Success Factors in the Diffusion of Innovative Services: A Case Study Specific to the Indian Telecom Context

Sangeeta Sahney
Vinod Gupta School of Management
Indian Institute of Technology
Kharagpur, West Bengal 721302, India.
sangeetasahney@rediffmail.com
sahney@vgsom.iitkgp.ernet.in

ABSTRACT
The telecom industry in India has witnessed a transformation. From a monopolistic regime, through an age of de-regulation and privatization, it has seen the rapid rise of market players who offer innovative products and services. This change has been commensurate with the growth of the industry, now ranked the fifth largest in the world and expected, by 2010, to be the second largest. Faced with a growing market and increasing competition, companies in the telecom business in India must re-orient their product and service offerings. These companies need to adapt continuously to the dynamic environment so as to survive competition. Although many companies focus on innovation of products and services, it is crucial that these products and services be customer-oriented for easier diffusion and quicker adoption, thus increasing customer retention and loyalty. This paper focuses on a telecom company in India, which is a major player in the market. The company formulated a strategy to launch a “bundle of services” program, which would enable it to provide Internet, television (video), and (telephone) voice simultaneously to its customers, apart from other services. This paper presents the results of an empirical study to identify the success factors for the “bundle of services” program. These results will provide a better understanding of customers’ needs, assist in the design of a system that can be diffused, and thus assist marketers as they construct, manage, and evaluate their marketing strategies in the Indian context.

Keywords: Telecom industry, “bundle of services” program, diffusion of innovation, empirical study, quality function deployment
1. INTRODUCTION

The telecom scenario throughout the world is changing at a phenomenal pace. In the last decade, immense technological advancement and innovation in the telecommunications industry around the globe have transformed the industry into a major sector indicative of economic growth. This transformation has been commensurate with diffusion and adoption processes that cause both technological and behavioral changes in business environments and in society.

To survive competition, organizations must adapt continuously to the dynamic environment. Innovations need to be continuous, maybe even dynamically continuous, and the process of diffusion must be evolutionary so as to result in newer technologies and advancements on a cyclical basis. Such trends have occurred around the globe and are nowhere more evident than in India.

The traditional pattern of a monopolistic regime wherein the telecom industry in India was owned, operated, and guided by the government saw a revolutionary change when, post-1991, the government began its policy of liberalization, privatization, and globalization. Many private players entered the scene, and competitiveness became a critical factor for success. The telecom industry in India, which ranks fifth in the world today, is projected to become the second largest by 2010. With a growing market, rising competition, and an open market philosophy, companies today must continually offer innovative products and services in order to survive, exist, and succeed.

In the last five years, various players in the telecom industry in India have begun to offer innovative products and services. Before the Internet and data circuit became popular, telecom operators had relied on voice revenue. The advent of the satellite age and the Internet, however, caused technological and behavioral changes among the public worldwide. The Internet was being used to transfer knowledge, technology, entertainment, and above all e-commerce. The public demand for downloads for knowledge and entertainment purposes affected market dynamics, prompting changes in the telecom industry that affected revenue and profits. With the decline in voice revenue from land-line and mobile services, both private and public telecom operators were left with no option but to search for new ways to earn revenue. Packages offering multiple service options through a single subscription and billing system gained popularity and were soon being offered by government, semi-government, and private players.

1.1. Need and Purpose of the Study

This case study focuses on the XYZ Telecom Company, a major player in the market. This company formulated a strategy to launch a “bundle of services” program that enables a telecom operator to provide Internet, television (video), and (telephone) voice simultaneously to customers, apart from other services. The company first conducted a study to determine which bundle of services would appeal to customers by identifying the expectations and future requirements of customers with regard to telecom companies. An analysis of the results revealed that a “bundle of services” program that would enable a telecom

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operator to provide Internet, television (video), and (telephone) voice simultaneously would be a profitable proposition. A second study was then conducted by the company to identify the minimum set of design characteristics of a telecom system that would meet the customer requirements, with specific reference to the “bundle of services” program. A telecom system based on this approach would enable faster diffusion of services in the system.

1.2. Indian Telecom Industry

The telecom industry in India, as elsewhere around the world, is witnessing a rapid diffusion across the country, transforming India into an information society. The Indian telecom industry, now ranked fifth in the world, is expected to become the second largest by 2010, with 500 million connections. It has the second largest telecom network in Asia, after China, with more than 429.7 million telephone subscribers (TRAI, 2009), for a telecom penetration of 36.98%.

The telecom industry in India witnessed an upsurge in the post-1990’s because of the country’s policies on liberalization, privatization, and globalization. Although other sectors of the Indian economy grew faster initially, the telecom industry saw its greatest upsurge in the last decade. Initially, the industry enjoyed a state of monopoly, but de-regulation, privatization, de-licensing, and the removal of restrictions on foreign capital investment opened the way for private players, both Indian and foreign.

The major milestones were laid by the Telecom Regulatory Authority of India (TRAI) in 1997; the Indian Wireless Act, 1993; the National Telecom Policy, 1999, for cellular telecom services; the Broadband Policy, 2000; the Information Technology Act, 2000; the Indian Telegraph (amendment) Rules, 2004; the Direct to Home (DTH) broadcasting service policy; and, the Communication Convergence Bill, 2001. The TRAI, which is a subordinate of the ministry of telecommunications, has played a major role in regulating yet facilitating the telecom business in the country. Its mission statement is as follows: “To ensure that the interests of consumers are protected and at the same time to nurture conditions for growth of telecommunications, broadcasting and cable services in a manner and at a pace which will enable India to play a leading role in the emerging global information society” (TRAI). The deregulation of the telecom industry in February 2002 brought about huge changes.

The tele-density in India is 36.98% (TRAI, March 2008), much higher than the planned 15% set forth in the telecom policy of 1999. Much of the expansion can be attributed to the drastic lowering of tariff rates. About $8.5 billion has been invested during the last two years, including a foreign direct investment of $550 million. There is tremendous market potential, especially in rural areas where the tele-density is only 8%. The growth rate in rural areas is projected to increase to 200 million rural telecom connections by the year 2012, with an expected tele-density of 25%. According to a joint report by the Confederation of Indian Industry (CII) and Ernst & Young, rural subscribers in 2012 will account for more than 60% of the total subscriber base. This potential is increasingly being recognized by both Indian and foreign players.
With the coming of the satellite age, fixed land-lines have become just one of the components in the service system. From 2004 onward, there has been steep growth in wireless, with two out of every three new telephone connections being wireless. Today, wireless accounts for 54.6% of the total telephone subscriber base. Mobile telephony has seen considerable growth. The two wireless technologies now in use are the GSM (Global System for Mobile Communications) and the CDMA (Code Division Multiple Access). With around 10 million new mobile subscribers being added to the network every month, mobile telephony is emerging as one of the fastest growing telecommunication markets in the world. In addition, the subscriber base for the Internet and broadband is also increasing. By the end of March 2009, the total wireless subscribers – GSM, CDMA, and WLL – number 391.76 million; the wire-line subscribers, 37.96 million; and the total broadband subscribers, 6.22 million (TRAI, 2009).

