

Exploration of telecommunication requirements and pricing suggestions for low income group and slum areas of Mumbai.

Choice of method of research and type of quantitative analysis

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**BUSINESS MODEL FOR SERVICE INDUSTRIES IN
COMPETITIVE ENVIRONMENT**
(An analytic study for telecom sector)

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Exploration of telecommunication requirements and pricing suggestions for low income group and slum areas of Mumbai.

Introduction of competition in telecommunication field has put incumbent service providers under pressure to look for various alternatives to expand their business. Robust infrastructure and availability of cables in almost all parts of the city provide them a competitive advantage in terms of penetration and reach. However the new service providers prefer to choose their customers on profitability basis and competition in low income group areas or slums is almost not there from private service providers. In this context incumbent telecom service provider in Mumbai i.e. MTNL would like to examine the potential in these areas and the price levels which may be appropriate to expand the service in this new customer segment. Incumbent service provider may also like to identify the parameters which affect the decision to subscribe to telecommunication facility. Once a customer has approached them, or out of the potential customers whose profile is available with them, they would like to identify persons who are most likely to avail of the services, and give them higher revenues. This document examines the above.

Brief about Mahanagar Telephone Nigam Limited.

The Mahanagar Telephone Nigam Limited (MTNL) came into existence on 1st April 1986 as a company wholly owned by the Government of India under the Department of Telecommunications, Ministry of Communications. MTNL has been entrusted with the management, control and operations of telecom services. (Excluding public telegraph service) in metropolitan limits of Mumbai (including New Mumbai and Thane) and Delhi. The last twenty years are a saga of eventful existence for MTNL. There has been all-round development , growth and improved operational efficiency. A variety of phone-plus services have been made available to customers connected to electronic exchanges. All landline telephones have been made internet-ready and customers can readily access the Internet by plugging in the telephone cable to their computer. Computerized morning alarm, voicemail, radio paging, automatic changed number announcement, etc., have been implemented. Sustained efforts have been made to maintain the various operational parameters such as STD, call completion rate and manual trunk efficiency. MTNL has taken several steps to improve its interface with the customers. Telephone Adalats, and Open House Sessions are being held to have effective both way communication, with the customers. Quick

Customers Service Centers have been opened at all divisional offices for catering to day-to-day customers requirements for accessories, phone-plus services, STD barring/restoration and local shift of telephone. The company, which operates nearly 5 million access lines, also offers wireless, data, and Internet services.

In mobile communication services MTNL provides services under the name of Dolphin mobile service, Trump pre-paid cards, Garuda WLL services, SMS, GPRS and MMS services.

In Internet services MTNL provides Dial UP for pre-paid and post-paid customers, Telephone for Internet, Internet Leased Lines, Web Hosting services, Bol Anmol cards for Internet Telephony. The ISP services of MTNL are the second largest in India after BSNL. Under Broadband services MTNL provides TriBand, which provides high speed broadband as well as Telephony services. It will also include further services such as VPN, Multicasting, Video Conferencing, Video-on-Demand and Broadcast applications in future.

Under IN, MTNL provides free phone service, VPN service, PRM (Premium Rate Service), UAN service, Tele voting, VCC (Virtual Card Calling service) and ACC (Account Card Calling service).

During the year, there is a tremendous increase in the cellular subscriber base as MTNL has added a total of 5, 21,146 subscribers and total cellular subscribers had increased to 8, 81,696 as on 31.3.2005. The income from mobile services has also gone up by 47% from Rs 1869.85 Million to Rs 2742.88 Million. The authorized equity share capital of the company is Rs 800 crore. The paid-up capital is Rs 630 crore which includes Rs 30 crore by way of GDR issue. The Government of India now owns approx. 56.75 per cent of the MTNL paid-up capital. Plans are afoot to merge the company with Bharat Sanchar Nigam limited (BSNL), which is also controlled by the government and would be the acquiring company.

