



**SUPPLY CHAIN ANALYSIS
FOR
TELECOM INDUSTRY**

Telecom Industry

**Anjali Reddy
213180009**

 **airtel**


BSNL
Connecting India



VI
TM

 **Bharti
Infratel
Limited**

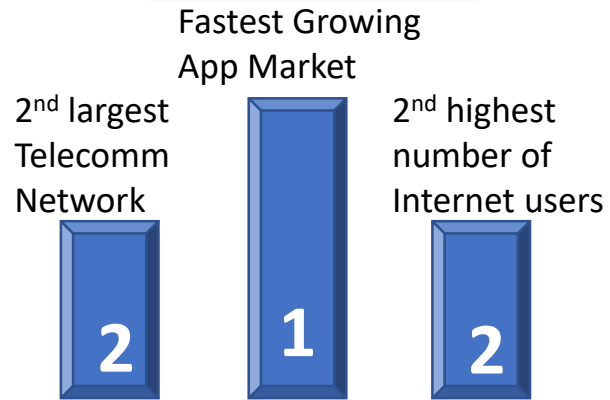

TATA
TELESERVICES LIMITED

RELIANCE
Communications

INDUSTRY OVERVIEW

Market Size

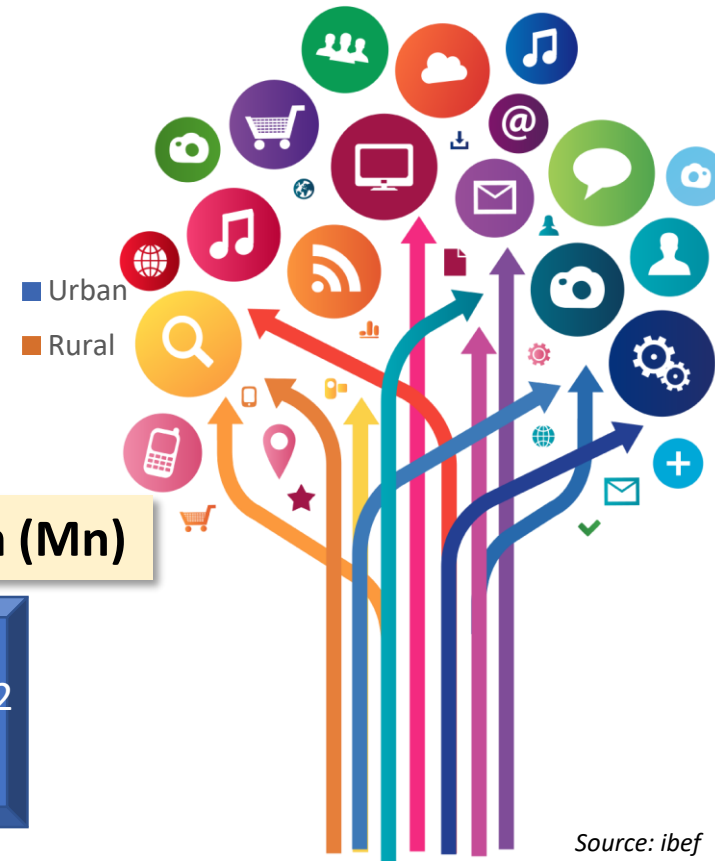
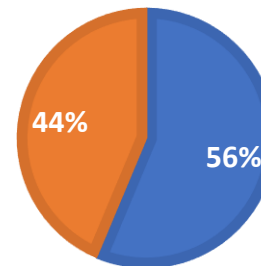
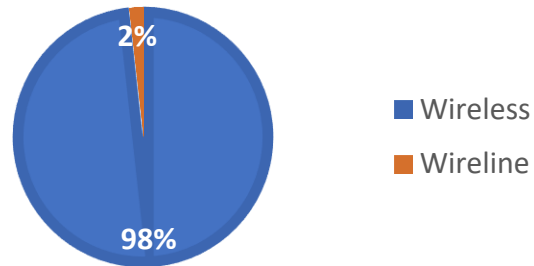
Global Ranks



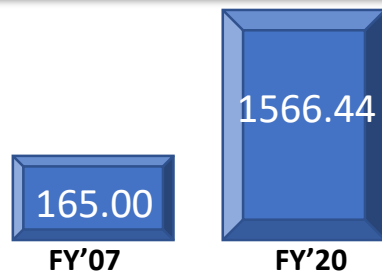
Subscriber base of 1,777.02 million as of January 2020

Sector Composition

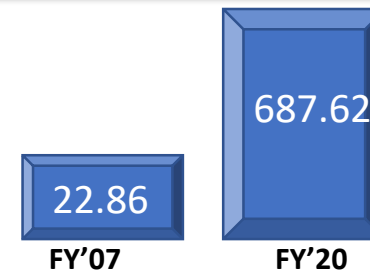
Composition of Telephone Subscribers (FY'20)



Wireless Subscription (Mn)



Internet Subscription (Mn)



Key Trends

Company Overview

Reliance Communications was incorporated on 15th July, 2004. The company filed for bankruptcy in Feb, 2019.

Headquarters : DAKC, Navi Mumbai, Maharashtra, India

Areas of Operation: Worldwide

Core Sectors: Mobile Telephony, Wireless Internet, Digital Television

Net Revenue (2018-19): Rs 4015 Crores

Services Portfolio

Mobile Services

GSM 2G
GSM 3G
CDMA2000
MIMO

Broadband Services

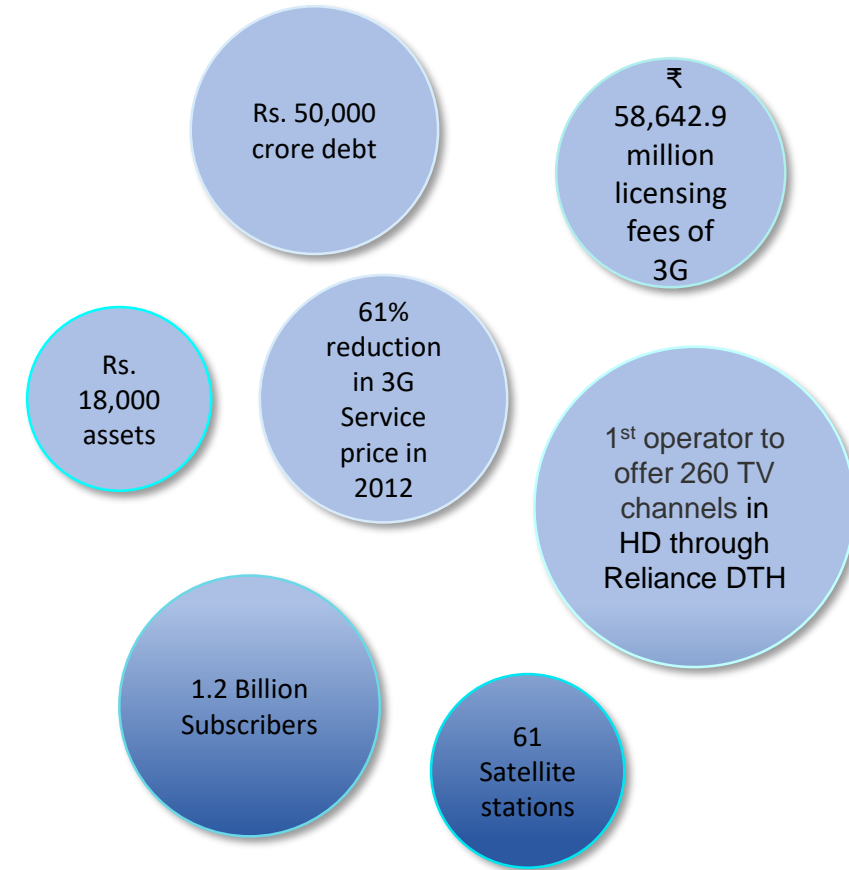
Landline
Mobile
Wi-Fi

Enterprise Services

Reliance Digicom
Data centre
Enterprise voice
Wholesale Voice

Cloud Services

Cloud Networking
Cloud Telephony
Collaboration
Services



Supply Chain Profile

Distribution



Stakeholders

Vendors

- Key Suppliers and vendors provide with equipment and services
- They build, develop, maintain and rollout networks and operate business
- Supply of handsets

Outsourcing

- Services for the company and the customers
- Outsourced network and related infrastructure management
- Operations and maintenance outsourced to third party vendors

Retail Distribution

- Extensive distribution and service networks consist of 750 exclusive Reliance World and Mobile stores
- Pre-paid starter packs and vouchers are sold to distributors upfront, who in turn supply them to retail outlets

IP Rights

- Third-party licenses and other intellectual property arrangements provide services, including content providers for DTH business
- Network elements and telecom equipment including software and firmware deployed are licensed or purchased from various third parties

Long Term Contracts

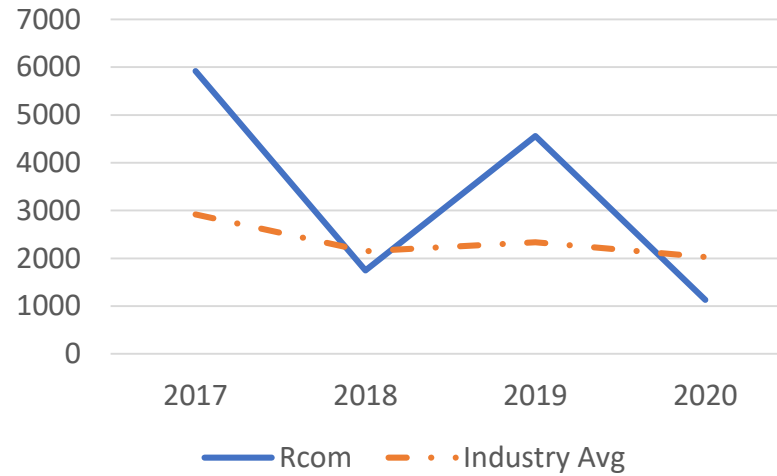
- Key components of telecommunications networks supplied by leading telecommunications equipment manufacturers
- Long term contracts with these vendors for the supply of equipment and for maintenance support of core and radio access networks. (3-10 years)

Distribution Network

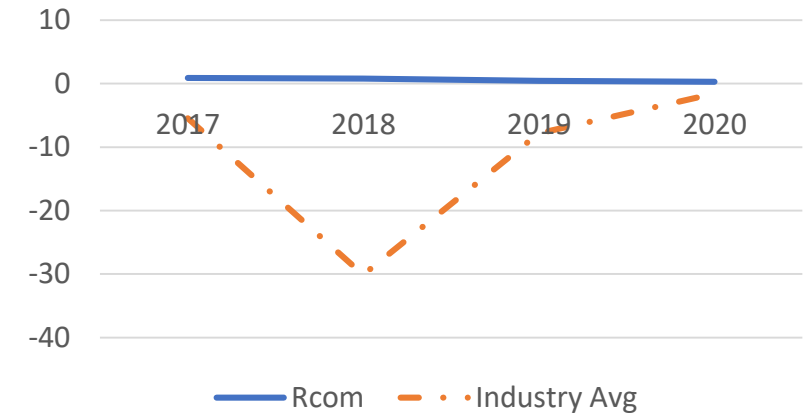
- Pre-paid distribution network comprises retail outlets, ranging from department stores, pharmacies to exclusive telecom outlets and branded stores
- BPO for customers servicing requirements and support to telecom, entertainment, BFSI and utility of the company