Three types of parties exist in the Indian telecom industry: state/government-owned companies, private Indian-owned companies, and foreign-invested companies. In addition to the basic land-line telephone with national and international dialing services, the telecom service in India includes telex and telegraph (both manual and automatic), business message networks, voice mail facility, video conferencing, cellular mobile phone, and related services such as SMS, Internet, and broadband (wireless and fixed).

This unprecedented growth in the telecom industry has had a multiplier effect on the entire economy. The players in the Indian telecom industry, comprising hardware manufacturers, operators, and service providers, are playing proactive roles by providing innovative products and services, by improving existing services, and by performing multi-functional roles for quick diffusion and adoption of such innovations through the application of organizational, technical, and commercial skills. The focus today is on innovation and value creation so as to differentiate products and services in order to effectively meet increasing competition and the needs of the evolving telecom industry.

2. THEORETICAL BACKGROUND

In recent years, the subject of innovation and consumer adoption of innovation has been the focus of considerable research [Alba, et al., 1997; Roehm and Sternthal, 2001]. Organizations must continue to innovate or face extinction [Christensen, 1997; Quinn, 2000, McDermott and O'Connor, 2002]; and any failure to innovate places the organization at a competitive disadvantage [Scott, 1999; Byrne, 2000]. Successful organizations encourage and foster an environment of creativity and innovation to ensure long-term success and survival [Oldham and Cummings, 1996; McLoughlin and Harris, 1997]. The time involved in the diffusion of an innovation is also an issue of concern; thus, “speed” becomes a crucial issue [Kessler and Chakrabarti, 1996]. The innovation “speed,” or the amount of time elapsed between initial conceptualization and development and final commercialization and marketing, has been addressed.
variously across two broad perspectives. The first, “commercialization and marketing,” should occur at a fast pace so as to obtain the first-mover advantage [Birnbaum-More, 1990; Emmanuelides, 1991]. The second is the “rate at which an innovation is diffused through an organization” [Rogers, 1983].

Studies have focused on technological advancement primarily because the products and services are complex and require more customer learning; the market is competitive; their life cycles are short; and, the risk factor is high with respect to diffusion among the public and the adoption process as a whole. With rapid technological changes and continuous innovation, the high technology sectors such as information technology and telecommunications have focal research areas. The research on technological innovation includes a large body of knowledge focusing on issues of technology and behavioral-based change in organizational and social settings [Wolfe, 1994; Rogers, 1995; Drazin and Schoonover, 1996]. The two concepts, “innovation” and “diffusion,” may be defined briefly:

**Innovation** has been defined with varying orientations – firm-oriented, product-oriented, process-oriented, customer-oriented, and market-oriented. It has been defined as “an idea, practice or an object that is perceived as new by an individual or other unit of adoption,” and as “the process by which an innovation is communicated through specific channels over time among members of a social system that are linked via networks” [Rogers, 1995]. It is “an idea applied to initiating or enhancing a product, service or process” [Hivner, et al., 2003]; “any idea, practice or object that the adopting individual or organization regards as new” [Damanpour, 1991]; a process that involves the “generation, adoption and implementation, and incorporation of new ideas and practices” [Axtell, et al., 2000]; and even, “a new or innovative idea applied to initiating or improving a product, process, or service [Kanter, 1988; Wolfe, 1994; Ford, 1996].

A multi-dimensional phenomenon, **innovation** is newness to the “firm” [Brouwer and Kleinknecht, 1996; Song and Montoya-Weiss, 1998]; newness to the “customer” [Atuahene-Gima and Ko, 2001]; newness of the “product” [Ali, et al., 1995; Sethi, et al, 2001]. Most studies, however, focus on the firm or customer perspective [De Brentani, 2001]. Product and service innovations bring about changes via something new; the changes that an innovation brings with it are both technology related [Kimberly, 1981; Rogers, 1983; Kitchell, 1995] and behavioral related [Rogers, 1983].

**Diffusion** has been defined as “a process by which an innovation is communicated through specific channels over time among members of a social system that are linked via networks” [Rogers, 1995]. Diffusion is
related to another concept known as “adoption,” which is a series of steps in which the consumer passes from initial knowledge of an innovation (awareness), to forming an attitude toward it (interest, evaluation, and trial), to reaching an adoption decision [Rogers, 1962]. The rate of adoption is the relative speed with which members of a social system adopt an innovation [Rogers, 1995], and reflects the fact that some people adopt innovations faster and more quickly than others. The market, in other words, does not react to an innovation in a similar manner and all members of the population do not adopt the innovation simultaneously (indeed, some never adopt) [Brown, 1981]. The market may therefore be classified as innovators, early adopters, early majority, late majority, and laggards [Rogers, 1962]. Rogers [1983], has identified certain characteristics of innovations that impact the degree of diffusion and are indicative of adoption; namely, relative advantage, compatibility, complexity, trialability, and observability.

Studies on diffusion of innovation have been conducted from two broad, varying perspectives. From a micro perspective, diffusion of innovation is a driver of strategic change within a company, something that is essential for sustained competitive advantage. From a macro perspective, it plays a crucial role in economic development of the country. Diffusion of innovation has been the underlying factor behind the growth and development in the IT and telecom industries, as it has in other industries. Innovative products and services in the IT and telecom sector have diffused into the business environment [Allen and Scott Morton, 1994], and into personal households [Miles, 1988].

Diffusion of innovation is an evolutionary process that has been studied from the point of view of stakeholders and social networks [Burt, 1987; Mahajan, et al., 1990; Rogers, 2003; Iacobucci, 1996; Troshani and Doolin, 2007], government and quasi-governmental institutions that intervene or refrain from intervening in the process [King, et al., 1994], and professional associations, trade and industry associations, standards-setting bodies and consultancies, and government policy-making agencies [Swan and Newell, 1995; Damsgaard and Lyytinen, 2001; Kurnia and Dare 2005; Papazafeiropoulou, 2004]. The innovative products and services offered by the telecom industry are no exception to having been affected greatly by social networks and the communication that takes place in such social networks.

