



ICICI Lombard
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**CORPORATE INDIA
RISK INDEX**
2022

Intelligence partner

FROST & SULLIVAN



SECTOR REPORT 2022

TELECOM & COMMUNICATION





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Preface

Corporate India Risk Index is primarily an academic exercise to understand the level of risk that companies are facing and also assist in developing a successful risk aversion plan, CIRI is a first-of-its-kind risk measurement tool to gauge the level of a company's risk exposure and preparedness.

This Corporate risk comprises of various aspects of the business—spanning customer, competition, regulatory environment, business operations, technology finances, environmental factors etc. The impact of unprecedented events is significantly higher now.

This Index is a comprehensive framework that draws upon global risk management best practices and comprises of 32 risk elements across 6 broad dimensions. The Risk Index is based on the principles of Lean and Six Sigma that qualify business processes by measuring effectiveness and efficiency.

ICICI Lombard's Corporate India Risk Index provides a crucial tool for assessing and addressing risks, fostering resilience and adaptability in the ever-evolving global landscape. In the current climate of increasing macroeconomic uncertainties, it is essential for corporates to prioritize robust risk management. We believe that a proactive approach to risk management not only fortifies individual businesses but also contributes significantly to India's overall economic growth and stability.

Executive Summary

The Indian telecommunication sector showed huge growth in the year 2022 bringing in infinite possibilities for the sector. The telecom sector has achieved numerous firsts this year, with 5G being the stand-out, thanks to changing consumer habits, awareness about technology, and extending widely used 3G and 4G coverage. Once the poster boy of India's growth story, then a debt-laden segment that saw many players withering away and now riding the wave of reforms as well as big-ticket investments, the telecom sector turned a new chapter in 2022. The shortage of raw materials and equipments particularly optical fiber cables, spectrum, and mobile towers continue to be a key issue facing the telecoms. Cyber security threats is a key risk for the sector with the increasing penetration of the internet and data in the country. However, the government-approved structural and procedural improvements in the telecom sector are expected to smoothen out the way for the sector in the coming years.

- **Regulatory Risks:** Regulatory risk is the risk of changes in regulations and laws that might affect an industry or businesses. The regulatory changes can pertain to tariffs and trade policies, business laws pertaining to employment, minimum wage laws, financial regulation, Foreign Direct Investment etc.
- **Foreign Exchange Risk:** The exchange rate plays an important role for firms who export goods and import raw materials. The fluctuations in foreign exchange will have great impacts on the prices of traded goods. For example, if the currency depreciates (devaluation), the exporting firms will benefit. However, the firms importing raw materials will face higher costs on imports. The firms need to hedge their exposure to foreign exchange risks to insulate themselves from the impact from forex changes.
- **Geo-political Tension:** Geopolitical risk means the political and economic risks that are a potential threat to the financial and operational stability of companies.
- **Competitive risk:** Competitive risk is the risk associated with the fact that there are multiple companies competing in the market, each seeking to obtain the highest position and consumer ratings, to gain maximum benefits for themselves. The companies devise different strategies to garner a higher market share and acquire customers from competitors. Any failure in managing the competitive stand could lead to losses in business, thereby making marketing and competition a major risk in market.



Technology Risk

Technology risks are also identified as information technology related risks which may arise due to failure of any installed hardware or software system, spam, viruses or any malicious attack. Also delay/over/under adoption of trending disruptive technologies can lead to technology related risks. We have classified the risks in below mentioned categories.

- **Innovation Risk / Obsolete Technology:** Innovation is the key to success in all the industries. Risk of redundancy and losing out to competition on account of poor R&D is a major concern.
- **Intellectual Property risk:** Dependence on trade secrets and unpatented proprietary know-how.
- **Disruptive Technologies:** These will fundamentally alter the financial prospects of the industry.

Data Compromise: Hardware failure refers to malfunctions within the electronic circuits or electromechanical components (disks, tapes) of a computer system; Software failure refers to an operating system crash. Such failures lead to stoppage of entire computer or operating systems creating substantial losses to business.

Operational and Physical Risk

Risk of losses caused due to faulty or failed processes, systems or human resource related inefficiencies are classified as operational and physical risks. We have classified Operational & Physical risks in below mentioned categories.

- **Critical Infrastructure Failure / Machine Breakdown:** Industries with a heavy dependence on machinery consider any rise in machinery breakdowns a hindrance to their businesses operations. An untimely equipment breakdown can bring businesses to a standstill or be the root cause for fires and explosions. Mostly, human errors and deferred maintenances are the major reasons for such breakdowns. The companies should actively invest in timely maintenance of all machineries.
- **Business Continuity / Sustainability:** Non adoption of Business Continuity/ Sustainability Plans and Lack of Internal Control tools would result in: Failure of businesses, Brand Equity / Loss of reputation, Financial Loss, Business model Failure, Ineffective engagement/communication with stakeholders, Losses in productivity, Lack of opportunity monitoring.
- **Supply chain risk:** Raw Material unavailability and Heavy Dependence on Global Supply Chains / Supplier concentration risk. Unavailability of raw materials owing to disruption in the supply chain or heavy dependency on one source (company/country) which is unable to supply owing to some geo-political tensions, fires, or any other incidents. Transportation is one of the key activities for companies making it an important risk to mitigate. The loss of goods in transit and spillage is one of the major concerns as it accounts for a sizeable loss of revenue to companies.
- **Commodity Price Risk - Volatility in prices of raw materials:** The fluctuations in raw material prices creating a margin pressure / top-line pressure in the scenario of rising input costs.
- **Portfolio Risk:** Loss of key customers, Customer concentration - Key customers accounting for a larger share of revenue, Over-dependence on suppliers, Business Model Risk: Transformative changes in business model, Tail Risks: Ability to overcome or manage extreme worst-case scenarios.
- **Environmental Hazard Risk:** Any environmental hazard having the potential to affect the surrounding environment.
- **Workplace Accident:** Fire and Explosion Hazards, Containment Incidents, Workplace Injuries
- **Human Resource: Key person risk:** This risk occurs when a business or business unit becomes heavily reliant on a key individual. Talent acquisition and retention - The companies require a highly skilled labor force for R&D as well as continuous production. Accessing skilled resources and expertise on an on-going basis is one of the major challenges; moreover, retention of trained staff is imperative. Labor shortages, Union Strikes & Industrial Actions, Employee health, safety, and security (SHE/Sustainability risk).

- **Financial Risk:** Financial Reporting Risk: Material misstatement of Financial Statements, whether due to fraud or error. Interest rates and equity prices: Interest rate risk arising out of working capital borrowings at variable rates. Equity price fluctuations affect the Company's income or the value of its holdings of financial instruments. Liquidity Risk (Credit Risk / Receivables).
- **Breaches of law (local/ international):** Voluntary/ involuntary breaches of law can lead to costly lawsuits.



Crime & Security Risk

Cybersecurity risks relate to the loss of confidentiality, integrity, or availability of information, data, or information (or control) systems and reflect the potential adverse impacts to organizational operations. These attacks can cause major financial losses, reputational harm, and a loss of client trust. Regarding cybersecurity, the BFSI industry in India has several difficulties, including difficult-to-secure legacy systems, a shortage of qualified cybersecurity personnel, and the requirement for ongoing system and network monitoring. There is a significant investment in cybersecurity tools like network monitoring, endpoint security, access control, and threat intelligence. Many organizations are also implementing cutting-edge technology like artificial intelligence and machine learning to strengthen their security posture. Around 7.4% of the attacks in the Asian region were targeted at India in 2022.

We have classified Crime & Security risks in below mentioned categories.

- **Cyber Crimes:** Data Theft, Spam, scams and phishing, Hacking, Malwares and Viruses, Piracy, Fraud, Corruption, Malicious attacks
- **Counterfeiting:** Counterfeiting of goods/services leads to loss of revenues, profits and ultimately affects the brand equity
- Threat to Women Security
- **Terrorism:** Un-lawful use of violence and intimidation, especially against civilians, in the pursuit of political aims.