Performance Analysis

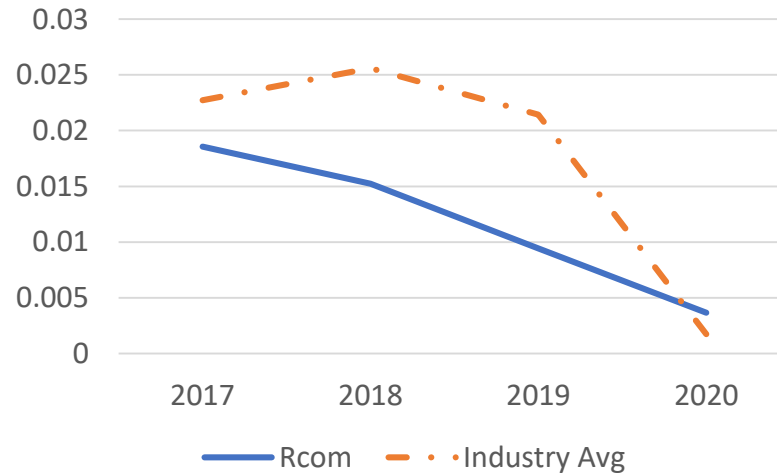
Total length of Supply Chain



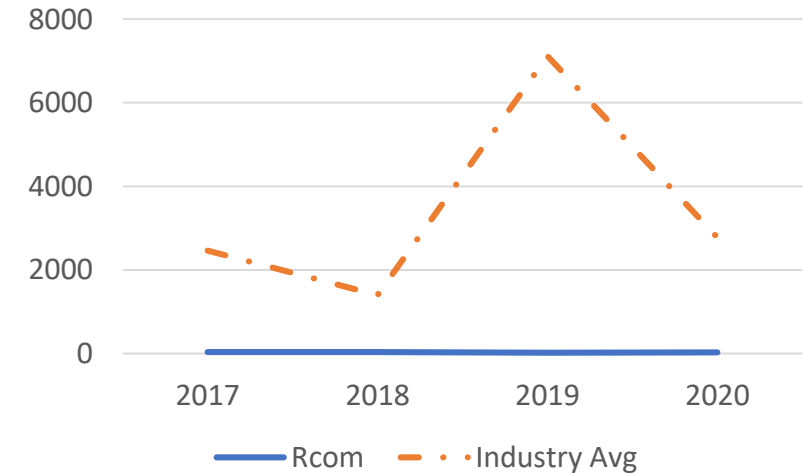
Supply Chain Working Capital Productivity



Supply Chain Inefficiency ratio

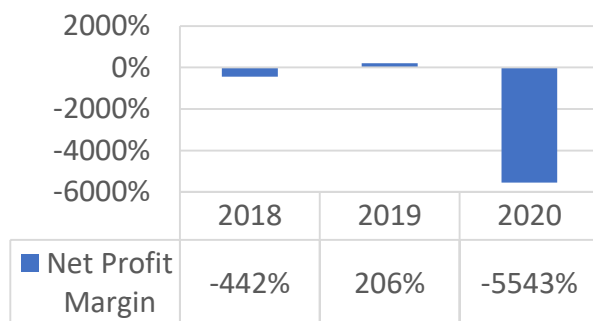


Inventory Turnover Ratio



DuPont Analysis

NET PROFIT MARGIN

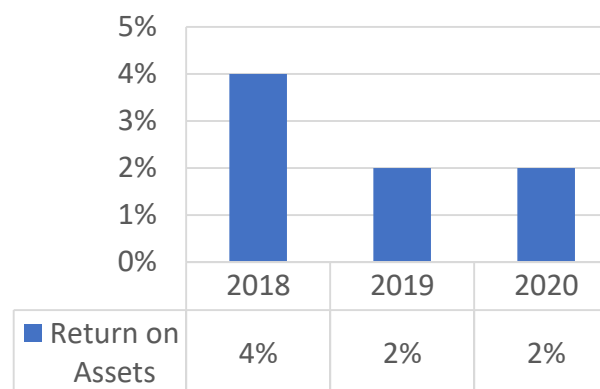


Net Profit Margin

The net profit margin improved in 2019 but drastically fell in 2020 because the company filed for bankruptcy.

The company now offers 4G data services, fixed-line, data center services, and enterprise solutions as well as subsea cable networks, "Global Cloud Xchange"

RETURN ON ASSETS

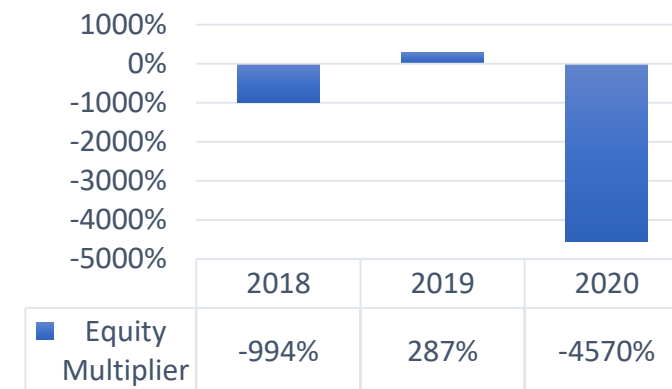


Return on Assets

The asset utilization fell after 2018 and has been constant for the last 2 years at a value of 2%.

The company filed for bankruptcy and then started operating with limited assets and limited operations therefore, a change can be seen in the return on assets.

ROE



Equity multiplier

The value of Equity multiplier increased in 2019 from 2018 and then dropped again in 2020.

There was a gain for shareholders in the year 2019 but after the company filed for bankruptcy and then limited its operations, the equity multiplier fell.



Company Overview

Bharat Sanchar Nigam Limited was incorporated on 15th September, 2000.

Headquarters : New Delhi

Areas of Operation:

Core Sectors:

Net Sales (2018-19): Rs 19321 Crores

Services Portfolio

Mobile Services

GSM 2G
GSM 3G

Broadband Services

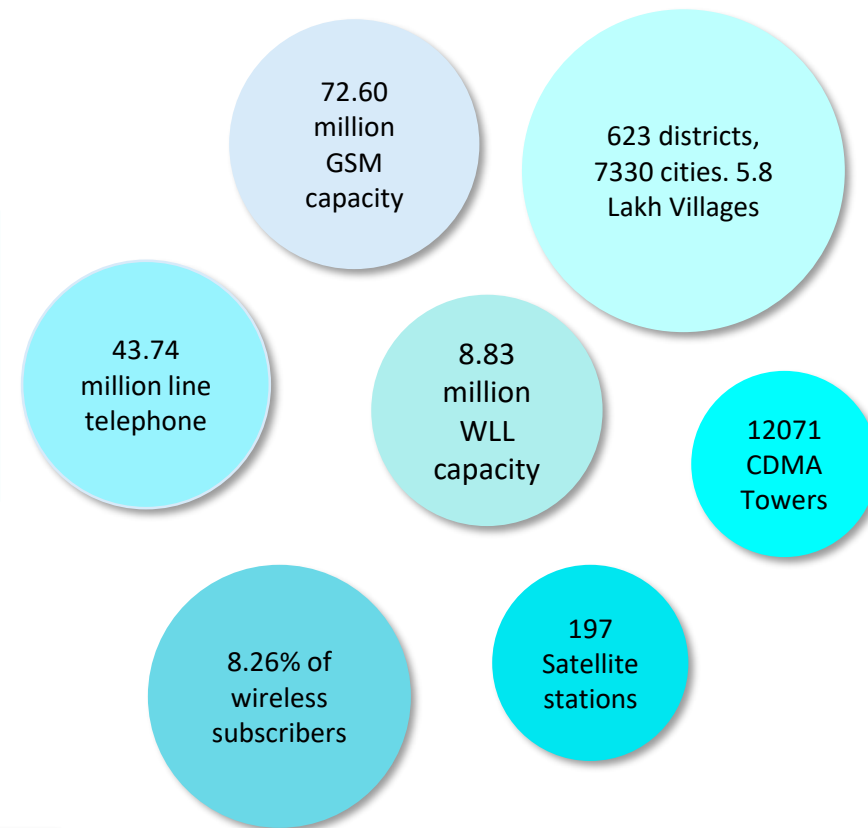
Landline
Mobile
Wi-Fi
Fiber Broadband

Enterprise Services

Voice & Mobility
Data Centre
Services
Broadband

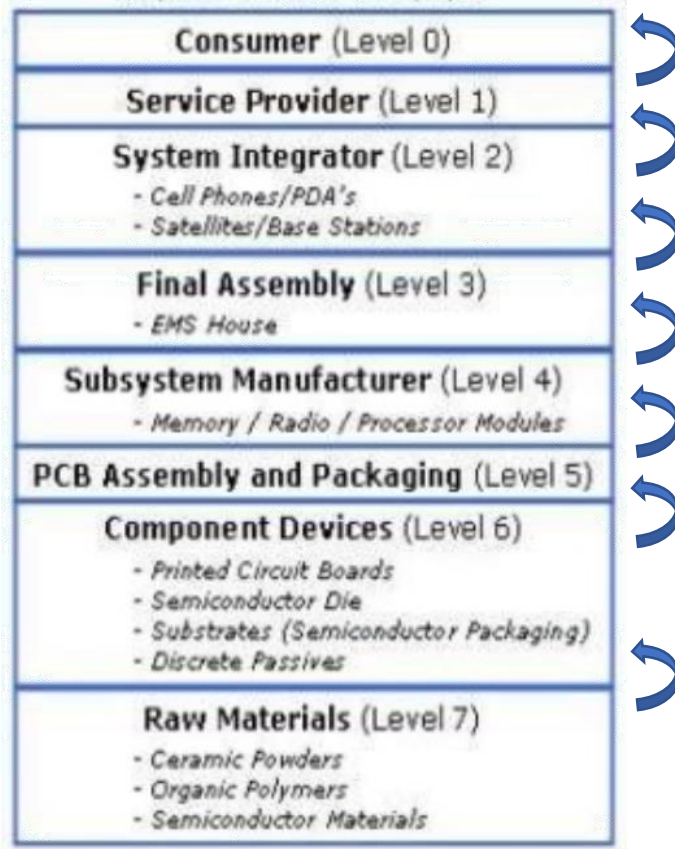
Landline Services

Telephone Lines
Intelligent Network
Services
Dial-up internet



Supply Chain Profile

Supply Chain Model



Procurement

Materials Procured

Stocked Items

Which are stocked in the Telecom Stores
Supplied to the Indenting unit by store organization

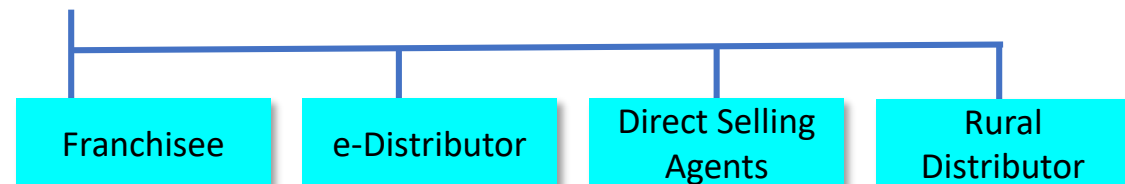
Non-Stocked Items

Which are not stocked in the Telecom Stores
Centralized, Decentralized & Local Purchases
Contingent Items
Petty Local Purchase

Sources

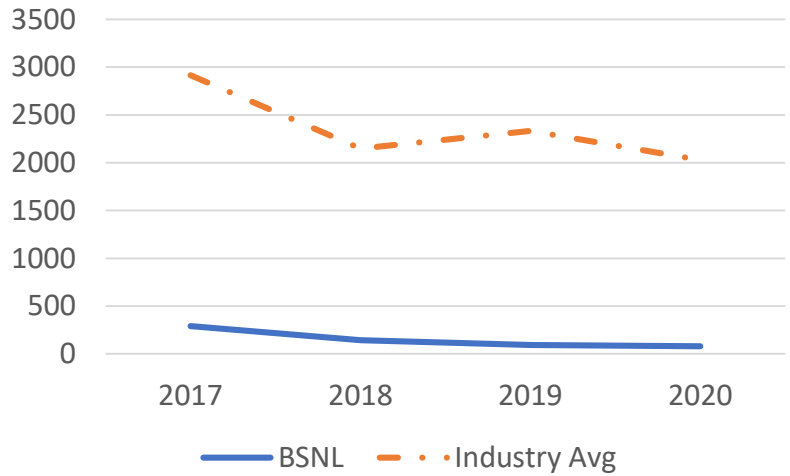
Telecom Store Organisation
Circle Telecom Stores
Telecom Factories
CGM Telecom Stores Kolkata
Telecom PSUs
ITI, HTL, HCL, TCIL
DGS & D
Kendriya Bhandar & NCCF
Private Sources
Indian & MNCs