Diffusion of innovation is multi-functional and embraces line functions performed by the R&D and product development team, the production department, and the marketing department. Diffusion of innovation has increasingly been studied and researched from a marketing perspective because it is essentially the marketing of new products [Rogers, 2004]. This perspective evolved in the 1960s and peaked in the 1980s, with a gradual leveling off after
that. Present technological advancements and their diffusion among the public, especially in a competitive environment, has led to a renewed interest among marketing professionals, researchers, and academicians to study and apply the concept with a marketing orientation [Mahajan and Peterson, 1985; Simmonds, 1986; Mahajan, et al., 1990; Rogers, 1995; Ganesh, et al., 1997].

3. CASE STUDY: XYZ TELECOM COMPANY

XYZ Telecom Company, formed a decade ago, is among the world’s top 10 telecom companies. It provides an elaborate yet comprehensive range of world-class telecom products and services in India. The company’s vision is to become one of the largest telecom service providers in Asia. Its mission is to provide a telecom infrastructure, contribute to the growth of the country’s economy, and provide better communication to the population of India.

The initial objective of the company was to create a telecom network across the country. Having done that, it has been focusing on constantly improving, consolidating, and expanding its network and providing new telecom services. It has one of the largest networks with connectivity across the country. It provides its customers with an array of services: Wireline, CDMA mobile, GSM mobile, voice mail, short message, group messaging, Internet, and broadband – bandwidth on demand, video and audio conferencing, corporate Virtual Private Network (VPN), video and gaming – VoIP services, wireless application protocol, and VSAT.

Recently launched services such as Close User Group (CUG) and VPN are extremely popular. Under these services, a small group can make unlimited calls among members of the group absolutely free by paying a nominal tariff. Integrated Voice Response Services (IVRS) linked to fixed lines provides sports news, astrology, horoscope, and other information. Apart from this, the company has decided to offer related services under various plans and schemes. In order to satisfy customers of such services, the company has recently launched a high-speed, multi-play broadband service of up to 8 Mbps speed.

The company has also recently launched an innovative service, known as the “bundle of services” program, aimed at providing Internet, television (video), and (telephone) voice over a single broadband connection. It now aims at faster diffusion of the service across the country, making it a viable commercial proposition.

The company is a major player, with 85% of the market share in the basic telephone subscriber market and 24% of the share in the mobile users market. It has a subscription base of 35 million basic phone subscribers, 2.75 million WLL subscribers, 2.8 million Internet customers, and 0.6 million broadband customers. The company is one of the market leaders not only in terms of the size of its subscriber base, but also in terms of the high revenue generated. With the present gross fixed assets of over US $28 billion, a turnover of over US $8 billion, and a
It has an infrastructure investment plan of US $16.67 million for the next three years.

In a technology-driven market with educated and informed customers and other competitive players, both a challenge and a huge opportunity existed in India for future business expansion through innovative products and services. Although there are options for a wide array of other services and video-based applications like video calling/conferencing, video mail, interactive gaming, video surveillance, video medicine, distance learning, etc, the XYZ Telecom Company decided to launch a service package called the “bundle of services” program. This seemed a viable proposition from the perspective of the company, which already had band-with efficiency and the infrastructure to bridge the gap between the entertainment industry and the needs of the customer. The company decided, therefore, to leverage this golden opportunity to meet the demand of customers and to earn more revenue.

The “bundle of services” program is the company’s commercial name of a single package with multiple products and a combined business model. Customers receive a land line, broadband connection, and Internet Protocol Television (IPTV) services through a single cable, and can use the telephone, surf the Internet, and watch cable TV on the same telephone line with a broadband modem or a set-top box. Customers have to bear the initial cost of the modem or the set-top box, the installation charges, and the tariff for the products and services they receive.

3.1. Objectives of the Empirical Study

The success of an organization is based on its gaining customer insight. Understanding and managing the dynamics of customer expectations are key to identifying the critical success factors for any service provider. In launching its “bundle of services” program, XYZ Telecom Company recognized that it must be done from the perspective of customer orientation. The company decided, therefore, to analyze whether the “bundle of services” program would appeal to customers at large.

Keeping customer satisfaction in mind, the company conducted the study, first, to understand the needs of the customer and thus be able to provide innovative services that can be easily diffused into the market system. Its second purpose was to design a system based on components and design elements that can meet the needs and requirements of its customer, so as to gain a competitive edge in the market. Following are the objectives of the study:

(i) To determine customers’ expectations and future requirements of telecom companies
(ii) To assess the performance of the existing broadband service
(iii) To identify the features in the “bundle of services” program that would appeal to customers
(iv) To determine the customers’ preference for a specific telecom company to provide their telecom needs
(v) To gain insight into the future of the telecom market and the role of technology
(vi) To identify the minimum set of design characteristics of a telecom system that would meet customer requirements, with specific reference to the “bundle of services” program

3.2. Scope and Methodology

The empirical study was conducted in two stages. In the first stage, a research instrument in the form of a questionnaire was prepared and distributed for pilot testing in the city of Kolkata, India. Eight experts and specialists from the telecom industry were involved to provide expert opinion on the various components of the research instrument. Non-probability judgmental and convenience sampling was used to identify customers of XYZ Telecom Company services who would be interested in its concept of multiple services, or “bundle of services” program. In deciding which of its broadband customers would receive the questionnaire, the company focused on two kinds of respondents – persons who opted for broadband as soon as the broadband service of the company had been launched, and persons who opted for broadband service after a two-months-free offer from the company. The minimum education qualification was higher secondary examination in order to analyze the difference in buying patterns across the two groups.

The questionnaire had two purposes:
(i) To gain an insight into customer needs and expectations as a whole and into the needs and expectations of the two groups, especially with regard to variables such as interest, price sensitiveness, and social acceptance.
(ii) To test the questionnaire for reliability and validity so that it could be used in the second stage of the study

A total of 65 responses were found to be complete and valid for analysis (34 people who opted for the broadband as soon as it was launched; 31 people who availed the two-months-free broadband offer, and then subscribed to the service).

In the second stage of the study, the statistically proven questionnaire was modified to facilitate application of the quality function deployment (QFD) technique. A total of 24 responses were collected and analyzed.