Natural Hazard Risk

A natural hazard is the threat of an event that will likely have a negative impact. A natural disaster is the negative impact following an actual occurrence of natural hazard if it significantly harms a community. Due to India's geographical structure, it is one of the most disaster-prone countries in the world. Natural hazards like floods, earthquakes, landslides, and cyclones are common risks faced by India. The situation has worsened due to rise in GHG emissions, loss of biodiversity, deforestation, and degradation of environment. From Surat Gas leak to landslides in the north and cyclones in Bay of Bengal, the year 2022 was no exception. Such natural disasters hamper the day-to-day operations of corporates, and it is important for them to understand that such risks cannot go unheeded. Over the years, Indian corporates have learnt to mitigate such risks by diversifying their supply chains, having multiple logistics partners, diversified geographical presence and multiple vendors.

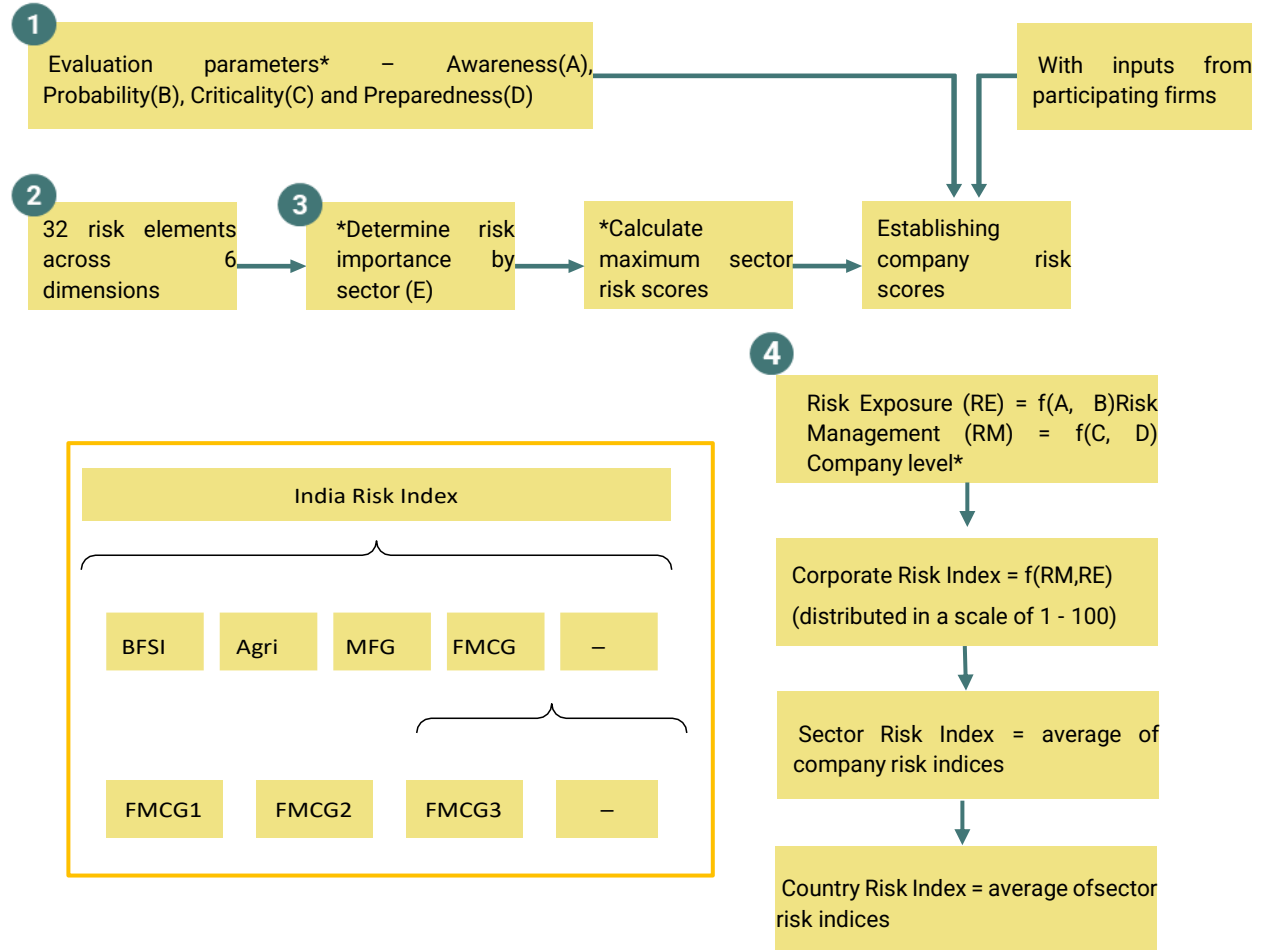
- **Pandemic and other global epidemic diseases:** Risk to business owing to disruptions caused by COVID-19 pandemic and similar another global epidemic.



Strategic risk

- Strategic risk is the risk that failed business decisions may pose to a company. Strategic risk is often a major factor in determining a company's worth, particularly observable if the company experiences a sharp decline in a short period of time. Several factors, such as unethical or unlawful activities, poor customer service, product recalls, data breaches, or unfavorable media coverage, can lead to strategic risk. An organization's reputation can be severely harmed by a single negative incident, such as a high-profile data breach or fraud scandal, resulting in a loss of clients, income, and market share.
- **Resource scarcity / Misutilization / Overall Utilization:** Difficulties in acquisition of land, water, fuel, or other resources for operations of business.
- **Public Sentiment:** Current events playing out in the public scene can change the public sentiment.
- **Delay in execution of projects:** Delays in execution of projects can surge in the capex.
- **Increased number of recalls and quality audits:** Impacts both the brand equity and increased operational expenses.
- **Failed / Hostile Mergers & Acquisitions:** High dependence on inorganic growth.

Bottom-Up Risk Assessment Approach



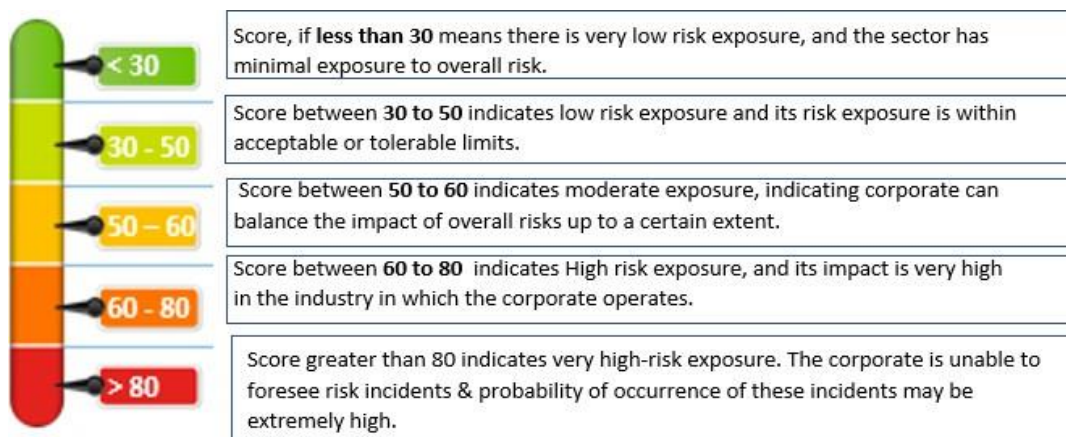
1. **Evaluation Parameters*:** The index maps the risks faced by any enterprise basis of Awareness, Probability, Criticality and Preparedness against the defined Risk elements. The evaluation Parameters are defined as: Awareness - Level of awareness of potential risk affecting the firm. - Likelihood of risk to affect the business goals of the firm adversely. Criticality - Level of impact of the identified risk on the success of business goals. Preparedness - Risk handling practices/mechanisms already in place to handle the risk.
2. **Determining Risk Importance*:** Importance/Impact of individual risk element is established against individual sector based on the published corporate risk reports, in depth sector understanding by F&S team and SMEs.
3. **Calculating Maximum Sector Risk Score:** Weighted Sum of all risk elements based on their importance to the respective sector.
4. **Company Level*:** All the Risk Index scores for companies in a sector are averaged to represent the sector; and sectors average to India. Risk Exposure is defined as the function of corporate's Risk Awareness and Probability of risk occurrence. Risk Management is defined as the function of an enterprise risk preparedness and criticality risk impact assessment.

