THE CRISIS AND REGAINING GROWTH - A STUDY ON THE FINANCIAL HEALTH OF THE TELECOM SECTOR IN INDIA

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MSc. International Business

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Abstract

In the present era of globalization and connectivity revolution, Indian entrepreneurs are revealing extensive grid towards the information technology and its improving prospects in contrast to the global telecommunication economy. Although the quarter ending of July 2019 does not reveal a healthy and competitive market environment, but the overall rate of increment and development in the rural areas are way more supreme. This study relates to the crisis that exists in the Indian telecommunication industry and further provide the readers with the revenue regaining strategies for future growth. Primarily, the research revolves around the growth and acceleration that the industry has shown so far with respect to the global telecom sector.

Consequently, the problems and issues that exists in the duopoly of the Indian telecom industry is reflected towards the end. All the possible changes that can be brought for implementing the 5G network spectrum has been highlighted afterwards. Moreover, the financial barriers that can reduce the success of implementing 5G spectrum in the Indian telecom industry has been highlighted. On further notes, in order to contrast the data collected from the secondary sources, primary data collection was conducted over the former colleagues of the telecom sector. A set of 10 questions were asked to each of the interviewees. In order to pertain a systematic hierarchy of the data collection process, a thorough methodological process was followed. Further, data analysis and discussion were carried out with the aim of getting a narrower existing issues and relevant solution for it. A wide range of recommendation was provided to enhance the existing crisis in the Indian Telecom industry and future capital growth. The recommendations provided are for the companies involved in the series to the Indian telecom industry as well as further modification in the governmental norms.

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List of Abbreviations

GDP	Gross Domestic Product
MNP	Mobile Number Portability
AGR	Adjusted Gross Revenue
SJM	Swadeshi Jagran Manch
ARPU	Average Revenue Per User
FDI	Foreign Direct Investment
IoT	Internet of Things
USO	Universal Service Obligation
E2E	Exchange to exchange
TRAI	Telecom Regulatory Authority of India
DOT	Department of Telecom
CCI	Competition Commission of India
DCC	Digital Communications Commission
TDSAT	Telecom Disputes Settlement and Appellate Tribunal

COAI	Cellular Operators Association of India
CEO	Chief Executive Officer
SUC	Spectrum Usage Charges
BSE	Bombay Stock Exchange
AI	Artificial Intelligence

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Chapter 1: Introduction

1.1 Significance of the Research

The main purpose of the study is to explore the adverse situation of Indian telecommunication sector, which is influenced by the changes in regulatory platforms thereby creating additional stress on the companies. Successful completion of the study may help to develop a sound knowledge about the striking downturn of financial health of India's telecom companies in the last few years along with explaining how the industry is regaining growth (The Economic Times, 2019a). Thus, the study will portray the current competitive scenario with potentiality of growth in Indian telecom sector, which may provide guidance to the new entrants. At once, the foreign companies may also perceive a coherent perspective towards the future prospects in this sector that will influence their investment decisions in India.

The preliminary section of the study is supposed to start by introducing the research topic or key area of interest of the study. Relevant information about the current state of Indian telecom sector is provided in introduction, on which the further discussion will proceed. A very precise analysis is made in this section to shed light on the rapid changes in the chosen sector in last decade. After demonstrating background of the study, the key research problem is addressed. It directly indicates the subject of interest and the study will tend to find out solutions to mitigate these problems. The very next section is focused on the existing literature stating the troublesome state of Indian telecom industry along with mentioning the strategies followed in this study to collect relevant dataset. Based on this discussion, research aim, objectives and questions are formulated in the next sections, relevance of the questions with the research topic is also explained.

1.2 Background of the Topic

In most of the emerging economies, the telecom industry plays a pivotal role to boost up the productivity level by lessening the complex economic activities. In addition to that, a considerable growth and positive approach of profit making in this sector has a significant influential impact on the macroeconomic aspects such as improving GDP (IBEF, 2020). Similar scenario is observed in India, which is now the second largest telecommunication market in the world with its subscriber base of 1.20 billion (IBEF, 2020). In the last decade, the mobile economy of India has witnessed a remarkable growth. The telecom sector creates supreme value for the overall economic context of India as it is expected to contribute almost 8.2% of GDP by 2020 (The Economic Times, 2019b).

Affordable tariffs, an expanding 3G and 4G network coverage, easy roll-out of MNP and wider availability are the key driving factors behind the exponential growth of this sector in India (Invest India, 2020). The below mentioned factors also contribute in enhancing potentialities for the telecom service providers.

Context of Indian Telecom Sector

Present contribution to India's GDP	*Total employment opportunities*	*Total no. of smartphone users*	*Total no. of smart cities*
6.5%	4 million	More than 525 million	100

(Source: Invest India, 2020)

Nonetheless, the world's fastest growing and cheapest telecom market is now facing severe life-threatening liabilities that are running into almost billions of dollars. Undoubtedly, the telecommunication sector is one of the major contributors in fuelling India's growth in this century but a number of companies in this industry are now suffering from the threats of possible bankruptcy and crushing debt. The old or existing operators are facing rivalry with the low-cost upstart of Reliance Jio, introduced by Mukesh Ambani after the Supreme Court order to include non-core revenue to AGR (PTI, 2019a). Excluding Jio, the AGR of India's different telecom companies deteriorated in 2018 in comparison to 2017 as represented by the following graph.

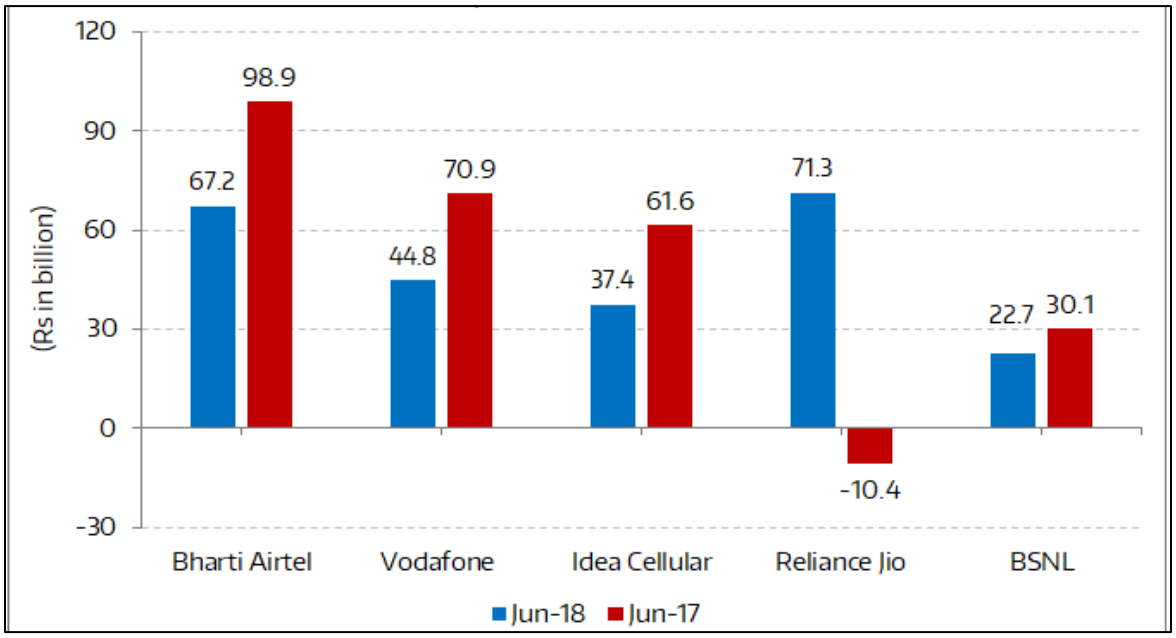


Figure 1: Adjusted Gross Revenue of India's Telecom organisations (2017-2018)

(Source: Mehta, 2018)

Along with the rising share of national security concerns, telecommunication is recognised as critical as well as strategic infrastructure sector, where a colossal influence of foreign companies is observed. The SJM proclaimed a firm initiative to develop a completely indigenised telecom network in India that will be reserved only for the domestic companies (PTI, 2019b). China has a robust control over a considerable section of the telecom network in India and here the threat is that information dominance is a part of China's core strategies. SJM also mentioned that it is high time for India to recognise the complete extent of its economic and national security issues posed by the foreign operators especially the influence of Chinese equipment in ICT networks of India (PTI, 2019c).

After a prolonged period of crisis since 2016 with rapid dwindling of subscriber base and profit, the profitability of India's telecom sector is expected to be revived in 2020. The recent unprecedented hikes of tariffs will help significantly. The companies have announced a 25% ARPU growth in 2020-21 that will help to address the risks of impending AGR liabilities thereby alleviating the financial stress (India TV News, 2020).

1.3 Research Problem

As described throughout the above section, the overall telecommunication industry of India is in distress and additionally, the SJM is highlighting the problems associated with foreign operators so they are moving towards ensuring security ground. However, the real scenario exhibits a severe economic downturn for the foreign companies as well. Foreign company like Vodafone is in serious trouble in India as in 2019, the organisation reported a net loss of Rs 50,922 crore in 3rd quarter (Roy, 2019).

At the same time, the Indian companies like Bharti Airtel, state-owned company, BSNL are also undergoing immensely ambiguous state. Moreover, as Jio started business it almost ruined the market of several marginal players like Tata Docomo, Aircel, Telenor and others (Pathak, 2016; (PTI, 2020b). The following graph represents a comparison between the revenue of two leading telecom service providers in India, which are facing a consistent downtrend after the launch of Jio.

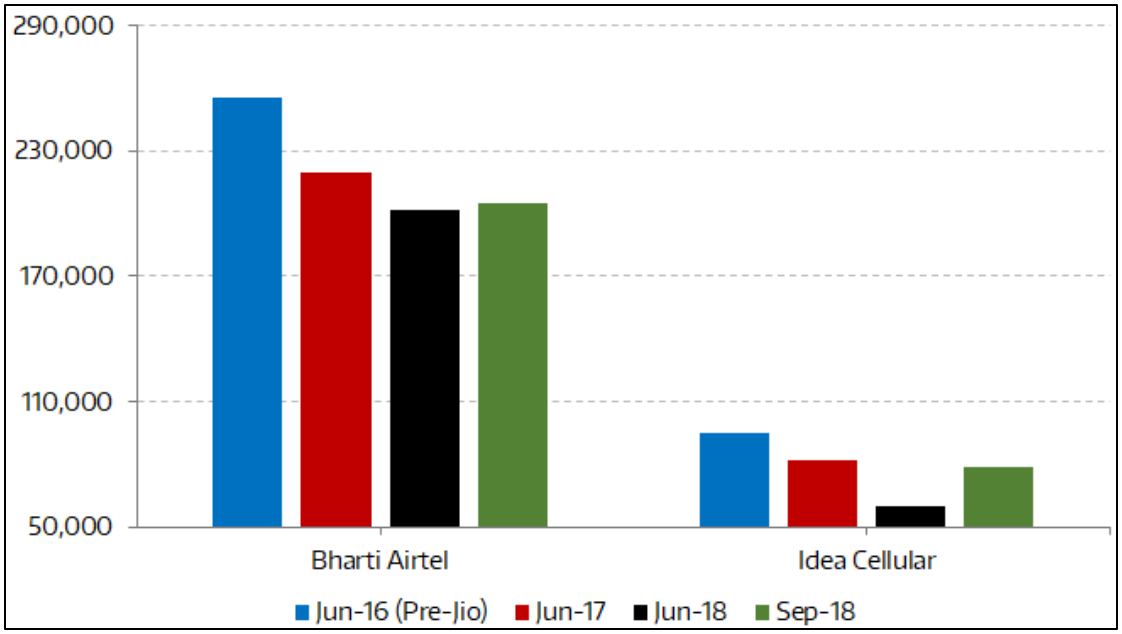


Figure 2: Declining Revenue of Bharti Airtel and Idea Cellular after Jio launch

(Source: Mehta, 2018)

Even after being the 2nd largest telecom market with a highly extended customer base and 2nd important source of revenue after income tax, India has countless challenges and issues. One of the most prevailing issues is related to the poor infrastructure. Some of these infrastructure-related problems are mentioned below:

- ***High cost of Right-of-Way*** as the government sometimes charges quite huge amounts to give permission for the laying of fibre.

- A ***low penetration of the fixed line*** is a problem in India as it is only around 6%, while it is 55%, 70% and 80% in China, Eurozone and Japan respectively. A small number of towers in this country are connected with the fibre networks (PTI, 2020a). The high-speed systems required for the 5G network is not possible to adopt in the current radio systems in India.

- ***High price and less than 40% of spectrum availability*** in comparison to the 50% in China and European nations and a low broadband penetration of 7% also create difficulties for telecom companies (PTI, 2019d).

- In addition to all these issues, the Supreme Court has recently allowed the government to ask for recovering the AGR of almost Rs 92,000 crore from telecom enterprises, which added further stress. As a result, these companies have obtained a steady and sharp fall of ARPU (Majumdar, 2019).

1.4 Existing Literature and Gap

As per the viewpoint of (Aggrawal, 2019), the decision of Indian Government regarding the deregulation of the country's FDI has made telecom as one of the fastest growing business sectors. The sector is becoming highly potential with a wide range of opportunities because the government is supposed to promote machine-to-machine communications, IoT and advanced technology to transfer HD videos. As observed in the following image, how the total number of subscribers has consistently increased in India, which is a beneficial aspect for the telecom companies.

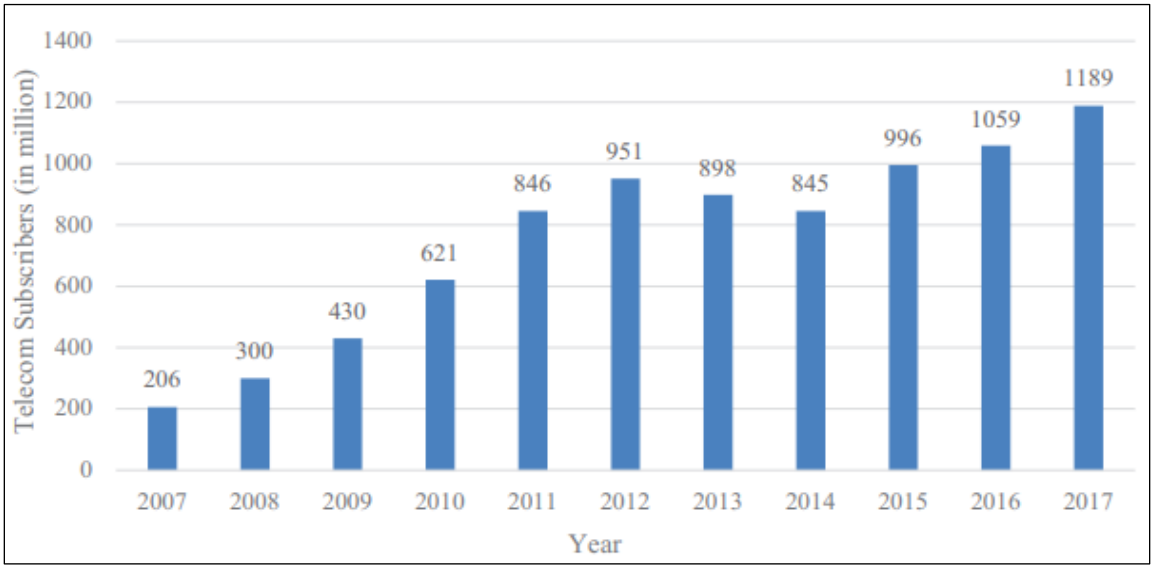


Figure 3: Growth of subscription in India

(Source: Aggrawal, 2019)

On the contrary, Puri, Rai and Saxena (2018) have identified several issues in India for embracing 5G technologies that may lead towards upgradation of telecom services. Lack of growth in the number of devices along with connections throughout wireless networks and poor data coverage and data volumes are identified as major problems. Deo (2017) has not preferred to emphasise the negative aspects and the crisis taking place in the Indian telecom sector because the country has a long history of providing and governing telecommunication services. During this period, India has witnessed notable transformation such as tele-density of the industry that includes both wire lines and wireless services, has increased from around 3.60% in 2001 to 84% in 2016.

