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A STUDY OF FUNCTIONING OF TELECOM REGULATORY AUTHORITY OF INDIA

Vinay S. Joshi[*], Kapil Arora[**] and Anukool Manish Hyde[***]

Over the past decade, Indian telecom industry has witnessed many positive developments. India has attained the second largest subscriber network after China with the total number of subscribers scaling up to about 900 million and claiming an urban tele density in excess of 140 and rural tele density of 40. With an estimated base of 67 million smart phone users in 2013, India also ranks fifth amongst the top countries in this category. With an increasing smart phone penetration in the country, subscribers accessing internet through mobile devices stand at 176.50 million. India has achieved a lot in telecom in terms of accessibility and connectivity throughout the country. The Indian telecommunications market has experienced a considerable number of challenges in the last few years due to constant regulatory disputes and a hostile business environment, which includes an aggressive price war that has eroded operators' profitability. Despite the country's significant growth potential, the industry is struggling to capitalize on the opportunities, Uptill 2010, telecom Industry has registered growth, but thereafter growth has become stagnant. Present scenario is that telecom companies are bleeding due to one or other reasons. This is the high time to propose remedial measures Telecom Regulatory Authority should take to avoid telecom industry to further deteriorate. Therefore, the present research is an attempt to find out factors responsible for effective functioning of TRAI. In the study, sample size is 313 and factor analysis has been applied for data analysis.

Keywords- *Average Revenue per Subscriber (ARPU), Minute of Usage (MoU),Value Added Service(VAS), Telecommunications, Policies*

[*] Research Scholar, Prestige Institute of Management and Research, Indore
[**] Associate Professor, Institute of Management, JK Lakshmipath Univsersity, Jaipur(Raj.)
[***] Associate Professor, Prestige Institute of Management and Research, Indore (MP)

INTRODUCTION

Innovation was the key factor for the revenues of the telecom industry in the western countries. Today, however, new wireless applications, low-cost manufacturing innovations, and handset design are some of the areas in which the Asian countries are out-investing the, in the emerging markets, factors such as customer service, regulations and policies are some of the main factors that are shaping the industry.

Hardan and Shatnawi (2013) discuss the methodology used to benchmark the performances of service providers in order to create a loyal customer base as well as to retain it, and they claim customer service is one of the factors that influences the revenue growth of the telecom industry.

Alexeyev (2005) demonstrates the effects of market liberalization and privatization on Chinese Telecommunications, from which, they give an insight into the current state of the Chinese Telecom industry. India has also taken the privatization path in the telecommunications sector and the market is now mainly dominated by private companies with two state-run operators only.

The telecommunications policy in countries like the United States of America is a frame work of law directed by government and the regulatory commissions, most notably the Federal Communications Commission (FCC). One of the goals of the FCC is to best utilize this limited resource, in such a way, it brings the "highest and best use". The Government of India aims to develop the nation as a global telecommunication hub and provides regulatory support to the industry to achieve the goal and to propose ‘infrastructure’ status to telecom. China’s successful reform on the other hand, is now often called another East Asian miracle, has been attributed to policy changes to take advantage of comparative advantages in labor-intensive goods.

Telecommunications has been and will continue to be an important foundation for innovative new industries that use telecommunications as a primary technological enabler and foundation. That being said, one should know that “not everything that glitters is gold”. For example, the emerging markets face lacking of talented resources and intense competition in order to sustain the growth that has been observed over the past few years. The importance of

regulatory and policy changes are stressed upon in order to adapt to the future and maintain the growth rate of the telecom industry in both the countries.The transfer of state-owned telecommunications assets to the private sector has been the linchpin of telecommunications reform in many developing economies during the 1990s. Coupled with a more liberalized and competitive telecommunications market structure, privatization has generated economic benefits in developing and developed economies. Some of these benefits include: increased network expansion, reduced waiting time for network access, increased capital investment and improved operating efficiency. The benefits to the overall economy from a more developed and efficient telecommunication sector are considerable.