Defining the Risk Scale

We have selected 20 sectors to understand the current stand of our country today in terms of risk. Risk for various sectors is measured on the risk exposure scale and risk management scale.

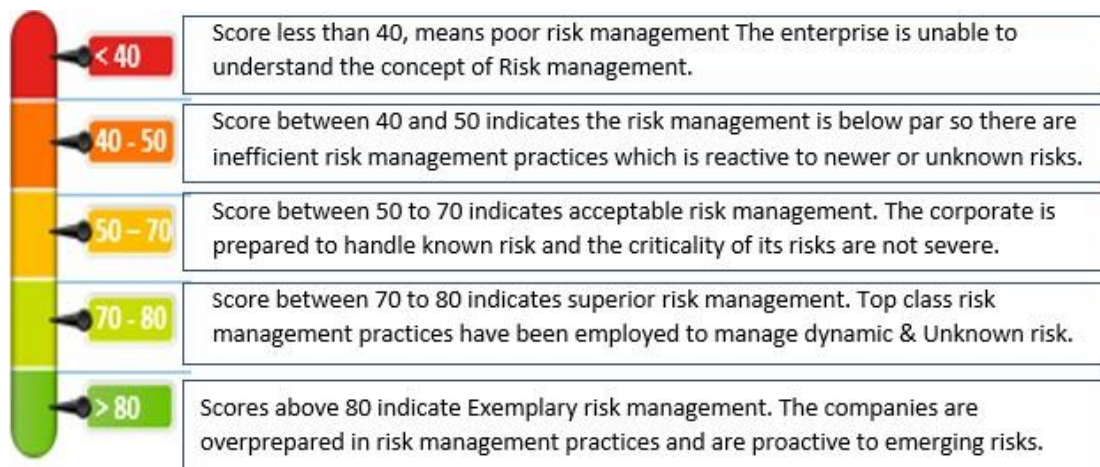
A. ICICI Lombard Corporate Risk Exposure – Scale

Risk Exposure: The impact of any internal, external or strategic occurrence on the financial performance of an organization is defined as the corporate risk exposure. Risk has traditionally been seen as something to be avoided – with the belief that if behavior is risky, it’s not something a business should pursue. But the very nature of business is to take risks to attain growth. Risk can be a creator of value and can play a unique role in driving business performance. Let’s look at the risk exposure scale.



B. ICICI Lombard Corporate Risk Management – Scale

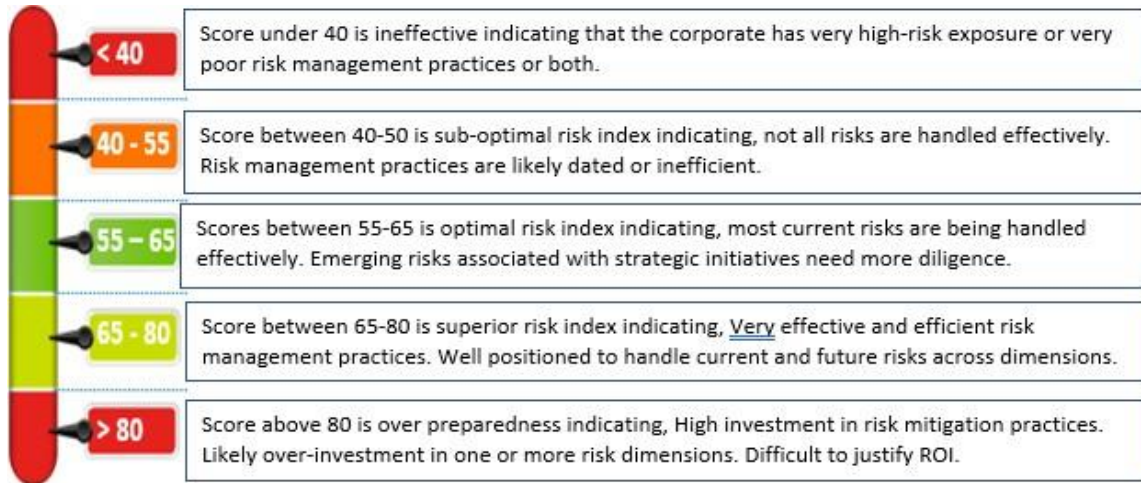
Risk Management: Identification, Evaluation and Prioritization of corporate risks followed by well-coordinated steps to minimize the occurrence of uncertainties in the foreseeable future is defined as the Corporate Risk Management. The risk management scale works in the opposite to that of the risk exposure scale. Let’s look at the risk management scale.



C. ICICI Lombard Corporate Risk Index – Scale

Risk Index: Risk Index is a measurement tool to gauge the level of Risk Exposure against Risk Preparedness. The score intends to give companies/Sector/Country access to an extensive and quantifiable metrics of risk management.

Let's look at the risk Index scale.



India - Emerging Superpower with Optimized Corporate Risk Handling

Manufacturing sector contribution to India’s GDP in 2022 stands at 17% and is expected to grow to 25% by 2025, the expected growth is attributed to various favorable schemes initiated by Government of India like ‘Make in India’, ‘Digital India’, Improved Road Infrastructure, implementation of modern technologies of manufacturing resulting in optimized and effective production, Also the pandemic has made business realize that they cannot just rely on a single manufacturing hub; hence notion of “China+1” is making the world realize the significance of India. China is in a trade war with the USA, which is positively shaping the role India will play in the global arena.

The below chart showcases the gradual increase in India’s manufacturing exports.

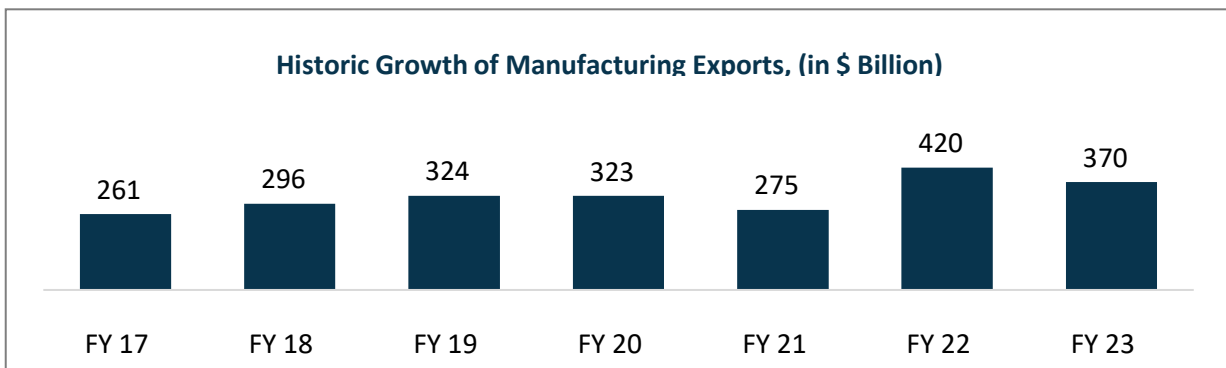


Figure 1: India’s Growth of manufacturing exports. (Source: Redseer)

Indian manufacturing sector is also focusing on electronics manufacturing like mobile phones, industrial electronics consumer electronics, etc. due to government initiatives the production has doubled since 2015.

Aerospace and defense sector in India have evolved significantly, Govt. of India have identified A&D as area of focus due to the belligerent neighborhood, steps like Make in India (Atmanirbhar Bharat) is helping the overall defense sector, however India still remains the largest importer of arms and ammunition, favorable policies and ease in regulations is helping the drone industry in India and many new start-ups and big players are entering in this space.

Urbanization is another phenomenon evolving in India and it is estimated that by 2030 more than 400 million people will be living in cities, due to this megatrend huge push towards realty and infra sector is observed which is also the growth of ancillary industries like metals, cement, water availability, sanitation, mobility etc., the government along with the private sector is working on multiple initiatives to manage the huge inflow.

