Business Process Reengineering and Customer Satisfaction with reference to Indian Telecommunication sector

Debiprasad Mukherjee\(^1\) and Monidipa Chatterjee\(^2\)

\(^1\)Senior Business Analyst, Business Process Management, Cognizant Technology Solutions, Kolkata, India

\(^2\)Lecturer, The Heritage Academy, Kolkata, India

debiprasad.mukherjee@gmail.com; chatterjeemonidipa@gmail.com; +91 9830318394; 9830346814

Abstract

Intention of the study was to quantitatively analyze the factors based on which telecom service providers can formulate strategy to satisfy customers to get an edge over the competitors. And we will see how Business Process Management and Re-engineering might play the role of a weapon to Indian Telco service providers. The elements of the business processes of the Telecom domain, which affect customer satisfaction level and how BPR can impact the level of customer satisfaction in the telecom sector in India was investigated in this study. Mainly three categories of research findings have been deduced from the study. The first category dealing with the customer’s perception on different areas of Indian Telecom processes exposed the need for a fast cycle capability and competitiveness of the Telco system. The second category analyzes customer’s satisfaction with the existing service facilities of Indian Telco services and shows an average figure of their present satisfaction level. The third category describes customer’s perception on Indian telecom service providers for enhancement of the level of satisfaction revealing a strong need for strategic planning and implementation of IT-enabled reengineered business process. The findings will be useful to increase customer value, customer satisfaction and retention and can guide the strategic business planners to introduce better, innovative and customized products to the consumers.

Keywords: Business process reengineering, fast cycle capability, customer satisfaction, business process improvement.

Introduction

Business Process Reengineering, Customer Satisfaction and Consumer Behaviour etc. are relatively new subjects in the field of business process research in India. In the present business environment organizational success depends on out-performing the business competitors while satisfying the consumers. The telecom ecology of a country is an essential domain not only for the economic development but also having huge social impact. Living in an age of global transition, one can’t help wondering about the transformations that took place, are taking place and will take place in social, economic and technological areas.

Technological changes have been massive and radical in India with the utilization of voice and data transmission technologies by companies for their global business framework. The revolution is still on, particularly for Telecom sector in India, as India is already having more than 110 million global systems for mobile communications (GSM) subscribers, according to global mobile suppliers association (GSA). So, the orientation to such a huge volume of customer satisfaction is quite an obvious phenomenon. Many successful business people over the years have identified the importance of focusing on customer satisfaction. Thus, customer satisfaction has a long-reaching impact on the current and perhaps future viability of an organization.

Schlesinger and Heskitt (1991) demonstrated the inter-relation between satisfied customers and satisfied employees in their ‘cycle of good service’ showing a cyclic relation which starts from customer satisfaction leading to lower customer churn which in turn generates higher profit margin. Satisfaction is quickly becoming the key to competitive posture within an industry as customer satisfaction has proved to give an organization competitive advantage by way of improved profitability, improved customer retention and improved market share. Most of the time a re-engineered system provides process automation of a business area by optimizing the sequence of activities and the involvement of proper human or computer resources associated with different steps.

A redefined BPM system also helps in adhering various administrative rules and policies associated with the resources and the work. All these reengineering provide fundamental change and optimization of business processes to achieve best-possible levels of cost, quality, customer satisfaction and operational throughput. This is especially important in an era of resource downsizing and greater demand for improved time-to-market and most significantly customer satisfaction. The need for business process re-engineering is omnipresent.
Organizations are currently getting engaged in business process reform in many areas, including banking and financial services, telecommunication services, healthcare and pharmaceutical services, customer order management, manufacturing automation etc. The structural elements that constitute a process provide the basis for its analysis, appraisal and redesign for achieving higher levels of efficiency and effectiveness, economy and speed, and quality and output. The performance of a business firm is the outcome of the interrelated operation of its constituent work processes. The redesign of processes, therefore, provides a powerful basis for improving the performance of a business enterprise. Although BPR is a multi-dimensional approach in improving the business performance, its thrust area may be identified as "the reduction of the total cycle time of a business process. Improvement on quality and cost follows after improvement on thrust area." This broader thinking process starts with the business and technology planning and working together as sponsors and as teams. Who knows, one day probably Gartner will publish a report that almost 100% of process improvement initiatives are operated by a cross-functional groups from technology and the business units.

