# Mediating effects of broadband consumers' behavior in India

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## ABSTRACT

Internet usage is rapidly growing in areas like cosmopolitan cities, semi-urban cities in India. I-enabled services offered by various government agencies, educational institutions and commercial activities force users of these services to seek superior internet access like broadband, WiMax is likely to replace traditional broadband and dial-up access soon. Interestingly, reforms in telecom sector are taking place at a rapid pace in India. Many private players started internet services affecting monopolistic public sector telecoms. The advent of private ISPs, the consumer behavior and brand choice of broadband consumers are witnessing dynamic shift in favor of private players. Cost competitiveness, transparency, paradigm shift in consumer responsiveness etc weigh in favor of Public Sector telecoms. This paper attempts to identify the factors affecting broadband consumer behavior. Further, paper studies the causes and effects, mediating effects of consumer behavior and conceptualizes a model to capture

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these effects. The results suggest that adoption of broadband service is playing a mediatory role in consumer satisfaction.

Keywords: Broadband, Adoption, Normative constructs, mediating.

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# I INTRODUCTION

Worldwide consumer adoption of broadband internet services continues exponentially. Broadband internet penetration is more than 55% in Japan and Korea and 53.6% in United States in 2004 (Venkata Praveen, Fotios Harmantzis 2006). One of the most stunning aspects of the past few years has been the speed at which the internet market has expanded and matured. This rapid rate of internet adoption has resulted in an extraordinary pace of change in the marketing landscape- and opened up a variety of opportunities for marketers (Pollack 1999). According to Internet World Stats, an online internet usage portal, broadband penetration is only 0.2% in India in 2007. There are four categories of broadband users: 1) Asymmetrical Digital Subscriber Line (ASDL) 2) Cable TV Internet 3) Fibre-to-home 4) Wireless Mobile Internet. But ASDL internet access and Wireless Mobile internet access are popular in India. The broadband penetration is expected to go up with impending WiMax broadband services in India. The markets for broadband that remain untapped are rural, high cost, low-income and high risk users. Serving these markets require large investments that have not been forthcoming from the private sector (Francis Porenza 2007). The deployment focus now is shifting towards broadband access services and in this regard, the Government of India has taken a number of proactive steps to boost the penetration and deployment of advanced telecommunications infrastructure in all parts of the country (Abhay

Karandikar, Zainul Chabriwala 2006). Government of India has taken numerous efforts to increase the tele-density to 25 in the coming years. The Telecom Regulatory Authority of India (TRAI), through its working papers, is promoting broadband internet access and advised the service providers to diversify their operations to rural India. Till 2004, the broadband market in India is dominated by 2 telecom public sector companies viz., BSNL (Bharat Sanchar Nigam Limited) and MTNL (Mahanagar Telephone Nigam Limited). Their market shares are witnessing sharp decline due to entry of many private players like Reliance, Tata Teleservices, and Airtel etc. The users are shifting from one player to another due to various reasons like cost, speed, quality of service etc. Beneficial impact of competition within the telecoms extending choice among consumers has provoked rivalry and price reduction among suppliers (Watson, Viney, and Schomaker 2002). India is also witnessing keen price war among the broadband service providers and thereby leading to increased broadband penetration in recent times.

Major beneficiaries of broadband internet services are health, education, transport and banking sectors. In India, BSNL (telecom PSU) is the dominant player in broadband segment of telecommunication. BSNL is offering almost all the telecommunications services from basic telephony to video conferencing. Besides, it has sizeable market share in rural India. From a conservative telecom operator controlled by Government of India, it has transformed into more corporatized entity resulting improved delivery, quality

of service. BSNL has presence in almost all urban areas except New Delhi and Mumbai. By 2006, BSNL had over 450,000 kilometers of fibre, compared to about 65,000 kilometers of its nearest rival, Reliance (Malik Payal 2008 chap 9). In order to increase their market share, ISPs are promoting ease of adoption of broadband services.

Broadband user adoption is affected by attitudinal constructs (relative advantage, utilitarian outcomes, hedonic outcomes, social outcomes and service quality), which represent consumers' favorable or unfavorable evaluations of the behavior in question (i.e. adoption of broadband) (Brown and Venkatesh, 2005; Dwivedi & others 2007; Rogers, 1995; Venkatesh and Brown, 2001); (2) normative constructs (primary influence, work referents' influence and secondary sources' influence), which represent the perceived social pressure upon consumers to perform the behavior in question (i.e. adoption of broadband) (Brown and Venkatesh, 2005; Dwivedi and others 2007; Venkatesh and Brown, 2001), and (3) control constructs (knowledge, self-efficacy, perceived ease of use, perceived ease of subscribing broadband, cost, declining cost, facilitating conditions resources and perceived lack of needs), which represent the perceived control over the personal or external factors that may facilitate or constrain the behavioral performance of consumers (Brown and Venkatesh, 2005; Dwivedi and others, 2007; Rogers, 1995; Venkatesh and Brown, 2001).

In this paper, an attempt to study these constructs and develop a normative model to understand their interdependencies is made. The model, so developed, is tested using structural equation modeling technique. From prior studies, we develop a mediating-mediating SEM model capturing various factors influencing broadband (BB) consumer behaviour. We find that attitudinal constructs have significant mediating role; which is again mediated by adoption constructs leading to consumer satisfaction.