India has observed a steady adoption towards EVs in recent years, though India adoption still remains very low in comparison to Europe, Canada, China, however all big auto players are coming with new lines of EVs, and significant strategic investment have been made. The adoption is primarily due to lower running

costs, lower maintenance, zero tailpipe emissions, tax and financial benefits by the government, convenience of charging.

BFSI sector in India is showcasing a significant robustness in the time of global crisis, there is a growing demand for financial services as there is a gradual rise in income across income brackets, with a rapid increase in mobile penetration and internet availability more than 2100 fintech companies have emerged in India, the traditional banks are also adopting the digital technologies at a required pace, investment on making the systems secured from cyber threats is utmost priority. Policy support by the government in the union budget 2021-22 is taking up shape and is helping the BFSI sector in 2022 and coming years, like government approval of 100% FDI for insurance intermediaries have increased the FDI limit to 74% from 49%.

Healthcare sector is also continuously growing healthcare has become the one of the India's largest employers, employing around 4.7 million people, though in 2021-22 India only spends 2.1% of its GDP in healthcare, in the union budget 2022-23, US\$ 11.28 billion was allocated to the Ministry of Health and Family Welfare (MoHFW). there is still huge room for improvement in the overall healthcare system in India. Efforts towards having well trained medical professionals in India is top priority. There were exemplary development in the vaccine manufacturing by India, Bharat Biotech Covaxin and Oxford AstraZeneca's Covishield manufactured by SII, helped India get a protection shield against Covid. There is a plan by the government of India to infuse US \$ 6 billion to boost the healthcare infrastructure in India.

The IT/ITes sector is a key engine for fueling India's economic growth and contributing to 7.5% of India's GDP in 2021-22, the Big four IT firms in India have recruited over 1 million employees, As the world is moving towards era of digital economy Indian IT-sector will be contributing significantly towards this journey, the rollout of 5G communication technologies and adoption of new age technologies across industries; like AI, Robotics, Internet of Things will further increase the size of Indian IT sector.

Indian enterprises are also concerned about the risks emerging out of the growing economy and the globalization India is heading towards, its observed that Indian enterprises are taking significant steps towards risk management and keeping budget allocated to implement best in class risk mitigation practices.

India Showcasing an Optimized Risk Handling



Figure 2: Corporate India Risk Index 2022

Corporate Risk Index Score of 63 implies that Indian enterprises are handling the risk in an optimal way but still there is scope of improvement to get into superior risk handling territory, Indian enterprises have a well-defined risk management practice in place for inherent risks, however risk management can be improved further as a potential buffer against potential risk events arising from market & economy, operational and technology related Risk events, openness towards adoption of technology and having a well-defined risk management team was observed across enterprises in India.

Sectorial categorization across above stated five categories, it was found that risk management is getting a paramount importance in the growth strategy of every organization and all the organization fell either into 'Superior Risk Management' or 'Optimal Risk Management' category.

From a risk exposure front the intensity of impact due to market and economy related risks increased due to the heightened inflation, global recession, and geopolitical tensions though from a regulation point the sector specific policies by the government helped the industries. Some of the inherent risks exposure due to the operational aspect did not see a significant change as compared to previous year, however companies are adopting diversification, technologically enabling the supply chain, and creating better hedging against financial related risks, whose results will be seen in coming years.

Below is a broader categorization of sectors in terms of risk index:

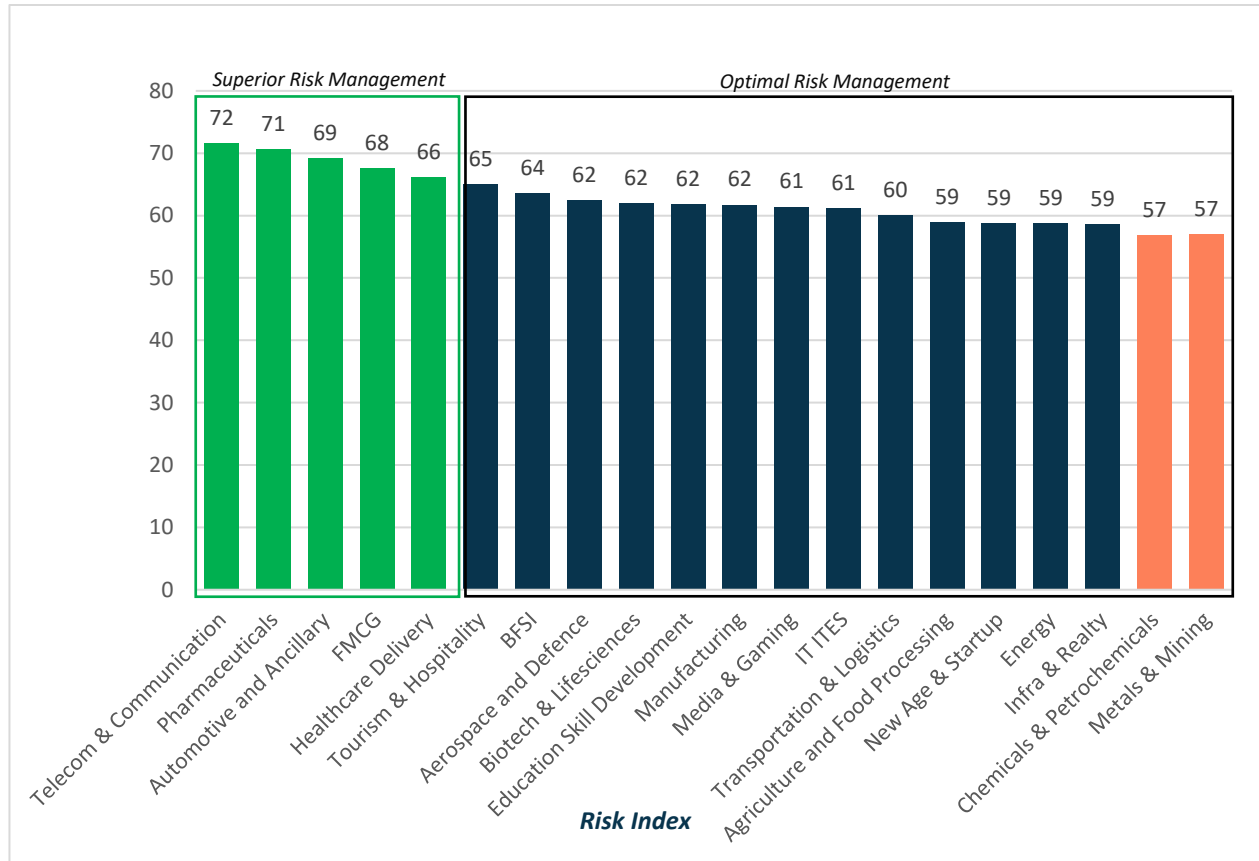


Figure 3: Corporate India Risk Index 2022 Sector Score

Superior Risk Index

Superior risk handling was found in five industrial sectors: Telecom & Communication, Pharmaceuticals, Automotive & Ancillary, FMCG, Healthcare Delivery.

Optimal Risk Index

Optimal risk handling was found in 15 industrial sectors: Tourism & Hospitality, BFSI, Aerospace & Defence, Biotech & Lifesciences, Education Skill Development, Manufacturing, Media and Gaming, IT & ITES, Transportation & Logistics, Agriculture and Food Processing, New Age & Startup, Energy, Infrastructure & Realty, Chemicals & Petrochemicals, Metals & Mining.

Telecom Sector Insights 2022

India is the world's 2nd largest telecommunications market with a subscriber base of 1.16 billion and is expected to become a digital economy of \$1Tn by 2025. The industry is divided into the following subsectors: Infrastructure, Equipment, Mobile Virtual Network Operators, White Space Spectrum, 5G, Telephone service providers, and Broadband. The sector is consolidated with key players, such as Reliance Jio Infocomm, Bharti Airtel, Vodafone Idea Limited, and Mahanagar Telephone Nigam Ltd. (MTNL) occupying the most market shares. These players focus on deploying the 5G network and increasing network capacity across the country to remain competitive in the market.