India have adopted a steady approach to reform the telecom sector by selective privatization and managed business rivalries in different segments. To start with, India introduced private competition in VAS in 1992 followed by introducing mobile services to private competition. The Telecom Regulatory Authority of India (TRAI) was established in 1997 as a regulator in this domain. Competition was also started in national long distance (NLD) and international long distance (ILD) telephony in the last decade. In spite of having asymmetry in market endowments between government sector incumbents and private companies, the act of opening up of the market actually unleashed vitality that was till then dormant in the telecom sector. The Indian Telecommunications network with more than 650 million connections is the 3rd largest in the whole world. The sector is rising at a rate of almost 45% during the current years. This kind of exponential growth is taking place due to various proactive decisions of the Government and involvement of both public and private sectors.

The total revenue of the Indian telecommunication domain has grown up by more than 7% to INR 283,207 crore for 2010-11 financial years, reported by telecom journal Voice and Data. During the previous fiscal the total revenue of the sector stood at Rs. 2, 64,669 crore. Revenue from various services in the Indian telecom industry grew to Rs. 166,168 crore, up 14.9%, in 2010-11 fiscal as against Rs.1, 44,600 crore in the previous financial year. Voice and Data estimated that maximum revenue in the service segment of the industry came from cellular services market which grew by 16.6% to Rs.102, 230 crore in FY '11 from Rs. 87,680 crore in the previous fiscal. Revenues from fixed line continued to decline both in terms of number of connections and revenues. The Indian telecom economy is expected to grow three times in coming years and market size over USD 8 billion. More than 150% growth in telecom services is expected in next 5 years. Cardozo (1965), one of the first academicians to investigate customer satisfaction, suggested the rather novel joint application of both Nelson's (1964) “contrast effect” as well as Festinger’s cognitive dissonance theory (1957). The study of John Howard and Jagadish (1969) in their paper of consumer behaviour laid vital foundations for the process-model of customer satisfaction, in parallel with their research on consumers’ pre-purchase and post-purchase reconciliation of information and feedback. Some of the most frequently cited, early satisfaction pieces are the works of Richard Oliver (1977-1997).

Olson and Dover (1979) in their work on consumer expectations define expectations as beliefs about a product or services attributes or preference at some time in the future. Oliver et al. (1983) have observed, however, that there are likely two components of expectations: the level of performance expected, and the certainty of receiving that level of performance. According to Anderson and Sullivan (1993), the behaviour of satisfaction as a phenomenon can be better understood if it is visualized as a function. More recently, Oliver (1997) suggested that profit for a company (purchase/repurchase behaviour by the consumer) was contingent on a sequence of three factors: quality, satisfaction, and loyalty. Vavra (1997) has researched a lot on the framework of measurement of Customer Satisfaction. Starting from the development of model of Customer Satisfaction, a detailed research was done to reveal the key issues to measure satisfaction, design questionnaires, collect satisfaction data and develop tools of satisfaction Analysis. A very recent study by Cheng and Lee (2011) extends the knowledge of relationship marketing and transaction cost to develop the conceptual model to explore the antecedents of customer loyalty via intermediary variables of customer satisfaction and perceived risk. A business relationship, just like other relationship, relies on both people getting their needs fulfilled. Irrespective of the type of business, all customers desire the same thing. They want to feel welcomed and appreciated, don't want to get the impression that they are just being used by a company for making money. Small interactions like “Thank you” or even a nice smile can help a lot in achieving customer satisfaction. BPR was introduced in a research program at MIT (Massachusetts Institute of Technology) in the early 90s.
The term was used in Davenport and Short's 1990 research project. They found out that the implementation of IT in organizations meant not only automation of managerial and operational tasks but also had an enormous and direct impact on the result and quality of the work. In the same year, Hammer (1990) in his article published in the HBR claimed that the major challenge for an organization is to obliterate non-value adding task and processes, rather than utilizing technology for optimizing and automating it. Most of the work being done does not add any value for customers, and the work should be removed, not accelerated through automation. Instead, companies should reconsider their processes in order to maximize customer value, while minimizing the consumption of resources required for delivering their product or service.

