Research Article

Matching the Needs of Subscribers with Technology Requirements of the Telecom Companies in Kerala

Biju M. K.*[1], & Sanu Abraham Thomas[2]

[1]Assistant Professor, School of Management and Business Studies, Mahatma Gandhi University, Kottayam, Kerala, India

[2]IV MBA, IGNOU, New Delhi, India

Abstract: *The subscribers of Telecom Service Providers expect quality services when they use mobile phones. The quality of a call involves a good numbers of factors. All these are provided by the technical process carried out by the Telecom Service Providers. This involves Point of Interconnections which ensures the call connectivity with and outside the network of a Telecom Service Provider. On increased demands the Telecom Service Providers need to proceed for augmenting the capacity to handle calls smoothly. Subscribers are unaware about these technical processes. This study is aimed at understanding the subscriber requirements and relates these to the technical process of the respective Telecom Service Provider. The findings of the study provide good insights to the Telecom Service Providers.*

Keywords: *Point of Interconnectivity (POI), Telecom Service Provider (TSP), Telecom regulatory Authority of India (TRAI), Cellular Operators Association of India (COAI), International Telecommunication Union (ITU).*

INTRODUCTION

Slowly evolving from a voice exchanging interface the mobile phone has now become the platform for a wide variety of services from money transaction to entertainment. When the subscribers make calls, there are a set of operations happen in the background. A major activity is called Point of Interconnections Augmentation, which makes it possible to connect two phones in the same network or with other networks. The efficiency of the system depends on the success of this process. It provides better call connectivity.

Globally telecommunication industry is a major revenue contributor to the economy. Telecom industry in India is a combination of Service providers like Airtel, BSNL, Vodafone, Jio etc., Equipment manufacturers like Oppo, Samsung, Nokia etc., Tower and Infrastructure Companies like Indus, A.T.C, Viom etc., Regulatory bodies like TRAI, TDSAT and the Subscribers of each TSP. Considering the revenue aspect Telecom is a high revenue generating sector in India. Subscriber bases keeps increasing since the price of handset have come down. Even though Data services are gaining immense popularity, voice services are still favourite choice among subscribers. The main reason is that voice calls through dedicated circuit switched path offer no delay in voice and hence are more reliable than data services. Thus, the research on Point of Interconnections which is a part of voice traffic is critical to revenue decision in short and long term.

As the market share of subscribers increase for a Telecom Service Provider (hereafter referred as TSP) more calls would flow among service providers thus creating the need for setting up new Point of Interconnections (hereafter referred as POI). In the last two decades there has been exponential growth in the telecommunication industry in terms of revenue and subscriber base. The surging traffic and low cost of mobile calls have recently put pressure on TSP's to increase their capacity.

Problem

From the subscribers' point of view, the communication through the mobile phone has to be clear, uninterrupted and cheap. If these conditions are felt by the subscribers, they complain. The organization gets subscriber complaints about calls to same network and other TSPs. This issue can be traced back to the POI augmentation process and its efficiency. The study aims at how subscribers value the benefits of effective POI augmentations at TSPs in Kerala circle. It evaluates various patterns of subscriber choices for preferring a TSP. The study also highlights critical suggestions to TSP

Objectives

The objectives of the study are,

---

*Corresponding Author: Biju M. K.

- To understand and evaluate subscriber opinion on problems related to calls from one TSP to other TSP in Kerala.
- Provide suggestions to TSPs in Kerala for improving process of POI augmentation.

RESEARCH METHODOLOGY

The Study follows descriptive research design. Primary data was collected from surveys among subscribers of various TSPs in Kerala. Secondary data would be from the reports available in the company like offline reports, equipment readings and trend line data. The population for this study is subscribers of various TSPs in Kerala. Sampling unit of subscriber survey is one subscriber of any TSP. The sampling method used is Judgement sampling. Sample size is 96. Data is collected through survey using a structured questionnaire. The tools for analysis used are Percentages, Likert scale, Ranking and Analysis of Variance (ANOVA).

The study covers subscribers' opinion on technical efficiency TSPs in Kerala. The limitations include the limited time available for the data collection and study. There is possible bias in the opinions of respondents.

ANALYSIS & DISCUSSIONS

The analysis and discussions are provided below. The analysis is done by dividing the data for each TSP. The analysis is presented for Airtel, BSNL, Jio and Vodafone separately.

Descriptive Statistics

The following are the descriptive statistics based on the collected data.

