructure for 3G and 4G services. Besides quality of voice signals are also equally important, as it is responsible for major portion of revenue operators' earning. Companies spent a lot of money in advertisement and sponsorship, while this study suggests that it is about 50% important than the 'call and SMS charges' telecom operators offer. So instead of spending huge amount of monetary resources in advertisements, telecom service providers should use their precious monetary resources to offer better customized services for their customers.

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