Hammer and Champy (1993) also define it as: "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed." Davenport (1993), Gerstner and Louis (2002) researched extensively on re-engineering for the IT giant IBM. Most of the work centred on eleven areas. The first six, called the Core Initiatives, were those parts of the business which dealt more with the outside world: hardware development, software development, fulfillment, integrated supply chain, customer relationship management and services. BPR doesn't offer a miracle cure on a platter. Nor does it provide a painless quick fix. Rather it advocates strenuous hard work and instigates the people involved to not only to change what they do but targets at altering their basic way of thinking itself. TeleManagement Forum has developed eTOM (enhanced Telecom Operations Map), the most widely accepted standard for business processes in the telecommunications industry. eTOM model describes the full scope of business processes required by a service provider and defines key elements and how they interact. eTOM can also describe a framework for developing business practices that follow a customer-focused pattern, such as marketing, initial sale, customer support, billing, after-service support, follow-up customer support, and so on. Strategies within eTOM suggest the most effective methods for achieving success in all of these areas. Such areas as marketing and billing are not usually associated with the same level of importance as the more technical aspects of customer support, but eTOM treats all aspects of the process equally, encouraging telecom businesses to do the same, and it's not just the business-to-customer relationship that is addressed here. eTOM also includes strategies for generating, maintaining, and improving business-to-business relationships. Against these backdrops this study was aimed with the following objectives:

- To develop an understanding about the degree of importance attached by the customers to each of these dimensions.
- To study how the applications of information technology in the business process of Telecom has affected customer satisfaction.
- To suggest a strategic framework through IT-enabled business process in Indian Telecommunication for enhancement of customer satisfaction.

In this study, we have restricted our observations on IT application of BPR in Telecom service as this is being widely applied as a very effective one. Thus, some other aspects of BPR have been excluded. This study has been carried out for available telecom service providers operating in and around Kolkata (A major metro city located in the eastern part of India).

**Materials and methods**

**Experimental design:** This work was done mainly as an exploratory research to reveal the correlation between business process reengineering and customer satisfaction. It was planned to analyze the customer psyche i.e., to find out what were the customers' needs and expectations and their telecommunication experience with the service providers. Hence, the thirty three questions (mainly close-ended ones) of customer questionnaire were divided under several sections:

- **Section A:** Products and services offered by the service providers where the customer is receiving his/her service.
- **Section B:** Telecom operation or process for delivering the service where the customer is receiving the service.
- **Section C:** Customer's perception of telecom services.
- **Section D:** Customer's idea on process reengineering for better satisfaction.
- **Section E:** Background of the respondent.

Approximately sets of different questionnaires were used.

**Scaling technique:** We have used Likert-type Scales, consisting of a number of statements to describe either a favorable or unfavorable perspective to a given object to which the respondent is asked to provide his/her input. Each response is assigned with a numerical value, indicating its favorableness/unfavorableness and the scores are summed up to measure the respondent’s behaviour.

**Sampling:** It was decided that the study would be carried out among telecom customers from different service providers in Kolkata region in West Bengal and its suburbs. This was done by the concept of convenience sampling. First, the 19 telecommunication service providers were arranged but the final selection was done with the help of the random sampling process. It was actually then trimmed down to 6 service providers.
The whole geographic area in and around Kolkata was divided into two main parts as Kolkata main city area and suburb of Kolkata. One of the prime motives behind the research study was to get direct feedback/input from the end-customers based on the above-mentioned questionnaire. The customers were taken at random by the interviewer on the basis of judgmental process because the researcher realized that they have more useful information related to the research.

**Statistical analysis:** The data collected through questionnaire were analyzed using the following statistical techniques:

- **Univariate statistical technique:** The measures of central tendency, namely, mean were used for determining customer satisfaction on various dimensions of Indian Telecom sector.
- **Bi-variate statistical techniques:** The correlation matrix of the variables has been used to determine the association amongst the variables.
- **Multivariate statistical techniques:** Factor analysis was carried out to identify the different dimensions of Indian Telecom industry and the variables that impact the dimensions.

The above analysis was carried out using SPSS v 10.0 software.

### Results and discussion

The data collected were analyzed and tested under three categories:

- **Category I:** Customer perception on different parameters of Indian Telecom customer-centric process.
- **Category II:** Customer satisfaction on service facilities of Telecom services and
- **Category III:** Customer perception on various dimensions of the Telecom industry in India to increase customer satisfaction.

The profile of the customers interviewed showed that 68.1% of the customers were related with a particular service provider. Table 1 depicts the variables and description on the basis of which information has been gathered and used.