Issues and Challenges faced by the Indian Telecom Industry Rapidly Falling ARPU

The competitive intensity in the telecom industry in India is one of the highest in the world and has lead to sustained fall in realisation for the service providers. Intense competitive pressure and cut throat pricing has resulted in declining ARPUs. With increasing number of new entrants in the telecom space the competitive intensity is likely to continue, putting further downward pressures on the telecom tariffs. Thus, the telecom companies might have to grapple with further decline in ARPUs, going forward. Further, with the telecom companies moving their focus to the rural areas for driving the future subscriber growth they might not witness a commensurate increase in revenues. In fact, the risk of steep decline in ARPUs will increase going forward as the telecom companies penetrate rural markets that are characterised by higher concentration of low income, low-usage customers. A higher-than-expected decline in ARPU poses a risk of reduction in margins of service providers. Alternatively, telecom operators are turning their focus to steadily increasing the minutes of usage (MoU) to counter the sustained fall in ARPUs. Likewise, the growth of the VAS is also crucial for some improvement in the ARPUs of operators.

Lack of Telecom Infrastructure

Lack of telecom infrastructure in semi-rural and rural areas could be one of the major hindrances in tapping the huge rural potential market, going forward. The service providers have to incur a huge initial fixed cost to enter rural service areas. Further, as many rural areas in India lack basic infrastructure such as road and power, developing telecom infrastructure in these areas involve greater logistical risks and also extend the time taken to

roll out telecom services. The lack of trained personnel in the rural area to operate and maintain the cellular infrastructure, especially passive infrastructure such as towers, is also seen as a hurdle for extending telecom services to the under penetrated rural areas.

Rural Areas Continue to Remain Under Penetrated

A rural tele density of merely 15% point towards the fact that a majority of Indian population still do not have access to telecom services. The rural India seems to have remained untouched by the telecom revolution witnessed in the last few years. A huge 'digital divide', which is reflected by the enormous difference of 74% between the urban and rural tele density, reiterates this fact. However, with the urban markets reaching a saturation point, the telecom service providers are penetrating rural areas for driving future growth. Thus, the service providers entering new rural markets might witness substantial increase in subscriber base. The expansion in the rural areas, however, has increased the risk of further decline in the ARPUs. Nonetheless the revenue growth from these regions is unlikely to match the surge in the subscriber base.

Excessive Competition

Another major concern that has come to the forefront in the recent past has been heightened competitive intensity in the industry that has correspondingly fuelled the price war between industry players. The Indian wireless market is one of the world's most competitive markets, with 12 operators across 23 wireless 'circles' and 6 to 8 competing operators in each circle. The auction of new 3G licences and the introduction of mobile number portability (MNP) are likely to heat up competition in the industry, going forward. Spectrum is the most important resource that is required for providing mobile services. Given that spectrum is a finite resource, the availability of the same would be inversely proportional to the number of operators. Thus, larger the number of service providers smaller will be the amount of spectrum available to each of them.

Scarcity of spectrum leads to higher capex on deployment of mobile networks for the operators as they need more cell sites to improve service quality. Further the growing usage of spectrum and the resultant scarcity may lead to re-use of spectrum and increased chances of congestion in networks leading to constraints on service quality.

Evidently, the competition in the industry is expected to intensify further with the entry of new players, both domestic as well as foreign players. With the competitive intensity of the industry already at such high levels new operators might find it difficult to gather significant share in Indian telecom market. While the new players may benefit from a faster network rollout through tower sharing, they will face challenges in terms of high subscriber acquisition costs and lower ARPU customers.

Price War between the Service Providers Putting Pressure on Margins

The ever-increasing competitive intensity in the sector, with licenses and spectrum in several circles allotted to newer operators, is also a concern and could lead to unrealistic pricing levels to grab subscribers. The pricing strategy of per second billing already has taken the price war between telecom operators to the next level. The intensifying price war could put significant downward pressure on the industry revenue growth. Further, the ongoing price war and the concomitant decline in telecom traffic could raise the entry barrier for new companies.