## II LITERATURE ON CONSUMER BEHAVIOR AND THEIR INFLUENCERS – A REVIEW

Consumer behavior is affected by many factors. When it comes to brand choice, it is affected by social, utility, needs and other factors. According to Sheth and Parvatiyar (1995) marketers will try to create an environment for increasing consumer inertia by providing conveniences and process simplification to minimize the desire to seek other alternatives. Needs of the consumer may be based on functionality or psychological fulfillment in nature, and sellers are often inclined to satisfy psychological needs as much as functionality oriented ones (Babin 1994). Economic theory has contributed to brand choice research. This contribution is reflected in rational choice theory that postulates consumers seek to maximize utility of their decision. Utility is maximized through consumers assigning a value to each product/service based on an assessment of each product/serviceability to satisfy needs and desires (Marshall, 1890;

Alchian, 1953; Strotz, 1953). According to Jacoby, rational choice theory argues buyers do not choose randomly and that rationality is the only reasonable explanation for their reactions to changes in relative prices (Jacoby, 2001). Accepting this theory would lead to rejection of psychological factors including past purchase experiences, current expectations, motives, mood, personality, attitudes, values, beliefs, memory etc. Brown and Venkatesh, (2005); Dwivedi and others, (2007); Rogers, (1995); Venkatesh and Brown, (2001) have listed various constructs affecting broadband adoption of Indian consumers.

Behavioral Intention (intention to subscribe), Relative Advantage (BB superiority), Utilitarian Outcomes (access to information), Service Quality (Fault clearance, speed etc), Primary Influence (friends, family etc), Social Needs (Symbol of possession), perceived ease of use and many other factors (Dwivedi et al 2007, Rogers et al 1995, Venkatesh and Brown et al 2001 &2005) significantly influence consumer behavior. Demographics (e.g., gender, age, income, race, etc.) did not predict differences in online buying, although males spent slightly more than female online shoppers. However, both the Wharton Virtual Test Market and other studies (Kehoe, Pitkow, and Rogers 1998; Kraut et al. 1997) have found that demographics were an important indicator of who is on the Internet in the first place. In their paper, Kehoe & others and Kraut argue that the different types of cognitive processing, changes of preferences, the focus of the need for identity and social networks are

determinants leading to product choice and explaining variations in market dynamics (Janssen Marco, Jager Wander, 2001). Deighton et al., (1994) examined switching and repeat purchase effects of advertising in well established and frequently purchased product categories. They found that advertising works through attracting switchers but did little in modifying the repeat purchase probabilities of those who have just purchased the brand (Deighton et al., 1994). Gary Madden, Michel Simpson and Scott Savage (2002) found NMNL model used by them suggest 65 per cent of separate Australian households passed are likely to subscribe to broadband delivered entertainment service in the twenty first century.

It has been proved that sales promotions to have positive effects for new customers only, with the likelihood of existing customers purchasing their existing brand not increasing. However, BB services promotions have positive effects for both new and existing customers and results in customer retention/brand loyalty. Gerald R. Faulhaber and Christiaan Hogendorn (2000) found that competition in the provision of interactive broadband infrastructure to metropolitan area households is likely, if the market is left unfettered. While this infrastructure market is clearly not perfectly competitive, it would appear that two or even three firms can offer fiber infrastructure at higher demand levels and survive. Strategic dynamic behavior takes the form of dissipating rents by increasing network size relative to the static model, which is an unambiguous gain for consumers. Fang-Mei Tseng (2006) listed upload speed,

connection stability, usage fees, download speed, service quality of provider, static ip address, brand of service provider, and awareness of the provider as the influencing factors of consumer choice of broadband services in Taiwan. He concluded that if the usage fees of broadband services falls, the dialup users in Taiwan will switch over to ASDL or Cable internet. But the fixed ASDL users will less likely to switch over to other options. The "India's Broadband Economy: Vision 2010", a study conducted by IBM Business Consulting Service on behalf of Confederation of Indian Industry (CII) and Ministry of Communications & Information Technology (MCIT) indicates that the present value (2004) benefit for the Indian Economy due to the growth in Broadband is expected to be USD 90 Billion for the period 2010-2020, with an 11 percent additional growth in the labor productivity. It further says that new business lines and efficiency will increase in existing businesses, leading to direct employment of 1.8 million and total employment of 62 million by 2020 (Pavan Kumar 2007). Offering a lower price may not be sufficient to cause customers to change supplier, as consumers are thought to exhibit threshold responses (Malhotra 1983). Assael (1987) suggested that the extent and depth of informational search will depend upon the nature of the buying or acquiring decision.

Kenneth Flamm, Anindya Chaudhuri (2005) found that the own-price elasticity of broadband demand is statistically significant and has a substantial coefficient value. The cross-price sensitivity of broadband demand with respect to dialup

price is also statistically significant, and supports the notion of the two services being substitutes. Broadband has developed as a type of high-speed Internet access that supports the transmission of data at speeds far greater than traditional dial-up access in US. While common-carrier requirements have now been cast aside for cable and DSL broadband providers, numerous regulations and statutes still remain in place that will prevent monopoly control of broadband service (Justin P.Hedge 2006). More information on prices could increase consumer price sensitivity for undifferentiated products. At the same time, having more information on non-price attributes could reduce price sensitivity for differentiated products (Alba & others 1997). In terms of Web behavior, the ease with which potential goal-directed shoppers can find the information they want, and the reliability they can place on that information, will be key determinants in their repeated use of the Web (Kathy Hammond, Gil McWilliam, Andrea Narholz Diaz, 1997). Key to the regulatory argument appears to be an assumption that local loop unbundling will promote the availability of new technologies based upon telecommunications networks (such as broadband services) – a supply-side argument based upon the premise that competing providers will put pressure upon incumbent operators to incorporate new technologies into their networks, thereby making the new technologies available to consumers (BOLES de BOER David, ENRIGHT Christina & EVANS Lewis 2000).