3.3. Variable Conceptualization and Instruments

The objective of the empirical study was to understand the needs of the customer and to determine ways to provide innovative services that can be easily diffused into the market system. Design of a customer-focused telecom multiple-service program was essential in order to gain a competitive edge among other players in the market. Theoretical and empirical studies on the telecom industry
were reviewed and the various industry players were studied. For the first part of the study, an exploratory factor analysis was conducted, and factor loadings above Cronbach’s α values of 0.50 were considered. The internal consistency was examined through a reliability analysis. Components that emerged statistically valid and reliable were as follows:

- Expectation and future telecom service requirements
- Customer satisfaction
- Features in the “bundle of services” program that would appeal to customers
- Interest in a multiple-services or “bundle of services” program
- Price sensitiveness of the multiple-service or “bundle of services” program
- Social acceptance among the public with regard to innovators of the multiple-service of “bundle of services” program

After the first stage of the study, another questionnaire was prepared, pilot tested, and modified for use in the second stage, which involved application of the QFD technique. A pilot study was conducted to examine the validity and reliability of the scale. The quantitatively and statistically proven items and attributes were classified under two broad headings: customer requirements and design characteristics. These were then incorporated in the questionnaires that were distributed to respondents. Customer expectations and requirements regarding a telecom “bundle of services” program were identified and grouped as customer requirements. A total of 14 items were identified that were grouped under five factors/constructs, with Cronbach’s α values ranging from 0.6850 to 0.7851. The various components that could lead to a customer-focused telecom “bundle of services” program were also identified and grouped as design characteristics. Here, a total of 20 items were identified that were grouped under four factors/constructs, with the Cronbach’s α values ranging from 0.6245 to 0.8224. These values clearly indicated that the scale was internally consistent and reliable [Cronbach, 1951; Nunnally, 1978; Nunnally and Bernstein, 1994].

Although the constructs proved to be statistically significant and the validity could not be negated, the scales for customer requirements and design characteristics are considered uni-dimensional, and the items are considered a single composite set of individual measures.

(i) Customer Requirements
- Performance
- Convenience
- Personalization
- Interactivity
- Reliability
- Responsiveness
Ease of operation
Ease of reach
Connectivity
Customer support
Value-added services
Technical competence
After-installation services
Continuous improvement

(ii) Design Characteristics
Easy accessibility of service
Simple, unambiguous transactions
Clear transaction policies
Quick delivery times
Error-free processing of information
Error-free billing
Billing transparency
Accurate order fulfillment
Interactivity between service provider and subscriber
Reputation
User friendliness
Transaction safety
Up-to-date information availability
Availability of competent representatives
Prompt handling of complaints
Proper speed and bandwidth
Value-added services
Branding
Individualized attention
Customer care

3.4. Data Collection, Analysis, and Interpretation, Stage I
The first stage of the empirical study was conducted to understand the needs of the customer and to analyze whether the “bundle of services” program would appeal to customers at large. A questionnaire was administered to the two groups of broadband customers previously identified. A total of 65 responses were found to be complete and valid for analysis. Following are the findings relating to the five objectives of the study.
3.4.1. **Objective 1:** To determine customers’ expectations and future requirements regarding telecom companies

Customer satisfaction and delight is the true mantra for the survival and success of any company in the highly competitive telecom environment. The study revealed that the market was ready for a converged solution, both voice and data. With the problems that can occur in maintaining multiple-service providers for Internet, cable television, and telephone, the customers surveyed preferred an agency or service provider that provided a combined solution, based on quality, personalization and individualization, customer care and continuous upgrades and improvement in technology and services. This objective was further explored in the second stage of the study with the application of the QFD technique.

The sample was also studied as two separate groups: persons who opted for broadband as soon as the broadband service of the company had been launched, and, persons who opted for the broadband service after a two-months-free offer from the company, so as to compare the results with regard to interest, price sensitiveness, and social acceptance.

First, the correlation among the three variables was studied for the entire group of respondents.

- **Interest:** This variable refers to the degree to which a person likes a category and is involved with it. In this case, the category pertains to entertainment through the Internet and television. Such a person would be innovative and would act as an innovator with regard to new products.

- **Price Sensitiveness:** This variable refers to the tendency of a person to buy or not to buy a product or service even if it is higher in price if the product or service delights him or her. The degree of price sensitiveness will be low if he or she is ready to buy the product or service, even if the price paid for it is high.

- **Social Acceptance:** This variable refers to the degree to which the person is liked by others or, in other words, the degree of influence that the person has over others’ behavior. This factor would affect the diffusion process especially through opinion leadership.

It was observed that *interest* and *price sensitiveness* were inversely related, with a correlation coefficient of 0.679. This finding implied that, if a customer was interested in entertainment through the Internet and television, he or she was low on price sensitiveness, and, with an innovative product, he or she could also act as an innovator. As far as *interest* and *social acceptance* are concerned, there was a direct positive relationship between the two variables, with a correlation coefficient of 0.767. This finding implied that, when a person was interested in entertainment through the Internet and television, he or she would be quick to adopt, his or her social acceptance would be high, and he or she would be regarded as an opinion leader. With respect to *social acceptance* and *price sensitiveness*, there was no relation between the two variables.
Next, the sample was studied as two separate groups. A two-sample t-test was conducted to ascertain whether there was any difference between the group of people who opted for broadband as soon as the broadband service of the company had been launched, and the group of people who opted for broadband service after a two-months-fee offer from the company.

- Null hypothesis = The variance/means between the two groups do not differ significantly and are the same/equal.
- Alternate hypothesis = The variance/means between the two groups differ significantly and are not the same/equal.

**Hypothesis 1.** There is no significant difference in the level of interest between those who adopted the service instantly and those who availed the two-month free broadband service and then subscribed to it.

Null hypothesis $H_0$: *Interest* of the persons who availed the two-months-free broadband is the same as that of the persons who did not avail the offer.

Alternate hypothesis $H_1$: *Interest* of the persons who availed the two-months-free broadband significantly differs from that of the persons who did not avail the offer.

The data was subjected to the independent samples t-test. The Levene’s test for equality of variances was applied. The F statistic value had a corresponding significance (or p-values), of more than 0.05. This meant that the null hypothesis failed to get rejected and that the variances of the two groups were equal. This supported the use of pooled variance t-tests for each of these to test the equality of means. The associated values of significance (p-values), were less than 0.05, and thus, the null hypothesis got rejected; i.e. the difference in the means is significant (see Table 1).

**There is significant difference in the level of interest between those who adopted the service instantly and those who availed the two-months-free broadband service and then subscribed to it.**

The average interest of the customers who did not avail the two-months-free broadband is significantly higher than the average interest of people who opted for two-months-free broadband service. This finding means that the people who did not avail the two-months-free broadband offer were more interested in entertainment such as music and movies the Internet and television. Also, they were comfortable with new technologies and more open to experiment with them. From the company’s perspective, they were the innovators and would act as opinion leaders, thereby helping in the adoption of innovation.
Hypothesis 2. There is no significant difference in the level of price sensitiveness between those who adopted the service instantly and those who availed the two-months-free broadband service and then subscribed to it.

Null hypothesis $H_0$: Price sensitiveness of the persons who availed the two-months-free broadband is same as that of the persons who did not avail the offer.