Spectrum Allocation

3G Spectrum availability is one of the major concerns for the industry. Lack of adequate spectrum which is the most integral part of the mobile telephony sector could hamper its growth severely. However, the spectrum allotment has been the most controversial issues in the Indian telecom sector. The smooth process of scheduled 3G and BWA spectrum allocation is likely to be one of the key factors affecting the industry dynamics, going forward. Given the highly-competitive nature of the Indian telecom industry on one hand, and limited licenses in the 3G network on the other, the risk of excessive biding by the service providers has increased. Irrational bidding, especially in some circles, might render 3G services financially-unviable. Further, there exists a risk of delay in allotment of proposed spectrum to the service providers who have successfully bid for the 3G spectrum.

Regulatory Charges

The regulatory charges in the telecom sector have a complicated structure because multiple levies impede the smooth implementation of telecom projects in India. Given the continuously-declining ARPUs, and the extremely-low tariffs, sustaining the current growth

rates of the industry requires urgent attention towards rationalising the convoluted tax structure in the sector.

Structure of Regulatory Charges

Regulatory Charges	Services Tax	License Fee	Spectrum Charges	USO
% age of revenue	12.36%	6% to 10%	2% to 6%	5% Included in licence fees

TRAI has recommended to the DoT committee to phase out the multiple levies in this sector with a single levy in a phased manner. Further with regard to license fees, which currently stand at 6percent-10percent of total revenue, TRAI has suggested that it be reduced at a uniform rate of 6percent across all licences.

Lower Broadband Penetration

The Indian economy remains highly underpenetrated in terms of broadband connections. High cost of devices (PC and laptop), high internet charges and lower wire line connections have been some of the major factors inhibiting broadband penetration. Broadband is one of the key catalysts for economic development and major initiatives by both the government and service providers are needed to increase its penetration.

Global Telecom Markets

Industry forecasts are generated using the best-practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

REVIEW OF LITERATURE

In her study on Quality of service parameters in cellular mobile communication, Anita (2007) developed a model of service quality and a set of dimensions for comparative evaluation which could provide useful directions to regulators and service providers.

Arindham (2006) takes out various case studies like Vodafone, Maxis, Telekopm Malaysia, Tatatele etc. to study the rising interest of foreigners for investment in Indian telecom

industry. Various reasons of stemming growth can be rising subscriber base, rising teledensity, rising handset requirements, saturated telecom markets of other countries, stiff competition, requirement of huge capital, high growth curve on telecom, changing regulatory environment, conducive FDI limits in telecom sector.

Bansal (2013) studied on FDI'S in India in-Telecommunication industry. The study found that there is a significant telecom equipment-manufacturing base in the country and there has been steady growth of the manufacturing sector during the past few years. The figures for production of telecom equipment show three time increase in production from Rs. 14400 crore to Rs. 50000 crore during the study period. Similarly, export of telecommunication equipments has been increased from Rs. 402 crore to Rs. 13500 crore during the same period. Rising demand for a wide range of telecom equipment, particularly in the area of mobile telecommunication, has provided excellent opportunities to domestic and foreign investors in the manufacturing sector. The major impacts of FDI in Telecommunication include faster economic growth, increase in trade and employment and skills levels.

Battistoni et. al. (2006) recommended that regulators should continually assess not only the kind of rules different regulatory bodies require but also "if competition is already established, whether fewer rules might make sense. They note that "regulations are hard to remove or reduce, but doing so may be necessary to stimulate growth and innovation." According to Battistoni, et. al.(2006), adopting a sunset clause forces governments to review on a regular basis "how well regulations fulfill their purpose".

Bepko and Charlene Pleger (2002) say that among the areas which need to be addressed in service quality research is the nature of consumer expectations across the range of intangibility. Previous research had compared consumers' service quality expectations across services, but different groups of subjects were evaluated for each different service. The problem with using different subjects for each service is that the subject's demographic characteristics may be responsible for the significant differences in expectations of quality. The paper used a controlled, repeated measures design where subjects were asked to evaluate three services, varying in their degree of intangibility, over a ten weeks period.