The telecom sector is the 3rd largest sector in terms of FDI inflows contributing 6.43% of total FDI inflow, directly to 2.2 Mn employment and indirectly to 1.8 Mn jobs. India has the second-highest number of internet subscribers globally. The total number of internet subscribers reached 836.86 million in April-June 2022. Broadband connections rose to 816 Mn in September 2022 from 61 Mn in March 2014, growing by 1238%. In the first quarter of FY22, total wireless data usage in India increased by 16.54% quarterly to 32,397 PB. In the third quarter of FY21, 3G and 4G data usage contributed 1.78% and 97.74%, respectively, to total wireless data usage. In the same quarter, the share of 2G data use was 0.48%.

The coronavirus's unexpected disruption of typical business operations prompted enterprises to operate remotely. This transition increased the demand for stronger network connectivity and internet availability, particularly in isolated or rural locations. Thus, the telecom (wireless and wireline) industry is attempting to provide better internet infrastructure to its clients. Even after the pandemic, the market is gaining traction across the country.

Key growth drivers include affordable tariffs, wider availability, roll-out of Mobile Number Portability, expanding 4G and 5G coverage, a conducive regulatory environment, and government's support through initiatives such as PLI Schemes under Atmanirbhar Bharat Abhiyan, Bharatnet Project, Prime Minister Wi-Fi Access Network Interface (PM-WANI). To further expedite digital connectivity, the Government has approved the auction of IMT/5G spectrum for the deployment of 5G services within the country. This auction was successfully held by the end of July 2022 and grossed \$18.77 Bn. It is estimated that 5G technology will contribute approximately \$450 Bn to the Indian Economy in the period of 2023-2040.

Recent trends in the sector include the emergence of BWA technologies, Green telecom, Internet-of-things, Universal Service Obligation Fund, Commercial SMS traffic, Satellite-based Narrowband-IoT Networks, increased international participation, and investments. The future plans for this sector include targeting a combination of 100% broadband connectivity in the villages, 55% fiberisation of mobile towers, average broadband speeds of 25 Mbps, and 30 lakh km of optic fiber rollouts by December 2022. The Department of Telecommunications (DoT) has also formed a sixth-generation (6G) innovation group to drive the development of 6G technologies. Significant opportunities across segments in the industry include increasing mobile subscribers, growth in MVAS, untapped rural market, Telecom advertising market, rising internet penetration, and growing cashless transactions.

The main challenges for this industry are declining ARPU, hefty license taxes, poor financial strength, and lack of telecom infrastructure in rural areas. The high costs of spectrum acquisition and the demands of network upgradation have increased the industry debt burden. Technological disruption, tariff competition, and rising leverage are among the principal setbacks to the sector.

Key risks facing the sector today are an increasingly competitive broadband market, limited spectrum availability, poor management of sustainability agenda, cybersecurity, and risk management. With the havoc caused by the global pandemic settling slowly, the economic and market wide risks are slowing down. In a response to bring the economy back to track and to renew the consumption and production decline, the country is plagued by a slew of corrective actions building inflationary pressures and pushing up the commodity prices.

Telecom sector is also being looked upon with high hopes of drawing in a new era of rapid technological development due to the rapid expansion of 5G and 6G network operations in the country, thus enabling the delivery of critical services such as digital learning, telesurgery and the Internet of Things over a mobile network with unprecedented efficiency. On the operation front, the telecommunication sector is faced with the lack of availability of smart phones, poor spectrum allotment and availability, dismal financial conditions, high debt levels, frequent outages and high security concerns.

Not only this, the overall risk index has increased significantly when compared to 2021 – showing a higher risk exposure for the sector.

Telecom Sector Risk Index 2022 Vs 2021

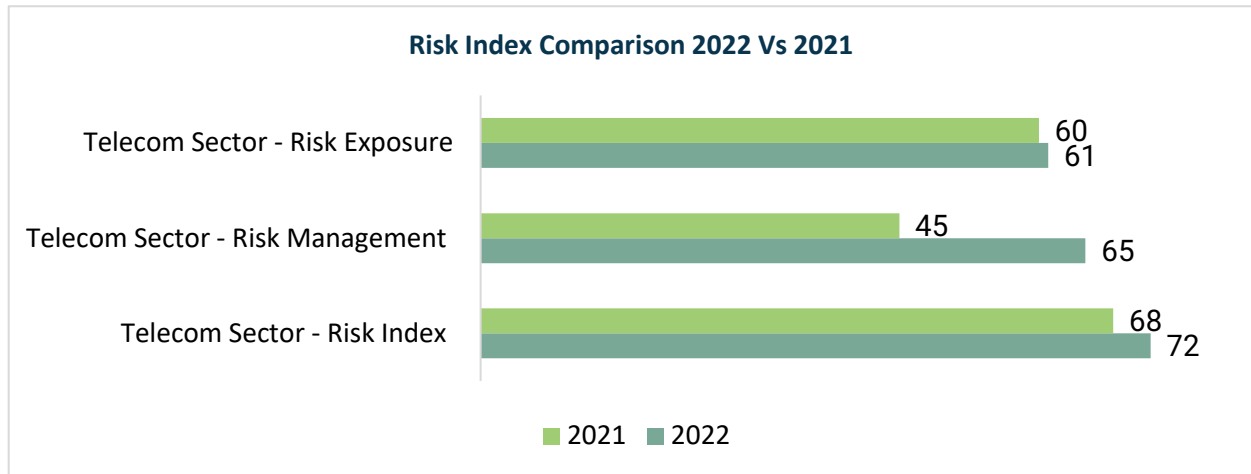


Figure 4: Detailed Comparative Analysis 2021 Vs. 2022

Telecom Sector Risk Index 2022 Vs 2021

India Risk Index (Superior Risk Handling): The overall Risk Index for telecom and communication improved to 72 from 68 in 2022, this was driven by significant improvement in natural hazard and event risk. The most significant reduction in risk happened due to the reduction in natural hazard risk as 2022 saw the revitalization of business operation in the telecom sector as the economy began recovering from the effects of COVID-19 and the new opportunities that the pandemic created for the sector which served as the engine of growth during the economic disruption.

There was no significant change in the operational and physical risk, human risks and other risks. However, the crime risks in terms of cyber-security, women’s risk exposure has increased which calls for a proactive action from the business leaders to fight the contingencies.

Telecom sector Risk Management 2022 Vs 2021

There was no significant improvement in the Telecom sector Risk Management, however it slightly improved to 65 from 45 in 2021. To reduce costs and concentrate on core activities, telecom companies have separated their tower assets into distinct entities. Which helped them in lowering operating costs and improving capital structure. This has also resulted in a new revenue stream. Most operators around the world are replicating the strategy after being inspired by the success of Indian players in the towers market. However, they still need to build guards against security, technological and operational risks.

Telecom Sector Risk Exposure 2022 Vs 2021

Telecommunication sector showed similar trends in 2022 with the risk exposure increasing marginally from 60 in 2021 to 61 in 2022 reflecting moderate to high risk quotient and impact of risks on the sector. The main risk is primarily due to exposure from Operational & Physical risks and Technological risks. While the risks posed by natural hazards and pandemics have been slowed down but the cyber-security risks have been compounded due to increased penetration of 5G in the country and digitalization brought in by the sector.