Affordability aspect for telephone aspirers :

MTNL with a view to expand its shrinking landline connections has been exploring various affordability parameters with an idea to focus its efforts on the areas where maximum returns are possible. Affordability aspects have been highlighted in various forum and studies to determine the size of market in any area. ITU Reports indicate that on average, 5% of household income in developing countries is spent on

telecommunications. At present, the monthly rental charged for most rural areas is either Rs. 50 or Rs. 100 (with 125 metered calls free per month). Calculating on the basis of 5% household income being spent on telecom, households subscribing in rural areas would have annual income of Rs. 12,000 (for monthly rental of Rs. 50) or Rs. 24,000 (for monthly rental of Rs. 100). For the present, it has been considered that the households with annual income of Rs. 5,000 and above can afford a telephone and this would raise the demand for DELs in rural areas accordingly. However, while making these projections on the basis of rentals of Rs. 50 or Rs. 100 per month, it should be considered that these would involve heavy subsidy unless the cost per line is brought down from say, Rs. 30,000 to somewhere around Rs. 10,000 per line.

For urban areas, the present minimum monthly rental charged is Rs. 100 per month (for exchange capacity of up to 29,999 lines), rising to Rs. 190 per month for the highest exchange capacity. On the same criteria of 5% household income being spent on telecom, it would mean that households with annual income from Rs. 24,000 (for monthly rental of Rs. 100) to Rs. 45,600 (for monthly rental of Rs. 190) could afford a telephone. As an initial estimate, it has been considered that households with income categories of Rs. 50,000 and above can afford telephones in urban areas. On the above basis, it would appear that in 2007 and 2010, respectively, 84.5 million and 94.4 million households would be able to afford a telephone. The corresponding estimates for urban areas are 26.75 million and 29.98 million households.

Price Is Not A Primary Issue:

When we talk about slum areas then affordability is the first thing that comes into picture when promoting a scheme or service is concerned. But there are contrary opinion that price is not the prime concern while buying a telephone connection. Many people are willing to buy a telephone at a price, which is greater than the minimum tariff plan offered by MTNL ie Rs 160 per month for incoming calls only. The people in slum areas have a genuine need for telecommunication services and they are currently spending money on these services and are willing to have a telephone connection at home also. Apart from this, insistence from spouse and children is another reason for which people would prefer to buy a telephone connection at home also.

As a lot of people go to far away places from their home for work whether having a telephone at home will enable them to stay in contact with their family at all the time. Since a lot of people are daily wage earners who work at different locations and the job timings are not defined so whether

for such people having a telephone at home will enable them to keep their families informed about their well being as and when required. Whether these requirements will force them to buy a telephone?

It is also stated that the awareness regarding MTNL's service offerings and plans is very low among people living in slum areas. In fact many people are not aware of the Rs 160/- scheme that MTNL is offering. The people living in slum areas have a genuine need for connectivity. And there are schemes available currently that they can use. But are they aware of these schemes ? There is therefore strong need for making people informed regarding the services available. And the important decision to be taken here is regarding the choice of medium to be used for spreading information. In general there are several means by which a service provider can advertise. But people in slum areas have a different mindset and life style and they are required to be made aware in a different manner. Whether following possibilities are best ?

- 1) Radio
- 2) Direct contact Programs

Whether radio can prove to be an important medium for spreading awareness, since now so many FM channels are available and a majority of people prefer to listen to radio? Whether direct contact awareness program will serve any purposes? When someone goes and talks to people directly then better awareness can be generated among them. The word of mouth then spreads very fast. Whether people will be much more interest in such programs?

These are some of the questions which, the research aims to explore and examine.

With above background information and objectives as discussed in above paragraphs, we may zero down to following hypothesis for the research work.

Hypotheses to test

Hypothesis 1:

Lack of awareness of affordable schemes is an important reason for low penetration in low income group and slum areas.