Cooper (2014) has done a comparative study of asian telecommunications policy reforms in Japan, Malaysia and the Philippines. It is clear that the three Asian cases under went telecommunications policy changes from monopoly to privatization and competition. In

Japan, telecom reform progressed from gradual privatization in 1985 to recent restructuring of the company and then toward promoting competition in the nation's telecom market.

Crandall, et. al. (2005) concluded that by extending deregulation U.S economy will be more efficient. The most important sectors still under formal government economic regulation are telecommunications and electricity. In addition, international air transportation and the air transportation network, including air traffic control and airport access, are still subject to government control.

Taneja and Kaushik (2007) conducted a study on "Customers Perception towards Mobile Service Providers: An Analytical Study" aims to deduce the factors that customers perceive to be the most important while utilizing the services of a mobile service provider.

Kalpana and Chinnadurai (2006) in their study analyzed that the increasing competition and changing taste and preferences of the customers all over the world are forcing companies to change their targeting strategies. The study revealed the customer attitude and their satisfaction towards the cellular services in Coimbatore city.

Lehr and Kiessling (1999) studied Telecommunication Regulation in the United States and Europe. On both sides of the Atlantic, communications policy-makers are seeking to promote competition and liberalization, while assuring the provision of an integrated, global, communications infrastructure. Realization of these goals requires a strong centralized regulatory authority. Unfortunately, in both the US and Europe, this authority is inadequate. In the US, the FCC's authority has been challenged by a series of decisions from the 8th Circuit; in Europe, there is no effective EC-level regulator.

Madjar (2011) concluded a comparison between European and North American wireless regulation that the most influential powers in wireless regulation and standardisation are Europe and North America. Their different approaches have been presented, analysed and explained. Rather than developing new regulations and standards, administrations worldwide typically follow European or North American rules. Emerging economies may decide if they develop their own technologies or adopt leading standards.

Pratibha A. Dabholkar (1995) concluded that customer satisfaction and service quality are both important tools for creating competitive advantage. However, there is a lack of consensus on whether the two are separate constructs and how they should be measured. The

research presented a number of conceptualizations of customer satisfaction and service quality based on disconfirmation, a transactional versus global view and the inclusion of cognitive and/or affective factors. Possible antecedents and consequences of both constructs were examined, and suggestions for future conceptualization and measurement of the constructs were provided.

Prasad and Sridhar (2008) attempted to analyse the tradeoffs between low market power and economics of scale for sustained growth of mobile services in the country. The analysis of the data on mobile services in India indicates the existence of economies of scale in this sector. They also calculated the upper bound on the optimal number of operators in each license service area so that policies that make appropriate tradeoffs between competition and efficiency can be formulated.

Shanthi (2005) threw light on the factors that contributed to the growth of telecom sectors. The trend is expected to continue in the segment as prices are falling as a result of competition in the segments. The beneficiaries of the competition are the consumers who are given a wide variety of services.

Venkatram (2012) found that competition significantly reduces profitability, employment and, surprisingly, efficiency after privatization, while creation of an independent regulatory agency significantly increases output. Mandating third party access to an incumbent's network is associated with a significant decrease in the incumbent's investment and an increase in employment.

Wolfe (2003) analyzed regulatory transparency in developing countries and the WTO and concluded that the only way any country can be an effective participant in the WTO, as it evolves in response to globalization is to have an open and transparent public administration based on a broad consultative process. Negotiators cannot find an appropriate rule if they do not engage the people who will have to live with it. People who do not understand or who were not engaged are unlikely to be able or willing to reproduce the rule in their daily life.

OBJECTIVES

To find out perception of TRAI working with respect to age, experience, qualification and designation by telecom employees.

HYPOTHESES

H_{01}: There is no significant difference in the perception of telecom employees towards TRAI working with respect to age.
H_{11}: There is a significant difference in the perception of telecom employees towards TRAI working with respect to age.

H_{02} : There is no significant difference in the perception of telecom employees towards TRAI working with respect to experience.
H_{12}: There is a significant difference in the perception of telecom employees towards TRAI working with respect to experience.