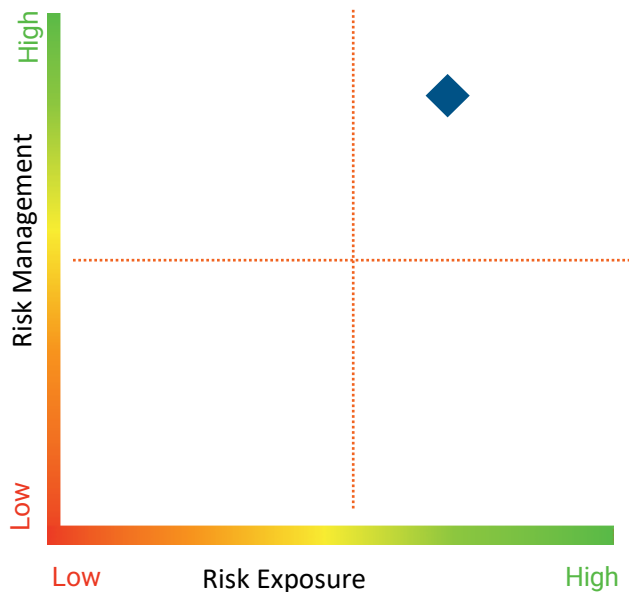
Key Highlights



Risk Dimension Analysis: Market and Economy

Risk Exposure Score: 60

Risk Management Score: 65



Inflation

- In 2022, CPI hit the highest of 7.79% in Apr, and WPI reached 15.88% in May.
 - The sector is positioned in the middle ground in terms of resilience towards inflation.
 - Inflation will lead to difficulty in managing-down capex on a softening demand coupled with likely increases in component and labour costs and reduced availability of debt-financing.
 - Specific to telcos, the demand for chips brought on by 5G upgrades, heavy supply chain pressures due to high dependance on equipment essentials will be compounded due to inflation.
- Inflation could shave two to five percentage points off telco EBITDA margins, mostly by way of increasing wage pressures and energy prices. (Source: Arthur D. Little)
 - Inflation presents a serious risk for telcos' continued profitability by way of rising costs and slowing market growth.
 - Rise in smartphone prices coupled with the increased cost of mobile services after the last winter's tariff hikes is slowing down 4G subscriber additions and also forcing subscribers to use less data.
 - To mitigate the impact of inflation, companies in the industry need to create an effective roadmap by setting out clear retention, communications, and product strategy.

Taxation

- The Indian Budget 2022-23 has extended the timeline for availing benefit of 15% corporate tax rate in case of manufacturing companies and tax holiday for start-ups, which will help in boosting the manufacturing of various equipments/products in the 5G ecosystem.
- Ensuring enhanced digital access across the rural hinterlands through USOF allocation, commitment to complete Bharat Net by 2025 and easy availability of 5G devices through the PLI scheme as enacted by budget will fuel the growth of the industry.
- Boost given to startups in the Artificial Intelligence, space sectors, amongst others, will create the necessary platform to nurture the skills of the future and cater to diverse industry applications.
- Companies in the industry will need to develop robust policies around spectrum allocation and pricing to accelerate 5G roll out in the country.

Regulatory Risks

- India's Department of Telecommunications (DoT) has come up with the draft Telecom Bill 2022, which proposes to change the equation between government and the telecom industry and to bring regulatory certainty.
- The new regulation proposes to dilute the telecom regulator's role as a recommendatory body, give a push to telecom infrastructure, bring OTT players under a licensing regime and ensure user protection, thus changing the regulatory landscape drastically. (Sources: TRAI, Economic Times)
- The requirements for effective use of spectrum, license framework, dispute resolution and graded penalties are likely to be modified.
- Companies in the telecommunication industry will need to closely monitor regulatory developments and adjust their business strategies accordingly to mitigate potential risks.

Foreign Exchange Rates

- The Indian Telecom sector is facing foreign exchange risks in 2022 due to volatility in currency exchange rates caused by COVID-19 and geopolitical tensions.
- The industry depends heavily on microchips and semiconductors, with India highly dependent on imports to meet the domestic demand, it poses a serious risk of price fluctuations.
- Government in line with its Make in India initiative has granted relief in custom duty on import of certain parts and inputs for manufacturing of mobile phones in the recent budget, thus impacting the telecom industry.
- The reduction of custom duties in Budget 2022 is expected to make Indian manufacturing more competitive and reduce the industry's dependence on imports.

Competitive Risk

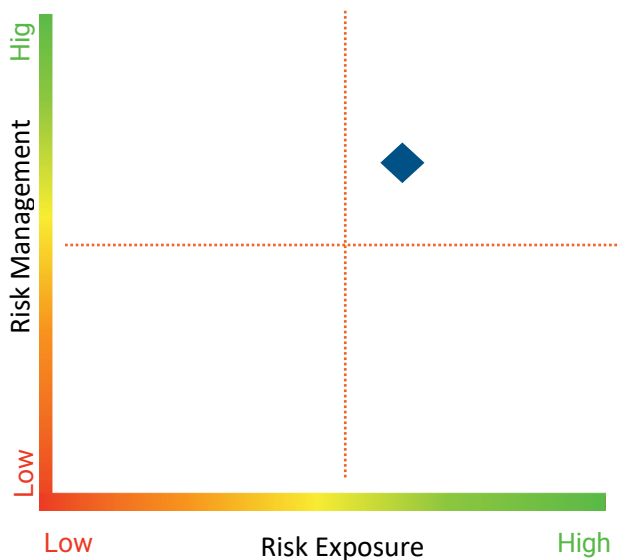
- With ever-expanding options for high-quality communication and internet services from telecom, cable, wireless, and satellite internet providers, consumers enjoy enhanced flexibility in purchasing and consuming services, thus leading to a more competitive environment in 2022.
- The enterprise market for private cellular networks and edge computing is gaining momentum. The market is still nascent but promises to be competitive, with many different players vying for their share.
- Whether through mobile hotspots, fiber footprint expansion, or 5G FWA rollouts, the ability of telcos to compete in the home broadband services market is rising.



Risk Dimension Analysis: Technology

Risk Exposure Score: 67

Risk Management Score: 66



Disruptive Technology

- The sector faces a challenge of balancing the ever-increasing need for sophisticated IT with the need to keep IT costs reasonable.
- Providing telecom services requires a massive amount of information technology (IT) support. IT costs represent nearly 5 percent of telecom revenues, compared with industries who spend just about 2%. (Source: Kearney)
- Complex and constantly changing tariff structures require sophisticated IT systems for mediation, rating and billing. Real-time processes such as billing of prepaid accounts require a fully IT-automated process chain.
- Older companies (10-plus years) constantly struggle to keep their highly complex and often custom-built applications up-to-date and integrate them with new systems, thus placing enormous strain on their IT departments.
- Complex regulatory requirements such as digital archiving and lawful interception pose significant challenges for IT processes and systems.

Data compromise

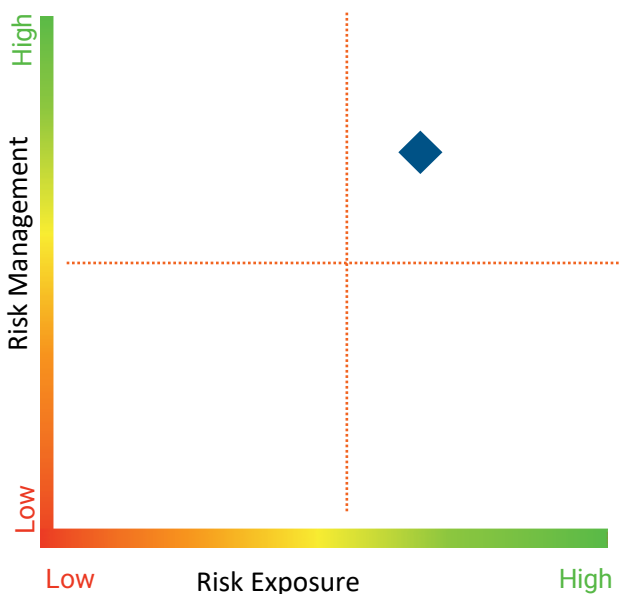
- About 40% of the citizens whose personal data was compromised allege that it was done by their telecom or banking service providers since they are required to share their personal financial details with them. (Source: Local Circles)
- Telecommunication companies are one of the biggest collectors of sensitive information in the world. With millions of customers sharing personally identifiable information (PII) and financial data with them, telecom companies are relentlessly targeted by cybercriminals.