Alternate hypothesis $H_1$: Price sensitiveness of the persons who availed the two-months-free broadband significantly differs from that of the persons who did not avail the offer.

The data was subjected to the independent samples t-test. The Levene’s test for equality of variances was applied. The F statistic value had a corresponding significance (or p-values), of more than 0.05. This meant that the null hypothesis failed to get rejected and that the variances of the two groups were equal. This finding supported the use of pooled variance t-tests for each of these to test the equality of means. The associated values of significance (p-values) were less than 0.05; thus, the null hypothesis got rejected; i.e. the difference in the means is significant (see Table 1).

There is significant difference in the level of price sensitiveness between those who adopted the service instantly and those who availed the two-months-free broadband service and then subscribed to it.

The average price sensitiveness of the customers who did not avail the two-months-free broadband service officer is significantly lower than the average interest of people who opted for the two-months-free broadband offer. In other words, people who did not avail the free broadband service are willing to pay a higher price if the services satisfy them.

Hypothesis 3. There is no significant difference in the level of social acceptance between those who adopted the service instantly and those who availed the two-months-free broadband service and then subscribed to it.

Null hypothesis $H_0$: Social acceptance of the persons who availed the two-months-free broadband is the same as that of the persons who did not avail the offer.

Alternate hypothesis $H_1$: Social acceptance of the persons who availed the two-months-free broadband service significantly differs from that of the persons who did not avail the offer.
The data was subjected to the independent samples t-test. The Levene’s test for equality of variances was applied. The F statistic value had a corresponding significance (or p-values), of more than 0.05. This fact means that the null hypothesis failed to get rejected, and that the variances of the two groups were equal. This finding supported the use of separate variance t-tests for each of these to test the equality of means. The associated values of significance (p-values), were again more than 0.05; thus, the null hypothesis failed to get rejected – i.e., the difference in the means is not significant (see Table 1).

*There is no significant difference in the level of social acceptance between those adopted the service instantly and those who availed the two-months-free broadband service and then subscribed to it.*

The average *social acceptance* of the customers who did not avail two month free broadband does not significantly differs from the average interest of people who opted for two month free broadband.

### Table 1  
Hypothesis Testing: Hypotheses 1-3

<table>
<thead>
<tr>
<th></th>
<th>Group</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>F</th>
<th>Sig. (p)</th>
<th>t Value</th>
<th>Sig. 2 tailed</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest</strong></td>
<td>Did not avail offer and subscribed instantly</td>
<td>4.00</td>
<td>0.50</td>
<td>3.658</td>
<td>0.060</td>
<td>2.374</td>
<td>0.021</td>
<td>5.679E-02</td>
</tr>
<tr>
<td></td>
<td>Availed 2 months free broadband</td>
<td>3.65</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.6617</td>
</tr>
<tr>
<td><strong>Price Sensitivity</strong></td>
<td>Did not avail offer and subscribed instantly</td>
<td>2.86</td>
<td>0.81</td>
<td>3.274</td>
<td>0.075</td>
<td>2.035</td>
<td>0.046</td>
<td>6.359E-03</td>
</tr>
<tr>
<td></td>
<td>Availed 2 months free broadband</td>
<td>3.22</td>
<td>0.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.7090</td>
</tr>
<tr>
<td><strong>Social Acceptance</strong></td>
<td>Did not avail offer and subscribed instantly</td>
<td>3.90</td>
<td>0.58</td>
<td>0.476</td>
<td>0.493</td>
<td>1.265</td>
<td>0.211</td>
<td>-0.1116</td>
</tr>
<tr>
<td></td>
<td>Availed 2 months free broadband</td>
<td>3.70</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.4961</td>
</tr>
</tbody>
</table>
3.4.2. **Objective 2:** To assess the performance of the existing broadband service

Customers were asked to give their opinion about the existing broadband service of the XYZ Telecom Company. The performance was assessed, from excellent to poor, on five parameters: speed, price, billing transparency, customer care, and reliability. The results are shown in Table 2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Excellent (%)</th>
<th>Very Good (%)</th>
<th>Good (%)</th>
<th>Average (%)</th>
<th>Poor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>12</td>
<td>29</td>
<td>39</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Pricing</td>
<td>2</td>
<td>20</td>
<td>58</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Billing Transparency</td>
<td>2</td>
<td>22</td>
<td>39</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>Customer Care</td>
<td>3</td>
<td>11</td>
<td>32</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Reliability</td>
<td>6</td>
<td>29</td>
<td>47</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

3.4.3. **Objective 3:** To identify the features in the “bundle of services” that would appeal to customers

The study revealed the following attributes, in order of preference, which would appeal to the customers:
- Service agreement where the level of service is formally defined
- Cost effectiveness
- Customer Support
- Value-added services
- Branding

Price was also an issue. The customers preferred competitive pricing, but in return for quality service delivery.

3.4.4. **Objective 4:** To determine customers’ preferences for a specific telecom company for their telecom needs

The telecom industry is highly competitive. Customers are always on the lookout for newer products and service schemes and packages. They even prefer to change their service providers to obtain better services and requirements. With
the advent of new local and global players, the telecom market is being highly influenced by brand, technology leadership, and innovative service packaging. Customers are encouraged to try newer offerings from other service providers. As an existing telecom player, XYZ Telecom Company believed it was crucial to understand the mind set of customer.

The survey revealed that value-added services were the major factor determining customers’ preference for a particular telecom company. They much preferred a service package that was high on quality and customer satisfaction. Although bandwidth, speed, and connectivity were the major technical factors, the marketing spirit lay in providing individualized attention and a system that was user-friendly. Transparency in dealings was also one of the major things that customers expected from their service providers. Interactivity between the service provider and the buyer was also important. The customers preferred a single service provider. Loyalty was high as long as service requirements were met without interruption, post-sales/subscription support was provided, and complaints were handled promptly.

3.4.5. **Objective 5: To obtain insight into the future of the telecom market and the role of technology**

Understanding the future of the telecom market is essential for service providers in order to be proactive in providing innovative products and services and rightly targeting and positioning them so as to penetrate the market and enable the diffusion and quick adoption of innovative products and services. The secondary data revealed that the future of the telecom market is bright. The rural sector afforded a great opportunity. Investment in basic infrastructure and bandwidth was the call of the day.

3.5. **Data Collection, Analysis, and Interpretation, Stage II**

To identify the minimum set of design characteristics of a telecom system that would meet the customer requirements, with specific reference to the “bundle of services” program, the company, in the second stage of the empirical study, applied the quality function deployment (QFD) technique.

The QFD technique, developed by Mizuno and Akao, is an integrative process based on the desires of the customer. It is a tool that aims at ensuring that the voice of the customer is considered throughout the product planning and design stages [Franceschini and Rossetto, 1997; Hauser and Clausing, 1988]. The technique has been used worldwide for design of products and services.