Previous studies suggested that the significant role of attitudinal factors such as relative advantage, utilitarian outcomes, hedonic outcomes and service quality on influencing consumers' behavioral intentions to adopt personal computers (Brown and Venkatesh, 2005) and broadband (Dwivedi, 2005). A total of 16 constructs were expected to be correlated to the BI of consumers when adopting broadband Internet in India. Of these 16 constructs three, including relative advantage, hedonic outcomes and cost, significantly correlated to the behavioral intentions (BI) of consumers. In terms of the size of the effect of these three constructs that contributed significantly to behavioral intentions, the relative advantage construct had the largest impact in the explanation of variations of BI (Yogesh K. Dwivedi1, Michael D. Williams, Banita Lal, Vishanth Weerakkody and Sneha Bhatt 2006)

A satisfaction dimension corresponds to a number of product attributes or features that together generate particular aspects of performance, such as price, perceived quality, ease of service, convenience in availability, variety of features, attractiveness of the product, and advertising of the product. The most important factors that will cause them to change are the perceived quality of the product and attractiveness of the product, while convenience in availability is not found to be of a great influence in brand switching. (Paurav Shukla, 2004). Since users fall into four categories: Students, Home users, Enterprise users, Government, the needs and wants are different for each type of users. For example enterprise users need higher bandwidth to support their commercial

interests and require continuous servicing by the provider, whereas home users are contend with relatively low or medium bandwidth and support when needed (Venkata Praveen, Fotios C Harmantzis 2006). Product familiarity had a significant impact on Indian consumers' attitudes, subjective norms, intention to buy, and, ultimately, purchase behavior of the low innovator and high innovator groups (HoJung Choo, Jae-Eun Chung, and Dawn Thorndike Pysarchik 2004).

# III METHODOLOGY

## A FORMATIVE MODEL

Based on the previous research into consumer behavior, constructs affecting broadband choice and influencers of consumer satisfaction, a formative model capturing the mediating role of broadband adoption, attitudes on the outcome of satisfaction is conceived by authors, which will be used in model testing under structural equation modeling. In the previous researches, effects of attitudinal constructs, normative constructs and/or control factors on the consumer behavior are extensively studied either in isolation or consolidated (Venkatesh, Brown 2005 and others). There has been relatively little research focus on mediatory role played by any of the subjective factors. Therefore, it is felt that a model would be of immense use for the academics and the industry, if it captures the important factors that influence the satisfaction of broadband users.

We have focused the research in that direction to come up with a comprehensive model.

In figure 1, a formative model for structural equation modeling technique is conceptualized for understanding the consumer behavior by the academics, telecom industry managers. This model has been proved empirically in results section. It is suggested that the academics can use this model with a fair amount of care as this is designed for a particular geographical setting i.e., service areas covered under Chennai BSNL and is limited to that metropolitan and adjoining areas located in a single state (Tamil Nadu) in India.

In order to capture the interdependence of adoption, consumer behavior constructs to achieve consumer satisfaction; we have conceived the following model in fig 1. There are four independent dimension/constructs (Attitudes, Normative (awareness), Adoption and Expectation) and a dependent construct (Consumer Satisfaction). Normative constructs are availability of information on connection, charges, rental, usage plans, fault repair procedure, customer care, value added services availability and payment facilities. Attitudinal constructs are consumer disposition on provider service quality, cost, provisioning speed, connection speed, post provisioning, provider's plans, superior payment facilities and consumer behavior on other operators' service. Adoption constructs are usage, duration, usage of other service providers, switchover, purpose, user, payment mode, availability, service quality, speed,

advertisement, influencers, and point of purchase and payment facilities. Expectation constructs are provisioning speed, price, service quality, utility, customer care, and fault attendance, post provisioning care, payment facilities and value added services. Consumer satisfaction is determined by provisioning speed, price, service quality, utility, customer care, and fault attendance, post provisioning care, payment facilities and value added services.

**FIGURE 1 FORMATIVE MODEL FOR CONSAT MEDIATING EFFECTS – Insert here**

## B DESIGN OF THE STUDY

### 1 DATA COLLECTION

The data collection employed cross-sectional data approach. Cross-sectional data "is one used to collect data on all variables at one point of time" (O'Sullivan & Rassel 1999). This approach is adopted in most econometric data collection. The survey design is regarded as the most appropriate research design to measure the consumer behavior of the respondents in this study. A survey is the most appropriate research design as it can enable the researcher to collect information from a large population. The current study is a relational survey that seeks to explore the relationship between Attitudes, Awareness & Consumer behavior (Normative), Expectation Factors as the mediating factor

and Adoption factors, again, overall mediating factor on the outcome Consumer Satisfaction. Pilot study consisting of a questionnaire was carried out with 50 existing Broadband users of BSNL Chennai. Based on the feedback, the questionnaire was revised by either deleting some constructs or adding some constructs. Questionnaire consists of VI Parts. Part I is related demographics, II consists of questions on brand awareness, III has questions on attitudes & consumer behavior, IV concentrates on adoption, V on Expectation and concludes with VI questions on consumer satisfaction with a five point scale instrument of Strongly disagree to Strongly agree. Individual constructs of these consumer behavior variables are listed in Table 1.

**TABLE 1 – INDIVIDUAL CONSTRUCTS OF CONSUMER BEHAVIOR VARIABLES - Insert here**

Questionnaires were handed over to over 1650 individuals who visited BSNL Chennai Customer Care Centers in its Service Area. Of these, 1574 individuals have responded to the questionnaires. Only 1522 responses were found valid with all questions' responses and remaining 52 responses were rejected either due to incompleteness or respondent own responses.