The information extracted from various secondary sources helps in a thorough understanding of the research problem and expected growth and changes in the selected industry in near future. In order to establish the facts firmly and get a deeper understanding of the topic, the researcher will collect primary data from a few former colleagues, who worked in Tata Docomo, Airtel and Uninor. These former colleagues have a sound knowledge about the way telecom companies

compete in Indian market before 5-10 years as well as the way multiple companies have gradually disappeared after facing colossal economic downturn. Apart from that, the researcher has also collected information from current connections in India, who work in the telecom sector.

- *[A sample of the data collected from an interview has been provided at the end of this paper.]*

1.5 Research aim

The study aims to explore the current crisis in the telecommunication sector in India, where most of the companies fail to maintain profitability and gain competitive advantage. As clearly stated not only the challenges or present crisis but the study also comprises the growth, the sector is expected to regain in 2020. Therefore, the study also intends to describe effective strategies that may help to overcome the existing barriers.

1.6 Research objectives

Primary objective:

To critically evaluate the significant competitive factors that cause the crisis in Indian telecom sector along with explaining the way of regaining growth.

Sub research objectives:

- To investigate the implications of regulatory costs and costs of spectrum on financial health of Indian telecom industry.
- To identify the significance of tax revenues in the growth of Indian telecom sector.
- To critically interpret the challenges faced by the telecom sector in achieving the target operating profit growth.
- To provide a set of recommendations to carry on future operations by overcoming the challenges.

1.7 Research questions

Primary question:

What are the key competitive factors that create a crisis in Indian telecom sector and gradually change the dimension and move towards regaining growth?

Sub research questions:

- How do the regulatory costs and costs of spectrum influence the financial health of Indian telecommunication industry?
- How does tax revenue impact on the financial profitability of the country's telecom sector?
- What are the most prevailing challenges preventing operating profit growth of telecom service providers in India?
- Which strategies can be suggested to these companies to overcome the challenges and carry on their operation?

Relevance of research questions:

The primary research question is directly aligned with the title of the study and the sub questions have been formulated based on the primary question and individual variables of the research. The first 2 sub questions are relevant because answering these questions will help to get a sound knowledge about the current state of telecom services in India in a detailed manner. The 3rd sub-question is valid because the study will remain incomplete without identifying the challenges as it will help to know about the crisis. The final question is absolutely feasible because it will help to mitigate the literature gap.

1.8 Structure of the study

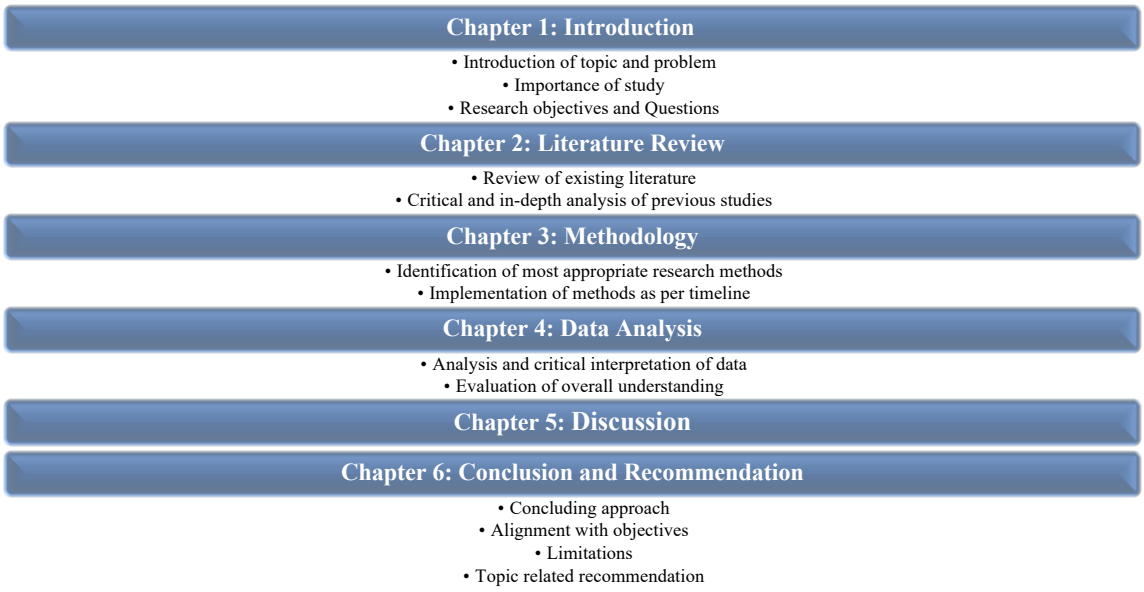


Figure 4: Consecutive stages of the research project

Explanation:

The entire research study consists of five chapters mentioned in the above image and each section plays pivotal role in determining the completion of the next one. In the initial chapter of **Introduction,** the research topic is introduced with explaining the main problems, the study is supposed to eradicate. Moreover, the aim, objectives and questions of the research are also clearly mentioned. A critical analysis will be conducted in the **Literature Review** chapter, where secondary data will be collected from existing literature. The process of data collection will be performed in the next stage and **Methodology** chapter will provide information about the suitable methods, selected by the researcher. The collected data will be analysed and critically interpreted in the consecutive chapter of **Data Analysis and Discussion.** Finally, the quintessential format of conclusion will be followed by amalgamating the key findings and understanding along with possible strategies to resolve the existing problems in last chapter of **Conclusion and Recommendation.**

Chapter 2: Review of Literature

2.1 Introduction

The review of literature reviews the academic and scholarly proofs of the relevance of the objectives that were identified for the purpose of the fulfilment of the aims of dissertation research. The review of the literature pertaining to the determinants of the financial health of the Indian telecom industry generates a clear understanding of the baseline of the research and helps in the accurate development of the research planning and execution. The review of literature is unbiased and independent understanding tool of the research topic that is utilised later for an allied approach to the actual research approach and execution.

2.2 Impact of Regulatory Cost and Cost of Spectrum on the Financial Health of the Indian Telecom Industry

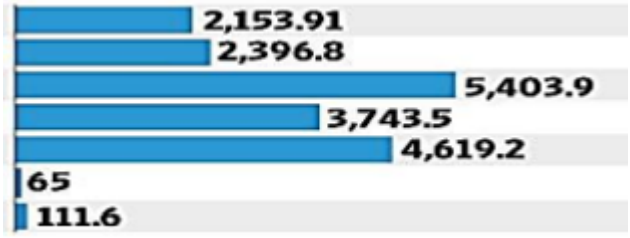
The regulatory costs and the cost of spectrum have both positive and negative impacts on the financial health of the telecom industry of India. These regulations have both company specific and overall national financial positive and negative impacts. In this context, as per the opinion of Mankotia, (2015) the cost of spectrum problems will have a high negative potential on the Digital India plan. The cumulative debt of the Indian telecom company has increased about 4 times of Rs. 82726 crores in FY 2008-2009 as compared to that of Rs. 300000 crores in FY 2014-2015. In this similar context, PwC, (2012) as assesses the current regulatory spectrum of TRAI and inferred that the estimated cost by TRAI on the cost per minute will gradually decrease from Rs. 4.4 in 2013 to Rs. 2.8, Rs. 2.2 and Rs. 1.8 in the FY of 2019, 2025 and 2031 respectively. However, on the consideration of the license extension of the current spectrum and the financial adjustments due to the existing MoU, the estimated cost per minute goes up to Rs. 26.1, Rs. 25.9, Rs. 26.4 and Rs. 26.3 for FY 2013, 2019, 2015 and 2031 respectively.

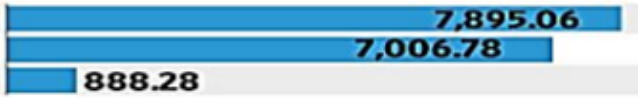
Pandey (2019) in an article in Livemint stated that the Indian telecom companies offering the cheapest mobile services need to pay the most for airways as per the cost regulations of TRAI. This amount is as much as Rs. 30 for every Rs. 100 earned by the Indian telecom companies and has proven to be ruinous. The high spectrum costs and the high network costs would significantly impact the Indian telecom sector as per the data and estimation of Airtel (Business Standard, 2019). As per this article, the cost of deployment and purchase of optical fibres as charged by the local authorities is 75 percent of the total expenditures. The reserve prices are as much as 7 times that of its “peers”. The revenue or profit on one user or consumer of any Indian telecom network is as low as $1.5 as compared to the $36 in the US and $6.5 in China. One of the major reasons that has been quoted as the major contributor to loss of the Indian telecom industries is the litigation in this sector. The industry needs to settle as much as INR 1 trillion and the GST credits need to be unlocked. It recommends the introduction of a more conductive regulatory environment. Airtel has reported that capex deployment is another key area of expenditure that is negatively affecting the

financial health of this industry as per Airtel. Airtel has spent about 40 % of total revenues on capex deployment which otherwise globally is under 20 %.

Most of the business analytics expected the telecom operators to avoid bidding, provided the steep price and the financial strain on India's debt-ridden telecom industry. The entry of Reliance Jio initiated an intense competition in India. The values and graphs in following table based on the spectrum, bought by different companies will help to understand the competitive context in this industry.

Spectrum bought by Telecom Operators in India

	Brand	**Airwaves bought (MHz)**	
800 MHz	Jio	15	
1,800 MHz	Jio	39.6	
	Idea	54.6	
	Airtel	18.8	
	Vodafone	42.6	
	R-Com	5	
	Tata	12.4	

	Aircel	1.8	
2,100 MHz	Airtel	25	
	Idea	20	
	Vodafone	40	
2,300 MHz	Airtel	130	
	Jio	160	
	Idea	30	
2,500 MHz	Vodafone	200	
	Idea	170	

(Source: Deo, 2017)

Net Profit Margin and Return on Equity in the Indian Telecom industry

Net Profit Margin= EBITDA/ Revenue				
EBITDA / Revenue	Average	Weighted average	Maximum	Minimum
2011-12	-8.29%	17.91%	110.30%	-150.33%
2012-13	-22.15%	15.62%	33.39%	-195.17%
2013-14	2.65%	20.57%	33.92%	-63.04%
2014-15	10.10%	23.77%	40.57%	-32.71%
2015-16	-38.07%	-12.85%	37.35%	-555.83%
2016-17	-380.91%	-354.79%	38.60%	-4115.69%
2017-18	10.45%	12.97%	33.58%	-14.10%
Equity* = EBITDA/ Shareholder Funds				
EBITDA/ Shareholder fund	Average	Weighted average	Maximum	Minimum
2011-12	8.53%	27.84%	118.53%	-63.05%
2012-13	-51.78%	44.88%	202.31%	-379.63%
2013-14	12.31%	39.00%	152.27%	-48.30%
2014-15	0.58%	32.28%	100.36%	-137.85%
2015-16	15.19%	25.12%	67.77%	-19.75%
2016-17	7.10%	14.68%	43.38%	-11.70%
2017-18	9.77%	13.04%	23.16%	-3.19%

(Source: Kathuria, Kedia and Sekhani, 2019)

Based on a corollary to the analysis and data provided in the above table, a financial distress is observed in the telecom sector of India. SUC and License Fee that constitute a considerable portion of the non-tax revenue of the government have registered a deteriorated value as percentage of non-tax revenue. In 2017, license fee collection in telecom sector declined by almost 19% and it caused a disruptive entry with limited scope of entry of the new operators (Kathuria, Kedia and Sekhani, 2019). As a result, the telecom sector witnessed a sharp fall in terms of AGR because of this stress. The following table consists of the statistical figures of the total amounts of charges, the government receives from the telecom operators.

	License Fee (Rs. Crores)	LF Y-o-Y Increase	SUC (Rs. Crores)	SUC Y-o-Y Increase	Total Non-Tax Revenue	LF + SUC as % of Non-Tax Revenue	Spectrum Acquisition Charges (Upfront & Instalment)	Total Licence Fee + SUC+ Spectrum Acquisition Charge
2010-11	10297		3858		218602		106652	120807
2011-12	11386	10.58	4849	25.69	121672	6.48		16235
2012-13	11442	0.49	5198	7.2	137355	13.34	2801	19441
2013-14	12909	12.82	6375	22.64	198870	12.11	21563	40847
2014-15	14069	8.99	6537	2.54	217831	9.7	22556	43162
2015-16	14591	3.71	7541	15.36	258576	9.46	33902	56034
2016-17	15975	9.49	7574	0.44	334770	8.56	55166	78715
2017-18	12976	-18.77	5089	-32.81	235974	7.03	12671	30736
Total	**103645**		**47021**		**1723650**	7.66	**255311**	**405977**

(Source: Kathuria, Kedia and Sekhani, 2019)

2.3 Impact of Tax Revenues on the Financial Health of the Indian Telecom Industry

The taxation system in the telecom industry impacts in both positive and negative ways. As per Abbas (2020), in an article in The Economic Times, he has stated that a tax rationalisation was demanded by the telecom sector in which the Universal Service Obligation fund was reduced to 3% and the license fee was reduced from 3% to 1% as a demand in the pre-budget of 2020-21. Previously as stated in an article of The Economic Times, (2019c), the revenue in the Indian telecom industry was seen to have slipped by 7% in 2018 due to cutthroat taxation policies and revenues charged as tax. Subsequently, the license fee and the spectrum charges were also seen to have decreased by 10.29 % and 17.7 %.

The Financial Express, (2017) has highlighted from the budget of FY 2020-21 that the Government of India is estimating to earn revenue of Rs. 1.33 lakh crore alone from the telecom industry. This implicated that the interest of revenue taxation would be considerably high. The outstanding revenue debt of the telecom industry to the Government is at Rs. 92642 crores and Rs. 55054 crores for license fee and spectrum usage charges respectively. Rathee, (2019) in an article has stated that the earning of revenue by the Government from the telecom industry is consistently decreasing as per TRAI. Overall, the AGR of the industry decreased by 13.26 % and reached Rs. 36142 in valuation.