The technique uses a matrix with rows and columns, the rows representing the “whats” or **customer requirements**, and the columns representing the “hows” or **design characteristics**. Because the matrix resembles the shape of a house, it has also been called the “house of quality.” The QFD matrix comprises two basic dimensions. The exterior walls on the left of the house represent the “whats” (with customer requirements constituting the rows), and the ceiling of the house represents the “hows” (with design characteristics constituting the columns). The rows and columns cut across each other, creating the cells or interior walls of the
house, which represent the relationship between the items of the “whats” and the items of the “hows.” The foundation of the house comprises the prioritized design characteristics, which are ranked both absolutely and relatively. The roof of the house portrays the interrelationship between the various design characteristics.

The QFD technique helps to arrive at a set of design characteristics that best satisfies customer requirements [Hauser and Clausing, 1988; Pitman, et al., 1995]. The objective is to understand customer needs and to prioritize the design characteristics in an order that most effectively meets these needs and to design a product or service system accordingly [Akao, 1990; Masui, et al., 2003].

3.5.1. Objective of Stage II

The objective of the second stage of this study was to identify the minimum set of design characteristics of a telecom system that would meet the customer requirements, with specific reference to XYZ Telecom Company’s “bundle of services” program.

The test of reliability and validity identified customer requirements and 20 design characteristics. These were arranged in a matrix that was incorporated in the questionnaire that was used in the second stage of the study. The respondents were asked to assign numeric relative importance scores to the various customer requirements, from the lowest to the highest, on a scale of from 1 to 5. They were also asked to express in numeric values the weak-moderate-strong relationship between the “whats” and the “hows” on a scale of 1, 3, and 9.

A total of 24 responses were collected and analyzed in this stage of the study.

Based on the prioritized scores and the relationship scores, the absolute values were computed for each column (absolute ranks: AR) and the respective “hows” were then ranked relatively (relative ranks: RR) (Figure 1 and Table 3). A correlation analysis was performed to identify the interrelationship between the different design characteristics, and the correlated pairs with an alpha value of more than 0.70 were identified (Table 4).
Figure 1. QFD Matrix
Table 3  
Codes and Items for the QFD Matrix

<table>
<thead>
<tr>
<th></th>
<th>Performance</th>
<th>Ease of reach</th>
<th></th>
<th>Convenience</th>
<th>Connectivity</th>
<th></th>
<th>Personalization</th>
<th>Customer support</th>
<th></th>
<th>Interactivity</th>
<th>Value added services</th>
<th></th>
<th>Reliability</th>
<th>Technical competence</th>
<th></th>
<th>Responsiveness</th>
<th>After installation services</th>
<th></th>
<th>Ease of operation</th>
<th>Continuous improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Performance</td>
<td>Ease of reach</td>
<td></td>
<td>Convenience</td>
<td>Connectivity</td>
<td></td>
<td>Personalization</td>
<td>Customer support</td>
<td></td>
<td>Interactivity</td>
<td>Value added services</td>
<td></td>
<td>Reliability</td>
<td>Technical competence</td>
<td></td>
<td>Responsiveness</td>
<td>After installation services</td>
<td></td>
<td>Ease of operation</td>
<td>Continuous improvement</td>
</tr>
</tbody>
</table>

A Easy accessibility of service  
B Simple, unambiguous transaction  
C Clear transaction policies  
D Quick delivery times  
E Error-free information processing  
F Error-free billing  
G Billing transparency  
H Accurate order fulfillment  
I Buyer-subscriber interactivity  
J Reputation  
K User friendly  
L Transaction safety  
M Up-to-date information access  
N Availability of competent reps  
O Prompt complaint handling  
P Proper speed and bandwidth  
Q Value-added services  
R Branding  
S Individual attention  
T Customer care  

Table 4  
Relative Ranking of Items

<table>
<thead>
<tr>
<th>Relative Rank</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>User friendly</td>
</tr>
<tr>
<td>II</td>
<td>Individualized attention</td>
</tr>
<tr>
<td>III</td>
<td>Availability of competent representatives</td>
</tr>
<tr>
<td>IV</td>
<td>Prompt complaint handling</td>
</tr>
<tr>
<td>V</td>
<td>Customer care</td>
</tr>
<tr>
<td>VI</td>
<td>Value-added services</td>
</tr>
<tr>
<td>VII</td>
<td>Proper Speed and bandwidth</td>
</tr>
<tr>
<td>VIII</td>
<td>Interactivity between seller and subscriber</td>
</tr>
<tr>
<td>IX</td>
<td>Accurate order fulfillment</td>
</tr>
<tr>
<td>X</td>
<td>Billing transparency</td>
</tr>
</tbody>
</table>
3.5.2. Findings of Stage II

The design characteristics that ranked as the first 10 in order of rank are:

- User friendly
- Individualized attention
- Availability of competent representatives
- Prompt handling of complaints
- Customer care
- Value-added services
- Proper speed and bandwidth
- Interactivity between seller and subscriber
- Accurate order fulfillment
- Billing transparency

A correlation analysis was performed to identify the interrelationship between the different “hows,” and the relationship was plotted on the roof of the matrix. The design characteristics that correlated with each other are as follows (Table 5):

\[
\{A\text{-}B\}, \{A\text{-}D\}, \{A\text{-}I\}, \{A\text{-}K\}, \{A\text{-}P\}, \{A\text{-}Q\}, \{A\text{-}T\}, \{A\text{-}C\}, \{B\text{-}E\}, \{B\text{-}H\}, \{B\text{-}I\}, \{B\text{-}K\}, \\
\{B\text{-}L\}, \{B\text{-}N\}, \{B\text{-}S\}, \{C\text{-}F\}, \{C\text{-}G\}, \{C\text{-}H\}, \{C\text{-}I\}, \{C\text{-}K\}, \{C\text{-}S\}, \{C\text{-}T\}, \{D\text{-}I\}, \{D\text{-}K\}, \{D\text{-}T\}, \\
\{E\text{-}F\}, \{E\text{-}G\}, \{E\text{-}H\}, \{E\text{-}L\}, \{E\text{-}N\}, \{E\text{-}O\}, \{E\text{-}T\}, \{F\text{-}G\}, \{F\text{-}N\}, \{F\text{-}O\}, \{F\text{-}T\}, \{G\text{-}K\}, \{G\text{-}T\}, \{H\text{-}I\}, \{H\text{-}J\}, \{H\text{-}K\}, \{H\text{-}L\}, \{H\text{-}N\}, \{H\text{-}O\}, \{H\text{-}S\}, \{H\text{-}T\}, \{I\text{-}K\}, \{I\text{-}M\}, \{I\text{-}N\}, \{I\text{-}O\}, \{I\text{-}S\}, \{I\text{-}T\}, \\
\{J\text{-}L\}, \{J\text{-}N\}, \{J\text{-}O\}, \{J\text{-}P\}, \{J\text{-}Q\}, \{J\text{-}R\}, \{J\text{-}T\}, \{K\text{-}L\}, \{K\text{-}M\}, \{K\text{-}N\}, \{K\text{-}O\}, \{K\text{-}Q\}, \{K\text{-}S\}, \\
\{L\text{-}N\}, \{L\text{-}T\}, \{M\text{-}N\}, \{M\text{-}P\}, \{M\text{-}T\}, \{N\text{-}O\}, \{N\text{-}R\}, \{N\text{-}S\}, \{N\text{-}T\}, \{O\text{-}R\}, \{O\text{-}S\}, \{O\text{-}T\}, \\
\{P\text{-}R\}, \{P\text{-}T\}, \{Q\text{-}R\}, \{Q\text{-}S\}, \{R\text{-}T\}, \{S\text{-}T\}.
\]