This particular area is chosen for study keeping in view of the economic diversity, cultural diversity and social divergence. Chennai is a metropolitan city (cosmopolitan in social setting) and has wide divergence in socio-economic life. It has vast majority of growing middle class and urban poor. The adjoining

areas are semi urban in socio-economic setting and comprise even villages turning as towns. Chennai Telephones under BSNL represents an ideal ground for the purpose of study. Chennai Metropolitan and adjoining areas covered by Chennai BSNL have a good mix of variety of commercial and economic units' viz., automobiles, information technology, banking and financial institutions. Besides, the education sector is making strident progress with new generation educational institutions in various faculties. Growing medical tourism and health care requires a great deal of investment in information technology including internet enabled services. As population of these areas represents a mix of all races of India, it is felt that the study could be representative of consumer behavior of broadband services. Therefore, the findings of this study can be generalized to India as a whole and of course, with a fair degree of caution. The findings can be applied at ease to all urban areas in India. As broadband penetration is quite high in urban areas compared to rural India, the study will be of immediate use to telecom companies either prospective or existing.

Respondents' characteristics based on demographics are listed out in the following table.

**TABLE 2 RESPONDENT CHARACTERISTICS – Insert here**

Responses based on demographic profile of the respondents in relation to where he/she uses it, whether he/she uses broadband connection and the level of awareness of the BSNL broadband (DATAONE) and/or other service providers are listed in table 3. Majority of respondents belonging to all age groups except in age 36-45 are using broadband from their home and office is their next preferred place. Almost all the respondents are either partially/totally aware of the broadband service offered by Public Sector Telecom BSNL. Male population outnumbers the females in using broadband internet and their awareness of BSNL Dataone is high compared to females. Responding to their use, all the unmarried respondents are using broadband compared to married ones. Respondents having higher qualifications are fully aware of broadband service from BSNL. Respondents' behavior, measured through their responses as above, fortifies the conceptualized relationship constructs of Andrews, Durvasula and Akhter (1990). According to them, consumer involvement is influenced by four antecedents that included personal characteristics, lifestyle, perception needs and situations that directly affect the shopping motives. The consumer behaviors affected were purchase decision, items purchased, amount spent, purchase volume and payment mode.

**TABLE 3 DEMOGRAPHIC PROFILE AND USUAGE – Insert here**

## 2 DATA ANALYSIS

The data collected were analyzed for the entire sample. Data analyses were performed with Statistical Package for Social Sciences (SPSS 17) using techniques that included cross tabulation and AMOS Package (AMOS 16) for Structural Equation Modeling and Bayesian Estimation and testing.

## A STRUCTURAL EQUATION MODELLING

The main study used structural equation modeling (SEM) because of two advantages: "(1) estimation of multiple and interrelated dependence relationships, and (2) the ability to represent unobserved concepts in these relationships and account for measurement error in the estimation process" (Hair et al., 1998, p.584). In other words, a series of split but independent multiple regressions were simultaneously estimated by SEM. Therefore, the direct and indirect effects were identified (Tate 1998).

Structural equation models with latent variables (SEM) are more and more often used to analyze relationships among variables in marketing and consumer research. Some reasons for the widespread use of these models are their parsimony (they belong to the family of linear models), their ability to model complex systems (where simultaneous and reciprocal relationships may be present, such as relationship between satisfaction and various normative constructs). As usually recommended, a confirmatory factor analysis (CFA) model is first specified to account for the measurement of relationships from

latent to observable variables. In the present case, the attitudes, awareness of brand, expectation are the observable variables and attitude being mediating factor on the internal endogenous variable adoption and adoption is the overall mediator on the endogenous variable, consumer satisfaction.

## 3 FORMULATION OF HYPOTHESIS

In order to study the mediating effects of attitudes & adoption on consumer satisfaction and their interdependencies, we developed following path model (see figure 2). After specifying the model, the hypotheses were formulated for empirical analysis and testing.

## HYPOTHESES FOR MEDIATING-MEDIATING CONSAT REGRESSION MODEL

Hypotheses are numbered from 1 to 9 and are denoted by notation H as H1 to H9 in figure 2. Alternative hypothesis (Null Hypothesis) for all the above hypotheses is that the variables under study have no significant influence or no relationship with each other and/or the outcome.

H1: There exists statistically significant association between attitudes and awareness.

H2: Attitudes are significantly influenced by expectation constructs.

H3: Awareness has significant influence on the mediator adoption constructs.

H4: Adoption is significantly influenced by expectation constructs.

H5: Attitudes influenced by awareness and expectation factors plays a mediating role with regard to outcome Adoption.

H6: Awareness has positive influence on Consumer Satisfaction.

H7: Expectation factors significantly influence on Consumer Satisfaction.

H8: Attitude significant mediates Satisfaction alongwith awareness and expectation

H9: Adoption significantly mediates other normative and descriptive constructs and has a significant influence over Consumer Satisfaction.

**FIGURE 2 PATH DIAGRAM: MEDIATING – MEDIATING CONSAT MODEL – Insert here**

These hypotheses are tested using various fit measures of Structural Equation Model and its regression coefficients. In the succeeding section, we will focus on the results of regression analysis in SEM graphical setting and the influence of demographic variables on constructs of consumer behavior.

## VI RESULTS

### A CONSUMER BEHAVIOR CONSTRUCTS AND DEMOGRAPHIC PROFILE OF BROADBAND CONSUMERS

In order to understand the role of demographic profile of respondents on consumer behavior, one way analysis of variance (ANOVA) was carried out using SPSS 17.0 @ 0.05% significance level and the results are summarized in Table 4. Interestingly, demographic variable age of the respondents significantly affects the level of awareness, their expectation and adoptability leading to high satisfaction level. Shwu-Ing Wu (2002) found that antecedents of personal characteristics, lifestyle, perception needs and situations affect the degrees of consumer involvement. These factors affect the purchase decision, desire for acquisition etc. However, the gender of the respondents does not affect the consumer behavior measured via the construct except their expectation. Most noteworthy outcome of ANOVA is attitudes are affected by qualification level and type of occupation and it is not affected by age, gender, marital status, level of income and family type. Shwu-Ing Wu (2002) suggests that these factors have lower Cronbach's alpha yet they affect the outcome of internet marketing. Ultimately, consumer satisfaction is not affected by the sex of the respondents or marital status. Irrespective of their sex, the consumers' wants and needs are typical as far as technology is concerned. But their satisfaction is achieved mainly by their level of income and qualification. As the income goes up, the possession constraints are minimized thereby increasing the utility gains (namely, satisfaction). Consumer adoption of broadband services is affected mainly by their age and marital status besides the income level and occupation. Since broadband services are technologically advanced, younger is able to adapt to the technological challenges than older

one. From the table, the most critical demographic variable is occupation and income level as has been suggested by Shwu-Ing Wu (2002). Occupation affects the consumer behavior totally where as others affect only few or most of the constructs employed for measuring consumer behavior.