H_{03}: There is no significant difference in the perception of telecom employees towards TRAI working with respect to qualification.
H_{13}: There is a significant difference in the perception of telecom employees towards TRAI working with respect to qualification.

H_{04}: There is a no significant difference in the perception of telecom employees towards TRAI working with respect to designation.
H_{14}: There is a significant difference in the perception of telecom employees towards TRAI working with respect to designation.

RESEARCH METHODOLOGY

The Study: The study is empirical and descriptive in nature.

Scope of the Study

This includes detail functioning of Telecom Regulatory Authority of India and of developed countries (Austalia/China/Russia/United Kingdom/Brazil/South Africa). Feedback, responses and views of senior telecom professionals of India are considered. Best practices in telecom regulation is taken into account through SWOT analysis of developed countries. Recent regulatory development in developed countries are studied. Through this study, recommendation and suggestion are given to Government of India and TRAI for the betterment and future growth of telecommunication in India, thereby contributing more to India's GDP growth.

Sampling Method- Convenient sampling method was used to select the sample.

Sampling Size- In the study, questionnaire was distributed to 356 respondents, but finally 313 completely filled questionnaires were received.

Sampling Unit: Employees of telecom Industry of India.

Tools for Data Collection: Data has been collected through primary and secondary sources.

Tools for Data Analysis: Data has been analysed with the help of Reliability Test, t- test and ANOVA.

RESULTS AND DISCUSSION

Test of Reliability- Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = poor, 5 = excellent). The higher the score, the more reliable the generated scale is. Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. The Cronbach's alpha for the questionnaire was 0.952 (Table 1). Hence, it was found reliable for further analysis.

Testing hypothesis regarding impact of age

Since the P value is .981 (table 2), which is greater than .05 (at 5% level of significance), $H0_1$ is accepted. It infers that there is no impact of age of the respondents on the perception of TRAI functioning. Issues and concerns prevailing in the telecom sector pertaining to TRAI functioning is widely known to all employees in telecom companies from top to bottom. Testing has been done with "AGE" as a parameter. With more age, understanding the root cause of prevailing issues may differ from the younger employees. But it is found out that in case of perception about functioning of TRAI, there is no impact. All respondents with varied ages has similar perception and hence no impact.

Testing hypothesis regarding impact of experience

Since the P value is. 676 (table 2), which is greater than .05 (At 5% level of significance) $H0_2$ is accepted. It infers that there is no impact of experience of the respondents on the perception of TRAI functioning. With more experience, understanding the root cause of prevailing issues may differ from the employees with less experience. But it is found out that in case of perception about functioning of TRAI, there is no impact. All respondents with varied experiences has similar perception and hence no impact.

Testing hypothesis regarding impact of qualification

Since the P value is .241 (table 2), which is greater than .05 (At 5% level of significance), $H0_1$ is accepted. It infers that there is is no impact of qualification of the respondents on the perception of TRAI functioning. With higher qualifications, understanding the root cause of prevailing issues may differ from the employees with lower qualifications but it is found out that in case of perception about functioning of TRAI, there is no impact.

Testing hypothesis regarding impact of designation

Since the P value is .700 (table 2), which is greater than .05 (At 5% level of significance), $H0_3$ is accepted. It infers that there is is no impact of designation of the respondents on the perception of TRAI functioning. With higher designation, understanding the root cause of prevailing issues may differ from the employees at lower designation but it is found out that in case of perception about functioning of TRAI, there is no impact. All respondents with varied designations has similar perception and hence no impact.

CONCLUSION

Telecom Regulation in India has always been into lime light. Detailed study on functioning of TRAI has been carried out to see the perception of telecom employees with respect to age, experience, qualification and designation. Also detailed study has been carried out about the functioning of Telecom Regulatory of India. TRAI is the body which is regulating the telecom sector since 1997. Inspite of growth of telecom sector in India, operators are hard pressed on Margins and still struggling, and future developments are at stake. Telecom Sector in other developing countries is one of the major contributor in the over all growth of the countries economy. In India inspite of good work done by TRAI, there are reasons which not allowing telecom sector to settle down and built Investors trust. Also it is concluded that there is is no impact of Age/Experience/Qualification and Designation of the respondents on the perception of TRAI functioning.