The license fee was also reported to be down by 11.08% to Rs. 2889 than that of Rs. 3249 of 2017. India Today, (2019) has revealed that as the revenue earning of the telecom sector drops by 7% in the financial year 2018-19, the ARPU came down from Rs. 124.85 to Rs. 71.39 in the financial year of 2019 as compared to previous year of 2018. Jagannathan, (2019) in its article in The Wire

has stated that in a verdict by the Supreme Court, the license fee and the spectrum charges were 8% and 4% respectively of the AGR. The permitted exclusions of the verdict implied that the revenues can be passed from one operator to another in the form of interconnected usage charges and roaming charges. In another article by Jayaswal, (2020) in the newspaper of Hindustan Times, it was stated that the telecom companies of India may get tax relaxations or at least relief in the form of input costs. In order to financially boost the telecom sector and ensure profitability of the industry in the long run, the Government of India would consider decreasing the GST from 18% to 12%, the USO levy from 5% to 3% and to refund the input tax credits of Rs. 36000 crores to the two officials from two different ministries on ground of anonymity.

Based on a news article in the Economic Times, it can be stated that the telecommunication industry in India is gradually striving towards the demands for reduction in taxes and levies in order to manage the recent shocks in profit rate (Abbas, 2020). A new policy named **National Digital Communications** has been developed by the government of India in 2018, where reduction in license fee is identified as an issue from the end of the operators. COAI also demanded the constitution of a working group with the members from industry stakeholders and regulators for preparing guidelines to adopt principles of input tax credit. The DOT in India also received an entreaty for facilitating a low-interest line of credit or loan to minimise pressure on these operators.

2.4 Competition Law Issues and Competitive Context in the Indian Telecom Sector

2.4.1 Overview of Regulatory Framework and Legal Provisions

DOT is the principal regulatory body in Indian telecom sector which is followed by TRAI and TDSAT (Lexology, 2019). TDSAT looks after the violation of rules that causes any kind of disputes in overall telecom services in order to protect the interest of both service providers and consumers. In order to make business operations and services functional, the telecom service providers need to follow the regulatory framework and consider the specific legal provisions applicable for this industry. The principle statutes that regulate Indian telecom sector are as follows:

a) *The Indian Telegraph Act (1885)*

b) *The Telecom Regulatory Authority of India Act (1997) / TRAI Act*

c) *The Indian Wireless Telegraphy Act (1933) / The Wireless Act*

d) *The Information Technology Act (2000) / The IT Act*

e) *The Broadband Policy (2004)*

f) *The National Digital Communications Policy (2018)*

(Lexology, 2019)

2.4.2 Conflict between Competition Law and Sector-Specific Regulations

As stated by Kathuria (2018), the network industries like telecommunication are usually subjected to application of the competition law and several sector-specific regulations. The author has mentioned that no competition exists between the competition and sector-specific regulations because the regulations are considered in the pre-application period while the law is followed afterwards. However, in the area of practical application, implementation of both competition and regulation is observed instead of the presence of such an over-simplistic approach. There are a number of examples worldwide, where the jurisdictions are struggling to demarcate all these boundaries appropriately for differentiating competition and regulatory regimes.

In the past decade, Indian telecom sector has witnessed intense competition and Vodafone-Idea merger and arrival of Reliance Jio have almost reinforced the steep competition. According to the viewpoint of Kumar (2018), this competition forced a number of margin companies to leave Indian market. After launching 4G mobile services on 5th September 2016, Reliance Jio crossed nearly 100 million subscribers within a couple of quarters. It is recorded as the fastest growth of a cellular-service provider in the world. On the contrary Mukherjee (2018) has made a strong comment that the arrival of Jio has transformed the dimension of competition in the Indian telecom sector as it forced the other companies to improve their service quality. In addition to that, Jio has developed the platform for **Digital India mission.** The investment of Rs. 2, 50,000 crores by Jio for next generation wireless broadband infrastructure established the pillars of digital India.

A stern competition arose in Indian telecom market after the arrival of Jio and the existing companies started taking initiative based on the regulatory platform of CCI. For instance, Airtel filed a complaint against Jio with CCI and remarked Jio's "free pricing strategy" as an attempt to injure competition (Raj, 2017). Reliance Jio was also accused of creating a monopoly market in India that was supposed to lessen the prospect of the industry and customers would lose the scope to get rid of the dominance. The CCI dismissed the complaint and Jio service was supported positively not for violating the ***Section 4 (2) (a) (ii) and 4 (2) (e)*** of the ***Competition Act (2002)*** (SH, 2017)**.**

Despite it being proved for Jio not violating the sector-specific regulations, CCI started investigation whether Airtel, Vodafone, Idea and other competitors have attempted certain alleged anti-competitive practices against Jio. A fierce competition was initiated in 2016 when TRAI proposed imposing penalty on Idea, Vodafone and Airtel for not providing the points of interconnection to Jio. Furthermore, this proposal was approved by DCC and these 3 companies were penalised for Rs. 3,050 crore and amounts for the individuals are given in the following table:

Companies	Amount per circle (Rs.)	No. of circles	Penalty (Rs.)
Vodafone	50 crores	21	1,050
Bharti Airtel	50 crores	21	1,050
Idea	50 crores	19	950
			3,050

(Source: FE Bureau, 2019)

Thus, Reliance Jio did not face any significant issue regarding competition law because of not violating the sector-specific regulations, which proves how these two actors are interrelated. Successful avoidance of the legal barriers and consideration of the regulatory attributes properly have allowed Jio to manage and run an uninterrupted service. However, in 2018, TRAI asked Jio to pay a financial disincentive of around Rs. 34 lakhs as the company did not meet some particular parameters of call centre services (PTI, 2018). This legal barrier was also smoothly avoided by Jio by taking immediate necessary action based on the regulatory filing. Apart from Jio, TRAI imposed penalties on other major telecom operators like Vodafone, Airtel and Idea. Thus, for multiple times, conflicting context has been developed in the Indian telecom sector in terms of violation of sector-specific regulation that has ultimately resulted in the competitive facets (Etikan, 2016).

2.5 Problem of Institutional change in Indian Telecom sector

2.5.1 Threat of Becoming Monopoly Market

Mukherjee (2018) has sighed light on the positive impacts of the competition approved in the Indian telecom sector after Jio entered. It has been highly appreciated that Jio has invested in almost all the categories of cellular infrastructure which may lead the country's telecommunication service towards consistent growth in the global market. During the initial period of investment, potential Jio customers have been incentivised with seamless data streaming services, guaranteed free calls with initial connection services. It was just an attempt to make a sizeable customer base which immediately created pressure on the leading companies like Vodafone, Airtel and others. Based on a recent report, in Delhi, Reliance Jio has obtained the position of market leader with **1.77 crore subscribers** (ET Telecoms, 2020a).

On the contrary, Chand (2006) has emphasised the potential issues in the institutional change of India's telecom industry along with its competitive characteristics. Although, the government of India expects a fair competition in the telecom sector to enhance customer service, but the way Reliance Jio is proceeding, it is supposed to lead the market towards monopoly. Although this complaint was first made by Airtel and Vodafone, but no legal action was taken because there was no record of violating regulations against Jio. It has been revealed in a report of Business Insider that the telecom competition of Jio has escalated its growth from the tariff war (Naidu, 2013). Jio highlighted the problem with the existing services of Vodafone and Airtel as these organisations have not been investing in network expansion.

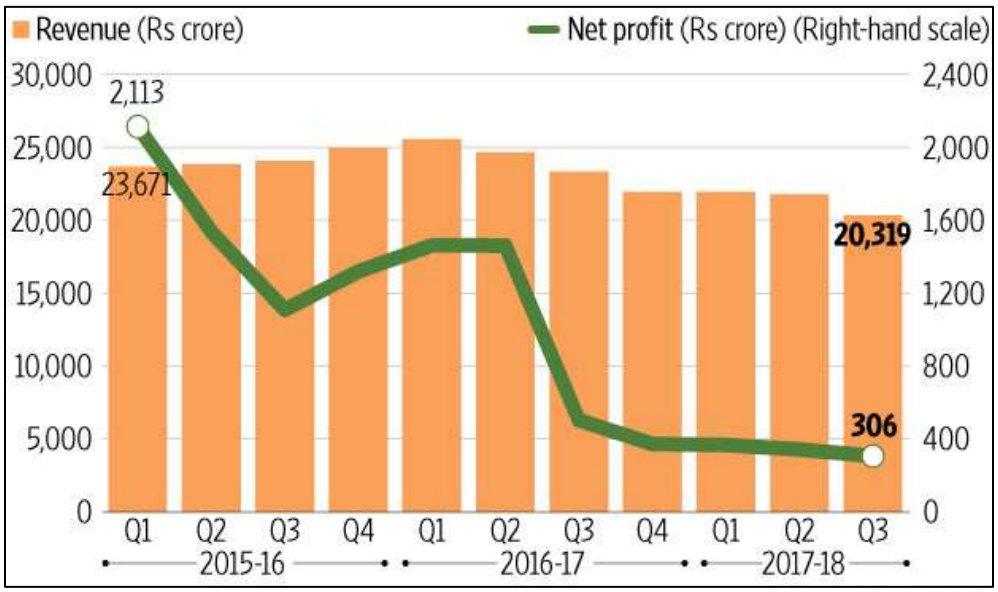


Figure 5: Declined net profit of Airtel with deteriorated revenue generation

(Source: Livemint, 2018)

Airtel's faced a sharp 39% and 12.9% fall in net profit and revenue respectively as defined by the above image and Jio is the biggest contributor in this downturn. Almost similar reports are also recorded for Vodafone, Idea Cellular and others. Based on this context, the COAI warned that the telecom industry is expected to become monopolistic with the dominance of Jio. COAI also supported these top leading companies when the Supreme Court's verdict was leading them to pay Rs. 92,000 crores (Naidu, 2013). Thus, it becomes a threat to the significant operators in Indian telecom industry while it tends to become a monopoly.

Nick Read has also alleged Reliance Jio's attempt to attain the sole beneficiary of India's telecom regulator but such allegation is completely abandoned by Jio. On the other hand, Jio has blamed its competitors to diminish the competition in the telecom sector (Khan and Sengupta, 2020). Thus, since 2016, the sphere of competition in the country's telecom sector has been condensed within 2-3 companies, whilst before 10 years a number of companies operate in this industry.

2.5.2 Threat Regarding Potential Growth of Indian Telecom Sector towards Duopoly

There is an important point to note that when a governing body like COAI has warned Indian market about the possibility of becoming a monopoly, another report established the fact that Indian market is headed towards duopoly. The government has shared a negative report regarding the growth and performance of Vodafone, which significantly indicates competition between Jio and Airtel (The Economic Times, 2019a). It is becoming a threatening factor for India and its telecom sector because such duopoly structure is not likely to be healthier for a country. Airtel, Vodafone and Jio are the key operating companies in India and it is clear from the image below that the other two companies belong to a relatively less financially ambiguous position than Vodafone.

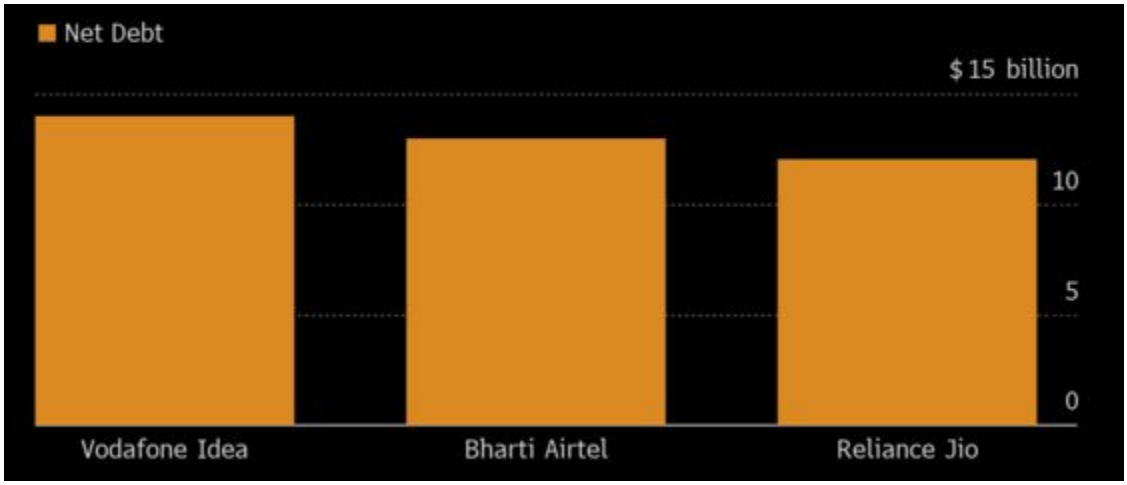


Figure 6: Debt or financial burden of the 3 top leading telecom service providers

(Source: The Economic Times, 2019b)

A recent report has revealed the ordering of the Supreme Court based on the demands of DOT that India is supposed to turn into a duopoly structure, where the Vodafone Idea is facing difficulties to grow. The strong balance sheet and positive financial report of Jio indicates its sustainable growth in future while the other companies are almost struggling to maintain their positions. In that respect, a tough competition will appear between Bharti Airtel and Vodafone Idea Ltd. As per the report of Morgan Stanley, Airtel's loyal customer base is the strength of the company that contributes to sustain the stable financial position, but an adverse situation is faced by Vodafone (Bloomberg, 2020). In the report of Morgan Stanley, the AGR issues are identified as a major factor behind the poor performance of Vodafone, which may lead the Indian market towards duopoly.

Brands	Dues as per DOT Report (Rs. crore)
Bharti Airtel	43,980
Vodafone Idea ltd.	58,254
Tata Group	16,798

(Source: Bloomberg, 2020)

The above table consists of the reports of dues shared by DOT for different companies that are almost struggling in Indian telecom sector. Vodafone's sustenance is not possible without operational improvement and remarkable equity infusion. These will be functional if the government comes up with some relief measures like mobile floor pricing, license fee cut and others besides a delayed payment option for the AGR (Bloomberg, 2020). In comparison to Airtel and Jio, Vodafone is in a devastated position even after its merger with Idea. Even earning Rs 200 as per user-revenue from its **280 million subscriber** bases along with **300-point deduction** in license fee cannot help Vodafone to carry on operation after FY2022.

2.6 Possible Changes in Indian Telecom Sector through 5G Spectrum

2.6.1 Importance of 5G Network Service in India for Financial Stability

As stated by Saxena and Ingawale (2020), the Government of India poses a reformist and liberal approach, which is quite likely to be instrumental abreast solid purchase requests in the rapid growth of the country's telecom sector. The mobile network connectivity in India will undoubtedly face a remarkable transformation with the launch of fifth generation (5G) services. The telecom sector may overcome myriad legacy issues like latency, speed and utility with the help of 5G services as it will provide data service at 100 times improved than 4G networks. Globally, the deployment of 5G network is moving fast from trail stage towards early commercialisation and India is also going to embrace it. In India, 5G network service was about to launch in April but the entire process has been postponed due to the COVID-19 pandemic (Roy, 2020).