## B MEDIATING-MEDIATING CONSAT THIRD ORDER STRUCTURAL EQUATION MODEL

In hierarchical regression, the predictor variables are entered in sets of variables according to a pre-determined order that may infer some causal or potentially mediating relationships between the predictors and the dependent variables. Such situations are frequently of interest in the social sciences. The logic involved in hypothesizing mediating relationships is that "the independent variable influences the mediator which, in turn, influences the outcome" (Holmbeck, 1997). However, an important pre-condition for examining mediated relationships is that the independent variable is significantly associated with the dependent variable prior to testing any model for mediating variables (Holmbeck, 1997). Of interest is the extent to which the introduction of the hypothesized mediating variable reduces the magnitude of any direct influence of the independent variable on the dependent variable. Hence, in this paper, the hierarchical regression model CONSAT, which is tested, is presented for discussion as under.

**FIGURE 3 THIRD ORDER MEDIATING-MEDIATING CONSAT REGRESSION MODEL – Insert here**

H1: Awareness is having $r^2$ of 0.25 with Attitude and has significant influence on the mediator attitudes.

H2: Attitudes are influenced by expectation constructs as it has $r^2$ of 0.07. But its influence is considered as low.

H3: Awareness is having $r^2$ of 0.07 with Adoption and has lesser influence on the mediator adoption.

H4: Adoption is influenced by expectation constructs as it has $r^2$ of 0.06. But its influence is considered as low.

H5: Attitudes have $r^2$ of 0.13 and influenced by awareness and expectation factors plays a mediating role with regard to outcome Consumer Satisfaction.

H6: Awareness has $r^2$ of 0.19 and has a positive influence on Consumer Satisfaction.

H7: Expectation factors having $r^2$ of -0.12 negatively influence on Consumer Satisfaction.

H8: Attitude has $r^2$ of 0.16 and mediates other constructs positively over Consumer Satisfaction.

H9: Adoption has $r^2$ of 0.39 significantly mediates other normative and descriptive constructs and has positive, mediating influence over Consumer Satisfaction.

Initiators generally have a shorter decision process than that of later adopters. Initiators are venturesome, impulsive, able and willing to bear risks and make relatively rapid decisions to adopt. The new products they buy are discontinuous innovations, having maximal impact on current consumption patterns. Initiators need less interpersonal influence than later adopters, having less need for others to legitimize their adoption decisions (Howard 1989).

Regression analysis reveals that awareness and expectation have influence over the attitudinal factors which mediates the mediator adoption. Individually, awareness is having positive influence on satisfaction whereas expectation has negative momentum over satisfaction. Higher the expectation, lower the level of satisfaction as seen from published works. Attitude has a positive mediator influence over satisfaction but its mediatory influence is not as strong as adoption over satisfaction. Finally, adoption of the broadband user is very crucial for overall satisfied customer. It is not always useful, as witness the attempts in marketing to predict consumer choice through knowledge of attitudes, intentions and personality (Foxall, Bhate 1993). That alone might have encouraged a wider quest for alternatives in so pragmatic a discipline. As seen from table 5, Confirmatory factor analysis reveals that Chi-square $\chi^2$ = 44.822 @ p =0.001, Root Mean Square Error of Approximation (RMSEA) = 0.098, Goodness of Fit (GFI) = 0.989, Comparative Fit Index = 0.962 and Normed Fit Index = 0.961. Though RMSEA of 0.5 is considered good fit, RMSEA of 0.098 is a good fit considering the model conceived i.e., mediating

recursive third order path model since other major fit indexes are within the acceptable range. The Bayesian estimates (see table 6) also vindicates that the data are statistically acceptable for analysis and that the conclusions derived from analysis are true. Therefore, the regression model is a good model within structural equation modeling environment. This reinforces the findings of Foxall (1992), who suggested The successive lifestyles, which are a function of experience rather than age, of many consumers are likely to be characterized by Maintenance, then Accumulation, then Pleasure, then Accomplishment.

## V CONCLUSIONS

The CONSAT mediating-mediating model to understand the interdependencies between attitudinal, normative constructs and adoption of consumer is estimated and empirically tested. The model provides quantitative assessment of mediatory role played by attitudes and adoption over satisfaction in combination with other constructs. Uniqueness of this model is that it has mediating factor attitude which in turn mediated by adoption. Previous researches suggest that attitudinal constructs have significant influence over broadband adoption (Venkatesh, Brown and others). This model empirically and graphically proved that the attitudes have to be factored for successful adoption of broadband services. Successful adoption leads to satisfied broadband user provided expectation and awareness are well gauged. Negative association between expectation and satisfaction vindicates previous works in

that increased expectation leads to dissatisfaction. Only limitation of the study is that it is confined to a particular telecom company operating in a service area. Findings, therefore, suggest that broadband user attitudes need to be gauged for successful adoption of broadband usage.