Distribution

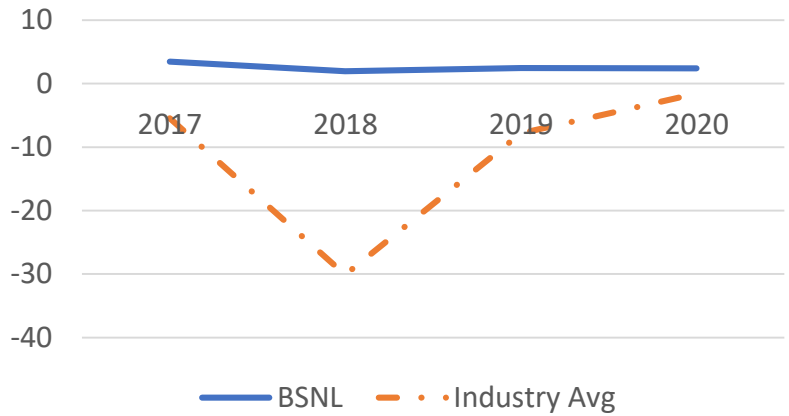


Performance Analysis

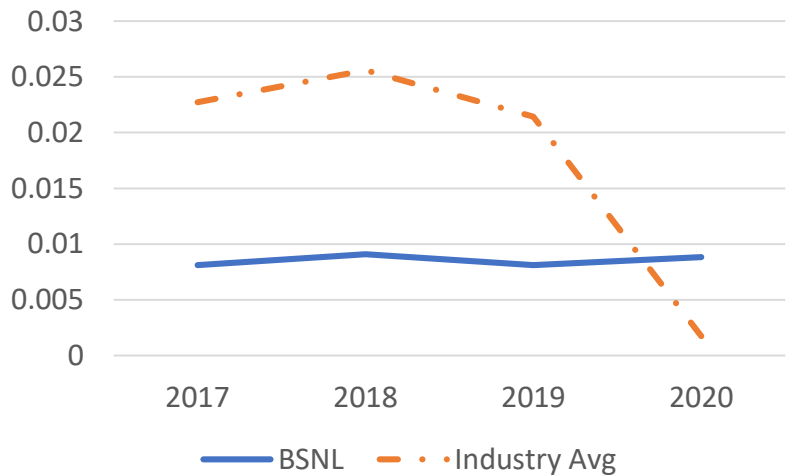
Total length of Supply Chain



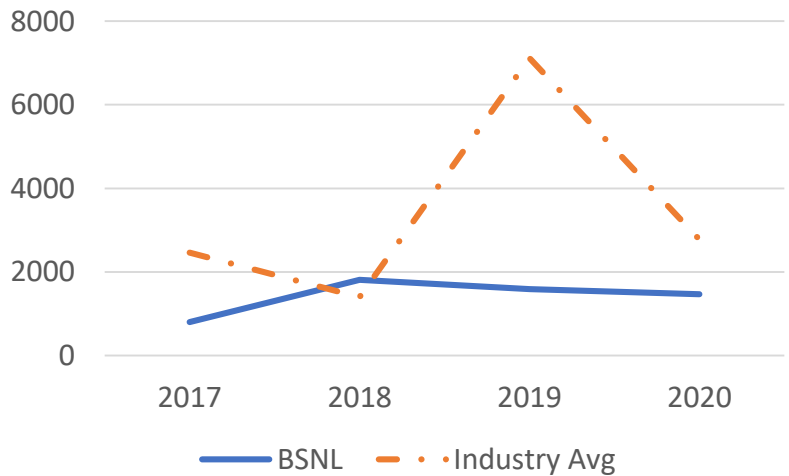
Supply Chain Working Capital Productivity



Supply Chain Inefficiency ratio



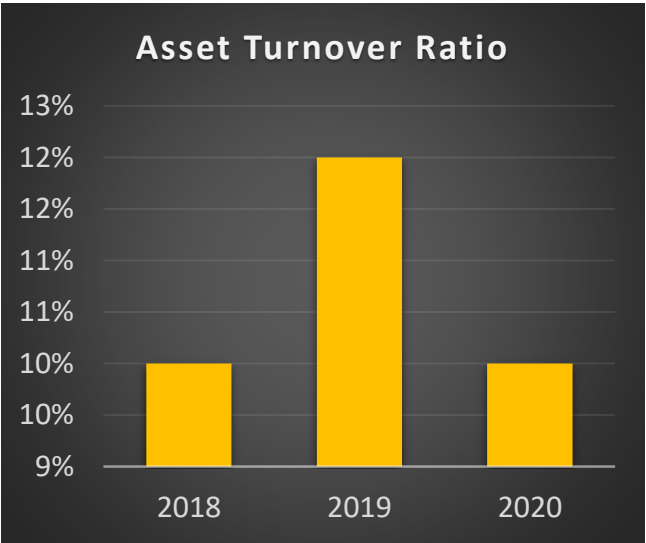
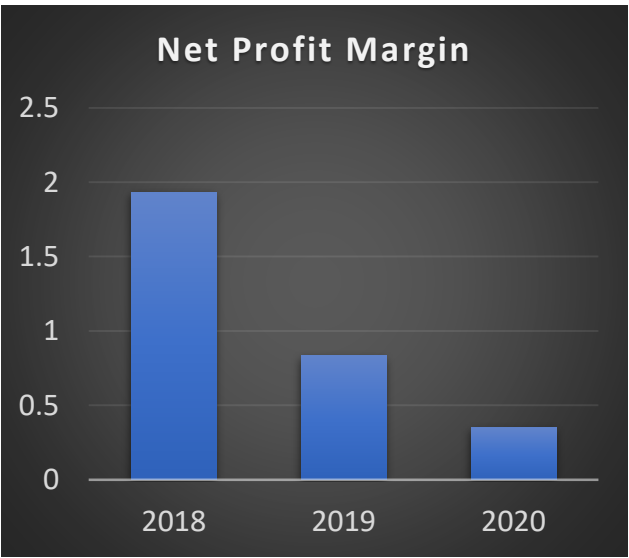
Inventory Turnover Ratio



Performance Analysis

Net Profit margin:

Net Profit margin for BSNL has seen a sharp decline with coming of major players like JIO in the market share

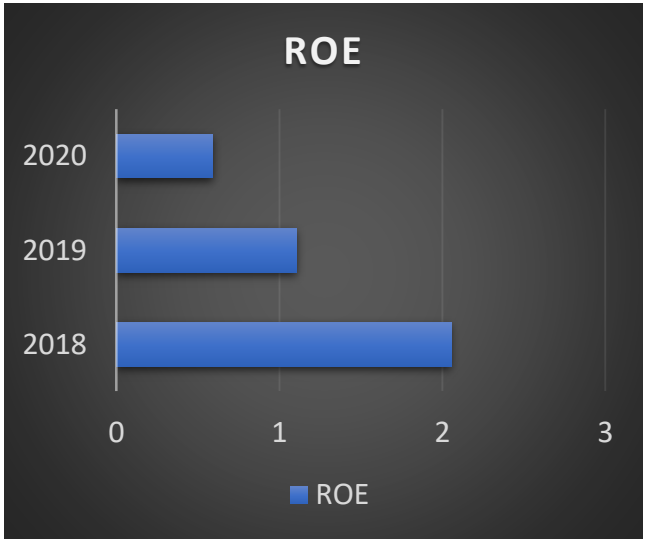


ROE:

The ROE again decreased over the years with the overall decrease in ARPU. It indicates the decrease in subscribers & market share for BSNL

Asset Turnover Ratio:

BSNL saw a drop in its assets with the onset of 4G in the market since 2019. The asset turnover came down further due to onset of Covid-19 pandemic





Overview

- **Vodafone Idea Limited**, is a pan-India integrated GSM operator offering 2G, 3G and 4G, 4G+ and VoLTE
- It is Headquartered in Mumbai, Maharashtra and Gandhinagar, Gujarat
- On 31 August 2018, Vodafone India merged with Idea Cellular, to form a new entity named Vodafone Idea Limited. Vodafone currently holds a 45.1% stake in the combined entity and Aditya Birla Group holds a 26% stake
- Vodafone Idea posted a net revenue of approx. USD 6.4 billion for FY 19-20
- As of March 31, 2020 Vodafone Idea had a subscriber base of 291 Million

SerVIces

Enterprise Mobility

- Postpaid & Prepaid
- International Roaming
- Secure Device Manager
- Managed Mobility
- Location Tracking
- eSIMs

Internet of Things Solutions

- Integrated IoT solutions
- Smart Energy Data Management
- Smart Security and Surveillance
- Smart Mobility

Connectivity

- SD-WAN
- MPLS and Global MPLS
- ILL (Internet Leased Line)
- Leased Circuits (NPLC, PLC)
- Managed WiFi

Business Communications

- SIP Trunking
- SIP Central
- Audio Conferencing
- Cloud Telephony Solutions
- Global IP Trunking
- Toll Free Services

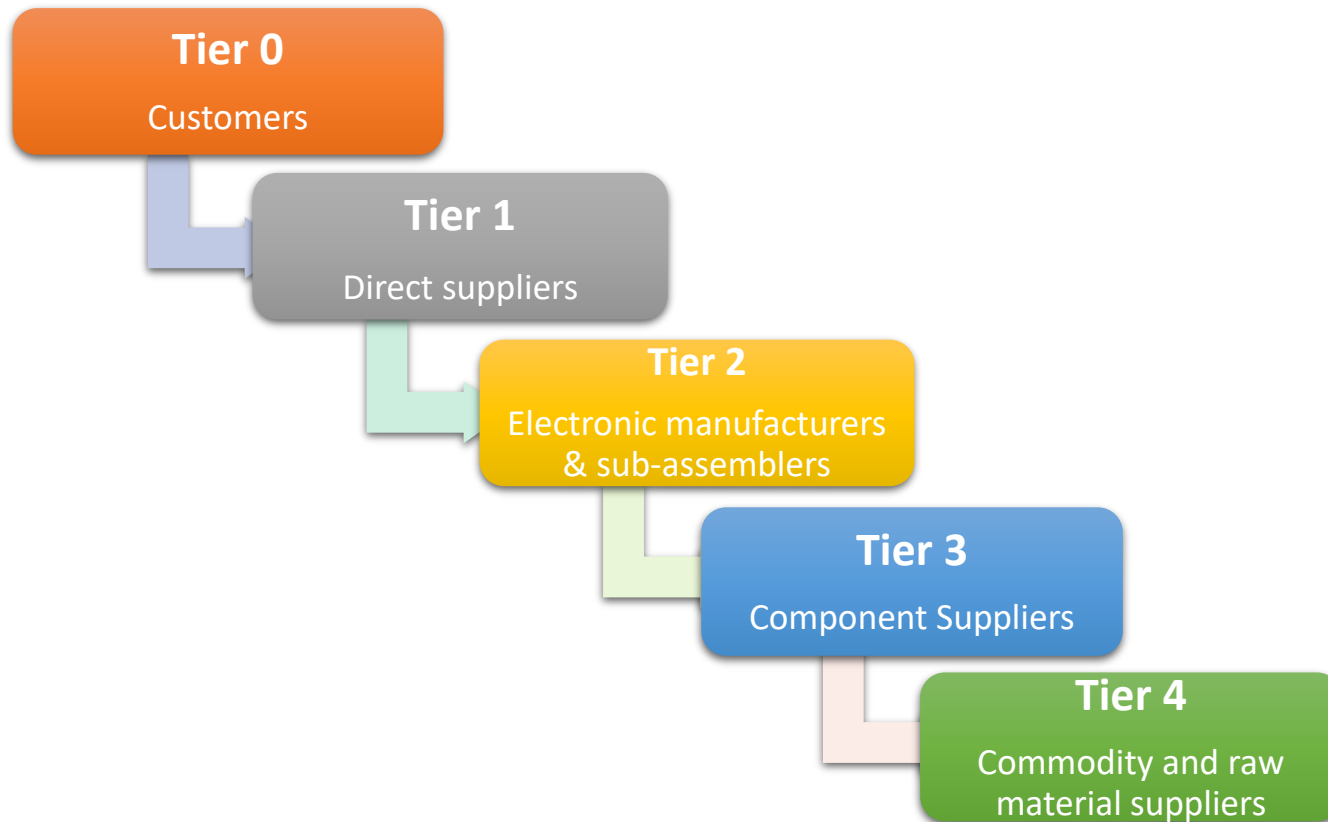
Security

- Managed DDoS
- Device Security Solutions
- Secure Device Manager
- Managed Security Services

Cloud Store

- G Suite
- Office 365
- Mobile Workforce Essentials
- Device Security Solutions
- Website Builder

Supply Chain Model



Major elements of supply chain:

- Vodafone Procurement Company (VPC)
Accountability for strategic category activities related to suppliers, savings and trading operations as well as partner markets and 3rd Party business
- Operations and Enablers Team
Accountability for overall operational effectiveness of supply chain across categories and markets
- Local Market SCM Teams
Local accountability for stakeholder management and commercial savings realisation in local markets

Distribution



Over 25,000 retail offline stores across the country offering prepaid and postpaid plans



Over 5400 branded stores to services customers



partnered with Amazon India, to build a unique 'Shop-in-Shop' model at Company-owned stores