LIMITATION

There were no studies available on the demographic variable so results have not been endorsed while discussion.

REFERENCES

Arindham, M. (2006). *Mobile Service Providers-Perspective and Practice*.

Alexeyev, M. Russian (2005). Wireline: *On the Eve of a Major Reshuffle*, 6 Advanced Communications and Media, 2 (3), 114–115.

Bansal, S., and Gupta, S. K. (2013). *FDI 's in India - A Study of Telecommunication Industry*.

Battistoni, E., Campisi, D. and Mancuso, P. (2006). European Integration and Telecommunication *Convergence*. *In Governance of Communication Networks* (357-377). Physica-Verlag.

Bepko and Charlene Pleger (2002). Service Intangibility and Its Impact on Consumer Expectations of Service Quality. *Journal of Service Marketing*, 14 (2), 9-26.

Cooper, W.H. (2014). US-Japan Economic Relations: Significance, Prospects , and Policy Option. *Information Economics and Policy*. 13, 51 – 76.

Crandall, R.W. (2005). The Remedy for the "Bottleneck Monopoly" in Telecom: Isolate it, Share it, or Ignore it, *The University of Chicago Law Review*, 3-25 (24), 439 – 452.

Chinnadurai, M. and Kalpana, B. (2006). Promotional Strategies of Cellular Services: A Customer Perspective. *Indian Journal of Marketing*, *36* (5).

Dabholkar, P. A. (1995). A Contingency Framework for Predicting Causality between Customer Satisfaction and Service Quality. *Advances in consumer research*, 22 (1).

Hardan, A. S. and Shatnawi, T. M. (2013). Impact of Applying the ABC on Improving the Financial Performance in Telecom Companies, 8(12). doi:10.5539/ijbm. 8 (12), 48.

Lehr, W. and Kiessling, T. (1999). Telecommunication Regulation in the United States and Europe. The Case for Centralized Authority. Competition, Regulation and Convergence. *Current Trends in Telecommunications Policy Research*. Mahwah, New Jersy: Lawrence Erlbaum Associates, 105-20.

Madjar, H.M.A (2011). Comparison Between European and North American Wireless Regulations Telecommunication policy, 24, 439 – 452.

Nunnally, J. C. and Durham, R. L. (1978). Validity, Reliability, and Special Problems of Measurement in Evaluation Research. *Handbook of Evaluation Research*, *1*, 289-352.

Prasad, R. and Sridhar,V. (2008). Optimal Number of Mobile Service Providers in India: Trade-off between Efficiency and Competition. *International Journal of Business Data Communications and Networking (IJBDCN)*, 4 (3), 69-88.

Seth, A., Gupta, H. M., and Momaya, K. (2007). Quality of Service Parameters in Cellular Mobile Communication. *International Journal of Mobile Communications*, *5* (1), 68-93.

Shanthi, N. M. (2005). Effectiveness of Predictive Churn Models for Sustaining Market Share in Telecom Industry–An Appraisal. *ICFAI Journal of Services Marketing*.

Taneja,G. and Kaushik, N. (2007). Consumer Perception towards Mobile Service Provider:An Analytical study. *The ICFAI Journal of Service Marketing*, 5 (3),39-52.

Venkatram, R. and Zhu, X. (2012). An analysis of Factors Influencing the Telecommunication Industry Growth : A Case Study of China and India. *Blekinge Institute of Technology*.

Wolfe, R. (2003). Regulatory Transparency, Developing Countries and the WTO. *World Trade Review*, 2 (02), 157-182.

ANNEXURE

Table 1: Reliability Statistics

Cronbach's Alpha	No of items
0.952	146

Table 2: Results of hypotheses tested

S. No	Item	p Value	Result
1	Age	0.981	H_{01} is Accepted
2	Experience	0.676	H_{02} is Accepted
3	Qualification	0.241	H_{03} is Accepted
4	Designation	0.700	H_{04} is Accepted