Hypothesis 2:

More than 50% of people staying in slum areas will avail of telephone facilities at Rs.160/- per month tariff rate.

Hypothesis 3:

Need to communicate to their home towns is an important criteria for availing telecom facility at residence.

Hypothesis 4:

The prospect under consideration will buy telephone facility.

METHODOLOGY:

To test above hypotheses, in addition to secondary data available in various data bases and social survey results available, primary data also need to be collected.

The data about various aspects of the life of low income group and slum dwellers need to be collected. To get the first hand information the best methodology is to have a survey based on written questionnaire. The questionnaire has to be designed in such a manner, that the target population can easily understand and fill up the questionnaire. The language of the questionnaire has to be local language in addition to Hindi and English. It is observed that for this purpose at least Marathi and Tamil need to be considered.

The questionnaire has to probe into various aspects of their life and the overall information need to be collected for categorization in following areas.

- A) Information about social status which may include numbers in family, earning members, monthly income, monthly savings etc.
- B) Information about penetration and likely usage pattern may include, information about distance to work place, purpose to use telephone (local or STD), frequency of use, frequency for STD calls, and likely options of telecom facilities.
- C) Information about affordability and need may include questions related to monthly expenditure, maximum affordable amount for telephones. Additionally various reasons for desiring a telephone connection may be examined which may include symbol of social status, spouse and children's desire, comparison with neighbors, job requirement and non-availability of other communication facility in the area.

- D) Information about mode of advertisement and bill payment may have questions regarding source of entertainment, timings of entertainment, preferences for bill payment, preference for prepaid voucher etc.

The questionnaire can be first designed and administered to a small group and difficulties experienced and suggestions received during this test survey can be used to modify the questionnaire for the final survey. This is a very important step, as it is very easy to underestimate the expertise required in designing a robust and effective questionnaire. There has to be a balance between ease of filling up the questionnaire and utility of the received information and data for the use of research, so that these fit in well in the framework of quantitative techniques which will be utilized to analyze the data collected.

The information collected has to be appropriately codified for the use in quantitative techniques through available statistical package for computer analysis. At this stage various variables have to be identified and codified. They have to be appropriately named, labeled, the type has to be defined, possible values have to be defined and the treatment of missing values have to be specified. In many cases the software may not be able to correctly categorize the measure or type of data and as such the classification of data into nominal, ordinal, interval or ratio etc. must be rechecked to ensure that appropriate techniques suitable for the type of data only are used.

SAMPLING:

The sample from which the data will be collected has to be chosen in a probabilistic manner as possible within the reach of financial and manpower resources available for the research. Considering that slums are situated in various pockets in the city, at first various slums may be identified or a list be obtained. List of slum areas may also be available from the municipality or other NGOs. These slums can be considered as clusters, and few clusters may be randomly chosen for analysis. In case even this is a large figure, two stage sampling can be used and in second stage, out of the clusters chosen subjects may be once again chosen in a random manner. To enhance the probabilistic nature and randomness in the sample, the survey may be conducted in different hours of the day which again may be chosen through use of a random process. Possibility of other criteria like randomly choosing a house number or randomly choosing a passerby can also be examined and used.

The size of the sampling has to be decided based on the resources available. However, a figure between 500 and 1000 may be examined in first stage.

DATA COLLECTION:

For the randomly chosen clusters, at randomly chosen times and for randomly chosen house numbers the survey can be administered through a team of workers who may be briefed about the purpose and the manner in which the questionnaire is to be filled up. Possible options for various questions and likely doubts may be explained to them along with the way in which these are to be handled.

DATA ENTRY:

As explained in earlier paragraphs also, the data has to be appropriately classified and codified along with mention of possible values, range, type etc. and then fed to the appropriate table in the software under use. The data table may be properly saved along with a copy at alternate location so that it can be recovered in case of any problems.