Risk Dimension Analysis: Operational and Physical

Risk Exposure Score: 59

Risk Management Score: 62



Critical Infrastructure Failure / Machine Breakdown

- The national targets include towers to reach cumulatively to 10 lakh and 12 lakh, in FY 2022-23 and 2023-24 respectively, but as of now only 7,39,000 telecom towers have been deployed in the country.
- Spectrum availability in India is less than 40% as compared to European nations and 50% as compared to China.
- Due to lack of telecom infrastructure in rural & semi-rural areas, service providers have to incur huge initial fixed cost.
- The recent E&Y study indicates that the industry would need a cumulative investment of Rs 921-Rs 1,411 billion between 2022-27 in various building blocks of 5G that includes fiber deployment and microwave, outdoor small cells and in-building solutions.
- There is a shortage of adequate backhaul at reasonable costs which throws up significant challenges in deployment.

Business continuity/Sustainability

- Global data traffic is expected to grow around 60% per year; consequently, telecom operators have a sizeable impact on both CO2 emissions and waste. In response to climate change, the volume of data communications is expected to increase, so reducing the power consumption of data centres and telecom network equipment, and the use of green power are extremely important issues that telecom companies are tackling.
- According to EY, the quality of telcos' climate change disclosures has worsened year-over-year, while reporting of ESG metrics such as renewable energy consumption and e-waste management is often lacking. 39% of telcos don't disclose a specific net-zero strategy, transition plan or decarbonization pathway.
- The sector has to comply with the GSMA's commitment to transform the global mobile industry to reach net zero carbon emissions by 2050. (Source: Capgemini)
- Establishing monetisation methods, negotiating subsidies and regulatory reforms with the government, promoting the legitimate use of carbon credits, and driving-related corporate ecosystems are some of the sustainability activities expected of telecoms with a large influence on the economic social community.

Commodity Price Risk

- High spectrum price and cost of deploying networks take a toll on the already debt-ridden telecom sector.
- 75 per cent of cost of deploying optical fibre in the country for high-speed broadband is the fees charged by local authorities and the current reserve price is very high when compared to the global peers.

Portfolio Risk

- Telcos are juggling the requirements of running and maintaining infrastructure which is capital intensive against rising customer expectations which naturally puts pressure on margins.
- The industry is trading at a PE ratio of 43.7x which is higher than its 3-year average PE of -114x. (Source: Simply Wallstreet)
- Total earnings for the Communication Services industry have gone up over the last three years, and the industry is now profitable. Revenues have grown 7.3% per year.
- While the global telecom market closed 2022 with a 9.7 per cent decline in revenue compared to the previous year, India emerged as an outlier with a double-digit revenue growth in the same period over the previous year. (Source: Times of India)

- Investors are most optimistic about the Wireless Telecom industry which is trading above its 3-year average PE ratio of 20.2x.
- However, the sector is also vulnerable to economic and political risks, such as changes in government policies and global trade tensions

Workplace accident

- There is a significant amount of risk involved in working at telecom centers and doing field installations. Technicians working in the field, often working at great heights while handling equipment during installation and maintenance, are especially prone to risk.
- Electrocution is an everyday danger for telecom workers because communication towers and electrical equipment go hand in hand.
- Falls rank as one of the most common risks for telecom workers. Reasons may include improper training on the ladder, safety device or other equipment used, defective parts, the worker's weight in addition to the tools and equipment exceeding the amount allotted by the body harness, and improper use of personal protective equipment.
- It is important for companies in the industry to prioritize safety and implement measures to prevent accidents and protect their employees.

Human resource

- India's telecom sector currently employs nearly 4 million workers that has close to 60% direct workforce employed with telecom service providers as well as multinational technology vendors. (Source: Economic Times)
- India would require as much as 22 million or 2.2 crore skilled manpower by 2025 due to the emergence of 5G-led-technologies in the country. (Source: Telecom Skills Body)
- A large number of employees will also be subjected to up-skilling to match industry demands which plans to employ technologies like IoT, AI, machine learning, big data, etc. in the near future.
- The telecom sector has among the lowest number of women in the workforce—an average of between 8% and 15%, far less than the 26.6% overall female participation rate in the total workforce, according to the Gender Diversity Benchmark for Asia.

Financial Risk

- The sector is plagued by lack of adequate tariff hike of the telecom companies. Without a substantial tariff hike, revenue growth for the sector will stagnate and the subsequent growth potential will be hurt.
- The sector requires an ARPU of Rs 256-285 to fund the massive upcoming capex required for 5G rollout and other network enhancements.

- The telecom industry's debt levels are set to climb to ₹6 trillion, from ₹4.7 trillion currently, with companies having made commitments of more than ₹1.5 trillion towards spectrum payments plus interest over the next two decades. (Source: Mint)

Breach of International law

- The Telecom Regulatory Authority of India (Trai) has the power to levy a penalty of up to Rs 10 crore and a jail term of up to two years on executives of telecom companies that fail to meet regulations set by it.

Process and Inventory risk

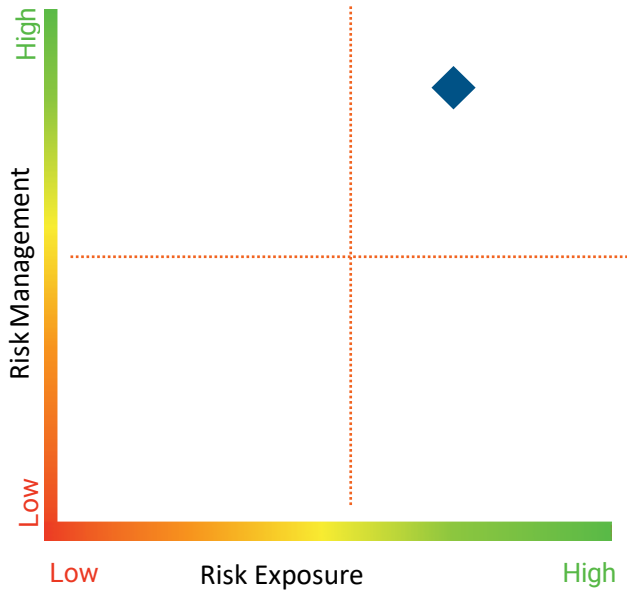
- The arrival of IoT and now 5G (and soon 6G) involves millions of devices that must be maintained. The decade-old inventory solutions still used by many telecoms operators simply can't cope with the complexity and agility of the new systems.
- Telecom inventory management, telecom billing management, telecom contract management, and other activities are frequently managed within disparate applications and databases, thus leading to complexity in processes.
- Usually, CSPs planning and implementation activities are done in Physical Network Inventory systems (PNI), so planners do not have clear visibility of the available inventory and shipment progress resulting in delays in work order construction due to unavailability of required inventory, lengthy procurement process, difficulty for re-plan, etc.
- For telecommunications organizations, data often resides in silos. Internally, data resides across systems for procurement, customer service, or transportation management, making cross-team collaboration time-consuming.
- Heavy investment in 5G network upgrades requires significant coordination, planning, and effort, plus a range of supplies, from wires and chips to physical construction materials for new towers.
- Outages are very common in the sector. Delivering better service to customers means building out streamlined workflows and automating as much of the process as possible requiring huge investments.
- Telecoms receive millions of customer requests on a daily basis and this number is growing with every passing day. Providing omnichannel support with immediacy is critical for customer satisfaction.



Risk Dimension Analysis: Crime and Security

Risk Exposure Score: 60

Risk Management Score: 66



Cyber-crimes

- With the arrival of 5G technology, all electronic devices will potentially be connected to the internet. Telecom networks are increasingly using cloud computing to support their operations. This increases the scope of cyber-attacks in the sector.
- One critical threat unique to the sector is the attack of leased infrastructure equipment, such as home routers from Internet Service Providers (ISPs). Once the equipment has been compromised, hackers can use it to steal data, launch other attacks anonymously, store exfiltrated data, or access expensive services such as international phone calls.
- Insider threats are one of the major risks for the telecom industry. There are two aspects to it – vindictive behavior by someone on the inside and lack of awareness about the risks involved with their actions. Cyber threats have increased now with the influx of remote work models and connections to unsecured networks.
- Phishing remains one of the top concerns where cyber criminals send malicious links through emails or messages.
- A bulk of 5G network components have been imported and manufactured in factories based in China, thus increasing the susceptibility to crimes and compromise on privacy.
- To some extent, 5G designing takes care of security from the beginning rather than the “bolt-on” approach adopted in earlier standards. Its encryption standards are so strong that even if an attacker gets some information, it will be in an unusable format.
- A collaborative arrangement between the government, academia and businesses is needed to fight the danger. Initiatives such as C-DOT’s 5G alliance, high conformity to security standards needs to be ensured.