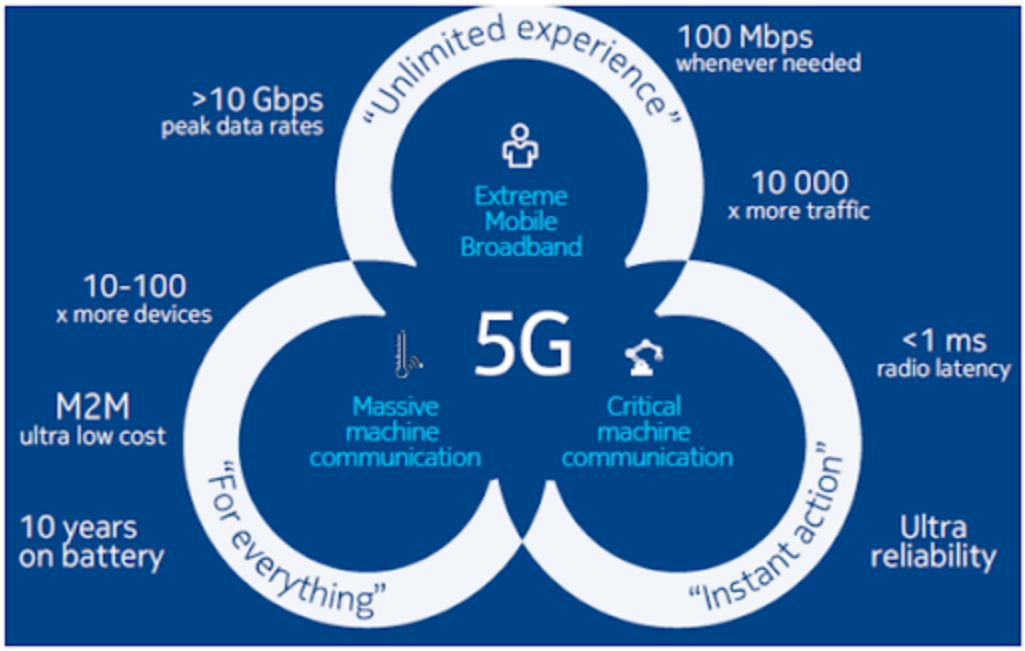


Figure 7: Advantages of 5G network services

(Source: U5GIG, 2017)

In the journey of the last ten years, moving towards 5G services seems to be a phenomenal initiative of India to revive and boost up its telecommunication industry. This advancement of network service is directly associated with the financial growth of the sector as well as the country. Based on the estimation report of KPMG, 5G services may contribute in adding around ***0.35% - 0.5%*** to India's annual GDP (ET Bureau, 2019).

2.6.2 Financial Barriers of Companies to Embrace 5G Network in India

When India is craving to embrace 5G network service, then only two companies, Reliance Jio and Airtel are competing with each other to some extent while the latter one is not in a satisfactory position. The financial liabilities of Vodafone are the most significant barrier for the company that may prevent advancement of its network. A latest report has focused on the comment made by Gopal Vittal, the CEO of Airtel (Press India, 2020). TRAI has fixed base price at Rs. 492 crore per MHz but the CEO has firmly mentioned that Airtel will not buy the 5G spectrum in upcoming auction if the price is not changed.

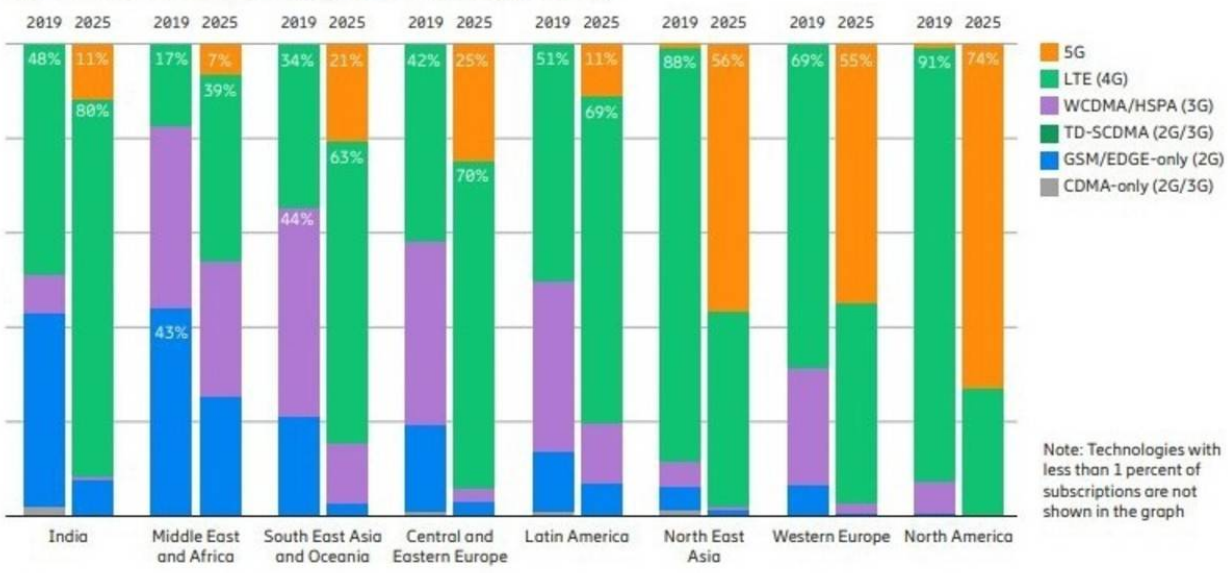


Figure 8: Expected expansion of 5G network in India compared to other countries by 2025

(Source: Gill, 2019a)

It is evident from the above graph that probably 5G will dominate a vast section of services across the world in 2025 but India will take more time to adopt to a greater extent. However, the way Airtel, Vodafone is giving up taking part in the auction, is raising questions towards successful advancement of the services. COAI has also mentioned that the price set by TRAI for the 5G spectrum is quite higher than the average international rate (Gill, 2019b). In this context, Reliance Jio is obtaining a leading position to use 5G spectrum as it has already approached the government for starting 5G services.

As observed in a news report of the Indian Express that currently the telecom market of India is confronting a predicament, where a number of companies have failed to survive and the others are in grip of serious financial crisis (Kathuria, 2019). The price set by the regulatory body for the auction is considered as immensely higher by the companies especially in the prevailing circumstances, where the sector is at a high risk of losing money. As 5G services may play a pivotal role in the improvement of Indian telecom industry and a few companies are unable to buy the spectrum due to huge financial liabilities, the government has the responsibility to assist these entities.

2.6.3 Government's Approach to Revive the Struggling Telecom Operators

The approach of Airtel's CEO has made it clear that the company will not take part in 5G action likewise Vodafone. Vodafone-Idea has a ***4G ramp-up strategy*** that focuses around the priority markets coupled with the company's infrastructure of limited on-ground fibre (Parbat, 2019). It is evident that the company is preparing for 5G deployment but fails due to its balance sheet

constraints. In such a scenario, when only Reliance Jio is seeking permission to use 5G spectrum, the government is looking for a constructive initiative to address the current problem taking place in this particular industry.

The Minister of Communication in India, Ravi Shankar Prasad has affirmed that the government of India is not going to allow or encourage a sectorial monopoly in telecommunication thereby ensuring a fair competition (Abbas, 2019). In addition to that the government is also planning to provide necessary support to Vodafone. Vodafone Idea Ltd. is expected to be benefitted by the government's appeal to the Supreme Court seeking permission for allowing wireless carriers to pay the statutory dues of almost thousands of crores over 20 years. The telecom operator has deposited **Rs. 6,854 crores, which is only 32%** of its total dues (Sarkar, 2020). Not only Vodafone, but it will also help Airtel as well, the following table consists of the dues of different companies.

Particulars	**Bharti Airtel**	**Vodafone Idea**	**Tata Group**	**Reliance Jio**	**Total**
Assessment of DOT as Per Affidavit	43,980	58,254	16,798	71	113,103
Company Assessment	13,004	21,533	2,197	195	36,929
Provisioned by Company	35,308	44,150	13,823	-	93,281
Balance as Per Dot	25,976	51,400	12,601	-124	89,853
Company Payment	18,004	6,854	4,197	195	29,250
Company Assessment as a% Of	30	37	13	277	31

DOT`s Assessment	

AGR Dues of different telecom operators

(Source: Sarkar, 2020)

As opined by Agur (2018), foreign investment and companies entered from outside have remarkable contributions to the Indian telecom sector to become the 2nd largest industry from a low-income colony with poor telephony. Indian government also tends to implement strategies to attract foreign investment. Therefore, if the government can manage to successfully support the limited number of telecom operators in India then it will explore the scope of business for new entrants as well as foreign investments, which will result in a prosperous growth and enhanced financial health of Indian telecom sector.

2.7 Challenges to the Financial Health of the Indian Telecom Industry

2.7.1 Challenges in Terms of Competitive Context in Public Service

A recent report of Quartz India has significantly emphasised how the vibrant market of this country with a number of firms is gradually moving towards duopoly (Taneja, 2019). Once, the state-owned enterprises like MTNL, BSNL dominated the Indian market whilst now Vodafone Idea, Bharti Airtel and Reliance Jio account for almost 90% of the country's total subscribers. In the rapid changes in Indian telecom sector, companies like BSNL, MTNL are being consigned to margins. Over the last few years, foreign-invested companies such as Russia's Sistema and Norway's Telenor have gradually exited the Indian market.

As observed in the following image, the public service of telecommunication in India relies on BSNL and MTNL and Indian and foreign companies compete with each other in the private sector. In last decade, better performance of the companies with improved telecom services has enhanced the operation in the private sector in comparison to government-owned companies.

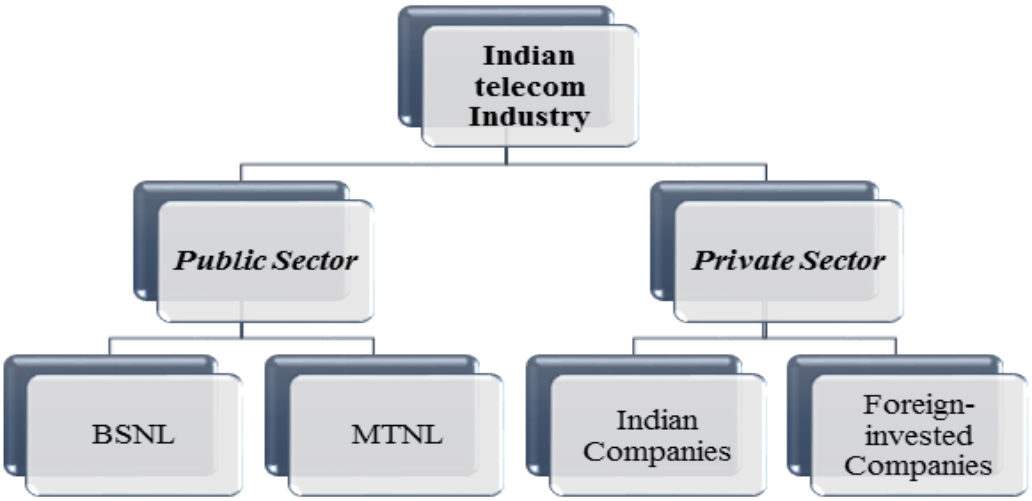


Figure 9: Hierarchical structure of Indian Telecom Industry

(Source: Deo, 2017)

Nagdev (2019) has shed light on the fierce competition in internal market of India where the existing operators, especially government-owned service providers are suffering from difficulties. Jio plays a vital role in influencing the competitive market. Whilst the other companies are undergoing serious financial obstacles, Jio has attained a remarkable profit growth.

BSNL

Years	Revenue (Rs. lacs)	Provisional Loss (Rs. lacs)	Employee benefits expense (Rs. lacs)	Depreciation and amortisation expense (Rs. lacs)	Trade receivables (Rs. lacs)	Trade payables (Rs. lacs)
2017	32,41,132	(4,85,916)	15,36,915	7,20,560	261515	268
2018	31,53,344	(4,79,321)	15,71,545	6,33,042	309881	592993
2019	2,507,064	(799,285)	1,483,724	583,158	392538	782989

MTNL

Years	Revenue (Rs. Lacs)	Provisional Loss (Rs. Lacs)	Employee benefits expense (Rs. Lacs)	Depreciation and amortisation expense (Rs. Lacs)	Trade receivables (Rs. Lacs)	Trade payables (Rs. Lacs)
2017	3693	1947.54	2639.32	1151.59	492.01	388.53
2018	3552.46	2941.08	2647.81	1087.63	491.58	429.75
2019	3116.42	2973.03	2445.79	1028.68	424.27	428.80

Reliance Jio

Years	Revenue (Rs. In cr.)	Profit & loss (Rs. In cr.)	Employee benefits expenses (Rs. In cr.)	Depreciation and amortisation expenses (Rs. In cr.)	Trade receivables (Rs. In cr.)	Trade payables (Rs. In cr.)
2017	1	-31	6	5	-	5923
2018	20158	723	963	3577	912	13263
2019	38844	2964	1658	6398	735	3601

(Source: Nagdev, 2019)

2.7.2 Challenges in Expanding 5G Network Services

The 5G enabled technology is expected to change the overall dimension of telecom services as well as other industries by exploring disruptive technologies. Embracing 5G technology will remarkably contribute to financial health of Indian telecom sector as it will enhance remote machinery control, energy management, crop monitoring and smart transportation (Gopalaiah, 2020). The latest digital communication policy of India is likely to develop a conducive environment to promote investments. However, the telecom service providers possibly face certain challenges as well in expanding services in India market and some of the major problems are mentioned below:

a) ***Fast Services to a Greater Volume***

Pandey, Gaurav and Kumar (2015) mentioned that the companies will face challenges in obtaining high data-rates of 5GBPS when the users will expect fast and immediate connectivity without any delay caused by the network. Difficulties will arise in developing wider carriers in latest spectrum bands by using new technologies.

b) ***Improved Services to the Large Population***

Technical challenges can be quite common in most of the crowded areas in India because the present networks of careless communication and other infrastructure are mostly used for providing broadband services to offices and houses. Energy and cost constraints may appear in the areas with high traffic density.

c) Reliability in Services

Reducing exchange-to-exchange (E2E) dormancy at those provinces, where wireless communications are highly accessible will be a challenge in the telecom sector. This reliability is very important because financial services, public health, business processes, education, travel and social securities will be based on wireless services in 2020 (Pandey, Gaurav and Kumar, 2015).

d) ***Communication through Ubiquitous Device***

Urban India is expected to become a connected society consisting of both machine-centric and human-centric communication. In such transformation in communication platforms, heavy deployment of the ubiquitous machine will be required, and the companies may face difficulties in immediately launching such high complexity devices.

2.8 Expected Financial Growth of the Indian Telecom Sector in Future

As proclaimed by Gupta, Raghav and Dhakad (2019), the second largest telecom sector in India is most likely to become the centre of attention of foreign companies as the fastest growing sector. The current marketplace is certainly volatile and struggling with a number of issues and based on the analytics' point of view, Indian market is gradually becoming a monopoly, which will result in an unhealthy competition. Now, the government is taking a firm initiative to sustain competitiveness with extended network coverage, cost centric offerings that may contribute to a sustainable growth of the industry.

Revival and reappearance of this industry utterly relies on the government's approach to mitigate the financial distress, when the state-owned companies are going to be closed. The statement, made by the finance minister of India, Nirmala Sitharam, in the Union Budget, clearly indicates that the government is planning to cut obvious levies to boost up telecommunications (Gaikwad, 2020). As telecommunication is a capital-intensive industry so low-interest funding will certainly be effective. A positive response regarding government's initiatives is obtained from Sunil Mittal, the chairman of Bharti Airtel, which is abundantly competing with Jio even after being one of the largest firms. A recent report has released that Airtel's shares closed at Rs. 545.50, which is 0.4% higher rate on BSE (ET Telecoms, 2020a). As per the experts' reports, the telecom operator will possibly witness a revenue growth of 8% in FY2020 followed by a 21% growth in next year.