Indirect Channels

- 2 tiered distribution model
- Mass market reach

Exclusive Retail

- Sales and Service
- Vodafone Store, Idea Store, Vodafone

Direct Channels

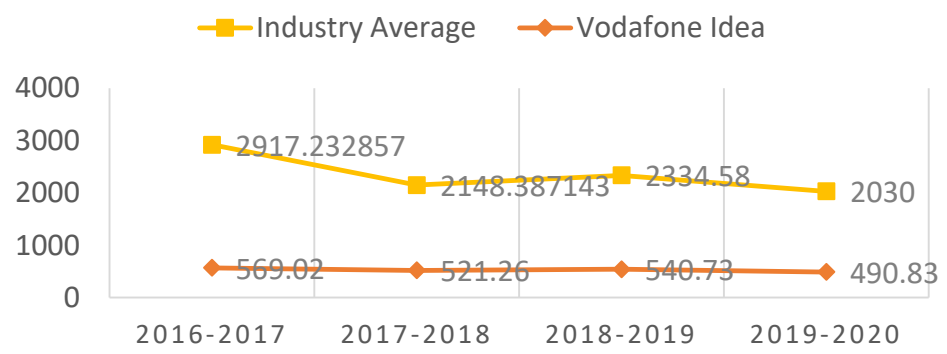
- Direct selling agents, cold calling
- Canopies and kiosks

B2B Business

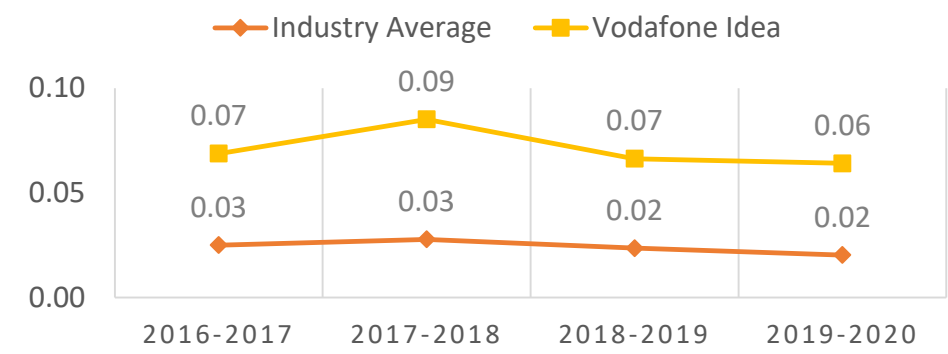
- Enterprise Solutions – VGE, SME
- Includes fixed line, data and IoT solutions



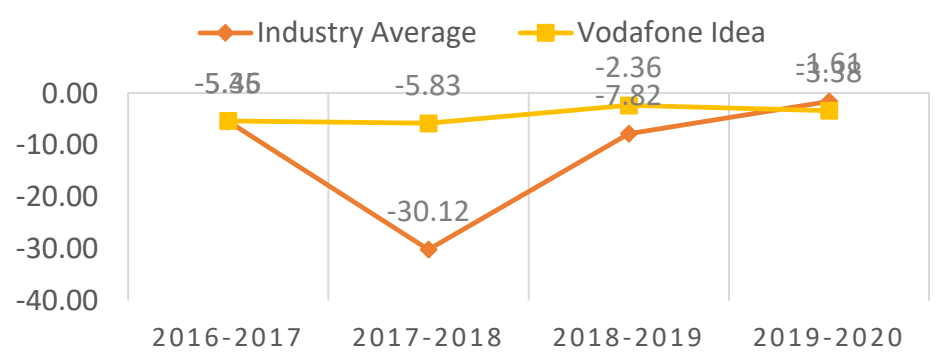
TOTAL LENGTH OF SUPPLY CHAIN



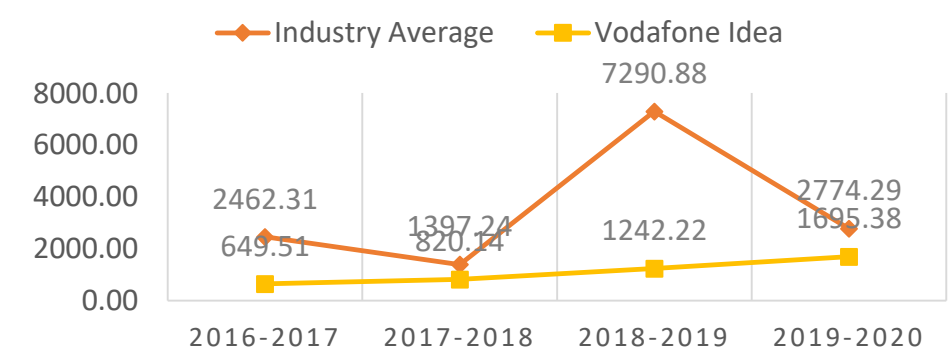
SUPPLY CHAIN INEFFICIENCY RATIO



SUPPLY CHAIN WORKING CAPITAL PRODUCTIVITY



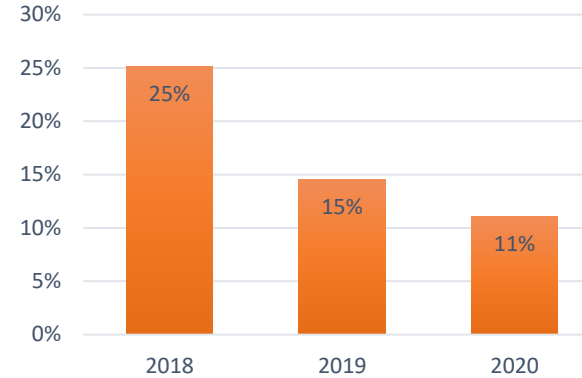
INVENTORY TURNOVER RATIO





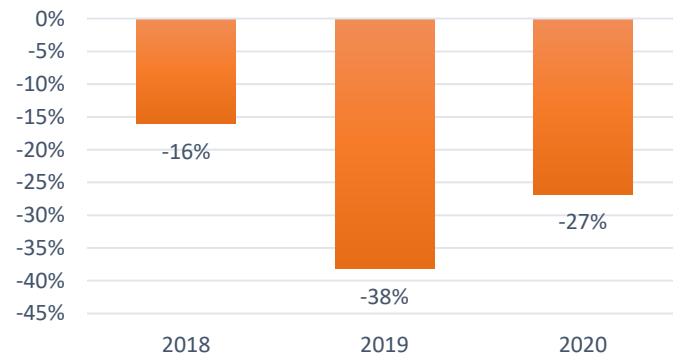
The net profit margins declined in 2019, due to low operating performance and hefty spectrum fee imposed by DoT. However the profits improved significantly after that after the tariff hikes.

Return On Assets



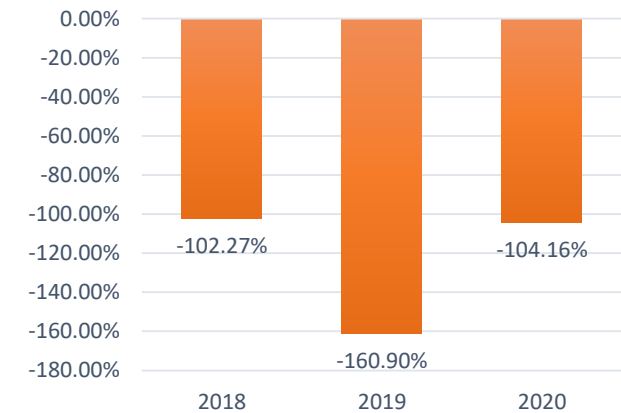
Market share decreased drastically in 2019 due to low profits and most of the subscribers switching to JIO, which hit the ARPU drastically.

Net Profit Margin



Return on Assets decreased over the last 3 years due to obsoleting of older spectrum assets after the introduction of 4G and also due to the Covid 19 impact in late 2019

Return On Equity



Company Overview

TATA Communications Limited, formerly known as Videsh Sanchar Nigam Ltd, is a part of TATA Group.

Incorporated : 1986

Headquarters : Pune, Maharashtra, India

Recognition : AON Hewitt's Best Employers in India for 2017.

Traded as : BSE: 500483, NSE: TATACOMM

Revenue (2018-19): Rs. 170.95 billion

Serves over
7000
companies
globally

co-location
in 44 sites

400 points of
presence
(PoPs)
with data
centre

network spans more
than 500,000 km
(310,000 mi) of
subsea fibre

Invested \$1.19 billion
in its global subsea
fibre network.

speeds
upto
10 Gbit/s.

Services Portfolio

Network and connectivity services

Ethernet
Private line
Content delivery network
Data centres

Cloud services

IZO Internet WAN
IZO Private Connect
IZO Public Connect
IZO SDWAN

Mobility

Roaming
Signaling
Messaging
Sponsored data exchange

Unified communications

Global SIP connect
Unified communications as a service
(UCaaS)
Hosted contact centre (InstaCC)

Security

3.5.1Managed security
3.5.2Fraud prevention

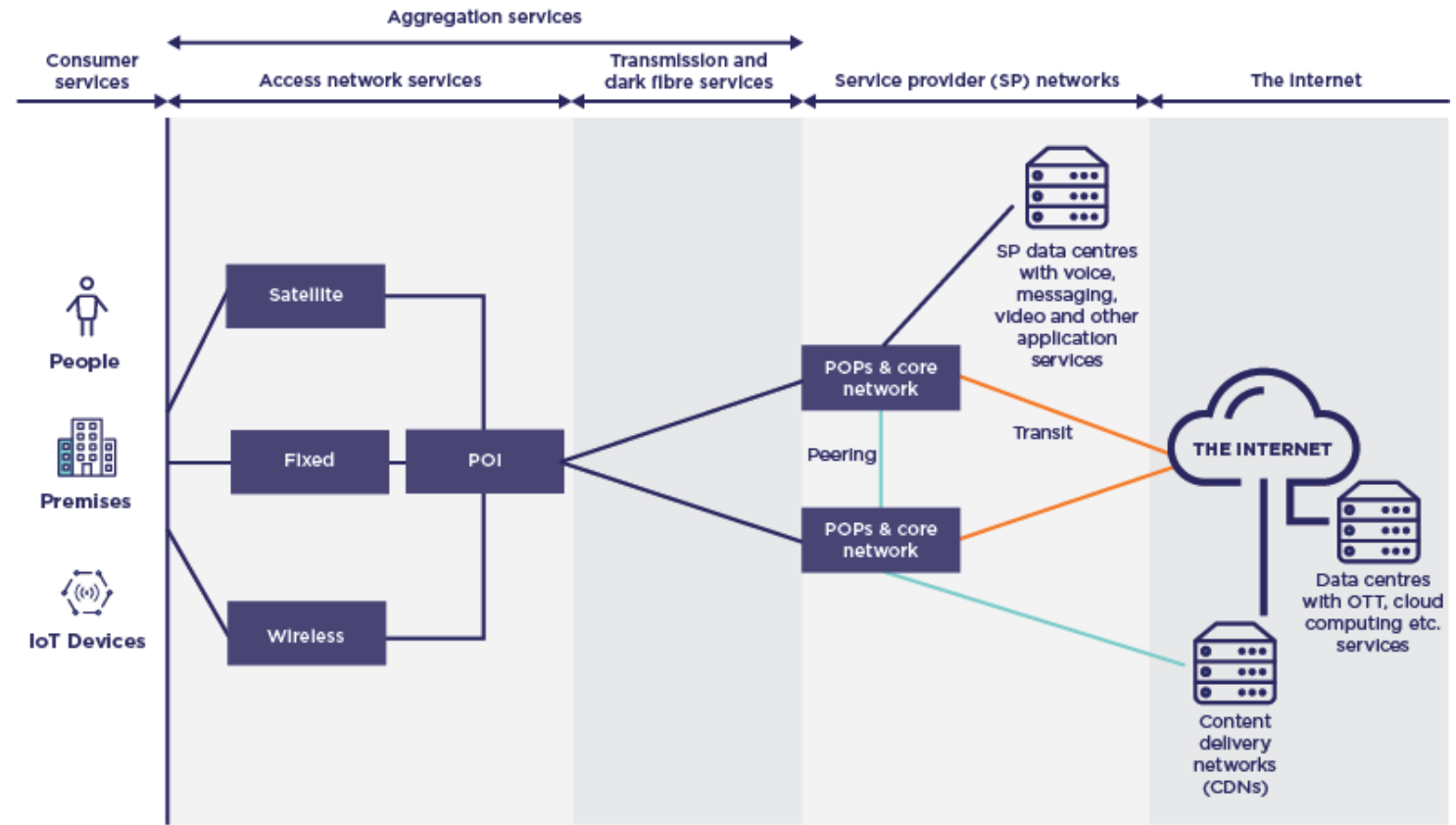
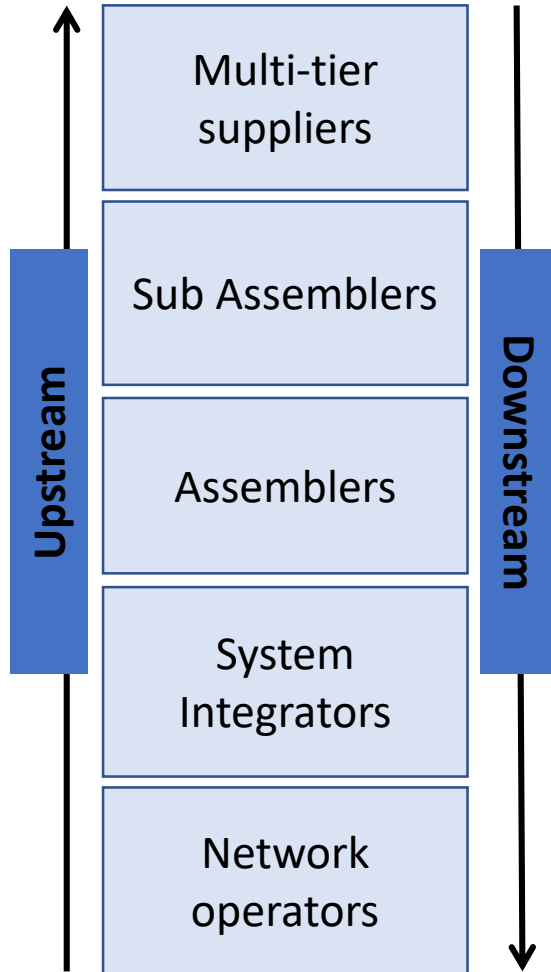
Voice