**Findings on category I: Customer perception on different parameters of telecom processes:**

*a) Analysis and test of mean:* The results of the responses to the questions on customer perception on different parameters of the offerings from telecom service providers are depicted in Fig. 1. It can be clearly understood that customers want fast-cycle-capability in the telecom customer centric process, which is the core objective of BPR. Considering the null hypothesis (H₀) that mean score of the degree-of-importance on certain parameters on telecom products/services = 2.5, H₀: μ = μ₀ = 2.5

H₁: μ > 2.5

For the given information X = 4.25, σ₁= 0.387, n = 8.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Variable Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ITM_OPEN</td>
<td>Importance attached to time taken for opening a connection</td>
</tr>
<tr>
<td>2.</td>
<td>ITM_WDRW</td>
<td>Importance attached to time taken for withdrawal of connection/service</td>
</tr>
<tr>
<td>3.</td>
<td>IF_B_HRS</td>
<td>Importance attached to flexibility in customer care timing</td>
</tr>
<tr>
<td>4.</td>
<td>ID_WT_CS</td>
<td>Importance attached to CSR dealing with customers</td>
</tr>
<tr>
<td>5.</td>
<td>IWRK_ENV</td>
<td>Importance attached to service provider’s working environment</td>
</tr>
<tr>
<td>6.</td>
<td>IMIN_BAL</td>
<td>Importance attached to minimum balance criteria</td>
</tr>
<tr>
<td>7.</td>
<td>IBNK_PRD</td>
<td>Importance attached to availability of range of telecom products/services offering</td>
</tr>
<tr>
<td>8.</td>
<td>ISEV_DEL</td>
<td>Importance attached to innovative service delivery system</td>
</tr>
<tr>
<td>9.</td>
<td>STM_OPEN</td>
<td>Satisfaction level on time taken for opening a connection</td>
</tr>
<tr>
<td>10.</td>
<td>STM_WDRW</td>
<td>Satisfaction level on time taken for withdrawal of connection/service</td>
</tr>
<tr>
<td>11.</td>
<td>SF_B_HRS</td>
<td>Satisfaction level on flexibility in customer care timing</td>
</tr>
<tr>
<td>12.</td>
<td>SD_WT_CS</td>
<td>Satisfaction level on CSR dealing with customers</td>
</tr>
<tr>
<td>13.</td>
<td>SWRK_ENV</td>
<td>Satisfaction level on service provider’s working environment</td>
</tr>
<tr>
<td>14.</td>
<td>SMIN_BAL</td>
<td>Satisfaction level on minimum balance criteria</td>
</tr>
<tr>
<td>15.</td>
<td>SBNK_PRD</td>
<td>Satisfaction level on availability of range of telecom products/services offering</td>
</tr>
<tr>
<td>16.</td>
<td>SSEV_DEL</td>
<td>Satisfaction level on innovative service delivery system</td>
</tr>
<tr>
<td>17.</td>
<td>ACC_OPEN</td>
<td>Connection opening system should be more simplified and less time taking</td>
</tr>
<tr>
<td>18.</td>
<td>WDRW_DEP</td>
<td>Withdrawal should be more simplified and less time taking</td>
</tr>
<tr>
<td>19.</td>
<td>MN_STMT</td>
<td>Send a monthly Statement of Billing to every customer</td>
</tr>
<tr>
<td>20.</td>
<td>FUL_COMP</td>
<td>Customer handling operation should be fully computerized</td>
</tr>
<tr>
<td>21.</td>
<td>ATM_FAC</td>
<td>Should introduce MNP facility</td>
</tr>
<tr>
<td>22.</td>
<td>FLX_WRKH</td>
<td>Service provider’s outlet should offer flexi-working hour</td>
</tr>
<tr>
<td>23.</td>
<td>DAY7_WRK</td>
<td>Service provider’s outlet should have all the 7-days working</td>
</tr>
<tr>
<td>24.</td>
<td>EMN_SKL</td>
<td>Skills of the Service provider’s employees need to be upgraded</td>
</tr>
<tr>
<td>25.</td>
<td>RESTR_RD</td>
<td>Service provider’s need restructuring for better customer satisfaction</td>
</tr>
</tbody>
</table>
Considering the population being normal, test statistic \( z \) to be considered as 12.77. We find the value of \( z \) to be within 1.645 for 5\% level of significance (one-tailed test). Hence, the null hypothesis is rejected and alternative hypothesis is taken into consideration. Hence, the mean score value is significant.