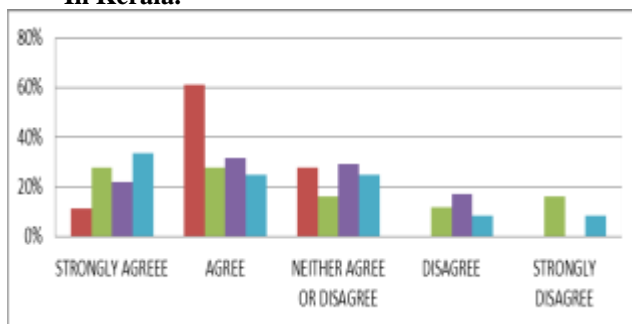1) **I Feel That My Service Provider Provides Good Call Connectivity To Other Service Providers In Kerala.**

Figure 1: Call connectivity to other service providers
Source: Primary data

Airtel subscribers are more satisfied with the call connectivity to other service providers in Kerala. Subscribers of other service providers are almost equally satisfied.

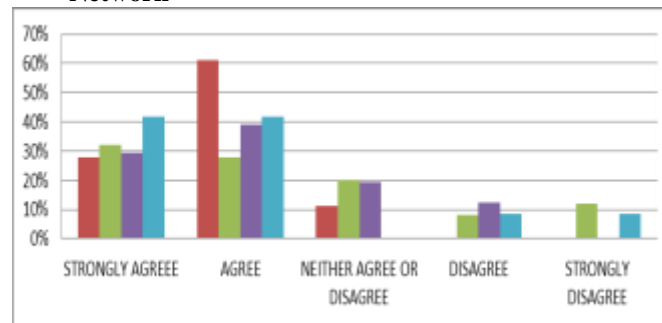2) **I Feel That My Service Provider Provides A Better Call Connectivity Within Its Own Network**

Figure 2: Call connectivity to within the own network
Source: Primary data

Majority of subscribers feel that the calls within own network have better connectivity compared to POI calls. Subscribers of all service providers are equally satisfied.

3) **I Am Very Satisfied With The Solution Given By My Telecom Service Provider When Complained About Call Connectivity To Other Service Provider.**
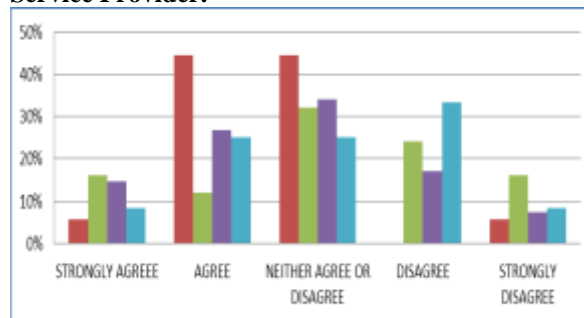

Figure 3: Solution given by the TSP on complaints
Source: Primary data

Airtel subscribers are more satisfied with the solution on the complaints on call connectivity with other operators. This indicates promptness of TSPs in solving POI related complaints.

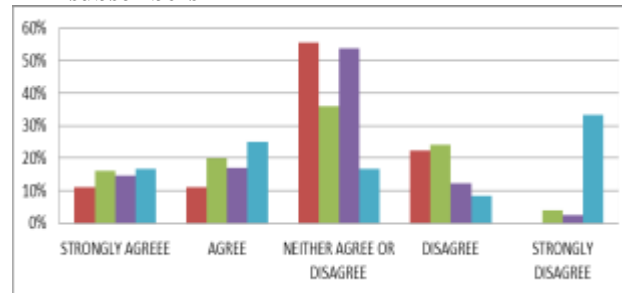4) **I feel most of the time the connectivity issues are experienced towards outside network subscribers**

Figure 4: Call connectivity issues towards outside network subscribers
Source: Primary data

Vodafone is having better POI connectivity among the rest of the operators. Most of the total respondents were neutral which means that they are satisfied unless there is high level of call failure. In that case they try to find out which TSP network their called party belong to.