Voice direct transit
Access services
WiFi +

Media Services

Supply Chain Profile

Supply Chain Model



Materials Procured

Stocked Items

Which are stocked in the Telecom Stores
Supplied to the Indenting unit by store organization

Non-Stocked Items

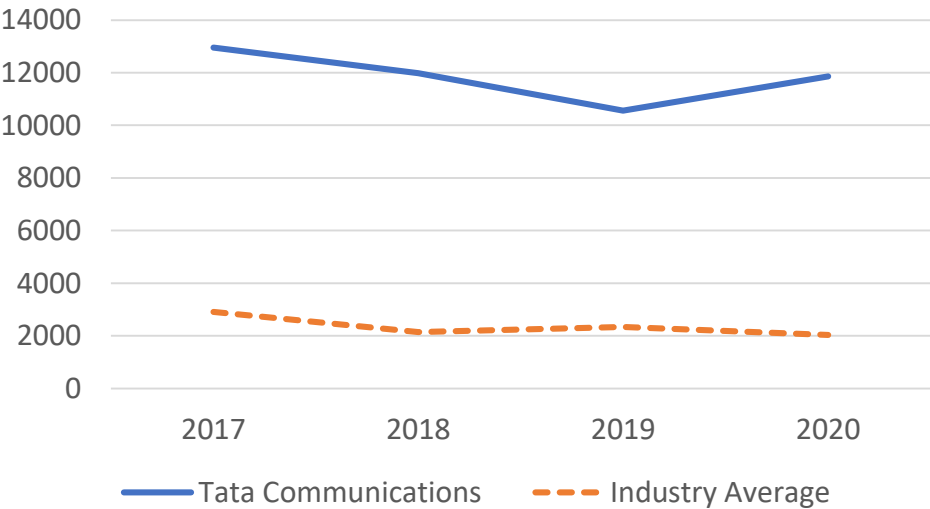
Which are not stocked in the Telecom Stores
Centralized, Decentralized & Local Purchases
Contingent Items
Petty Local Purchase

Features

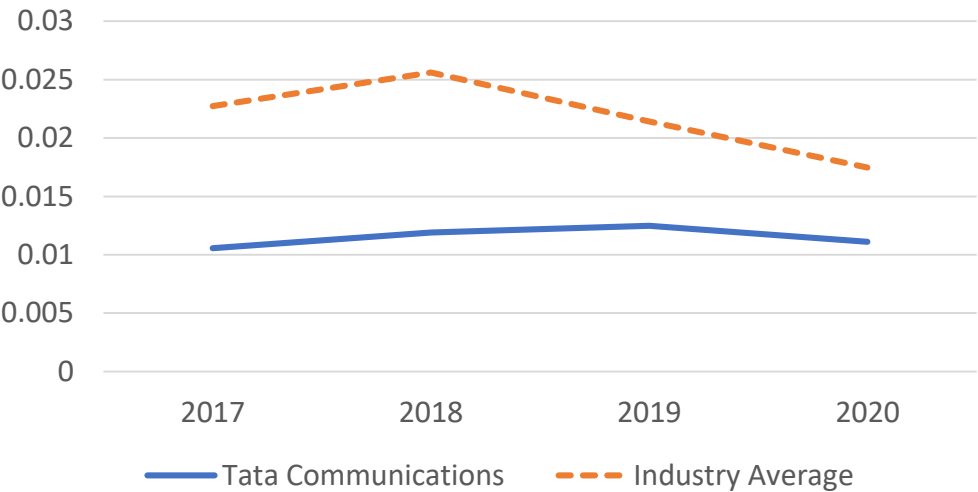
Global Growth
Enhance Productivity
Boost Agility
Connect Multi-Clouds
Private Line Solutions
WAN ethernet services
Internet Access Services
Application Aware Networking

Performance Analysis

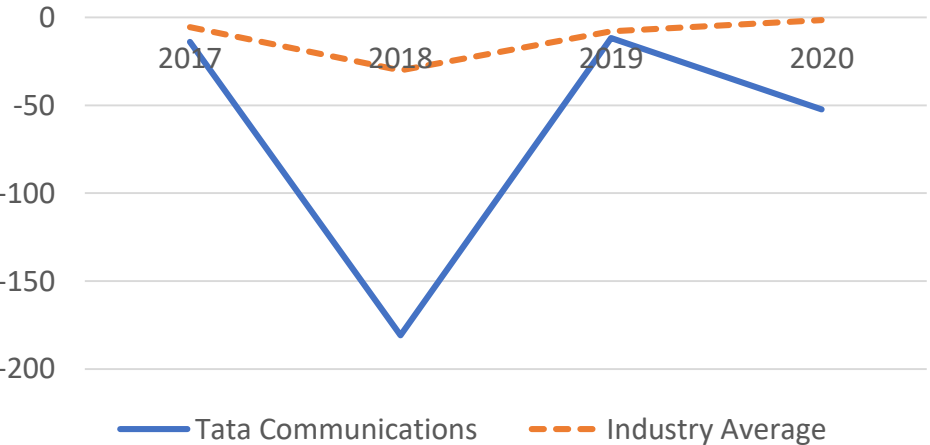
Total Length of Supply Chain



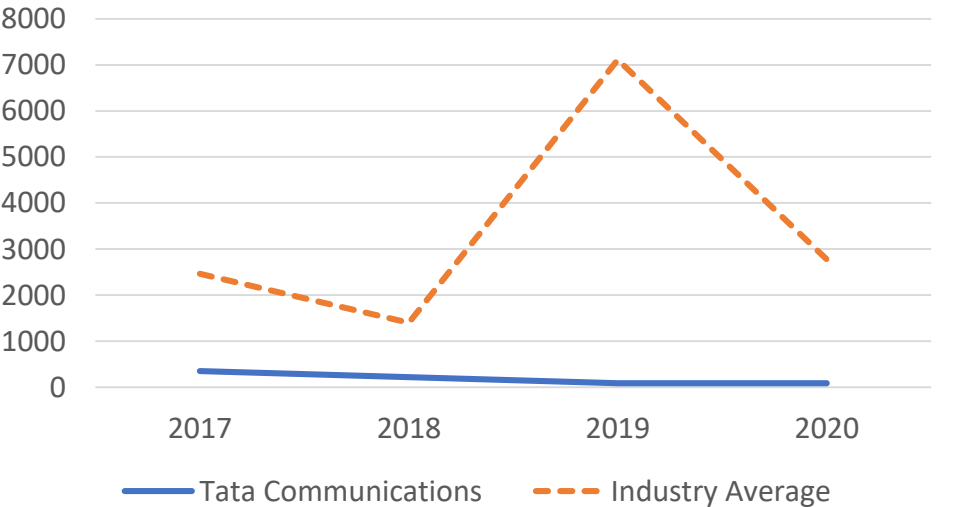
Supply Chain Inefficiency Ratio



Supply Chain Working Capital Productivity

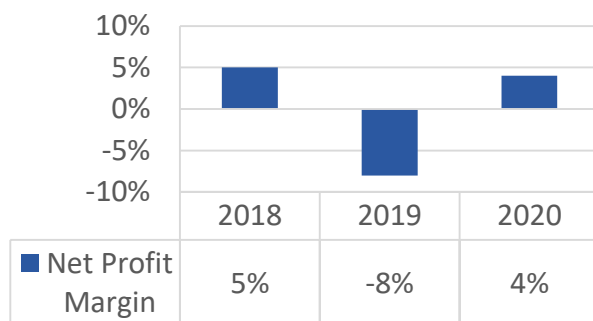


Inventory Turnover Ratio



DuPont Analysis

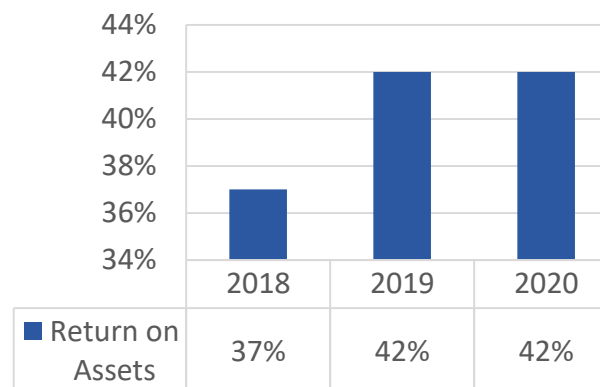
NET PROFIT MARGIN



Net Profit Margin

The net profit margin dipped in 2019 but drastically improved in 2020 because the company introduced new verticals. The company now offers various services such as media, security, data center services, and cloud services as well as subsea cable networks.

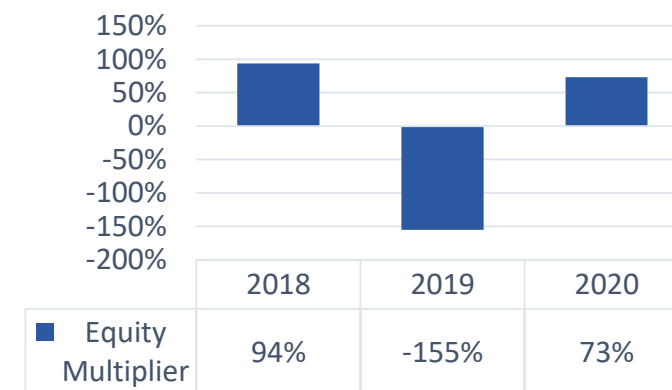
RETURN ON ASSETS



Return on Assets

The asset utilization improved after 2018 and has been constant for the year 2020 also. The company has adapted with changing telecom regulatory environment and then started operating with increased number of assets and operations therefore, a change can be seen in the return on assets.

ROE



Equity multiplier

The value of Equity multiplier drastically decreased in 2019 from 2018 and then improved in 2020. There was a loss for shareholders in the year 2019 but after the company introduced connected supply chain model and added other services in its portfolio, the equity multiplier improved.



Company Overview

Mahanagar Telephone Nigam was created by the Government of India in 1986 to oversee the telephone services of Delhi and Mumbai.