2.9 Resolution of the Future Operational Challenges of the Indian Telecom Industry

The Indian telecom industry will keep on facing challenges which are averse to the financial health of it. In this context, Sharma, (2019) has highlighted that the telecom industry being at the peak of its, the government should decrease the outstanding debt. This led to postponing of financial reporting of the telecom companies due to the Supreme Court's order to telecom companies like Vodafone and Airtel to pay billions of dollars as revenue. Sengupta, (2019) in a newspaper article in the Economic Times has however pointed out that the telecom industry is finally going to be a profitable one. This can be only achieved if the usage and number of consumers is maximised with optimise data and service utility.

As per the opinion of Sunil Mittal, the chairman of Bharti Enterprises, in the same article reported that this positive transition is possible due to the presence of only 3 key players in the nation; India achieved the world's highest per capita consumption of 12 gigabytes a month. This is the only way out in order to resolve the future financial challenges. In a study article by Tyagi, Tyagi and Bateja, (2014) has identified that the major component of demographic outlook and constitution and political stability of the nation are crucial for the achievement of financial stability and resolving any existing or future challenges that the Indian telecom industry may witness.

Additionally, the establishment of an independent regulatory body of the TRAI and the partial privatisation of the telecom industry will be crucial and a trump card in the resolution of any future challenges in Indian telecom industry.

Philipose, (2019) has reported that in the attempt to save the telecom companies of India there have been two crucial steps which will help in resolving the primary challenges that the industry is facing or will face in the recent future. Firstly, a relief package would be developed and applied solely for the telecom industry in order to meet unprecedented challenges in terms of funding or lack of liquidity. Secondly, the investors will invest more safely as there would be lesser investment from their end unless the government gives a clear declaration about the establishment of relief package for the telecom industry.

The requirement of the relief is because of decrease in the expenditure of the customers for telecom services which in the case of Reliance Jio had dropped from INR1.8 trillion in 2016 to INR1.2 trillion in 2019.

Usmani, (2017) has stated 4 challenges and the resolution measures to ensure a healthy financial health of the Indian telecom industry. Firstly, it has stated that Reliance Jio should gradually withdraw its discount in order to earn optimally as compared to the mere one third that it earns currently. Secondly, the charges on inter network services should be dissolved or at least minimised. In this case, Jio is in favour of dissolving charges however the companies such as Bharti Airtel wants it to be doubled which would prove to be adverse for the Indian telecom industry due to a critical disparity in the charging dynamics.

Thirdly, the scheme of Reliance Jio to introduce its own set of 4G phones with the refundable deposit money of INR 1500 at the end of 3 years seems to be a dicey situation. If the company is incapable of achieving adequate transactions it might have to reduce its plan changes. Fourthly, the pricing disparity of services, plans and products between the leading telecom industry and varying business strategies will lead to healthy peer competition and ultimately generate profits for the overall telecom industry of India. In this context, Gupta, (2015) has also validated the point that the profitability and resolution of Indian telecom challenges lie in the profitability earned in terms of data usage and the data plans and that must be critically strategize in terms of plan and pack costs and charges.

2.10 Conceptual Framework

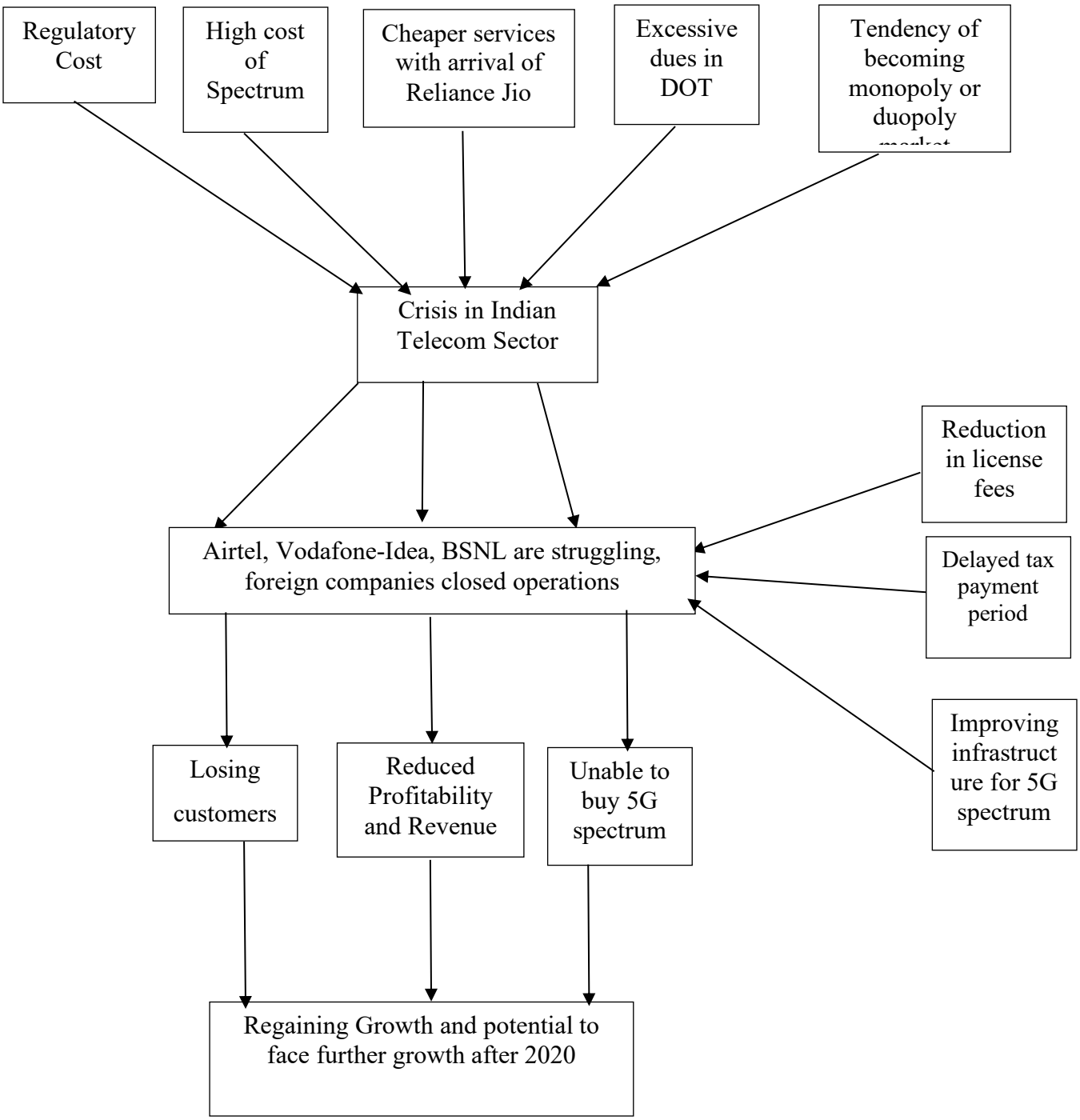


Figure 10: Conceptual Framework

2.11 Literature Gap

Throughout the entire procedure of critical analysis of the existing literature studies, it has been observed that most of these research papers and articles have extensively demonstrated the present financial health of Indian telecom sector. The changes in regulatory framework and taxation policy are not analysed to a greater extent. The topic of the research has two significant barriers including crisis and regaining growth while most of the articles consist of detailed discussion of the crisis. However, the 4 to 5 years or the last decade has been challenging for Indian telecom operators but the coming years are supposed to be more demanding.

This study aims to fill the gap of knowledge regarding the strong move of the governing body to revive this sector and explore opportunities for foreign investment. The present study is also concerned with a detailed analysis of potential prospects of launching 5G network services, which is also avoided in several articles. Moreover, instead of throwing light on the challenges and barriers, the study recommends a few possible methods that can help to eradicate the issues.

2.12 Summary

Precisely, it can be noted that the telecom sector always has been a predominating contributor to India's economy. The highly competitive market has dramatically disappeared in the last decade and after the arrival of Jio, the sector is becoming a monopoly. Companies like Bharti Airtel, Vodafone-Idea, state-owned entities like BSNL are suffering from crisis and struggling to run business. However, a sanguine approach of the government is expected to revive the sector along with moving towards the advancement of 5G services.

Chapter 3: Methodology

3.1 Introduction

The following discussion embodies a critical evaluation of the methodical structure, followed by determining the crisis in Indian telecom sector. Research philosophy, design and approach are preliminary aspects in the systematic structure of methodology while the further section has described techniques of identifying potential data sources, data collection and analysis. The study has a clear indication towards the ethics considered by the researcher in data collection and interpretation. This methodology section carries the importance of selecting most suitable methods to lead a research study to fulfil its objectives.

3.2 Research Philosophy

According to Aliyu et al. (2014), research philosophy that provides post-conceptual intelligence incredibly helps in distinguishing and articulating the investigation procedure. A ***Positivism Philosophy*** has been adopted by the researcher in this study to answer the research questions. The main area of discussion centres on a practical problem prevalent in Indian telecom sector. Saunders, Lewis and Thornhill (2016) have mentioned that being in an extreme positivist position allows the researcher to assess the research problem in the light of natural phenomenon. Thus, its scientific approach helps to attain factual knowledge about a topic and yield pure data.

Selection of positivism philosophy has minimised the additional effort to collect reliable and valid data from external sources. The observable and measurable facts are easily identified with this approach such as the reasons of current crisis in Indian telecom sector and changing dimension of competition after Reliance Jio entered. Therefore, it can be stated that selection of the aforesaid philosophy is perfectly suitable.

3.3 Research Approach

Selecting the appropriate approach of reasoning helps in further acquisition of new knowledge relying on the observations of specific instances (Hyde, 2000). Two general approaches followed in research studies are **Deductive** and **Inductive**. Inductive approach has been used in the present study on Indian telecom sector. Deductive approach consists of a theory testing process, commences with a theory and identifies its suitability in the specific instance. Spens and Kovács (2006) have explained the inductive research approach as a process of theory development that starts based on the observations of specific exemplars thereby establishing generalisations about the research phenomenon. Hyde (2000) has described the inductive reasoning process as an efficient approach to develop theory from collected data and understanding, which is applied in qualitative studies most often.

The present research study followed a qualitative approach throughout, so an inductive approach is recognised as appropriate. Inductive approach has been appropriate because hypotheses were not mentioned, and the instances were not clearly stated for applying the theory. Moreover, it has also allowed utmost flexibility and explication of various instances related to the financial stability and performance of India's telecom industry. Thus, the selected research approach has led the study towards obtaining the research goals.

3.4 Research Design

Research design that would be applied for propagation of this research would be qualitative. Reason behind the encompassment of this specific design is inclined towards the interpretation of the non-numeric primary data. Collection of data would be premised from the prospect of interview therefore in-depth observation on the transition scenario between crisis and growth of the financial health of Indian Telecom industry. Further qualitative research design would be beneficial towards providing subjective overview on this arena of the research through detailed observation on both interview data and empirical studies (Saunders, Lewis and Thornhill, 2016). Credibility of the subjective area of the research could be maintained through Qualitative research design as it provides in depth emphasis on the problems and its resolutions. Thus, the perspective of the respondents and the exterior world regarding the rise and fall of the economic space of this industry could be evaluated through propaganda of qualitative research.

3.5 Data Type

Data type that would be the implicative through this research is non-numerical data which is aligned towards descriptive context. Data that would be gathered from the interviews is non-numeric, however the mode of data would be reflective towards detailed response. Further the reliance on the fundamentals of empirical studies would also configure on the prospect of non-numerical data. Therefore, in both the aspects collected data would be non-numeric and descriptive as it would shed light on the intrinsic factors that have led to the downfall and recovery of the financial status of Indian Telecom industry.

3.6 Data Collection Method

According to Burke and Miller (2001), data collection is the procedure of gathering, extracting and measuring information on the key variables of interest by following an established systematic method. In order to make a sound knowledge about the crisis that arrived in India in the past few years and potentialities of positive changes in future, the researcher has collected only primary data.

Saunders, Lewis and Thornhill (2016) have explained observation as a way to add and enhance the richness of the research data. Selection of the data collection method is determined by the type of data while a successful completion of this process. Apart from collecting information from

various secondary sources and critically interpreting it in the literature review section, the researcher has collected primary data from former colleagues and a few current contacts, who live in India and employed in telecom sector. Rather than entirely depending on the analysis made by other research scholars on the selected topic, a better apprehension can be obtained by collecting data from people who have experience of working in this sector. Therefore, an **online interview method** is applied to collect data from the target sample population.

Interview method not only ensures authenticity of the information but also enables the researcher to recognise personal feelings, opinions and perceptions of the respondents. In this present study, personal opinion and viewpoint of the telecom sector employees was necessary to get a coherent perspective of the industry's current situation, which is successfully accomplished by interview.

3.7 Data Collection tool and Research Instrument

The entire process of data collection has been carried out online as the researcher has interacted with the current connections in India. **10 open-ended questions** have been asked to the participants and their responses were recorded. The questions have emphasised on their opinion in terms of regulatory cost, service tax revenue, contribution of TRAI, network infrastructure, debt equity ratio and others.

3.8 Data Analysis Technique

Selection of data analysis technique entirely relies on the quality and type of data selected to fulfil the research objectives. Qualitative and Quantitative are the two most usual data analysis techniques. ***Qualitative method*** is selected in this research study because the researcher has collected non-numeric data by an online interview.

Sgier (2012) has identified content-based analysis and interpretive analysis as the two predominant factors of qualitative data analysis. The former category is exemplified by thematic analysis, when it is the secondary data set and the latter one is about discourse analysis through interpretation. Critical interpretation of the changes in Indian telecom industry has been necessary in this study to evaluate the possibilities of regaining growth from 2020 and these facts are analysed with a Qualitative method.

3.9 Sample size

For collecting relevant and reliable data regarding the telecom sector of India, the researcher has targeted both the people who worked in this industry and those who are still working. At first, data is collected from the current connections, the researcher has communicated with 5 current connections via calls. Contact details of these participants are collected from current employees and they have also been interviewed. 3 out of the 5 former colleagues worked at Tata Docomo and 2 others were in Uninor and Airtel.

(Refer to Appendices - Appendix 1 for Questionnaire and Appendix 2 for Details of Interviewees).

3.10 Sampling technique

The data collection process in this study has been influenced by the course of action set by purposive sampling, which is a particular form of non-probability sampling technique. It has allowed the researcher to rely on personal judgement and understanding to choose members of the population as potential respondents. The former colleagues and present employees of are selected with a purpose to attain the most relevant data as they have witnessed the changes closely.

3.11 Ethical Considerations

Convenience of respondents of the interview would be maintained at the foremost level. Detailed information regarding the purpose and intent of the research were dispersed to the participants beforehand in order to diminish the likelihood of any sort of ambiguity. Further the written consent and the approval from the chosen respondents were undertaken prior to initialisation of the interview.

Moreover, data that would be gathered would be protected in encrypted form. Identity of the respondents would be concealed and a coding system like initial of the first and question number would be encouraged for the conductance of the interview. Data protection Act would be maintained for the assurance of confidentiality in the whole process. Finally, the data collected would be maintained in the database for three years and henceforth would be deleted. Transparency would be the main propaganda that would form the basis of this research configuring the retention of its reliability and accuracy.