DATA ANALYSIS AND HYPOTHESES TEST:

The data collected can be categorized into groups which can be further used for analysis. These groups could be stated as social status, usage pattern, affordability information, need information and awareness information. As the responses to the questions in the questionnaire will be in multiple choice formats, most of the data will be in nominal form. Even the questions like income expenditures, saving etc. may be grouped with appropriate ranges in the questionnaire itself, as firstly the questionnaire is to be administered to a population where educational level may be low and secondly as the prospects may not desire to reveal exact information about such questions.

Various responses can be nominally or ordinaly codified as 1, 2, 3, or 4. Variables which are similar can be grouped and added together so that the resulting data from addition of a number of responses which are indicative of a similar trait or decision making criteria tends to reflect an interval scale. For example if responses to eight similar questions are added the resulting data will vary between 8 and 32 and as such can be utilized for analytic techniques with better strength. Care has to be taken that the data which is combined together has to be indicative of similar nature and in same direction.

Following data analysis technique can be used for drawing inferences:

At first descriptive analysis can be used to obtain central tendencies and dispersion qualities of the basic data to get a feel of the nature of the data collected, various groupings etc. The analysis may also include various frequency tables and frequency listings along with percentile break ups to understand the distribution of data and draw some simple and general inferences about the sample.

As most of the data is in nominal form, Chi square test is most appropriate for analyzing the data. The test may bring out association between various components of the questionnaire and also between various parameters and the final decision to purchase. Care must be taken to ensure that each cell in the matrix has got sufficient frequency, normally not less than 5. In case any cells have got a frequency of less than 5 combining the rows or columns may be considered. Combining the rows or columns will also reduce degrees of freedom related with the test and hence the value of the Chi square statistic for the same significance level. In case the number of cells with frequencies less than 5 can not be reduced to a low level the test can not be exercised. Chi square being a non parametric test can be appropriately utilized in this case, especially as most of the data is nominal in nature. This test can be used to test hypothesis 1, Hypothesis 2 and Hypothesis 3.

Further with the combined data factors univariate or multivariate linear regression can be used to obtain various items which contribute primarily to the buying decision. The analysis will give weightage attached to various items included in the analysis. While carrying out the regression analysis apart from pearson correlation between variables, R square and standard error estimats can also be examined. Residual statistics will provide the unexplained variations in the regression variables and case wise diagnostic can be utilized to identify specific cases which have residual variation more than specified number of standard errors say 3 standard deviations. Normal plot of regression between variable will visually indicate the soundness of relationship and scatter plot between regression standardized predicted value and regression standardized residual value if scattered all over will indicate soundness of the equation and test. This test can be used to find relationships which can be used to test Hypothesis 1, Hypothesis 2 and Hypothesis 3.

Finally to check for the possibility of a prospect being converted to a buyer discriminant analysis can be utilized. Out of the questionnaire the persons who have a telephone and who do not have a telephone can

be categorized and the variables which provide maximum discrimination between the two categories can be identified and utilized for modeling the equation used for subsequent identification of a prospect which is more likely to get converted to a buyer. Through exploring various combinations of variables, it is possible to get high discriminating equation, as for each equation the software will not only provide coefficient for discrimination but will also calculate and display what percentage of sample data is correctly evaluated by the discriminating equation. Model from this equation can be used to evaluate each prospect for the probability that he will get converted to a buyer i.e. this analysis can be used to test Hypothesis 4 for each prospect.

Further factor analysis and cluster analysis can be utilized to identify various clusters in the sample which can be further analyzed to provide information about such clusters.

Conclusion:

Thus we have in this document, overviewed the challenges posed to incumbent telecom service provider, examined possibilities for growing business, established the objectives for the research, identified and defined the hypothesis, suggested methodology for the research including sampling, questionnaire preparation, questionnaire administration, data collection , data analysis. We have also explored suitable quantitative techniques to analyze the data and test the hypothesis so that the results can be utilized by the organization fruitfully.