Headquarters : New Delhi

Areas of Operation: Fixed line and

Core Sectors:

Net Sales (2018-19): Rs 2085 Crores

Product Portfolio

Telephone & Mobile

Fixed Line
telephones and
Wireless Local Loop
services

3G Mobile Services

MTNL 3G Jadoo
includes video calling,
mobile TV and mobile
broadband

Broadband & FTTH

Triband Services via
Dialup & DSL
FTTH- Tripple Play

Other Services

VPN, VOIP and
Leased Lines through
BSNL and VSNL

5.00
million line
telephone

3.62
million
GSM
capacity

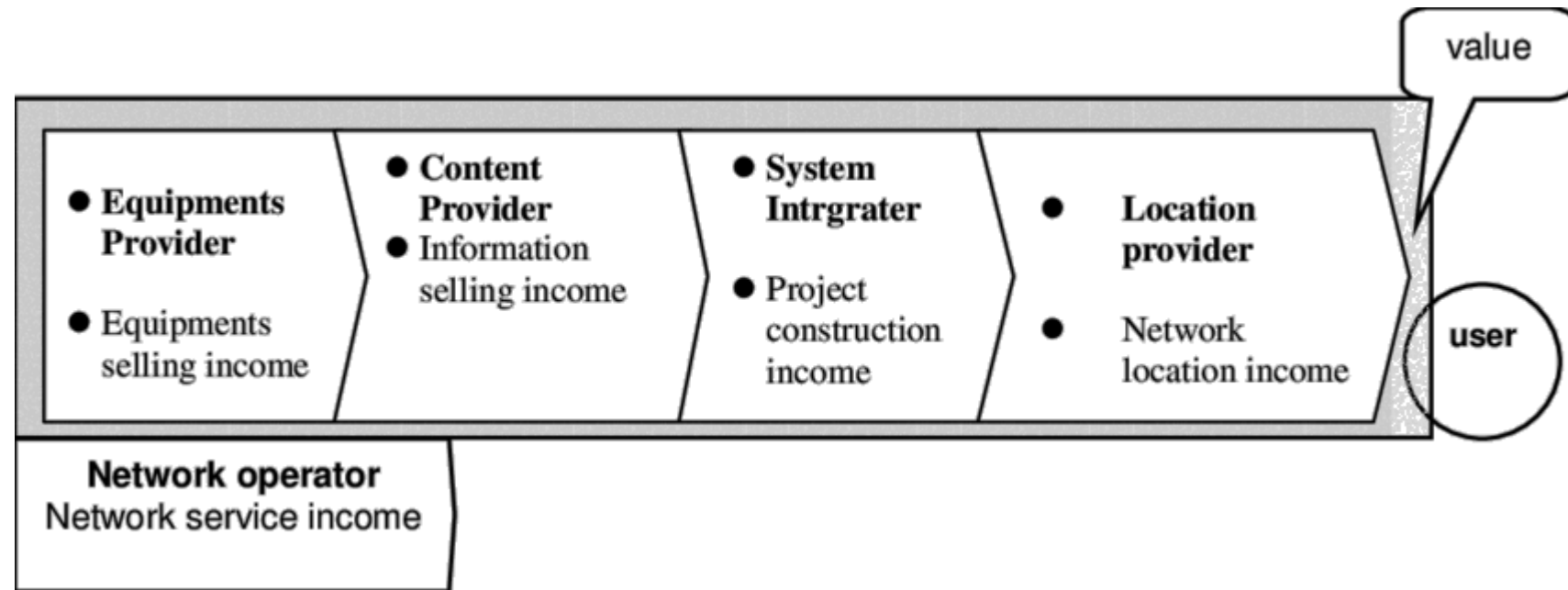
9000
FTTH
subscri
bers

1.1 million
broadband
subscribers

120
Satellite
stations

“Green Initiative
in the Corporate
Governance” -
paperless
compliances by
the Companies
through
electronic mode

Supply Chain Profile



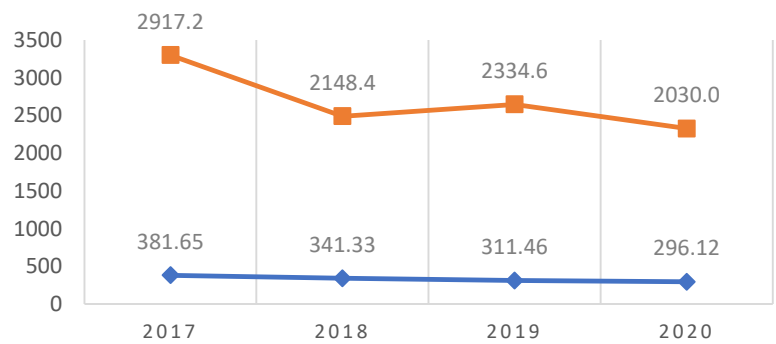
FOCUS AREAS FOR IMPROVING SUPPLY CHAIN EFFICIENCY



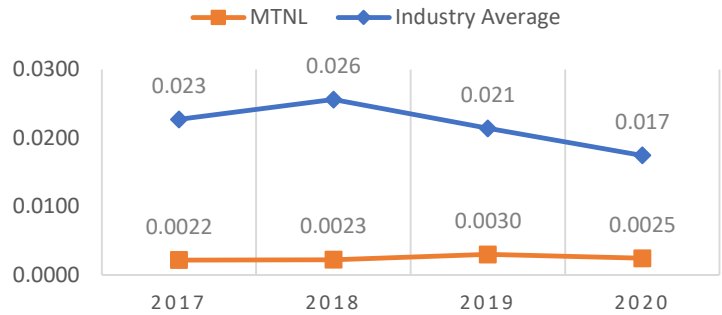
MTNL, a loss making PSU needs improvement in its Supply Chain management to improve customer satisfaction. Supply chain is a major determinant as it requires quick and faster information flow along with speedy redressal of grievances

Performance Analysis

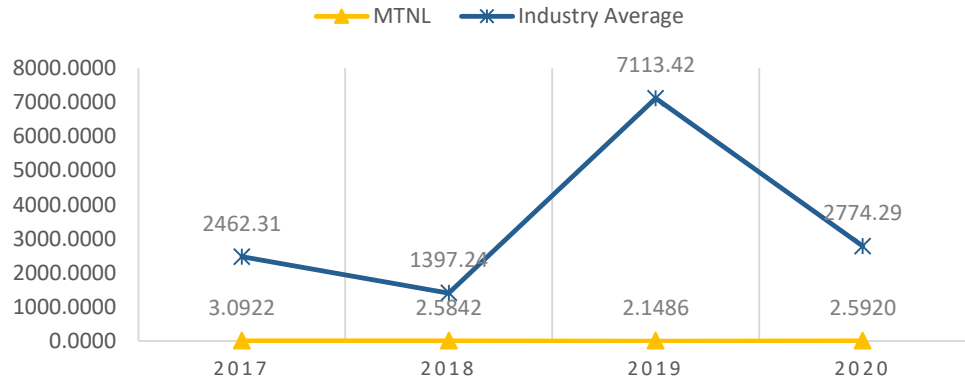
TOTAL LENGTH OF SUPPLY CHAIN



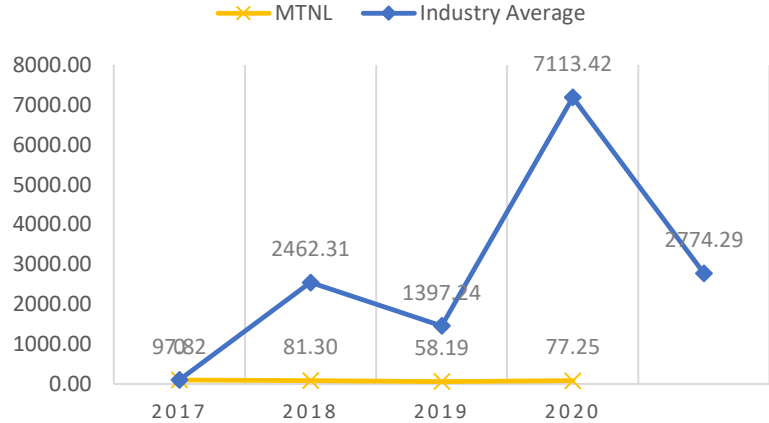
SUPPLY CHAIN INEFFICIENCY RATIO



SUPPLY CHAIN WORKING CAPITAL PRODUCTIVITY



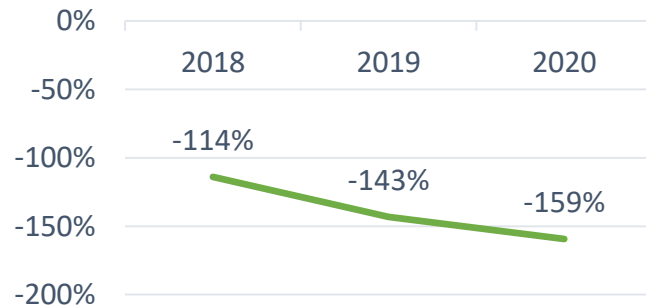
INVENTORY TURNOVER RATIO



DuPont Analysis

Net Profit Margin

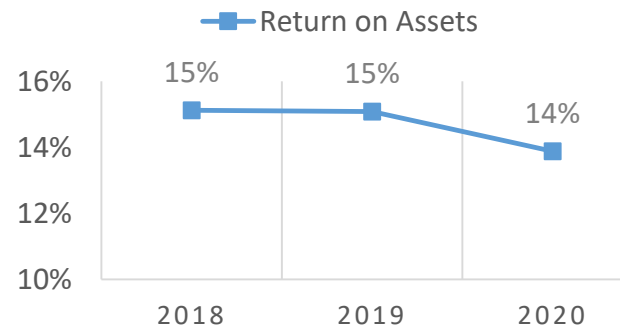
NET PROFIT MARGIN



The Net Profit margin has consistently been very low for the past 3 years and fell to its lowest in 2020. The revenues of the company have been on a decline as well.

Asset Turnover

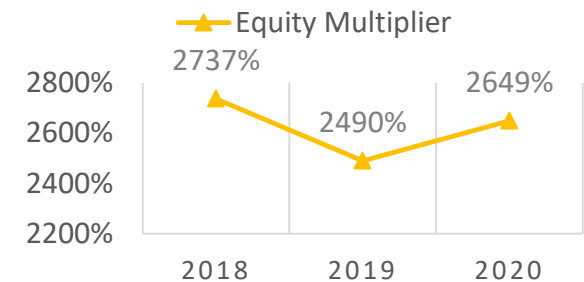
RETURN ON ASSETS



The return on assets was fairly good and the assets showed an increase in 2020. The decline observed for the year 2020 is due to fall in revenue of the company due to industry wide disruptions

Equity Multiplier

EQUITY MULTIPLIER



The equity of the company has been considerably low as compared to the asset base the company has. This is the prime reason for extremely high equity multiplier along with an observed increase in Assets as well

Average ROE for the 3 years is : -532.08%



Company Overview

Bharti Infratel Limited is a telecom tower infrastructure service provider that deploys, owns and manages telecom towers and communication structures, for various mobile operators.

Established : November 30, 2006.

Headquarters : New Delhi

Net Revenue (2018-19): Rs 6927 Crores

Services Portfolio

Tower Infrastructure Solutions

The towers or poles come in 2 varieties:

- ground-based (GBT)
- roof-top (RTT)

Tower Operations Center

Centralized Control Room that functions as a single point of contact for flashing and reporting all site-downtime alerts

Infratel Enterprise Suite - Customer Portal

IES is Infratel's innovative online ERP platform, where the customer OpCo user can raise & manage their respective business requests on an end-to-end basis.