b) Correlation analysis: The variable ITM_OPEN and ITM_WDRW are strongly correlated. The ID_WT_CS is moderately correlated with the IWRK_ENV (Table 2). All other variables are not significantly correlated and can be assumed to be independent of each other.

c) Factor analysis: Table 3 shows the result of factor analysis. The component matrix got rotated with the help of varimax-rotation (Kaiser-Normalization). Three factors were extracted through above method that converged in 5 (five) iterations. Factor 1 comprises variables namely ITM_OPEN, ITM_WDRW indicating Time Dimension of Indian Telecom sector. Factor 2 comprises variables ID_WT_CS, IWRK_ENV and IMIN_BAL indicating service environment dimension of Indian Telecom sector. Factor 3 comprises variables namely IBNK_PRD, ISEV_DEL and IF_B_HRS indicating service customization dimension.

Findings on category II: Customer’s satisfaction on existing facilities offered by Indian Telecom industry:

a) Analysis and test of mean: The results of responses received against the questions on customer’s experience of telecom offerings and satisfaction level on various parameters are described in Fig. 2. The findings depict the present level of satisfaction of the end-customers for Telecom operations is just average and the customers are not very satisfied. Taking the null hypothesis (\( H_0 \)), mean score of customer satisfaction level on attributes of Telecom offerings = 2.5, 

\[ H_0: \mu = \mu_{H0} = 2.5 \]

\[ H_a: \mu > 2.5 \]

For the given information \( X = 3.40, \sigma_p = 0.141, n = 8 \).
Assuming the population as normal, test statistic $z$ can be considered as 18.00. Value of $z$ is found to be within 1.645 for 5% level of significance (one-tailed test). Hence, the null hypothesis is rejected and alternative hypothesis is accepted. So, the mean score value is significant.

b) Correlation analysis: Table 4 shows the correlation matrix of Customer’s satisfaction on existing facilities offered by Indian Telecom companies. The pair of variables that are correlated to each other are given in Table 5.

c) Factor analysis: Three factors were extracted through varimax with Kaiser Normalization rotation method, having Eigen value more than 1. Factor 1 comprises variable namely SF_B_HRS, SBNK_PRD and SSEV_DEL indicating the service customization dimension. Factor 2 includes variable SD_WT_CS, SWRK_ENV and SMIN_BAL indicating the service environment dimension.
The statistical analysis and the findings clearly reflect the dimensions of the Indian Telecom services which affect their customer satisfaction level. The implications of the findings may be summarized as follows: There are broadly four dimensions namely, the time dimension, service customization dimensions, service environment dimensions and the technology dimensions. All the above dimensions except technology dimension have been revealed from the statistical analysis of the customers' perception on different attributes of Indian Telecom Sector and their present satisfaction level. The technology dimension has been revealed from the analysis of customers' perception on enhancement of Telecom services. The improvement on the time dimension calls for a fast cycle capability which is one of the core objectives of BPR.

This dimension was found to be highly significant in customers' perception study. The service customization dimension was also quite significant as per customer satisfaction study. This dimension can be improved through extensive use of Information technology. Therefore the strategic planners have to base their strategies and policies so as to address the different dimensions for overall customer satisfaction.

### Conclusion

From the study, it is revealed that re-engineering of the business processes for the telecom service providers has significant impact on the level of customer satisfaction. In order to improve their competitiveness in the present market environment the strategic leader should concentrate to improve on the dimensions of customization, working environment enhancement, time compression and technology up gradation. Emerging business goal oriented technologies like Enterprise Service Bus, Service Orchestration and Business Process Management (BPM) can play a significant role in implementing NGOSS to provide a blueprint for robust and adaptable infrastructure to deploy new offering quickly. BPM helps in the interaction between of activities of various human actors and OSS/BSS systems with the information available. BPM system can offer the required process execution framework for process flows written in an executable process-language.

A process stack can be used to maintain pre-defined process flows for generic processes like provisioning, order entry, rating, billing, payment handling, and customer inquiry and problem management. An effective process performance tier can be included on top of the existing business process tiers in overall business process architecture. It can create more opportunities developing more optimized systems for managing process. As per the observed process-performance, there is scope for minimizing the provisioning cycle-time and reducing costs. To outperform the competitors, there should be strong emphasis on customer interaction and improvement in level of satisfaction.
References