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## TABLE 1 INDIVIDUAL CONSTRUCTS OF CONSUMER BEHAVIOR VARIABLES

| AWARENESS | ATTITUDES & PERCEPTION | ADOPTION | EXPECTATION | SATISFACTION |
|---|---|---|---|---|
| Use | Quality of Service | Service | Post Provisioning | Provisioning Speed |
| Place | Cost | Duration | Price | Price |
| Service | Fault Clearance | Other Operator | Quality of Service | Quality of Service |
| Connection | Provisioning Speed | Migration of Service Provider | Broadband Speed | Broadband Speed |
| Installation | Customer Care | Purpose of Use | Utility | Utility |
| Rent | Post Provisioning Care | User | Customer Care | Customer Care |
| Charges | Broadband Speed | Payment Mode | Fault Clearance | Fault Clearance |
| Plans | Plan Suitability | Availability | Post Provisioning | Post Provisioning Attendance |
| Fault attendance | Payment Facility | Utility | Payment Facilities | Payment Facilities |
| Customer Service | Other Provider Customer Service | Cost | Value Added Services | Value Added Services |
| Value Added Services | Other Provider (OP) Speed | Quality of Service | | |
| Payment | OP Provision Speed | Speed | | |
| | Cost Comparability | Customer Care | | |
| | OP Plans | Fault Clearance | | |
| | Technology Issues | Provisioning Attendance | | |
| | New Technology | Payment Options | | |
| | | Advertisement | | |
| | | Franchisee Recommendation | | |
| | | Agency Recommendation | | |
| | | Staff Recommendation | | |
| | | Friend Recommendation | | |
| | | Colleagues | | |
| | | Previous User | | |

**TABLE 2 RESPONDENTS CHARACTERISTICS**

| *Demographic Variable* | 20-25 | 26-35 | 36-45 | above 46 | Total |
|---|---|---|---|---|---|
| Age | 161 | 510 | 333 | 516 | 1520 |
| | | | | | |
| | Male | Female | | | Total |
| Gender | 524 | 996 | | | 1520 |
| | | | | | |
| | Married | Single | | | Total |
| Marital Status | 1108 | 412 | | | 1520 |
| | | | | | |
| | High School | UG | PG | Others | Total |
| Education | 52 | 719 | 578 | 171 | 1520 |
| | | | | | |
| | upto 5K | 5K-10K | 10K-20K | above 20K | Total |
| Monthly Income | 42 | 356 | 472 | 650 | 1520 |
| | | | | | |
| | Joint | Nucleus | | | Total |
| Family Type | 577 | 943 | | | 1520 |
| | | | | | |
| | Govt/PSU | Private | Self | Others | Total |
| Job | 353 | 856 | 162 | 149 | 1520 |

## Table 3 DEMOGRAPHICS & USUAGE PATTERN

| Demographic Variables | | Place | | | | Use | | BSNL BroadBand | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Office | Residence | Browsing Center | All these Places | No | Yes | No Knowledge | Partially Aware | Fully Aware |
| **Age** | 20-25 | 20 | 100 | 0 | 30 | 0 | 150 | 0 | 60 | 90 |
| | 26-35 | 60 | 174 | 60 | 322 | 20 | 596 | 30 | 262 | 324 |
| | 36-45 | 124 | 82 | 10 | 110 | 0 | 326 | 22 | 140 | 164 |
| | 46 & above | 20 | 380 | 0 | 30 | 10 | 420 | 0 | 114 | 316 |
| **Gender** | Male | 174 | 512 | 30 | 300 | 30 | 986 | 32 | 382 | 602 |
| | Female | 50 | 224 | 40 | 192 | 0 | 506 | 20 | 194 | 292 |
| **Marital Status** | Unmarried | 50 | 190 | 20 | 262 | 0 | 522 | 20 | 252 | 250 |
| | Married | 174 | 546 | 50 | 230 | 30 | 970 | 32 | 324 | 644 |
| **Qualification** | HSC | 0 | 20 | 0 | 0 | 0 | 20 | 0 | 0 | 20 |
| | UG | 104 | 410 | 40 | 332 | 0 | 886 | 42 | 292 | 552 |
| | PG | 110 | 204 | 30 | 150 | 20 | 474 | 10 | 222 | 262 |
| | Others | 10 | 102 | 0 | 10 | 10 | 112 | 0 | 62 | 60 |
| **Monthly Income** | <5K | 0 | 30 | 0 | 20 | 0 | 50 | 0 | 0 | 50 |
| | 5K-10K | 50 | 154 | 40 | 182 | 0 | 426 | 30 | 182 | 214 |
| | 10K-20K | 102 | 104 | 10 | 250 | 30 | 436 | 22 | 240 | 204 |
| | >20K | 72 | 448 | 20 | 40 | 0 | 580 | 0 | 154 | 426 |
| **Type of Family** | Nuclear Family | 80 | 408 | 60 | 322 | 30 | 840 | 20 | 254 | 596 |
| | Joint Family | 144 | 328 | 10 | 170 | 0 | 652 | 32 | 322 | 298 |

## TABLE 4 ONE WAY ANOVA OF DEMOGRAPHIC VARIABLES AND CONSTRUCTS

| Demographic Variable/Constructs | ANOVA | AWARENESS | ATTITUDE | ADOPTION | EXPECTATION | SATISFACTION |
|---|---|---|---|---|---|---|
| AGE | F | 5.107* | 0452 | 8.293* | 29.318* | 11.014* |
| | Sig | .002 | .716 | .000 | .000 | .000 |
| GENDER | F | 0.206 | 3.473 | 0.614 | 19.894* | 0.052 |
| | Sig | .650 | .063 | .433 | .000 | .819 |
| MARITAL STATUS | F | 5.667* | 0.544 | 10.162* | 1.703 | 1.026 |
| | Sig | 0.017 | 0.461 | 0.001 | 0.192 | 0.311 |
| QUALIFICATION | F | 8.810* | 2.945* | 2.048 | 27.806* | 6.153* |
| | Sig | .000 | .032 | .105 | .000 | .000 |
| INCOME | F | 12.129* | 1.383 | 4.731* | 92.067* | 6.183* |
| | Sig | 0.000 | 0.246 | 0.003 | 0.000 | 0.000 |
| FAMILY TYPE | F | 110.193* | 0.309 | 0.118 | 11.019* | 6.967* |
| | Sig | 0.000 | 0.579 | 0.731 | 0.001 | 0.008 |
| OCCUPATION | F | 8.936* | 6.766* | 4.562* | 29.591* | 7.670* |
| | Sig | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |

* *Significant @ 0.05% level of significance n/m 3/1519*

## TABLE 5 MAJOR MEASURES OF GOODNESS OF FIT (CONFIRMATORY FACTOR ANALYSIS)

| S.No | Measures of Fit | Output of CONSAT Model | Acceptable Range |
|---|---|---|---|
| **1** | Chi-square ( $\chi 2$) at p 0.01 | 44.822 | Highly Significant |
| **2** | Degree of freedom (df) | 1 | - |
| **3** | Goodness-of-fit index (GFI) | 0.989 | >0.90 |
| **4** | Comparative fit index (CFI) | 0.962 | >0.90 |
| **5** | Bentler –Bonett Index or Normed Fit Index ( NFI) | 0.961 | >0.90 |
| **6** | Comparative fit Index ( CFI) | 0.962 | >0.90 |
| **7** | Root mean squared error of approximation (RMSEA) | 0.098 | Acceptable fit for third order model |
| **8** | Minimum value of Discrepancy ( FMIN) | 0.030 | Lower the closeness of Fit |
| **9** | Lower Limit of FMIN (LO90) | 0.017 | - |
| **10** | Upper limit of FMIN (HI90) | 0.046 | - |
| **11** | Browne-Cudeck Criterion (BCC) | 82.972 | - |
| **12** | Akaike Information Criterion (AIC) | 82.822 | - |
| **13** | ECVI | 0.055 | Lower |
| **14** | MECVI | 0.055 | - |

| | | | |
|---|---|---|---|
| **15** | HOELTER .05 | 131 | <= 75 poor fit |
| **16** | HOELTER .01 | 225 | At least 200 |

## TABLE 6 BAYESIAN ESTIMATES FOR THE CONSAT MEDIATING -MEDIATING MODEL

| | Mean | S.E. | S.D. | C.S. | Median | 50% L bound | 50% U bound | Skewness | Kurtosis | Min | Max | Name |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Regression weights** | | | | | | | | | | | | |
| Satisfaction<--Awareness | 0.164 | 0.000 | 0.022 | 1.000 | 0.164 | 0.149 | 0.179 | 0.006 | 0.022 | 0.068 | 0.248 | W6 |
| Satisfaction<--Expectation | -0.125 | 0.001 | 0.022 | 1.000 | -0.125 | -0.140 | -0.110 | 0.012 | -0.053 | -0.214 | -0.029 | W7 |
| Satisfaction<--Adoption | 0.365 | 0.000 | 0.012 | 1.000 | 0.365 | 0.356 | 0.373 | 0.005 | -0.074 | 0.320 | 0.415 | W8 |
| Attitude<--Awareness | 0.249 | 0.000 | 0.023 | 1.000 | 0.249 | 0.233 | 0.265 | -0.037 | -0.059 | 0.163 | 0.338 | W1 |
| Attitude<--Expectation | 0.071 | 0.001 | 0.024 | 1.000 | 0.071 | 0.056 | 0.087 | -0.023 | 0.062 | -0.020 | 0.172 | w2 |
| Adoption<--Attitude | 0.132 | 0.001 | 0.039 | 1.000 | 0.132 | 0.105 | 0.158 | -0.018 | -0.012 | -0.046 | 0.273 | w5 |
| Adoption<--Awareness | 0.070 | 0.001 | 0.045 | 1.000 | 0.070 | 0.040 | 0.101 | 0.027 | 0.017 | -0.119 | 0.256 | W3 |
| Adoption<--Expectation | 0.065 | 0.001 | 0.038 | 1.000 | 0.065 | 0.039 | 0.091 | 0.030 | -0.025 | -0.080 | 0.216 | W4 |
| Satisfaction<--Attitude | 0.164 | 0.001 | 0.023 | 1.000 | 0.164 | 0.148 | 0.179 | 0.008 | -0.008 | 0.078 | 0.247 | W9 |
| **Means** | | | | | | | | | | | | |
| Awareness | 27.378 | 0.003 | 0.123 | 1.000 | 27.378 | 27.296 | 27.460 | -0.019 | 0.040 | 26.889 | 27.861 | M1 |
| Expectation | 34.367 | 0.003 | 0.120 | 1.000 | 34.369 | 34.287 | 34.447 | -0.037 | 0.103 | 33.835 | 34.834 | M2 |
| **Intercepts** | | | | | | | | | | | | |
| Attitude | 38.310 | 0.023 | 1.122 | 1.000 | 38.294 | 37.561 | 39.053 | 0.064 | 0.103 | 33.974 | 42.866 | I1 |
| Satisfaction | 7.015 | 0.033 | 1.467 | 1.000 | 7.019 | 6.009 | 8.001 | 0.000 | -0.007 | 0.916 | 12.366 | I2 |
| **Covariances** | | | | | | | | | | | | |
| Awareness<- | -4.824 | 0.010 | 0.60 | 1.00 | -4.813 | -5.216 | -4.415 | -0.098 | -0.005 | -7.222 | -2.804 | C1 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| >Expectation | | | 2 | 0 | | | | | | | | |
| **Variances** | | | | | | | | | | | | |
| Awareness | 23.123 | 0.019 | 0.828 | 1.000 | 23.093 | 22.554 | 23.659 | 0.205 | 0.067 | 19.986 | 26.571 | V4 |
| Expectation | 22.504 | 0.017 | 0.825 | 1.000 | 22.495 | 21.936 | 23.049 | 0.125 | 0.025 | 19.346 | 25.728 | V5 |
| e1 | 15.988 | 0.015 | 0.586 | 1.000 | 15.974 | 15.595 | 16.375 | 0.153 | 0.137 | 13.741 | 18.866 | V3 |