3.12 Limitations of the Study

The main limitation of this research is inclined to the constraint of time. Lack of the ample time frame might hinder the pathway of covering each and every intrinsic aspect that is aligned with the subjective area of this research. Further minimal discussion on the domain of this research might pose limitations for this study due to the inadequacy of information. Subject or topic that has been chosen for the research is dynamic and involves lots of variations, therefore selection of an accurate sampling method would be essential towards maintaining the intent of this research.

3.13 Summary

This study is premised towards implicating possible techniques that would be utilised for the propagation of the research. Primary base of this research is interview; therefore, the inductive and qualitative mechanism would be formalised towards maintaining credibility of the research. Further positivism philosophy would be premised towards drawing an inference on the financial trend of Indian Telecom industry. The entire method of data collection would be based on the ethical consideration of maintaining confidentiality in the entire procedure. Lastly, the timeline that has been considered for the completion of this research is inclined to thirteen weeks.

Chapter 4: Data Analysis

4.1 Interview Responses

Question 1: What is your opinion regarding the regulatory costs and the costs of spectrum and regarding its impact on Indian telecom industry?

1st former colleagues: The high spectrum price and cost in the deploying networks took a toll to the debt-ridden telecom company, Docomo. The current reserve prices were very high than the global peers. Although the telecom industry was increasing significantly, but when compared to the international firms, the revenue rates were coupled with more capex development and escalated average revenue per user.

2nd former colleagues: The spectrum price in India is more than any other country; certainly, it was a problem for Airtel. No doubt the market is now growing and average revenue per user may increase more if the AGR does not become a burden to the companies.

3rd former colleagues: Higher prices of spectrum have definitely been alarming for Uninor as the average capex that has been is same which catered towards a lot of stress for the company in terms of coping up with the increased demand for quality service.

4thformer colleagues: Now hike of regulatory cost and spectrum price has created a burden for Docomo in terms of maintaining the expenditure of capex on continuous growth of the database and phenomenal demand for the data service.

5th former colleagues: As a former colleague of Docomo I feel that the rise of the regulatory price is adding to the litigation prevalent in this sector which is worth 1trillion INR. Therefore, GST is required to be unlocked by the Government at the foremost level in order to settle the litigations.

Question 2: What do you think about the contribution of telecom sector on service tax revenue?

1st former colleagues: "In terms of TATA Docomo, where I worked, the company had an annual loss of $1.3 billion…" "…buy Japanese company's 26% stake during the last phase of business growth in Indian telecom industry…" "…exit the joint venture with a loss of 7,000 crore…"

2nd former colleagues: Aircel was liable for some AGR dues that were own by the company and Videocon. Notices were received for paying 15% service tax and the rates were changing by arrival of GST regime since 2017. Aircel received tax demand notice for undergoing insolvency.

3rd former colleagues: As a former employee of Tata Docomo, I have conferred the fact that Directorate General of GST intelligence has been examining the payment of 1.2 billion of Tata

sons to NTT Docomo in the year 2017. This has ensured the settlement achievement over the exit of Japanese company from the Teleservices of Tata group.

4th former colleagues: Investment of Docomo in the teleservices of Tata has been 2.2 billion which was enforced in 2009, therefore the partnership norms have been inclined to purchase the shares at a fair price post the exit of Docomo after 5 years which was later invoked. Therefore, Tata Sons might have to pay a GST bill of 1600 crore due to the capital transaction with the Japanese unit

5th former colleagues: Uninor has been liable towards the clearance of dues of 1.47 lakh crore to the Government at earliest due to violation of the deadlines of tax payments.

Question 3: How the capital structure and the leverage impacts on cost of capital of Telecom industry?

1st former colleagues: I think the optimal capital structure can be measured by undertaking large number of profitable projects and increased value of the firm at the same time. Therefore, capital structure or leverage directly impacts the capital of Telecommunication industry. "Coming in contrast to Docomo, the company fell short in marketing the technology…" "…the number of subscribers therefore mostly belonged to the bottom-line-pyramid…" "…costlier technologies became a poor man's technology for the Indian customer…" "…bigger subsidies were hence needed by the company, due to which the financial performance eventually degraded…"

2nd former colleagues: It actually has direct impact on the capital of telecom sector but a high rate of profitability influences capital flows at greater extent. Airtel was not performing well so it was not is a stage to make any significant impact or prompt a sustainable funding.

3rd former colleagues: Capital structure and leverage posed a significant effect on the profitability of the telecom industry. In case of Uninor it has been adverse as the company has been likely to its stake by a margin of 50% due to the increased penetration of post-paid services and there this could result into lower revenues of roaming for the company.

4th former colleagues: Debt laden teleservices of Tata group which operated at the Docomo towers has entailed a revival process with infusion of the funds through fresh and bold investment forums.

5th former colleagues: Capital structure and leverage has been an opportunity in disguise for the Tata sons in terms of settling the dispute with NTT Docomo. Moreover, it has also ensured the exit of Docomo from the partnership of Tata sons at a fair price of Rs 16-18 per share which is much lower than the fair value at the time of agreement.

Question 4: What do you think about spectrum payments that could contribute towards the financial health of the telecom sector?

1st former colleagues: Deferment of spectrum auction instalments eases out the outflow of any stressed telecom company. Therefore, the payment facility, interests to the banks and statutory liabilities gets easier. It further fills up the economic and employment growth rate. With the improvement of the economic condition, the continuous service providing facility will get enhanced, thereby maintaining a consistency in the service delivery process.

2nd former colleagues: The major reliefs for AGR have hit the companies and I hope the government will focus on easing the statutory liabilities and payment facilities furthermore. These are very important, and it is undoubtedly an effective way to boost up the economic aspects.

***3rd former colleagues*:** Financial stress that is being faced by the telecom companies would be relieved through the leverage imposed by the Governments in deferring the receipts from the dues of spectrum instalments for two consecutive years.

***4th former colleagues*:** Telecom industry is presently reeling beneath a debt of 7 Lakh crore which could be revived through levying rationalization in this sector by the Government.

***5th former colleagues*:** Spectrum payments would contribute towards the explosion of telecom networks on a massive level. 5G technology would serve as the pathway for India in terms of fulfilling socio-economic aspirations at a wider level.

Question 5: What do you think about the roles and contribution of TRAI regarding financial health condition of Indian telecom sector?

1st former colleagues: Telecom Regulatory Authority of India nurtures the condition and growth of the telecommunications in the country to ensure standardized global information system that can create a benchmark in the global telecommunication industry.

2nd former colleagues: TRAI looks after almost all the facts regarding telecom service, dispose appeals, adjustment of disputes and many more. Customers' complaints are received and addressed. In fact, TRAI fosters customer satisfaction which is directly associated with financial health of the sector.

***3rd former colleagues*:** TRAI has been accurate in terms of revealing its data on the revenue earnings by the Government from Telecom industry. This regulatory body has always been ample in controlling tariff for the Telecommunication unit in India.

***4th former colleagues*:** As per my opinion TRAI has been a responsible body in maintaining the interest of the customers of the Telecom unit at a continuous level.

***5th former colleagues*:** Goal of TRAI has been enriching in terms of the adjudication of the disputes and securing the interest of the customers as well as the service providers of telecom business.

Question 6: Do you think that, the investment on network infrastructure could possibly improve the financial health conditions of Indian telecom sector?

1st former colleagues: Yes, I agree completely with this fact…" "it would create high skilled job, increase opportunities and immediately stimulate the economic growth exponentially…" "… Investments in 5G network telecommunication is a huge scope in from of the Indian telecom sector and TRAI…"

2nd former colleagues: Obviously, in comparison to the global peers, still more are left in India for improvement and network infrastructure is one of them. I think, it is also the main barrier to adopt 5G spectrum and its expansion. Being the second biggest telecom market with potentialities, India has the scope to invest in infrastructure.

***3rd former colleagues*:** Yes, definitely expansion of network infrastructure would result in bulk of localised capital infrastructure for the telecom companies which would further be prudent in enhancing the overall financial condition of Indian Telecom industry.

***4th former colleagues*:** Certainly, significant investment in network infrastructure would imply potential increase of the base telecom subscribers thereby developing a network encompassing a wider landscape.

***5th former colleagues*:** I second it, robustness and dynamism in the telecom market could be visualised through ample investment in the network infrastructure.

Question 7: How could you define the current scenario of network infrastructure by analysing the share of tangible and intangible assets?

1st former colleagues: Current network infrastructure is not in a considerably good state in India, but it has opportunities in coming years. It will take time for 5G network but the last few years have been quite hard for our company. 2015 was very challenging and it faced huge loss but in last year tangible and intangible assets of Docomo are increased.

2nd former colleagues: As I said the situation is not quite satisfactory and TRAI needs to focus on infrastructure development to compete in global marketplace. Otherwise, it will be difficult to adjust with 5G along with the rise in demand.

***3rd former colleagues*:** The present circumstances of network infrastructure in India is not at all noteworthy as the telecom players are experiencing decline in the tariff rates of both data and voice services.

4th former colleagues*:** I feel that the present scenario provides an insight of the massive network expansion in India due to the significant endeavour undertaken on assembling extensive ***fibre optics submarine cables and satellite earth stations.

***5th former colleagues*:** Present situation is surrounded with increased pressure on the revenue margins due to stiff competition enforced by the global networks.

Question 8: How much important for an industry to stabilise their debt equity ratio?

1st former colleagues: A higher debt equity ratio sometimes indicates high risks so it depends on the company's performance in last five years and capability of financing and risk management how it can deal with changes. Rather it is important to stabilize the debt equity ratio to sustain financial growth.

2nd former colleagues: It's all about the companies' competencies to deal with changing standards and regulations in the industry but sometimes, high debt equity ratio causes risks. Otherwise, I agree, stabilizing debt equity ratio is important.

3rd former colleagues: Increased debt equity ratio of the telecom companies in India is implicating its aggressiveness towards funding the growth with debt which is required to be controlled through stabilization in preventing future risks.

4th former colleagues: Rise in the margin of debt equity ratio leads towards unsustainable stages of financial stress for the companies therefore stabilization would be prudent in visualizing effective management of finances or capital.

5th former colleagues: It is immensely important for any industry to stabilize its debt-equity value in order to maintain competitive advantage on the wider prospect through efficient capital management.

Question 9: What is your opinion regarding the capital market development and its impact on the Indian telecom industry?

1st former colleagues: As I said before that the coming years have positive growth opportunities for India. Capital market development is also a positive sign I consider. In last years, even when I was employed in Tata Docomo, I have experienced how the government investment can revive the business.

2nd former colleagues: Capital market growth is always good especially when Indian market is developing at a rapid pace. If it can be managed to sustain the growth, Airtel also has scope to revive the business.

3rd former colleagues: Capital market development would lead towards a potential way-out for Uninor in terms of mobilizing its savings through the productive investments of the Government.

4th former colleagues: As a former employee of Tata Docomo I seriously feel that development of the capital market would configure towards distinguished securities for the telecom companies in terms of dealing with the situation of debt.

5th former colleagues: I feel growth in the capital market would illuminate future prospects of the telecom industry through streamlined operations and adequacy of finances.

Question 10: Do you think that, as per the current situation of the Indian telecom industry, the operating leverage and financial leverage could magnify the profit? How?

1st former colleagues: Financial leverage was a huge burden for the small companies even the Docomo the communication entity of Tata also faced same issue. High tax is still a problem in India. Fixed costs have increased as you can see the higher prices of mobile tariffs of Tata Docomo. It was nothing but an attempt to maintain the profit so if a company can control operating and financial leverage, it will help to make profit.

2nd former colleagues: Financial leverage is undoubtedly a burden for the small firms. I have experienced same while working in Airtel and it is the high time to think again about the high tax in telecom sector. Without controlling operating leverage of the companies struggling, the risks of monopoly market cannot be avoided.

3rd former colleagues: In my employment tenure in Uninor I have experienced that financial leverage imposes the risk of higher debt which more often is difficult to manage thus inducing financial stress.

4th former colleagues: It's high time for the telecom companies to control its operating and financial leverage in order to eradicate the likelihood of loss runs. Profit could only be maximized through effective management of the ratios of financial advantage.

5th former colleagues: Rise in the fixed cost and tax margins has led towards increased reliance on financial leverage which further would act as the source of stress for the companies. Therefore, financial burden of the telecom companies can only be healed through the reduction of the ratios of financial leverage.

4.2 Analysis

The responses of the interviewees were analysed as follows.

In the first question which asked the respondents of their views on the regulatory costs and the costs of spectrum of telecom services in India and their perceived potential impact on the Indian telecom industry, all the 5 respondents opined that the costs of spectrum is rather high, unaffordable and adverse impacts their respective ex-employing telecom companies. For the case of Docomo, it was reported that on the accounts of the high costs, the outstanding debt of it further suffered leading to high current reserve prices as compared to its 'global peers'. On further competitor-comparison, the capex development and the revenue earned per user increased for the government and not for the company. In alignment with the grievances, the settlement of the litigations may be done only if the GST is unlocked by the Government of India. For the case of Airtel, the costs did not have much adverse implications on the growth of the company in India and if the AGR does not prove to be a burden then it will prove to be a benefit. For the case of Uninor the high prices were alarming for the company in terms of coping up and catering to the increased demand for quality services.

In addition to the analysis of the first question, the implementation of GST, will enhance the business legalities and at the same time it will benefit to oligopoly market in the industry. Moreover, the 5G spectrums are having the overall advantages and it also requires the heaving investments by the Government of India, and the companies are expected to buy the hardware from the company.

In the question pertaining to the implications of the Indian telecom sector on the service tax revenues of their respective ex-employing companies, for Docomo the company incurred a high amount of financial annual loss which led to the industry buying 26% stake of the company during the last phase of the business growth but later ended the venture after incurring a significant loss. As a result, the Tata Sons has to pay a huge GST bill owing to the capital transactions with the unit in Japan. Aircel had outstanding AGR liabilities for stakes that were jointly owned by the company and Videocon. It received a notice for settling the service taxes and on-going solvency. Uninor on the other hand had to settle and clear dues to the Government on the accounts of violation of tax payment deadlines.

The third question of the questionnaire which asked for the respondents' views on the impact of capital structure and the leverage on the costs of capital for the telecom industry, Docomo had reported poor marketing of the technology which generated customers only from the lower tiers of the financial pyramid of the company. This indicated that the costly and advanced technology which required high cost of capital were utilised by only the lower economic group which did not suffice for optimum revenue generation of the company. As mitigation, Docomo further decided in favour of bolder and fresher investments. Overall, the implications on the cost of capital for Tata Docomo was a blessing in disguise as the exit of Docomo from the venture with Tata Sons

was done at INR 16018 per share which was lower than the entering clauses. As for the impact on Airtel, it was reported that the company was doing well anyway so it did not prompt any sustainable funding for the company. The implications on Uninor were rather negative as the penetration of post-paid services could lower the revenues for roaming service by the company.

The 5th former colleagues' respondent, have indicated that the raise of the tax margins are responsible for increment of reliance financial leverage which has allowed the company to enhance their market share in the Indian telecom market. One of the respondents have also elaborated that the financial profit can be enhanced with effective implementation of the innovation and bringing more technological advantages to the customers. Moreover, another respondent has expressed the view with working in Airtel, and as per their opinion the market share can only be gained by engaging absolute control over the operating leverage of the companies which are struggling, and at the same time the monopoly of the market cannot be created. In case of creation of the monopoly market the companies which are having the low sustainability, rate may face decline in terms of business returns and profits from the market.