5) **If close associates of mine using other service provider are not able to reach me during busy hours, I would port out to their network for better connectivity.**
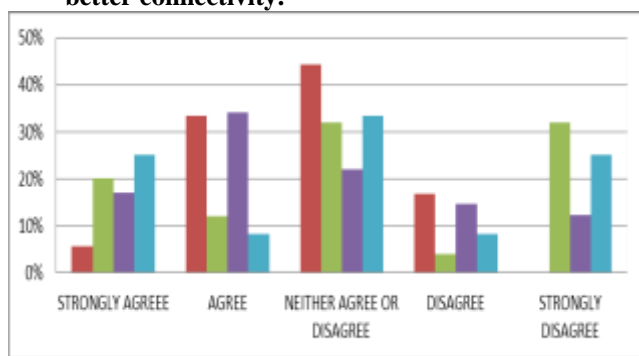

Figure 5: Porting to other service providers
Source: Primary data

Most of the Jio and Airtel subscribers are neutral to the question on whether they would port out to their network for better connectivity. Subscribers of BSNL and Vodafone are less probable to port out to their network for better connectivity. Subscriber loyalty and sensitivity towards service provider may affect their decisions.

6) **If given an option I would want to have all my frequently called contacts on my provider's network. Because I feel it will make me connected to them more quickly and efficiently**
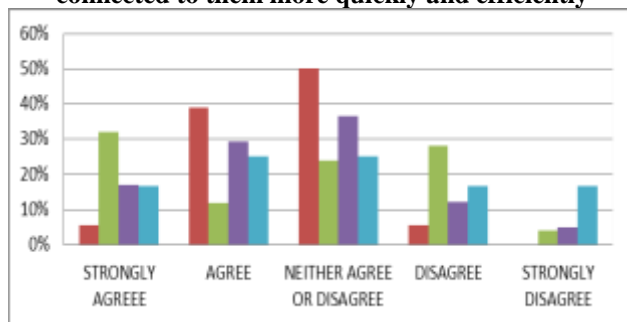

Figure 6: I need my contacts in my network
Source: Primary data

If given an option subscribers feel it's better to have all frequent callers in same network due to reasons viz., call cost on same network is less and connectivity benefits as there is no possibility of POI related congestion. Airtel subscribers show a clear trend of desire to have good connectivity. Jio, BSNL and Vodafone subscribers are not very sensitive towards call connectivity to frequent callers. The reason is evident in the market share as Airtel has to make 1 in 4 calls to either of the Jio, Vodafone or BSNL subscribers. Thus suggestion to Airtel is that it should always have enough capacity such that there are no complaints.

7) **I feel that call connectivity problems to other operators vary from period to period.**
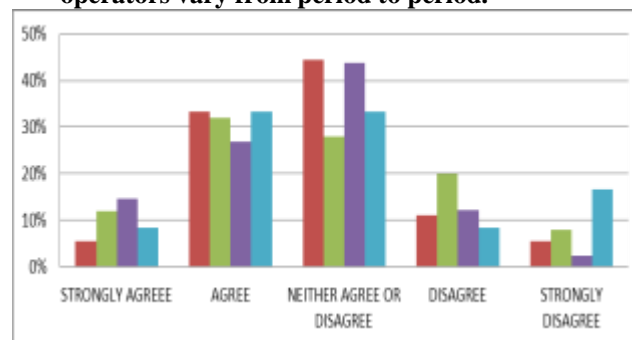

Figure 7: Call connectivity problems to other operators vary
Source: Primary data

Call connectivity issue can have very different views among the public, however there are differences in the opinion of Private sector and public sector subscribers. The delay in process followed in approval and augmentation of POI may be one reason for this. There is very little perceivable difference in the augmentation process among private operators and hence subscriber's feedback is neutral to the time variation of calls among private players.

8) **I have constantly felt congestion on dialled network for more than 6 months from now**
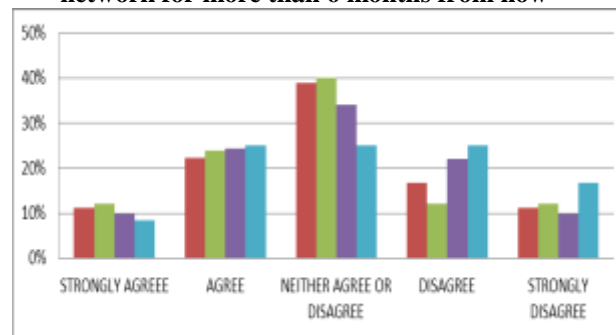
Figure 8: Congestion for more than six months
Source: Primary data

Overall congestion is quite evident among subscribers of all operators. The problem of POI untimely augmentation is significant among all operators. However, Vodafone subscribers fairly disagree on this point hence meaning that among TSPs they are much aggressive in terms of augmentation with other operators.