Shared Tower
Telecom
Infrastructure
provider

One of the
world's largest
telecom tower
infrastructure
providers

**Total Co-
locations :**
174,216 as on
June 30, 2020

Total Towers :
95,801 as on
June 30, 2020

Lowest cost
of ownership
including
both Rentals
and Opex

Industry pioneer in
adopting green
energy initiatives for
its operations

Decentralized
operations in
circle & zonal
offices

Three largest customers -



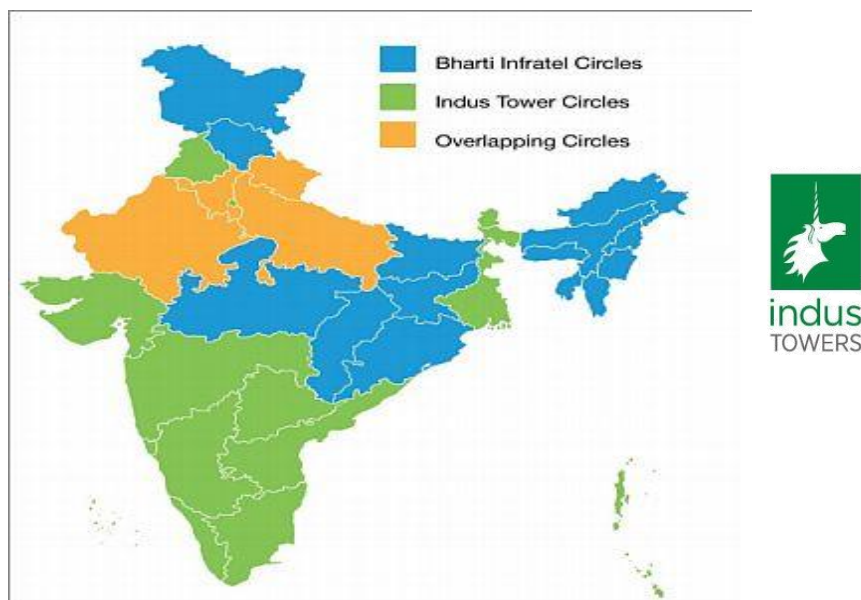
Shruti Shreya-44KA

Supply Chain Profile

Supply Chain Relationship Matrix



Pan India Footprint



Distribution

- In India, they have a vast footprint of over 39,000+ towers across 18 states of the Union of India in 11 telecom circles
- **42%** stake in Indus Tower - Joint Venture between Bharti Infratel, Vodafone and Aditya Birla Telecoms
- Opportunities for voice growth in rural areas given rural penetration of 58.92%

Going Green

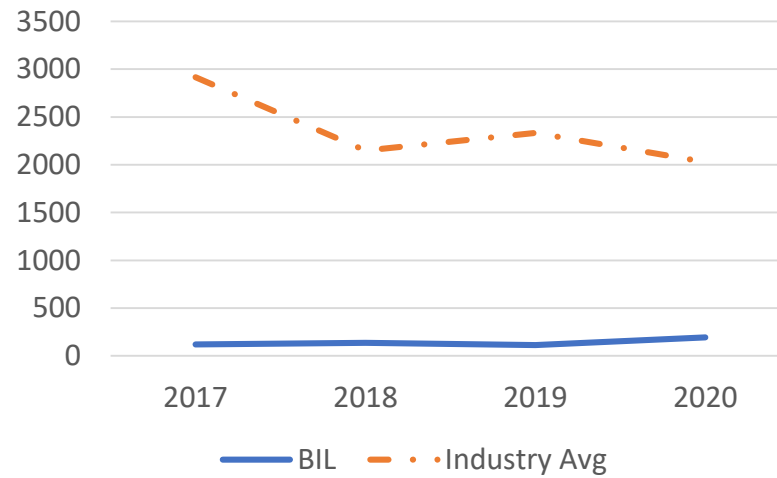
As part of the Green Towers P7 program, Bharti Infratel has commissioned:

- Over 1,200 solar powered towers
- Variable speed DC powered DG sets
- Integrated Power Management Systems (IPMS), and
- Free Cooling Units (FCU)
- Green towers eliminating use of DG sets

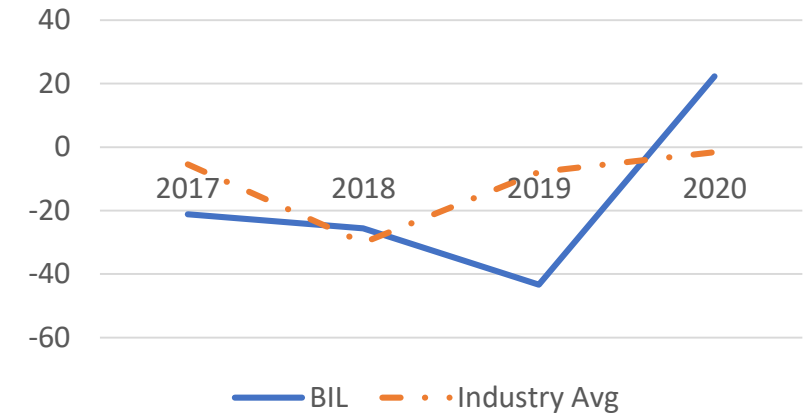
	Bharti Infratel Circles	Indus Towers Circles	Overlapping Circles
No of Circles	7	11	4
No of Operators	5-7	7	7
No of Subs. (m)	244	649	254
Tele density (%)	84.0%	115.8%	81.0%

Performance Analysis

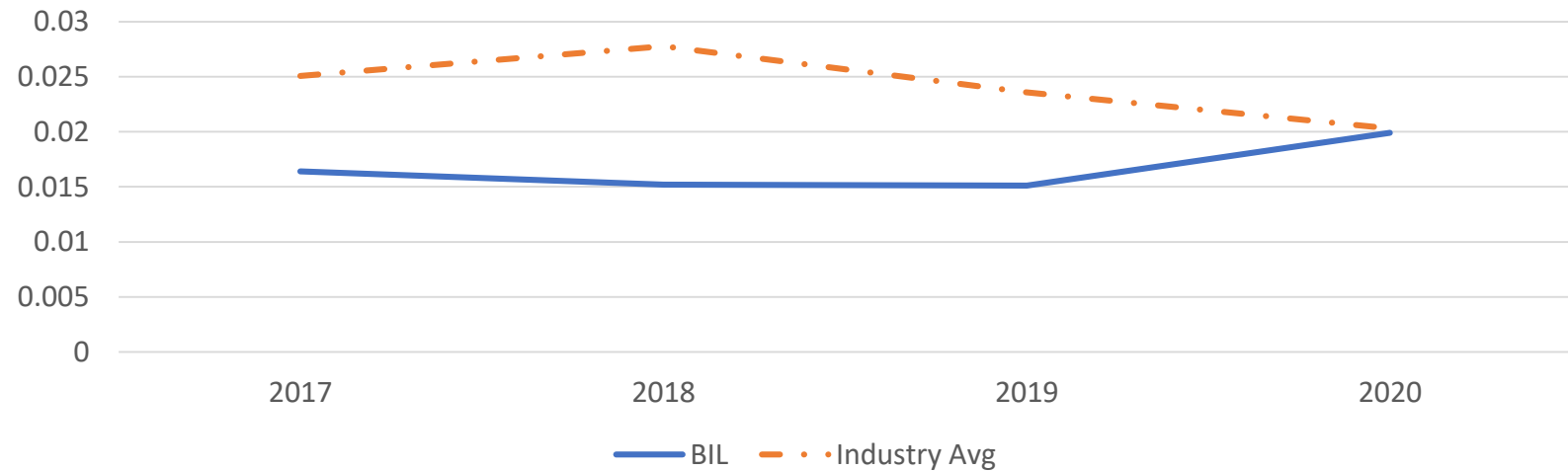
Total length of Supply Chain



Supply Chain Working Capital Productivity

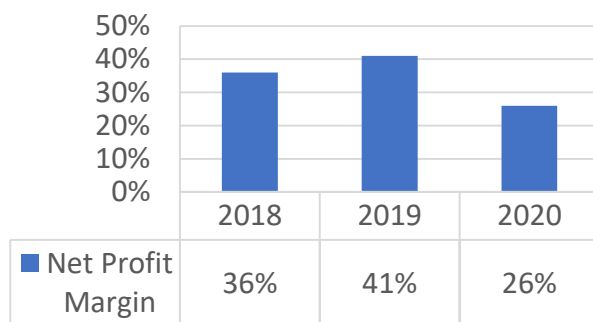


Supply Chain Inefficiency ratio



DuPont Analysis

NET PROFIT MARGIN



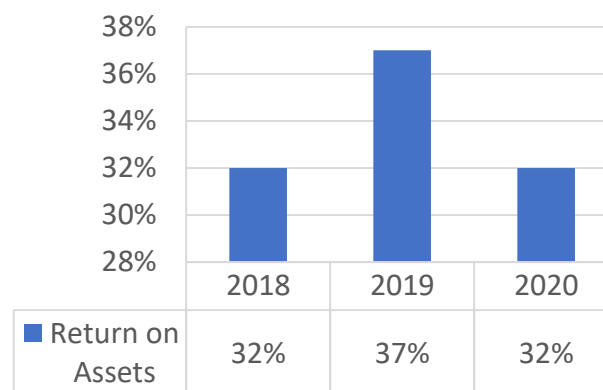
Net Profit Margin

The net profit margin improved in 2019 but drastically fell in 2020.

The Company during the 1st quarter of 2020 has reported reduction in co-locations (Bharti Infratel and Indus towers).

Average sharing factor declined from 1.87 to 1.82 on-year leading, to 4% fall in sharing revenue per tower to Rs 78,219.

RETURN ON ASSETS



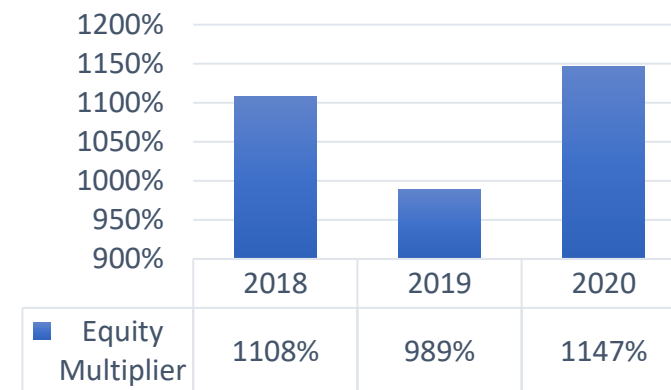
Return on Assets

The asset utilization rose after 2018 but fell to the same level in 2020 as 2019.

Co-locations are points where a tower company deploys mobile telecom antennae of multiple carriers on a single structure.

As of June 30, 2020, there are cumulative 3,474 co-locations for which though the exit notices have been received but actual exits have not happened

Equity Multiplier



Equity multiplier

The value of Equity multiplier decreased in 2019 from 2018 and then rose again in 2020.

There was a loss for shareholders in the year 2019 but after the company Bharti Infratel acquired 42% equity interest in Indus tower and increased its operations, the equity multiplier rose.



Company Overview

Bharat Sanchar Nigam Limited was founded on 7th July, 1995.

Headquarters : Gurgaon

Areas of Operation: India, Sri Lanka, Africa

Core Sectors: Telecommunications Services

Net Sales (2018-19): Rs 543171 Crores

India's 2nd
most
valuable brand

over 423.28
million
subscribers

provides GSM,
3G,
4G LTE, 4G+
mobile services

low call rates
of ₹1/minute

15000
CDMA
Tower
s

Operates
in 18
countries

spent US\$1 billion
to acquire
BWA spectrum

Services Portfolio

B2C Services

2G
3G
4G
International Roaming
Prepaid services
Postpaid services
Wifi Calling
DTH

B2B Services

Enterprise Grade LAN
Wifi for Office
Government Contracts
Internet of Things devices
Bluejeans Video Calling
Solutions
Global Connectivity
Cloud Computing Services

Digital Properties

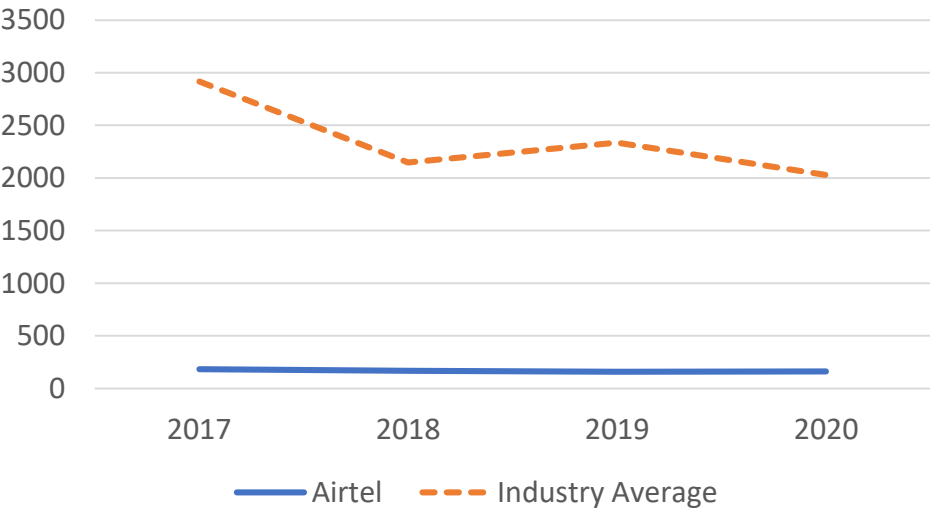
Wynk Music
Airtel Xstream OTT
Xstream Box
Airtel Payments Bank