**Table 5**

Important Pairs after Correlation

<table>
<thead>
<tr>
<th>Easy accessibility of service AND Simple unambiguous transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy accessibility of service AND Quick delivery times</td>
</tr>
<tr>
<td>Easy accessibility of service AND Interactivity between seller and subscriber</td>
</tr>
<tr>
<td>Easy accessibility of service AND User friendly</td>
</tr>
<tr>
<td>Easy accessibility of service AND Proper speed and bandwidth</td>
</tr>
<tr>
<td>Easy accessibility of service AND Value-added services</td>
</tr>
<tr>
<td>Easy accessibility of service AND Individualized attention</td>
</tr>
</tbody>
</table>
Table 5. Important Pairs after Correlation (cont’d)

| Easy accessibility of service AND Customer care |
| Simple unambiguous transactions AND Clear transaction policies |
| Simple unambiguous transactions AND Error-free processing of information |
| Simple unambiguous transactions AND Accurate order fulfillment |
| Simple, unambiguous transactions AND Interactivity between seller and subscriber |
| Simple, unambiguous transactions AND User friendly |
| Simple, unambiguous transactions AND Transaction safety |
| Simple, unambiguous transactions AND Availability of competent reps. |
| Simple, unambiguous transactions AND Individualized attention |
| Clear transaction policies AND Error-free billing |
| Clear transaction policies AND Billing transparency |
| Clear transaction policies AND Accurate order fulfillment |
| Clear transaction policies AND Interactivity between seller and subscriber |
| Clear transaction policies AND User friendly |
| Clear transaction policies AND Individualized attention |
| Clear transaction policies AND Customer care |
| Quick delivery times AND Interactivity between seller and subscriber |
| Quick delivery times AND User friendly |
| Quick delivery times AND Customer care |
| Error-free processing of information AND Error-free billing |
| Error-free processing of information AND Billing transparency |
| Error-free processing of information AND Accurate order fulfillment |
| Error-free processing of information AND Transaction safety |
| Error-free processing of information AND Availability of competent representatives |
| Error-free processing of information AND Prompt complaint handling |
| Error-free processing of information AND Customer care |
| Error-free billing AND Billing transparency |
| Error-free billing AND Availability of competent representatives |
Table 5. Important Pairs after Correlation (cont’d)

| Error-free billing AND Prompt complaint handling |
| Error-free billing AND Customer care |
| Billing transparency AND User friendly |
| Billing transparency AND Customer care |
| Accurate order fulfillment AND Interactivity between seller and subscriber |
| Accurate order fulfillment AND Reputation |
| Accurate order fulfillment AND User friendly |
| Accurate order fulfillment AND Transaction safety |
| Accurate order fulfillment AND Availability of competent reps. |
| Accurate order fulfillment AND Prompt complaint handling |
| Accurate order fulfillment AND Individualized attention |
| Accurate order fulfillment AND Customer care |
| Interactivity between seller and subscriber AND User friendly |
| Interactivity between seller and subscriber AND Up-to-date information access |
| Interactivity between seller and subscriber AND Availability of competent reps. |
| Interactivity between seller and subscriber AND Prompt complaint handling |
| Interactivity between seller and subscriber AND Individualized attention |
| Interactivity between seller and subscriber AND Customer care |
| Reputation AND Transaction safety |
| Reputation AND Availability of competent reps |
| Reputation AND Prompt complaint handling |
| Reputation AND Proper Speed and bandwidth |
| Reputation AND Value-added services |
| Reputation AND Branding |
| Reputation AND Customer care |
| User friendly AND Transaction safety |
| User friendly AND Up-to-date information access |
| User friendly AND Availability of competent representatives |
| User friendly AND Prompt complaint handling |
Table 5. Important Pairs after Correlation (cont’d)

<table>
<thead>
<tr>
<th>Important Pairs after Correlation (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>User friendly AND Value-added services</td>
</tr>
<tr>
<td>User friendly AND Individualized attention</td>
</tr>
<tr>
<td>Transaction safety AND Availability of competent representatives</td>
</tr>
<tr>
<td>Transaction safety AND Customer care</td>
</tr>
<tr>
<td>Up-to-date information access AND Availability of competent representatives</td>
</tr>
<tr>
<td>Up-to-date information access AND Proper Speed and bandwidth</td>
</tr>
<tr>
<td>Up-to-date information access AND Customer care</td>
</tr>
<tr>
<td>Availability of competent reps AND Prompt complaint handling</td>
</tr>
<tr>
<td>Availability of competent reps AND Branding</td>
</tr>
<tr>
<td>Availability of competent reps AND Individualized attention</td>
</tr>
<tr>
<td>Availability of competent reps AND Customer care</td>
</tr>
<tr>
<td>Prompt complaint handling AND Branding</td>
</tr>
<tr>
<td>Prompt complaint handling AND Individualized attention</td>
</tr>
<tr>
<td>Prompt complaint handling AND Customer care</td>
</tr>
<tr>
<td>Proper speed and bandwidth AND Branding</td>
</tr>
<tr>
<td>Proper speed and bandwidth AND Customer care</td>
</tr>
<tr>
<td>Value-added services AND Branding</td>
</tr>
<tr>
<td>Value-added services AND Individualized attention</td>
</tr>
<tr>
<td>Branding AND Customer care</td>
</tr>
<tr>
<td>Individualized attention AND Customer care</td>
</tr>
</tbody>
</table>

4. SUMMARY OF FINDINGS
The world has become increasingly dependent on telecommunication products and services in both the business and private sectors. Tremendous development in the telecom sector over the last decade is reflected in the rapid growth of companies, increased competition among them, and the rising number of players offering multiple, innovative products and services that are being facilitated through global technological networks. The key to survival and success lies not only in innovation, but also in the diffusion of such innovations and their glad adoption by the public. It is essential, therefore, that the dynamics of success be properly understood and managed.
This paper examines the success factors of an innovative service offered by the XYZ Telecom Company of India. Its “bundle of services” program is its commercial name for providing three services: high-speed Internet, television, and telephone over a single broadband connection. The company’s challenge was to diffuse this innovation to private households.