9) **I usually have to repeatedly raise complaints to address other operator call connectivity congestion issues**

Figure 9: I had to raise complaints
Source: Primary data

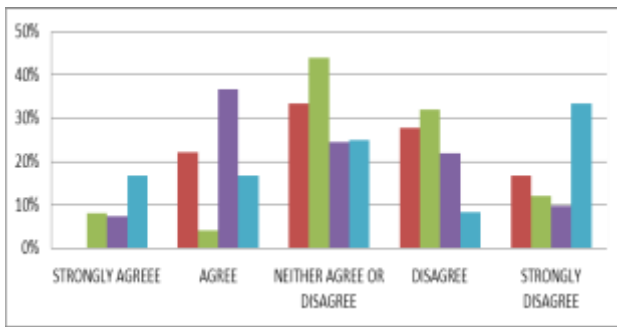From the responses there is quite an agreement between Jio subscribers indicating the need for raising repeated complaints about congestion to other operators. The operators have to understand that calls within the network are as significant as POI calls. A strong indication of Vodafone emphasis the point that Vodafone subscribers are better catered in terms of POI calls to other operators. Hence, Vodafone does POI process better than other operators when it comes to complaints.

10) I feel complaints given for congestion of calls towards BSNL network are usually addressed and resolved promptly
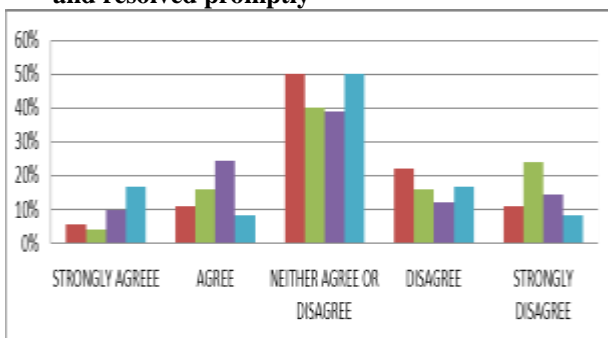

Figure 10: Congestion towards BSNL network
Source: Primary data

BSNL Subscribers are 3rd in size in Kerala circle. Hence, it is quite critical this question gets a high positive agreement. However the subscribers are neutral and this shows a gap in the subscriber requirements and the actually POI process followed at BSNL. The major reason for this may be that POI added to BSNL is fully dependant on the commercial purchase of Port rented from BSNL (port charges). This cost has to be fully recovered with the IUC Termination charges received by the operator. BSNL should re-visit the process and format a revenue based port charge sharing approach towards POI augmentation with other operators.

11) I feel complaints given for congestion of calls towards private service provider's network are usually addressed and resolved aggressively
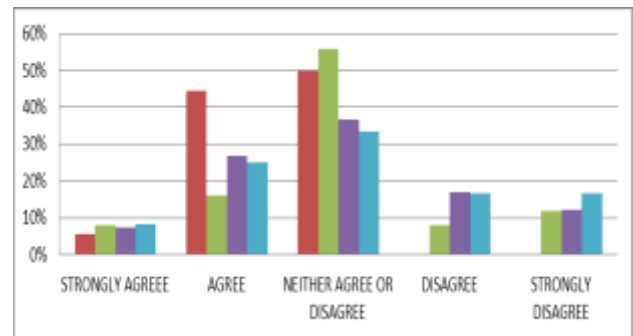

Figure 11: Complaints on congestion of calls on private service provider's network are usually addressed and resolved aggressively
Source: Primary data

Overall subscriber has neutral opinion on aggressiveness of TSP complaint resolutions. Subscribers in Airtel feel that when compared to BSNL calls there are fewer complaints towards private operators whereas, other TSP subscribers do not feel any differences. This can mean that Airtel have been able to build better connectivity capacity over the time with all TSP. Since Airtel subscriber base is small and not growing the existing capacity is more than sufficient. There are concerns among the top three Jio, BSNL a nd Vodafone subscribers which require attention.

12) I am overall very much satisfied with the network quality of my service provider

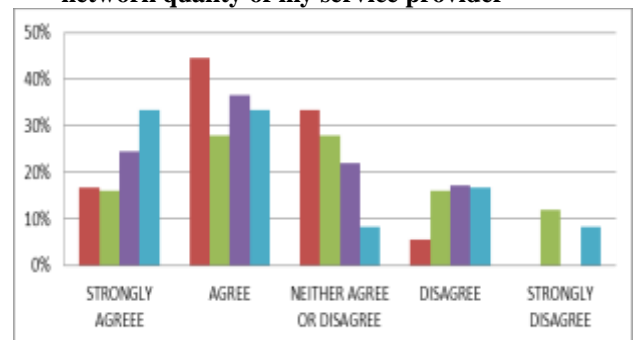**Figure 12:** Satisfaction on Network
Source: Primary data

Subscribers using Airtel are most satisfied. Jio ranks second in subscriber satisfaction and third Vodafone. A Similar analysis is done using Likert scale also.