Supply Chain Profile

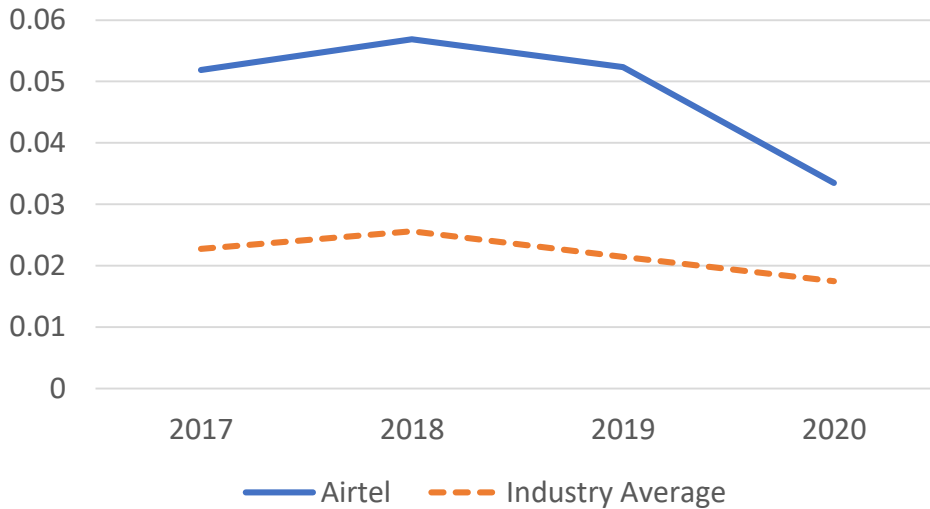
	Develop New Markets & Product		Acquire & Manage Customers			Develop & Provide Network Services			Manage Enterprise		
	Marketing	Product Mgmt	Sales	Customer Mgmt & Care	Billings & Collection	Service Assurance	Network Planning & Deployment	Network Operations & Maintenance	Retail Logistics	F&A	P2P (Direct, & Indirect)
Planning & Analysis	Market & Brand Strategy	Product Planning	Sales Channel Strategy	Customer Strategy & Care Mgmt	Billing Strategy	Network Planning			Supply Planning	F&A Strategy	e-RFX
	Brand Mgmt					Supply Planning					
						Demand Planning					
Direct & Control	Marketing, Comms & Promotion	Product/ Service Devpmt & Retirement	Sales Channel Mgmt	CRM Support & Readiness	Billings & Collection Mgmt	Service Mgmt & Readiness	Asset Mgmt		Inventory Mgmt (Mobiles & Accessory)	Asset Mgmt	Contract Mgmt
					Customer SLA/QoS Mgmt	Device & Supplier Order Mgmt	Network Inventory Mgt	Spare Parts & Field Force Mgmt	Real Estate Mgmt		
	Supplier Performance Mgmt & Reporting										
Operate & Execute	Market/ Customer Research & Analysis	Execute & Manage Campaigns	Sales			Problem Reporting & Mgmt	Service Activation	Maintenance Mgmt	Ware'hse Mgmt	Accounts Payable	Catalogue Mgmt
					Service Problem Mgt	Service Performance Mgmt					
	Warehouse & Logistics Mgmt							Logistics & Transport Services		Financial & GL Reporting	PO/ SOW Mgmt
						Resource Provisioning					

Performance Analysis

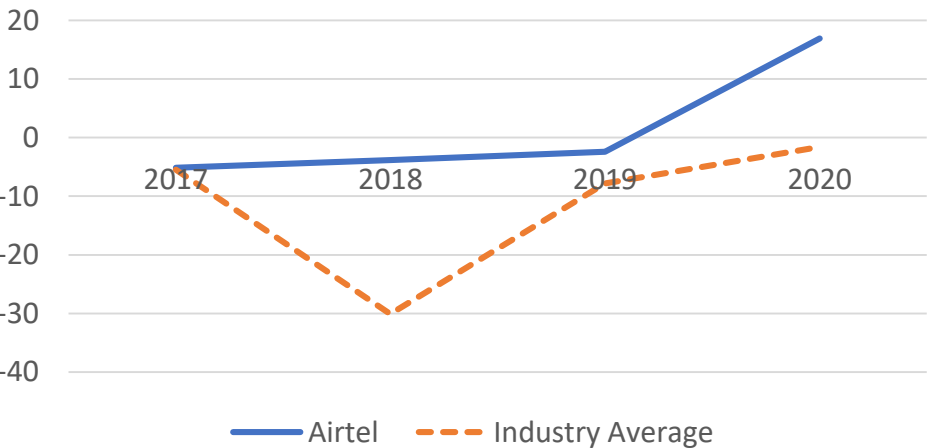
Total Length of Supply Chain



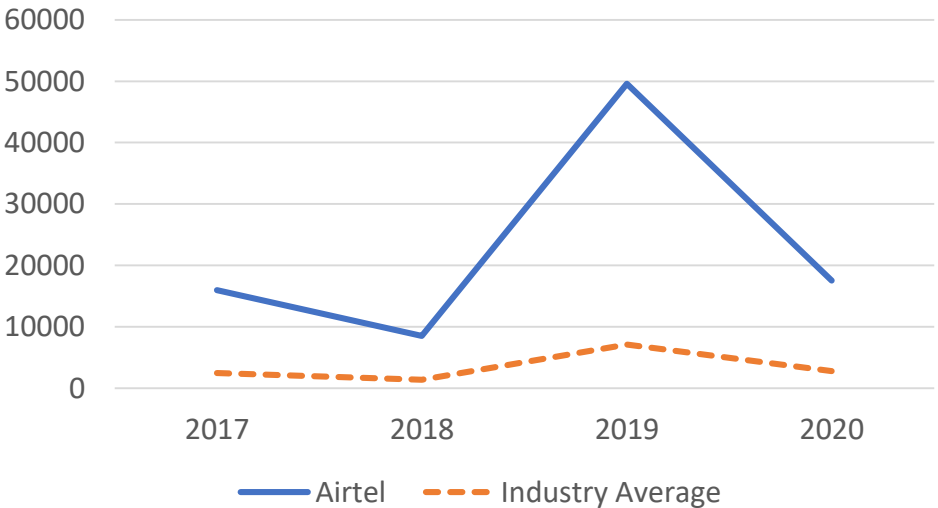
Total Length of Supply Chain



Supply Chain Working Capital Productivity

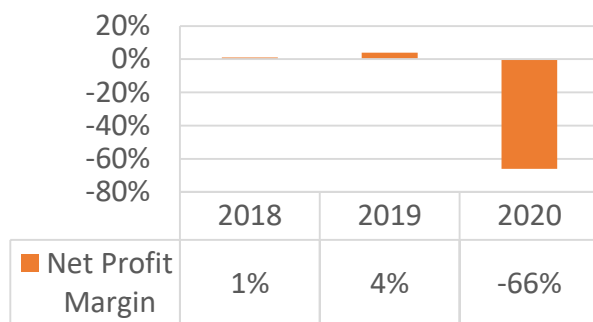


Inventory Turnover Ratio



DuPont Analysis

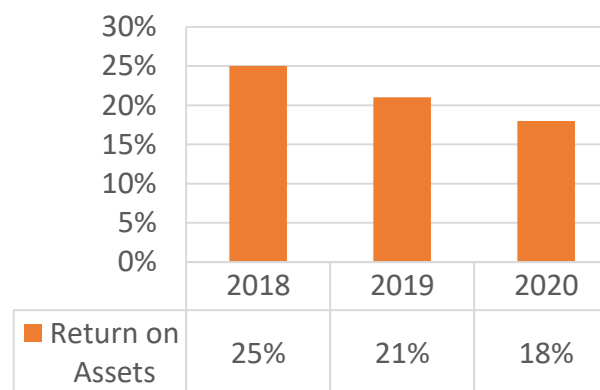
NET PROFIT MARGIN



Net Profit Margin

The net profit margin improved in 2019 but drastically fell in 2020 because of the pandemic and telecom fees imposed by government. The company has now diversified into various verticals and offers cheap 4G data services, data center services, and has also signed contracts with companies like Amazon.

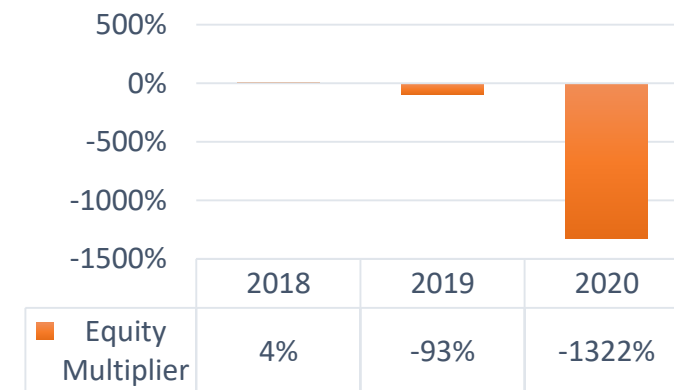
RETURN ON ASSETS



Return on Assets

The asset utilization fell after 2018 and has been falling for the last 2 years at a value of 3%. The company has introduced low tariff rate and then started operating with increased number of assets and operations therefore, a change can be seen in the return on assets.

ROE



Equity multiplier

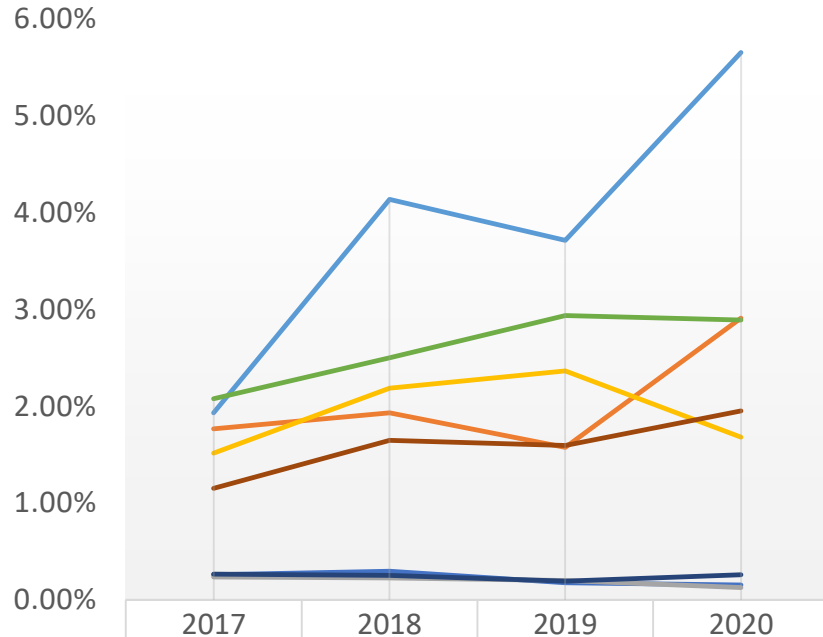
The value of Equity multiplier decreased in 2019 from 2018 and then dropped again in 2020. There was a loss for shareholders in the year 2019 but after 2020, the shares have lost significant value because of changes in regulatory and competitive environment, hence the equity multiplier fell.

Peer Comparison - Outsourcing Trend Analysis

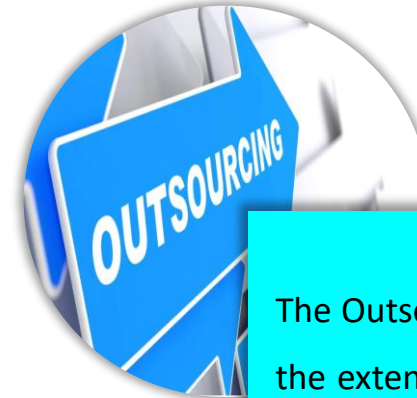


Microsoft Excel
Worksheet

Outsourcing Ratio



BSNL	2017	2018	2019	2020
Bharti Infratel Ltd.	0.26%	0.29%	0.18%	0.15%
Airtel	1.77%	1.93%	1.58%	2.91%
Tata Communications	0.24%	0.23%	0.20%	0.13%
Rcom	1.52%	2.19%	2.36%	1.68%
MTNL	1.93%	4.14%	3.71%	5.66%
Vodafone Idea	2.08%	2.50%	2.94%	2.89%
Industry Average	0.27%	0.25%	0.19%	0.26%
	1.15%	1.65%	1.59%	1.95%



The Outsourcing Ratio of a firm is an indicator of the extent to which a firm has shrunk the scope of its internally managed activities. For Vodafone Idea, Airtel and BSNL the value being the least and far below the industry average shows that most of there activities have been outsourced. But Tata Communications, RCom and MTNL have high Outsourcing Ratio, showing most of the production activities are being taken care of by the firm itself.



THANK



YOU