On being asked about their individual takes on the probable contribution of spectrum payments on the financial health of the telecom sector the following opinions and perceptions were noted:

- The deferring payment of spectrum instalments eases the financial stress on any telecom service provider in terms of payment non-rigidity and interest liability payment to banks and other statutory liabilities. This helps in employment and economic growth rate of the telecom industry helping to achieve a consistent service-delivery dynamic.
- Governmental aids and support will help in easing the statutory liabilities and further enhance the payment facilities for telecom service providers in India and boost the economy of the telecom industry of India.
- Rationalisation of debt collection instalments by easy Government levying would support Indian telecom service providers and the industry as a whole economically, operationally and in terms of infrastructure.
- The technology of 5G would be the future of Indian telecom industry to fulfil the socio-economic aspirations.

In context to the question in line, the contribution of TRAI, the key areas of impact and implications that were a part of the interview responses were that the TRAI sets the global and standardised information system that acts as a global benchmark for the telecommunication industry. It further helps the telecom service providers to improve their respective quality of services by giving knowledge of customer grievances thus ensuring customer satisfaction which directly impacts the financial health of this sector. Controlling tariff and generating accurate revenue data is another positive implication to the financial health of the telecom industry which helped in formulating effective governmental and other financial regulations. Overall, TRAI helps

in dispute management between the customers and the telecom service providers of India and maintaining a consistent economic flow.

The opinions and perspectives of all the 5 respondents were in alignment to the question that asked for their views if investment on network infrastructure will improve the financial health of the telecom industry. All the respondents were affirmative of this fact that investing in advanced infrastructure like 5G with help of localised capital infrastructure would help expand the base telecom subscribers and help in improving the financial health of the Indian telecom sector. These recommendations help in achieving the objective of the research where it aspires to find the recommendation for mitigating future challenges.

The respondents stated that the infrastructure in terms of tangible and intangible assets are not up to the mark. The 5G network will take another substantial time to be operational and TRAI needs to make exemplary and revolutionary infrastructure development policies to improve the existing condition. Stiff global competition to increase revenue margins is leading to increased pressure and the telecom players are experiencing significant decrease in rates of both data and voice service tariffs. Investing in infrastructure like satellite earth stations and fibre optics submarine cables will help in broadening the service spectrum. This helps in achieving one of the research objectives of determining the impact of tax revenues on growth of the Indian telecom sector.

In the context of determining the importance of the stabilisation of the debt equity ratio for the any industry the following responses and explanations were marked:

- High debt-equity ratios imply higher financial risk and are important to be stabilised for sustainable growth of the respective business sector.
- High debt-equity ratio indicates the company's competency to deal with market changes and regulation. However, it is important to stabilise it to achieve better risk management.
- High debt-equity ratio is a causal factor for the aggressive funding for growth of the telecom industry in India which needs to reach a state of equilibrium by stabilisation of the same.
- The increasing margin of the debt-equity ratio in a business sector leads to unsustainable financial stress and calls for urgent and effective financial and capital management which will give competitive advantage.

In the context of determining recommendations for improving the future of this industry, the phenomenon of capital market development has been unanimously voted in favour of having positive implications. Tata Docomo has experienced that government investments can help revive a vulnerable business. Airtel also sees the scope of reviving their business in India there is adequate capital market development especially in the rapidly growing telecom sector of India. It would also help Uninor to effectively and profitably mobilise its savings and rebuild its business in this

country. Overall, the capital market development in the Indian telecom industry will pave the way for future prospects by streamlining the operations and financial dynamics of the sector.

Financial leverage and operating leverage are both reasons for major financial burden on the telecom service providers in India. The inability for the sector to control its operating leverage will lead to monopoly market. It would be impossible to stabilise the debt-equity ratio in this sector if financial leverages are not revised and monitored. High tax percentage to maintain the profit margins is generating a scenario of unaffordability among the telecom service providers. Overall, the rise in the fixed costs, tax margins and unprecedented financial leverage and regulations are increasing stress on service providers of the Indian telecom industry.

Chapter 5: Discussion

5.1 Introduction

As mentioned by Sanli, Erdem and Tefik (2014), objective of the Discussion section is one of the important areas in a research, because the information gathered from the interviews are being summarised and it helps the researcher to identify and extract the appropriate outcome from the conducted methodological activities. In this section the impact of the regulatory cost and spectrum, Tax Revenues on the Financial Health, Challenges to the Financial Health and Possible Changes in Indian Telecom Sector will be discussed in detail.

5.2 Impact of Regulatory Cost and Cost of Spectrum on the Financial Health

The three apex bodies that regulate the policies, regulations and legal bindings of the telecom industry of India are DOT, TRAI and TDSAT (Lexology, 2019). As per the claims of Kathuria (2018), no competition exists between the competition and the sector-specific regulation as both are implemented in different stages of pre-application and post-application. However, in practice both are equivalently implemented on service providers leading to discrepancies and confusions. The dispute between the Indian telecom company of Reliance Jio with the other telecom companies of Airtel, Idea and Vodafone on the grounds on attempt to create monopoly and practicing “free pricing strategy” which was later nullified and reverse penalty was imposed on the grounds of non-provision of points of interconnection to Jio (SH, 2017).

The online interviews marked the inclusion of only TRAI in assessing the contribution to the financial health of the telecom sector. TRAI has been reported to not only develop telecom regulations for India which acts as global benchmarks but is also responsible as a dispute mitigation apex body of the Indian telecom industry between the consumers and the service providers (TRAI, 2005).

The cost of spectrum problems has the potential to cause a lot of negative impacts on the Digital India scheme (Mankotia, 2015). The cumulative debt that currently outstanding on the grounds of high cost of spectrum is about four times the debt in the FY of 2008-2009 of Rs. 82726 crores and reached Rs. 3,00,000 crores in FY of 2014-15. TRAI regulations on the cost per minute of voice calling services may reduce from Rs. 4.4 in 2013 to Rs. 1.8 in 2031 (PwC, 2012). The competitive advantage of the Indian telecom service providers is put at jeopardy owing to the high travel and infrastructure expenses in which about 75% of the investment are taken up by the assets like buying optical fibres and transportation deployment (Business Standard, 2019). The AGR saw a sharp decrease when it saw an indiscriminate entry of new service providers on accounts of declined licence fees by 19% in 2017 (Kathuria, Kedia and Sekhani, 2019).

The responses in the online interviews were in alignment with the facts that have been determined from the review of literature. The high spectrum costs is leading companies like Uninor, Airtel and Docomo to increased debt-equity ratio and which is targeted to be earned back by increasing revenue per user (IANS, 2019).

5.3 Impact of Tax Revenues on the Financial Health of the Indian Telecom Industry

The demand for a tax rationalisation was filed by the telecom sector of India on accounts of which Universal Service Obligation taxes were reduced by 3% and the licence fee was reduced from 3% to 1% in the 2018 in the pre-budgetary demand for the financial year 2020-2021 (Abbas, 2020). The taxation policy has resulted in a drop of 7% in the revenue owing to cutthroat competition and the final decrease in licence fee and the cost of spectrum stood at 10.29% and 17.7% respectively in 2019 as have been reported by TRAI (The Economic times, 2018). The government considered giving its support by decreasing the GST from 18% to 12%, the USO levy from 5% to 3% and to refund an amount of Rs. 36000 crores to two ministries of India on the grounds of anonymity (Jayaswal, 2020).

As per the responses of the interviewees, the Tata Sons had bought 26% stakes in the Japanese Unit of Docomo only to incur a Rs. 7000 crore loss of revenues. This had a positive implication as the existing settled share price for Docomo was actually lower than the entering share price which was beneficial for Tata.

The COAI has shown great resentment and worry towards the potential of the Indian telecom sector becoming a monopoly of Reliance Jio (Naidu, 2013). The issue has also been supported by the peer telecom service providers in India of Vodafone, Airtel and Idea which was dismissed on grounds of non-violation of any legal clause (SH, 2017). However, Jio has given its explanation by saying that the competitors are not investing enough for expansion of their networks and hence facing the negative impacts of Jio's strategies (Khan and Sengupta, 2020).

In contrast to the potential of reaching a monopoly by Reliance Jio, as warned by COAI, the Indian market may also be potentially be heading towards a duopoly between Jio and Airtel (The Economic Times, 2020). Poor AGR performance of Vodafone is the key reason to lag in the competition and pave a way for a duopoly of Reliance Jio and Airtel (Bloomberg, 2020).

The responses of the interviewees align with the fact as per the literature review in the context that investment in infrastructure and the development of a capital market are beneficial for the improvement of the financial health of the Indian telecom industry.

5.4 Challenges to the Financial Health of the Indian Telecom Industry

The challenges to financial health of the Indian telecom industry are primarily a potential to reach monopoly by Reliance Jio or a duopoly by Reliance Jio and Airtel (Taneja, 2019). However, foreign investments by the Russian company of Sistema and Norwagean Company of Telenor have generated interest in the Indian telecom market (Taneja, 2019). The next major challenge is the development and implementation of the 5G technology in India on ground of demand for fast services to a great consumer base, demand for high quality of services to a large customer base, reliability of telecom services on such a great magnitude and demand for services through ubiquitous and affordable devices (Pandey, Gaurav and Kumar, 2015).

The responses in the interviews agree to the to the identified problem of the advancement and development of 5G spectrum in India as it is a major challenge to provide, consistent, reliable, high quality and continuous telecom network service to the huge population of India (Kaushik, 2018).

5.5 Expected Financial Growth of the Indian Telecom Sector

The Indian telecom sector is predicted to grow consistently in the coming financial years with emphasis on sustained competitiveness by improving network coverage and cost and customer centric offerings (Gupta, Raghav and Dhakad, 2019). The growth of this sector will be further boosted if the government approaches to mitigate the financial distress of high tax margins and ease the debt instalments which seem probable since the latest financial budget of India shows signs of uplifting levies to boost telecommunication in India (Gaikwad, 2020). The future scenario of a monopoly seems bleak as Airtel is tirelessly competing with Reliance Jio and reported a cost per share of Rs. 545.50 (+0.4%) in the BSE as per ET Telecom (2020b).

In retrospective the responses surfaced through interview accountability of the telecom sector to service tax revenues of the country provides insight on the minimisation of financial pressure predominant within the telecom industry of India through ease in debt instalments. For instance, settlement between Tata and Japanese group Docomo has reflected a liability of a certain amount to the Directorate General of GST Intelligence citing the financial development of Indian unit through retention of accuracy and leverage in the tax margins.

With the rapid industrialisation and globalisation norms there has been a substantial increase in the number of subscribers within the Indian telecommunication industry, it currently stands with more than 1.20 million subscribers as a result of reformist laws. It approximately contributes 6.5% to the Indian GDP while offering both direct and indirect source of employment to 4 million individuals in 2015 (Financial Express, 2017). The Indian telecom investors has approximately Rs. 1.42 lakh crores investments in the past six months. Additionally, over the years, the industry has transverse into new technological facilities that circumvents idea of better service quality and

values for money. These progressions were quite prominent within the industry after the entry of Jio, until then, the network operators within the industry were able to derive 75% of their revenues from voice and implementing competitive pricing strategies.

Despite the rapid extent of progression Gurnaney (2019), highlighted that, with increase in availability of 4G there is a coupled rise on the customers possessing a 4G handset, consequently, leading to strained networks. As per the Global Index, Singapore is the first nation to have a fixed broadband with a 197.50 Mbps of average download. On the other hand, Norway at the pole position was acknowledged a fixed download speed of 65.41 Mbps. On the contrary, the average 4G LTE download speed in India stood at 10.58 Mbps in 2019 as compared to 9.84 Mbps in 2018.

As highlighted in a report in the Economic Times (2019c) that the telecom industry would not be significantly affected by outbreak of the pandemic (Covid19) besides, the existing dues of Rs. 90,000 crores further raise the chances of uncertainty for the industry. Moreover, there are further chances of an additional surge in debt levels which initially moderated to Rs. 4.4 lakh crore in the adjusted gross revenue dues. However, a variety of measures are undertaken by network operators to curtail the share of rising debt, such as equity raising by Airtel as well as Vodafone-Idea. Besides, the immediate repercussion associated with the wide scale implementation of such norms was a fall in industry-debt to Rs. 4.4 lakh crore as compared to Rs. 5 lakh crores. As mentioned in PTI (2020b), Bharti Airtel has further raised approximately $ 1 billion through the sale of equity in order to pay off its debts. Moreover, the promoter firm Bharti Telecom is planning on diluting the nearly 2.25 % of its stake at floor price amount to Rs. 558 for later secondary placements.

Additionally, with the prolonged series of nation-wide lockdowns there is yet a lack of clarity on the payment of such substantive dues. Apart from that, it is also expected that the inability of the government to contain the virus would further pressurize the share of revenues in relation to the limited customer addition, accompanied by the lack of physical recharges further triggering usage of mobile phones on account of working from home as well as content viewing. Therefore, it can be apprehended that the aforesaid factors would lead to a pertinent shift to digital platforms hinting excessive data requirements per head.

5.6 Resolution of the Future Operational Challenges of the Indian Telecom Industry

The promise and prosperity of the future of the Indian telecom industry can be determined if the government gives support to helping the service providers in decreasing the outstanding debt (Sharma, 2019). Also, the privatisation of this industry will be crucial for future challenge. Usmani, (2017) has stated 4 measures for improving the financial health of the Indian telecom industry which are:

- Withdrawal of discount by Reliance Jio to optimise revenue earnings from the current one third earnings

- Dissolving or minimising inter-network charges
- Balancing out plan charges as per the market status of the specialised 4G phone to be released by Jio if it nor performs adequately
- Variation in pricing and plan offers and strategies to keep a healthy economic competitive ecosystem

Equivalence in the relevance of above discussion could be implicated through the positive opinions gathered favouring the network infrastructure investment enhancing the margin of exponential economic growth. In addition, the presence of stability in debt equity ratio would be pragmatic in maintaining a fair competitive scenario amongst the telecom companies in India.

With the rapid progressions and excellent performance in myriad metrics, various Indian telecom owners are trying and testing the prospects of 5G spectrum in India. Gill (2019a), highlighted that one of the major reasons associated with the delayed 5G auction in India is its expensiveness to the Indian industries. Furthermore, India's debt-ridden telecommunication operators are reeling to keep the 4G costs comparatively low in order to tap into new customer segments. There is a further hope that with the gratification of innovative policies in relation to the pricing of the spectrum would further assist bringing in the much delayed 5G auction in India. Additionally, the acquisition of sites is also an accessible issue associated with deploying 5G. Therefore, it is of extreme importance that the site is owned by the Indian government to avoid the recurrence of further risks.

As affirmed by Bhargava (2019), COAI has expressed its concerns regarding the financial well-being of the industry amidst excessive competition and current phase of consolidation, that the introduction of 5G spectrum would further create fuss and chaos within the operations of businesses. Apart from that, concerning the present dynamics the introduction of 5G further demands to bring in necessary changes to existing infrastructure of communication practices in India. Besides, upgrading to the existing Long-Term Evolution cores is not going to make things any better for 5G technologies.