13) Do you agree that government regulatory bodies like TRAI are efficiently monitoring subscriber opinions and complaints of call congestion between service providers
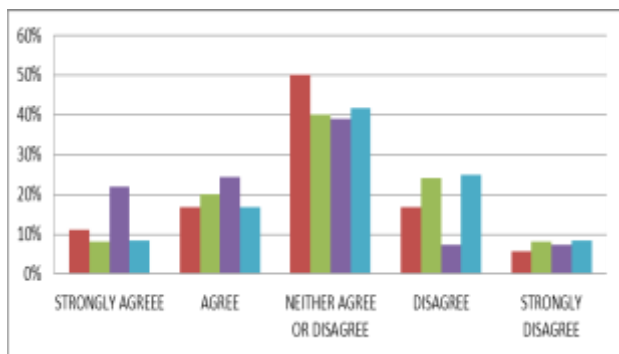

Figure 13: Government regulatory bodies efficiently handle subscriber complaints
Source: Primary data

This question throws light to the effectiveness of intervention of regulatory authorities in the practices of POI connectivity followed by TSP. Even though TRAI has the power to intervene in POI related congestion issues the subscribers feels that actions are not up to the mark. What needs be done by TRAI is to regularly conduct satisfaction survey among subscribers and compare with the POI reports from operators. If there is substantial difference in observation strict measures should be taken against defaulting TSPs.

Ranking Analysis - Subscribers

In ranking analysis, the various factors on the selection of a TSP are asked to be ranked by the subscribers. The ranks given are analysed for finding the scores for each TSP separately.

Table 1. Scores for each TSP by ranking analysis

Factors Considered	Scores			
	Airtel	BSNL	Jio	Vodafone
Call connectivity	94	125	220	65
Data connectivity and speed	84	110	185	58
Tariff	67	86	142	40
Complaint redressal	48	80	105	29
Better Coverage	54	83	127	38
Subscriber Care - touch point access	31	41	82	22

Source: Primary data

Call connectivity is the most important factor the subscribers verify when they choose a particular TSP. The second important factor is data connectivity and speed. Subscriber care is the least preferred factor. Thus, the POI traffic is very much relevant topic to subscribers who want call connectivity every time, everywhere. Subscriber loyalty and revenue is directly related to the priorities of subscribers. To survive competition operators must focus of having more POIs and ensure smooth coordination among themselves.

Likert Scale data

The responses were asked on a 5-Point scale, which were consolidated into points out of 5. The analysis was done for each TSP separately to have a better analysis.

Table 2. Likert Scale based responses

Statements	Airtel	BSNL	Jio	Vodafone
I feel that my service provider provides good call connectivity to other service providers in Kerala.	3.8	3.4	3.6	3.7
I feel that my service provider provides a better call connectivity within its own network	4.2	3.6	3.9	4.0
I am very satisfied with the resolution given by my Telecom service provider when complained about call connectivity to other service provider	3.4	2.9	3.2	2.9
I feel most of the time the connectivity issues are experienced towards outside network subscribers	3.1	3.2	3.3	2.8
If close associates of mine using other service provider are not able to reach me during busy hours, I would port out to their network for better connectivity.	3.3	2.8	3.3	3.0
If given an option I would want to have all my frequently called contacts on my provider's network. Because I feel it will make me connected to them more quickly and efficiently	3.4	3.4	3.4	3.1
I feel that call connectivity problems to other operators vary from period to period.	3.2	3.2	3.4	3.1
I have constantly felt congestion on dialled network for more than 6 months from now	2.9	2.9	3.0	3.2
I usually have to repeatedly raise complaints to address other operator call connectivity congestion issues	3.4	3.4	2.9	3.3

I feel complaints given for congestion of calls towards BSNL network are usually addressed and resolved promptly	2.8	2.6	3.0	3.1
I feel complaints given for congestion of calls towards private service providers network are usually addressed and resolved aggressively	3.6	3.0	3.0	2.9
I am overall very much satisfied with the network quality of my service provider	3.7	3.2	3.7	3.7
Do you agree that government regulatory bodies like TRAI are efficiently monitoring subscriber opinions and complaints of call congestion between service providers	3.1	3.0	3.5	2.9
Average Score	**3.4**	**3.1**	**3.3**	**3.2**

Source: Primary data

In connectivity within the same network and with other networks, Airtel performs better compared other TSPs. At the same time, complaints are more in the Airtel. Also, it performs well in complaint redressal process. The subscribers of Airtel, BSNL and Jio are ready to port out from the network if issues come. The connectivity issues are not regular in Jio compared to others. Vodafone subscribers feel more congestion in the network compared to other TSPs. Vodafone to BSNL connectivity issues are there. Except for BSNL, all others are satisfied with the network quality.