To achieve its goals, the company conducted a two-stage study. The objective of the first stage was to determine which bundle of services would appeal to customers by identifying the expectations and future requirements of telecom customers. The results indicated that a “bundle of services” program emphasizing individualized attention would be a profitable proposition. In the second stage, an investigation was made to identify the minimum set of design characteristics of a telecom system that would meet customer requirements, with specific reference to the “bundle of services” program. A telecom system incorporating these characteristics would achieve a faster diffusion of its services.

The findings of the two-stage study may be summarized as follows:

1. The market is ready for a converged solution, both voice and data. Customers would prefer a service provider who would provide a combined solution for Internet, television, and telephone over a single broadband connection.

2. Customers desire a system based on quality, personalization and individualization, customer care, and continuous upgrades and improvements.

3. Interest and price sensitiveness are inversely related. This finding implies that, if a customer is interested in entertainment via the Internet and television, he or she is low on price sensitiveness, and, with an innovative product, he or she may also act as an innovator.

4. There is a positive relationship between Interest and Social Acceptance. This finding implies that, when a person is interested in entertainment via the Internet and television, he or she would be quick to adopt, his or her social acceptance would be high, and he or she would be regarded as an opinion leader.

5. There is no relationship between Social Acceptance and Price Sensitiveness.

6. There is significant difference in the level of Interest between those who adopted the service instantly and those who availed the two-month free broadband service and then subscribed to it. The average interest of customers who did not avail the two-month free broadband is significantly higher than the average interest of those who opted for two-
month free broadband. From the Telecom Company’s perspective, the former customers are the innovators and would act as opinion leaders, thereby helping in the adoption of innovation.

7. There is significant difference in the level of Price Sensitiveness between those who adopted the service instantly and those who availed the two-month free broadband service and then subscribed to it. The average price sensitiveness of the customers who did not avail two-month free broadband is significantly lower than the average interest of those who opted for two-month free broadband. Those who did not avail the free broadband are willing to pay a higher price if the services satisfy them.

8. There is no significant difference in the level of Social Acceptance between those adopted the service instantly and those who availed the two-month free broadband service and then subscribed to it. The average social acceptance of the customers who did not avail two-month free broadband does not significantly differ from the average interest of people who opted for two-month free broadband.

9. Customers who opted for broadband connection soon after its launch are more interested in the Internet and entertainment. They are also less price sensitive than those who availed the two-month-free broadband offer. If the XYZ Telecom Company can target such customers and satisfy them, it can expect positive word-of-mouth publicity for its service.

10. Customers were asked to give their opinion of the existing broadband service of the XYZ Telecom Company. They were asked to rate, from “excellent” to “poor,” the following five parameters: speed, price, billing transparency, customer care, and reliability. The findings show that broadband users are happy with the speed, reliability, pricing, and billing of broadband service, but a majority of them are not satisfied with the level of customer service. The Company should improve its customer care service for existing broadband customers.

11. The study reveals the following attributes that would appeal to customers, ranked here in order of preference: a service level agreement that formally defines the level of service, cost effectiveness, customer support, value-added services, and branding. Price is also an issue. Customers prefer competitive pricing, but in return for quality service delivery.

12. The major determinant for preference of customers for a particular telecom company is value-added services; i.e., a service package that is high on quality and customer satisfaction. Band-width, speed, and
connectivity are the major technical factors, but the principal marketing factor is individualized attention; i.e., user friendliness. Transparency in dealings is also one of the major expectations of customers. Interactivity between the service provider and the buyer is also important. The customers prefer a single service provider. Loyalty is high as long as service requirements are met without interruption, post-sales/subscription support is provided, and complaints are handled promptly.

13. The secondary data reveal that the future of the telecom market is bright. The rural sector provides a great opportunity for growth. Investment in basic infrastructure and band-width are the call of the day.

14. The minimum set of design characteristics of a telecom system that would meet customer requirements, with specific reference to the “bundle of services” program, are listed here in order of preference: user friendly, individualized attention, availability of competent representatives, prompt complaint handling, customer care, value-added services, proper speed and band-width, interactivity between seller and subscriber, accurate order fulfillment, and billing transparency.

5. CONCLUSIONS

This paper begins with a discussion of the conceptual background and then presents the methodology, data, and findings of an empirical study of a telecom company in India. The purpose of the case study was to identify factors critical to the successful diffusion of three innovative services offered by the XYZ Telecom Company of India – high-speed Internet, television, and telephone over a single broadband connection. The variables for the study were identified from the literature review and expert opinion, and were then pilot tested.

The case study was conducted in two stages. Since the market seemed ready for a converged solution, both voice and data, the first stage of study involved a survey to determine which bundle of services would appeal to customers. The survey results revealed that customers would indeed prefer a service provider who would offer a combined solution for Internet, television, and telephone over a single broadband connection. The results indicated that customers desired a system based on quality, personalization and individualization, customer care, and continuous upgrades and improvement.

In the second stage, an investigation was conducted to identify the minimum set of design characteristics of a telecom system that would meet customer requirements, with specific reference to the “bundle of services” program. The voice of the customer was ascertained using the quality function deployment technique, and factors critical to customer satisfaction were then prioritized. Incorporating these elements in the design of a “bundle of services” program would lead to diffusion of the innovative service and its quick adoption by the public.
NOTE
The case has been developed to gather insights into the success factors in the diffusion of innovation, with specific reference to a telecom company in the Indian context. The identity of the telecom company has been hidden and the name changed for confidential purposes.

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REFERENCES
Cronbach, L.J. 1951. Coefficient alpha and the internal structure of test, Psychometrika 16, 297-300.
http://business.mapsofindia.com/india-industry/telecom.html


www.ibef.org/industry/telecommunications.aspx

www.trai.gov.in

ABOUT THE AUTHOR

Dr. Sangeeta Sahney is an assistant professor at the Vinod Gupta School of Management, Indian Institute of Technology, Kharagpur, West Bengal, India. Her areas of specialization are marketing management, with particular reference to consumer behavior and services marketing. She also pursues an interest in quality management in services, particularly with regard to quality in education.