As per Gopalaiah (2020), the launch of 5G services not only determines future of the telecommunication industry but also, is expected to be a transformative initiative by leading to the further development of myriad disruptive technologies. The global investment within the auction and further development of 5G services is expected to amount to US$3.5 trillion, on the other hand, over US$ 12 trillion sales are expected within the global industry with the effective implementation of 5G services in the coming time.

5.7 Possible Changes in Indian Telecom Sector through 5G Spectrum

Indian Government exhibits liberal movement which is aligned with instrumental context of enhancing the purchasing power of telecom products. 5G network is expected to cater a remarkable

transformation through the eradication of a myriad of challenges of speed, utility and latency of data processing. On the global prospect, 5G has been embraced on broader level and India is about to step in the same pathway through the launch of 5G services which was slated in April 2020 however postponed due to the outbreak of COVID 19. Nevertheless, the exceptional context to responses of the interview has been that two former colleagues of an Indian Telecom company have outlined the scope of socio-economic development through incorporation of 5G services. Subsequently it aligned with the evaluation or prediction report of KPMG, stating that 5G services would be facilitative in contributing additional 0.35% to 0.5% to the yearly GDP margin of India. Therefore, as per the discussion associated with the importance of 5G within the field of this industry in India, capital movement could be facilitated through the reduction of possibilities of network related issues thereby thriving on higher customer experience.

Despite considerable prospects, financial barriers might be influential in delaying the emergence of 5G services in India. There are many competent companies namely Jio and Airtel which have been proactive in introducing 5G services in India however none have been in a remarkable position. The financial limitations of Vodafone company is hindering the advancement of the network within this company, likewise other potential Indian companies have been struggling towards inducing network upliftment due to financial stress. In addition, base price fixed by TRAI for the purchase of 5G spectrum worth Rs 492 crore for each MHz has not gone down with the chief executive of Airtel (Press India, 2020). Thus, content pressure based on the amendments of fixed price of 5G spectrum auction of India has differed from the interest of leading telecom organisation of Airtel to inculcate network investments (Airtel, 2020). Equivalence in the notation of this context could be analysed from a statement inferred by a respondent of Docomo indicating lack of satisfactory movement on infrastructural development by TRAI barring the capitalisation of rising demand for 5G services.

Initiative undertaken by Government of India in addressing the balance sheet issues of Airtel and Vodafone for the inculcation of 5G services is centred to the discouragement of sectorial monopoly and ascertains fair competition amongst the telecom companies (Abbas, 2019). Constructive initiative from end of Indian Government could be cited through reference of above-mentioned concept. Seeking permission from Indian Government by Jio towards utilisation of 5G has been configured with the prominent actions enforced by the former in terms of addressing prevalent problems within the overall telecom industry. In addition, appeal of the Government to the Supreme Court for the allowance of wireless carriers regarding the payment of statutory dues has been a factor of encouragement for Vodafone group in terms of depositing a token amount of Rs 6854 crores, which is 32% of the total liabilities of the company (Sarkar, 2020). Contradictory side has been elaborated by one of the responses of the sixth question of interview signifying the scope of improvement for Indian Government in relation to the investments in infrastructure. Momentary leverage on the overall dues of the company would not solve the aspect of financial stress in Indian telecom sector. Considerable revision on the overall regulation is required along with

infrastructural development to pave the way for fifth generation network services like other countries as deduced from the perspectives enlightened within empirical studies and interviews.

5.8 Conclusion

Based on the above discussion it can be concluded that in the dispute among Indian Telecom companies such as Reliance JIO, Vodaphone, Bharti Airtel have created monopoly in the market with free pricing strategy. The tax rationalisation that was filed by the telecom sector was reduced by 3% (Universal Service Obligation Taxes) and enhanced the pre budgetary demand in the market. It can be noted that the 5G services determines the future of the industry and also initiate transformation within the industry with more disruptive technologies.

Chapter 6: Conclusion and Recommendation

6.1 Conclusion

The primary aim of the research is to highlight the existing as well as the current upheaves within the Indian telecommunications industry in association with the failure of organizations to attain a greater competitive edge and profit rates at the same time. It can be concluded from the above analysis that liberal as well as reformist policies of the Indian Government within the Telecommunications industry, has further bolstered the strong consumer demand within the industry thus, triggering the growth and development of Indian telecommunication infrastructure.

On the other hand, the Indian Telecommunication Industry is also acknowledged as second largest telecommunication industry with a subscriber base of over 1.20 million, contributing a gross revenue of Rs. 121,567 crores for the FY April-September 2019. On the other hand, from the above analysis it is quite evident that, the Indian Telecommunication industry despite its proximity to create large scale profits is currently surrounded by concerns such as bankruptcy and transgressed share of debts within star contributors. In the former section of the study it was further highlighted that the cutthroat competition prevalent within the industry, concerning the entry of low-cost upstart Reliance Jio, has later resulted in the protracted fall in the total revenue share of the other telecom operators within the industry by approximately 7%.

Furthermore, the adjuncts of the concerns in national policy have further ramped-up the strategic significance of the telecom industry for foreign enterprises. Additionally, it is also suggestive from the above discussion that despite substantial bout of the economic as well as financial inadequacies in 2016, the industry is expected to prosper in the late 2020, as result of the unprecedented escalations of tariffs over a spanned time frame. Moreover, Section 1.3, emphasizes on the array of Research Problems that were highlighted and discussed in the due course of the study. As mentioned by SJM, the Indian telecommunication industry is currently experiencing a negative downturn of return characterized by the negative returns, excessive competition and security concerns for both domestic as well as foreign organizations. Besides, the lack of adequate infrastructure as well as the entry of the upstart Jio are some of the prominent discrepancies within the industry. However, to reach a pragmatic conclusion the researcher has further divided the two instrumental elements of the study, the research objectives and questions in primary and secondary categories in such a way that the primary objective quantifies the primary question and vice versa.

From Chapter 1: Introduction, Section 1.6 Research Objectives, it can be apprehended that the primary objective of evaluating competitive factors causing crisis within the Indian telecommunication industry, further discussed and met in the Chapter 2: Literature Review, Section 2.4, further hinting that within an ample span of time, the telecom industry has faced intense competition from foreign and domestic merger of Vodafone and Idea, in addition the

unpronounced entry of Reliance Jio, has led to an untenable transformation within the domain of telecom infrastructure.

On the other hand, it can also be affirmed that excessive focus on enhancing the service quality within the network operators as a result of the entry of Reliance Jio within the industry further revived a novel approach to position and target potential customers. Moreover, Jio further eased the venturing probable opportunities within the telecommunication industry, by effectively developing a brand-new platform to support the ongoing government campaign of Digital India Movement.

Moreover, there was a stern exoneration in the existing competition when Bharti Airtel lodged a complaint against Reliance Jio, in the CCI in association with its "free pricing strategy". Therefore, it can further be comprehended that along with service quality, price is also a competitive factor that results in a crisis within the network operators within the industry. Moreover, as per Chapter 4: Finding and Analysis, it was further deciphered that factors such as the capital structure, financial leverage as well as regulatory costs have a positive impact on the overall revenue earning capacity of the firms operating within the industry.

Talking about the secondary objectives of the study, those further underlines on the postulates of determining the impact of regulatory and additional spectrum costs on the financial health of the industry, identifying the significance of tax revenues, challenges faced by network operator in attaining the estimated profit margin and lastly the scope of recommendation for future research. The initial section of Literature Review emphasizes the extent of regulatory costs along with the cost of spectrum on the financial well-being of the industry. Based on the discussion in Section 2.2, it can be inferred both the aforesaid elements are positively and negatively related to the financial health of the network operators. Moreover, the extensive increase in cost of spectrum is supposed to have a detrimental impact on the Digital India plan as set out by the Indian Government in late 2016. The exacerbated share of debts within the industry currently ramped-up to 4 times, besides, it can be stated that the prolonged rise in network costs as well as spectrum cost has a substantial impact within the industry as per data as well as the estimates. Moreover, the cost of deployment and purchase of optic fibre is roughly 75% of the overall expenditure incurred by organizations, apart from that, the profit on a single user as per the network telecom is as low as $ 1.5 in comparison to $36 in the USA and $6.5 in China.

Based on the in-depth analysis in Chapter 4, it can further be concluded that the increased share of spectrum costs in India is comparatively high which is a barrier for companies such as Airtel, Docomo and Uninor, which deters the organization to meet up with the rising demand for service quality. The second objective deals with determining the scope and extent of tax revenues on the financial health of the industry, from the above analysis in Section 2.3 with the prevalence of aggressive taxation policies there was an associated fall in the overall industry by 7% followed by a fall in the revenue charged as taxes. The minimized share of revenue directs towards lessening

government support thus emphasizing on the fact that the interest of revenue taxation on Indian telecom industry is estimated to be comparatively high.

In the later section of the study, it was further highlighted that the Indian telecommunication industry is currently moving to be a duopoly, this raises concerns for the functioning of the other network operators. It is quite evident from Section 2.7 that the internal government network providers are facing myriad atrocities, in terms of sustaining competition. Besides, despite the protracted surge in the share in financial as well as operational discrepancies within the industry, Reliance Jio has substantially managed to sustain a profitable growth, thus satisfying the third objective of the research to determine the extent and scope of competitive barriers within the industry.

Therefore, it can lastly be concluded that, within the coming year, the Indian telecommunication industry is expected to prosper, but with rising share of atrocities related to excessive cost charged by the operators, high cost of spectrum, cheap services of arrival, predominance of excessive debt, fear of duopoly or monopoly within the market has substantially affected the revenue within the industry. On the other hand, the unsystematic market structure of this industry, is also an associated factor for the fall in the customer base, minimized profit levels as well as the inability to implement 5G spectrum. Moreover, for greater profitability as well as retaining customer segments the network operators should abide by the stringent set of recommendations that are enlisted in the later section.

6.2 Recommendation

6.2.1 Recommendation for the Study

As the share of revenues are expected to rise as a result of the increasing mobile and internet penetration the firms operating within the industry can attain a greater competitive edge by incorporating the apparent market trends of AI and IoT. Therefore, network operators should abide by the use of customer service chat bots for traffic classification, network optimization and orchestration as well as predictive network maintenance.

On the other hand, becoming an IoT service provider and providing Machine to Machine (M2M) devices is also an effective revenue stream for the network operators. In order to avoid recurrence of high spectrum and regulatory costs there is an apparent need for network operators to decentralize the decision-making process and well as the purchasing function, internally and externally for the inherent agile reconfiguration of the cloud.

Additionally, considering the enhanced demand for sustainability, TRAI has focused on the incorporation of green telecom infrastructure and manufacturing. Besides, TRAI must focus on liberalizing the spectrum which further assists in large-scale use of the spectrum as long as it has a ready access to technology.

Moreover, propositions should also be framed on the need to bring in adamant upgradation in IT and connectivity infrastructure thus, explicitly focusing on providing ace service quality. Apart from that, security of the networks is also of grave importance, therefore, network operators must focus on abiding by a series of operational and technical innovations that would later assist in meeting the prior customer expectations covering and addressing the issues within the system security to the device level.

It can be recommended that incentivizing indigenous design as well as domestic manufacturing of telecom apparatus. Moreover, the indigenous products must be listed into Made in India or Designed and Made in India products, besides the effective distinction between such products would further assist in bringing clarity thereby establishing an intrinsic regulatory provision for specific products.

6.2.2 Recommendation for Research

From the above discussion it can further be recommended that, in order to come up with a rational decision as well as presenting a coherent discussion on the identified facts from the raw data, the researcher should have relied on the use of a mixed methodology that would further assisted in critically evaluating the pertinent attributes in the empirical analysis thereby integrating it with the primary qualitative evaluation. On the other hand the use of effective sampling techniques could have favoured the study in recruiting a more aware and responsible sample population thus, helping in effectively identifying the prior themes and justify the purpose of the study.

6.3 Limitation of the Study

Despite the constraints of time and incompetent sampling techniques circumventing the intrinsic aspects and dynamics of the study, the research is associated with an array of pitfalls such as the lack of mixed research strategy to effectively quantify the raw data and the empirical analysis undertaken in the former section of the study. Besides, excessive dependence on conducting interviews of the employees, might have affected the ability to analyse and highlight attributes and lay a coherent discussion thus, categorically leading to pragmatic and realistic conclusions.

6.4 Future scope of the Study

The current study explicitly focuses on analysing the context of various competitive factors having a bearing on the competitive well-being of the Indian telecommunication industry, in light of the effective strategies that are to be undertaken by the network operators within the industry to overcome the accessed barriers and accentuate the growth in the long-run. Therefore, the outcomes derived from the research is effective in determining the affluent dynamic prevailing within the Indian telecommunication industry. On the other hand, the researcher will set out a lucid base for further research, in terms of ascertaining the downward trend within the Indian telecommunication

industry. Besides, the research would also serve as a guideline to enter and prosper within the liberal and aggressively competitive Indian telecommunication industry.

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Appendices

Appendix 1: Interview Questionnaire

- Question 1: What is your opinion regarding the regulatory costs and the costs of spectrum and regarding its impact on Indian telecom industry?
- Question 2: What do you think about the contribution of telecom sector on service tax revenue?
- Question 3: How the capital structure and the leverage impacts on cost of capital of Telecom industry?
- Question 4: What do you think about spectrum payments that could contribute towards the financial health of the telecom sector?
- Question 5: What do you think about the roles and contribution of TRAI regarding financial health condition of Indian telecom sector?
- Question 6: Do you think that, the investment on network infrastructure could possibly improve the financial health conditions of Indian telecom sector?
- Question 7: How could you define the current scenario of network infrastructure by analysing the share of tangible and intangible assets?
- Question 8: How much important for an industry to stabilise their debt equity ratio?
- Question 9: What is your opinion regarding the capital market development and its impact on the Indian telecom industry?
- Question 10: Do you think that, as per the current situation of the Indian telecom industry, the operating leverage and financial leverage could magnify the profit? How?

Appendix 2: Details of Interviewees

Respondents	*Category*	*Company*
1	Former Colleague	Docomo
2	Former Colleague	Airtel
3	Former Colleague	Uninor
4	Former Colleague	Docomo
5	Former Colleague	Docomo

Appendix 3: Timeline

Project activities	**Duration (in weeks)**	**Start date (year 2020)**	**End date (year 2020)**	**Time period**															
				Wk 1	***Wk 2***	***Wk 3***	***Wk 4***	***Wk 5***	***Wk 6***	***Wk 7***	***Wk 8***	***Wk 9***	***Wk 10***	***Wk 11***	***Wk 12***	***Wk 13***	***Wk 14***	***Wk 15***	***WK 16***
Action plan and abstract	2	27th April	11th May																
Questionnaire	3	12th May	25th May																
Introduction	2	26th May	1st June																
Literature review and interview 1	2	2nd June	10th June																

Determining objectives and questions	2	11th June	15th June																
Methodology (little portion)	1	16th June	19th June																
Segregation of dependent and independent variables	2	20th June	22nd June																
Methodology and 2nd interview	3	23rd June	6th July																
Three more interviews	1	7th July	10th July																
Documentation of background and problem statement	2	11th July	13th July																

Analysis	2	14th July	20th July																
Finding and Discussion	4	21st July	8th August																
Presentation of recommendation, conclusion and submission	2	9th August	17th August																