Overall, Airtel provides better services followed by Jio, Vodafone and BSNL.

ANOVA

ANOVA is used to here to test whether there is significant difference among the opinions on performances of the service providers on various factors.

- H_0: There are no significant differences among the opinions on performances of the four select service providers on various factors. i.e., $\mu_1 = \mu_2 = \mu_3 = \mu_4$
- H_1: There are significant differences among the opinions on performances of the four select service providers on various factors. i.e., $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$

The test was conducted using the Likert Analysis data (Table No. 2) as the observed values.

ANOVA is carried out using short cut method.

- T = 28681.9
- N = 52
- Correction factor, CF = 551.57
- Sum of squares of values = 557.4
- SST = 5.8
- SSC = 0.53
- MSC = 0.18
- SSE = 5.3
- MSE = 0.1098
- Degrees of freedom = 3, 48
- F Ratio = 1.6
- Table value at 5% Level of significance is 2.8

Table 3. ANOVA Table

	SS	df	MS	F
Between	0.53	3	0.18	1.6
Within	5.8	48	0.1098	

Source: Primary data

The calculated value is lower than the table value. Hence, the Null hypothesis gets accepted. This implies that there are no significant differences among the opinions on performances of the four select service providers on various factors.

Suggestions

The following are the suggestions.

- Subscribers clearly differentiate calls within network and outside network. TSPs have to improve the call connectivity.
- Subscriber complaints on congestion to other operators are to be addressed properly.
- A suggestion to Airtel network is that it should have enough capacity always with all other three TSPs in Kerala. Subscribers of Airtel are highly sensitive towards POI calls as most of the calls are made to other networks.
- The study suggests to BSNL to improve its POI augmentation process with other operators. However calls within own network are not having any issues.
- Blindly reducing the tariff and introducing free plans without looking into the POI capacity is a major deterrent to subscribers as it affects their highest priority which is call connectivity.
- Frequent monitoring and re-visiting the POI practise once in four months is very much required for all TSPs.
- The subscribers feel that actions and interventions of TRAI are not up to mark. What can be suggested to TRAI is that it has to regularly conduct satisfaction survey among subscribers and correlate with the POI reports from operators.
- Suggestion to Vodafone is that subscribers perceive quite high variation in calls in network period to period. This may mean that there is a highly dynamic traffic trend and thus variation in subscriber perspective needs to be matched while proposing augmentation

CONCLUSION

This study was aimed at understanding subscribers' opinions on various TSPs operating in Kerala in relation to the Interconnectivity process. The subscribers are not aware about the technology used but, they require the quality in the service. This study tried to connect the subscribers' requirements with the technological process of the TSPs. The insights were presented in the study.

REFERENCES

1. Chowdary, T. H. (1998). Comment: Politics and economics of Telecom liberalization in India. *Telecommunications Policy, 22*(1), 9-22.
2. Debnath, R. M., & Shankar, R. (2008). Benchmarking Telecommunication service in. *Benchmarking: An International, 15,* 584 - 598.
3. Gupta, S. (2015). Telecommunications at the crossroads in India. *IIMB Management Review*, *27*(3), 196-208.
4. Kalavani. (2006). *To study the gap between service promised and service offered by service provider.*
5. Mitra, K. (2005, June 5). *Business Today*. *Review of Interconnection Usage Charges Consultation Paper No. 17/2016.* New Delhi: Telecom Regulatory Authority of India, retrieved from http://www.trai.gov.in/WriteReadData/Consultatio nPaper/Document/Consultation_Paper_05_August_ 2016.pdf
6. Shanthi, N. M. (2005, January 2). Indian Telecom: Growth and Transition. *Business Today*.
7. Taneja, G., & Kaushik, N. (2007). subscriber perception towards mobile service providers; An analytical overview. *The IUP Journal of services marketing*, 14.
8. Venkatram, R., & X. Z. (2012). *An analysis of Factors Influencing the Telecommunication Industry Growth.* Blekinge Institute of Technol.