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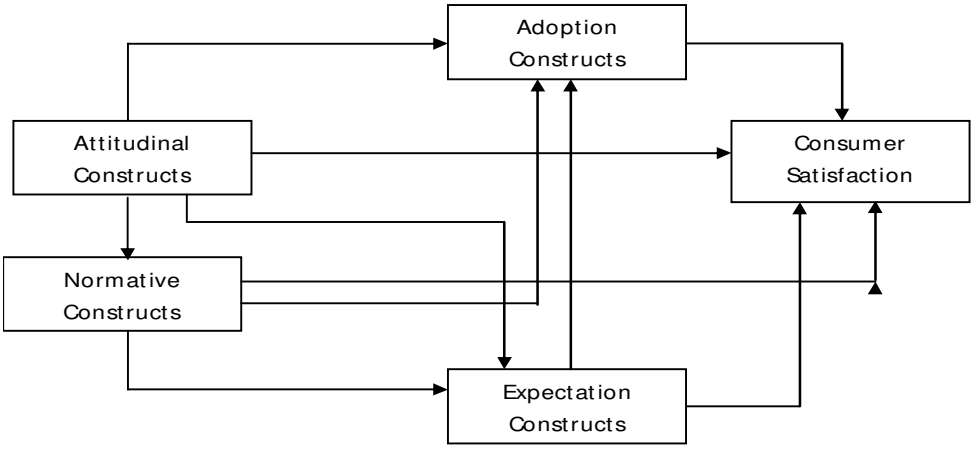


**FIGURE 1 CONCEIVED FORMATIVE MODEL FOR CONSAT MEDIATING EFFECTS**

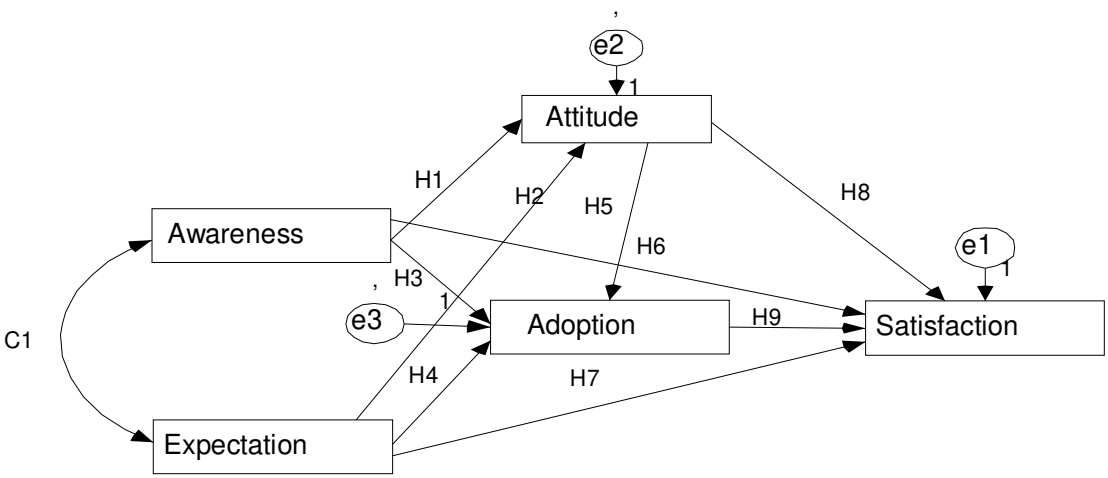


**FIGURE 2 PATH DIAGRAM: MEDIATING – MEDIATING CONSAT MODEL**

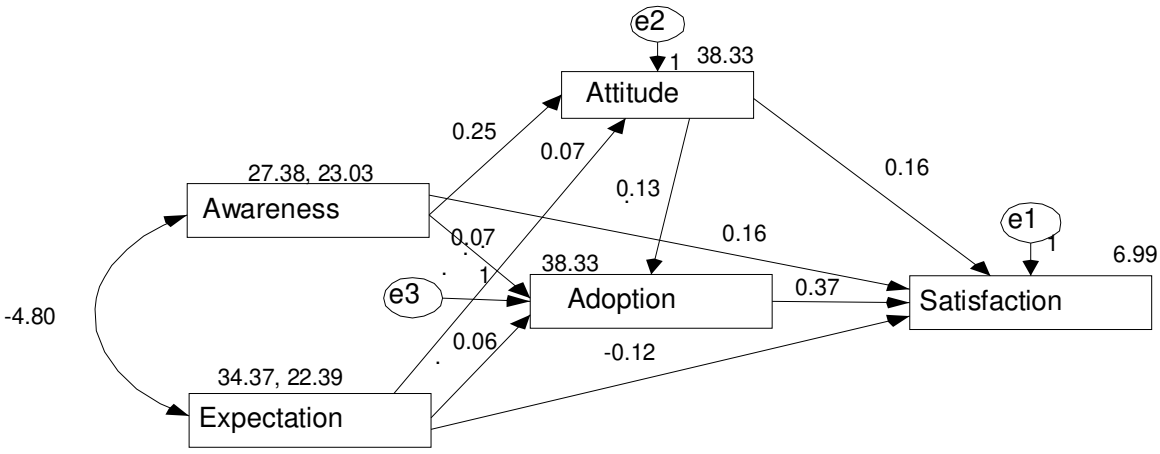


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**FIGURE 3 THIRD ORDER MEDIATING-MEDIATING CONSAT REGRESSION MODEL**