Threat to women security

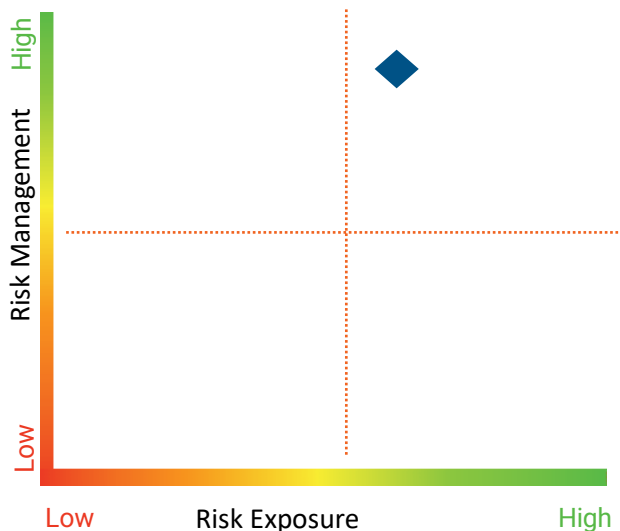
- A survey conducted by the Thomson Reuters Foundation in 2018 ranked India as the most dangerous country in the world for women, with incidents of sexual violence, harassment, and trafficking being major concerns.
- Women are more likely than men to be victims of severe forms of cyber violence and the impact on their lives is far more traumatic.
- The most common cybercrimes committed against women are cyber blackmail, threats, cyberpornography, posting and publishing of obscene sexual content, stalking, bullying, defamation, morphing, and the establishment of fake profiles.
- The conviction rate or percentage of case disposal by courts for cybercrime against women is lower than the conviction rate of cybercrime cases.



Risk Dimension Analysis: Natural Hazard and Event

Risk Exposure Score: 59

Risk Management Score: 63



Natural Hazards:

- The global costs of natural disasters have increased significantly over the past several decades, with direct losses averaging around USD 300 billion per year.
- One of the first and immediate impacts of any natural disaster is the collapse of communications infrastructures. Standard cell or landline telecommunications infrastructures are likely to be knocked out, causing disruption to telephone, internet access, and potentially even satellite-based emergency communication devices.
- In an emergency, people rush to contact friends and family or seek out information. This creates large volumes of calls, messages and internet usage, which can overload the network and stop critical calls from getting through. The extra load on the network can also exhaust backup power supplies.
- It is important to engage and train staff of Indian Telecom Services to adopt a suitable and conscious risk management system to reduce the vulnerability for telecommunication sector.
- Climate change is expected to increase the frequency and intensity of natural hazards, further exacerbating the risks to telecommunication industry.

Pandemic and other global epidemic diseases

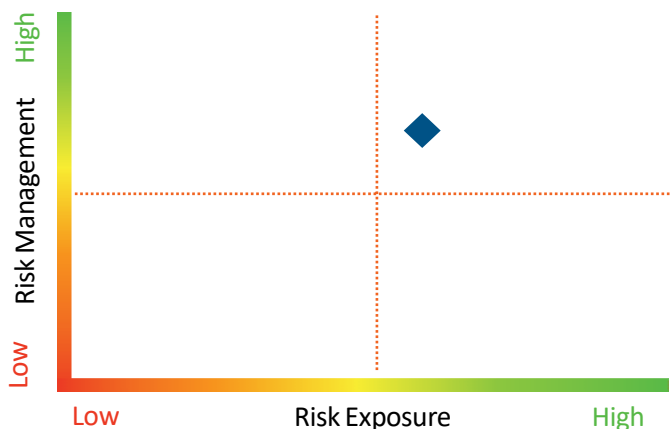
- During the Covid 19 pandemic, the sector was responsible for providing supportive services to all other sectors and kept the wheels of the economy moving.
- Remote working, video conferencing, and telecommunications technology have quickly emerged as key enablers for business operations during the pandemic, and streaming services such as Netflix have become the go to source for entertainment, putting the telecom sector in the spotlight.
- COVID-19 exposed telecom industry’s supply chain vulnerabilities as many organizations were dependent on China as a global manufacturing hub for the telecom industry and closure of factories amidst Corona fears resulted in the disruption of global supply chains.
- Another trend was the growing focus on sustainability in the telecommunication industry, with companies exploring ways to reduce their carbon footprint and promote environmental stewardship.
- Since companies moved to a remote workforce as a result of the lockdown, employees had to send confidential information over an unsecured network and each online tool they used grows the complexity and the vulnerability concerns of their network. Network operations and Security operations teams faced the challenge of optimizing the performance of a network that can physically be located anywhere, while protecting against security threats that take the advantage of typical operating procedures.



Risk Dimension Analysis: Strategic Risk

Risk Exposure Score: 59

Risk Management Score: 65



Resource scarcity/ Over utilisation

- A shortage of fiber-optic cable has driven up prices and lengthened lead times, endangering companies’ ambitious plans to roll out state-of-the-art telecommunications infrastructure.
- With increase in rural penetration, scarcity of spectrum is likely to increase further and consequently the demand of FOC for backhaul as well as BTS access will be on the rise.

Delay in the execution of projects

- The application process for installation of Digital Infrastructure is being delayed due to inconsistency and uncertainty of policy and processes. It requires maintaining a fast-tracking application process to overcome the implementation challenges of Right of Way Rules.

ICICI LOMBARD: Key Solution Offerings



Property

- a. Businesses are always prone to risks and fire eruption and fire insurance provides a comprehensive protection against damages caused due to fire explosion and other risks. Besides fire related perils, it also protect damages caused due to any natural calamity, bursting of water tanks, theft etc. The built in covers include alterations or extensions, stocks on floater basis, temporary removal of stock, cover for specific contents, start-up expenses, professional fees, costs for removal of debris etc
- b. **Solutions**
 - i. **Property Loss Prevention exercise** - We have developed the methodology of Property Value Added Services for corporate customers which focuses on technical engagement with detail risk visit, followed by benchmarking of the risk (Industry Risk Profiling).
 - ii. **Fire Hydrant IoT** - Fire hydrant online monitoring devices use IoT to monitor fire hydrants and assure their availability in emergencies. We've helped multiple corporate customers maintain and monitor this important fire safety component in real time.



Marine

- a. We offer specially curated plans for covering the risk of theft, malicious damage, shortage, and non-delivery of goods, damages during loading and unloading, and mishandling of goods/cargo
- b. Marine Cargo insurance primarily covers loss during transit caused due to fire, explosion, hijacks, accidents, collisions, and overturning
- c. **Solutions**
 - i. **GPS Device Tracking:** With the help of our advance GPS devices we can have bird eye view on the consignment and vehicle from anywhere in the world. OurSAAS allows us to track and get the visibility of the vehicle on the basis of our requirements which is fully customizable



Liability

a. Comprehensive general liability:

- i. This policy is important for every small and medium sized businesses to protect the insured entity against claims arising out of legal liability where they are held responsible for third party bodily injury or property damage due to insured's business, premises or products. It should be taken by every new business as it covers all risk a business may face.

b. Cyber - With cyber risk steadily increasing, security/ data breaches affect millions of records a year. Cyber Risk insurance coverage is designed to help an organization mitigate its risk exposure by offsetting costs involved with recovery after a cyber-related security breach or similar event.

c. Solutions

- i. **Simulated phishing tests** - Simulated real looking phishing tests and record employee behavior to phishing attacks along with training collateral in form of co-brandable posters, infographics and videos
- ii. **Cyber maturity assessments** - Assess the security posture of your organization and identify the potential risks with our assessment based on ISO 27001 Control measures for Information security
- iii. **D&O** - The need of Directors & Officers Insurance is more than ever before. Any breach or non-performance in the duties can result in claims against directors, officers and employees by reason of wrongful act and need to incur various expenses like defense costs, damages or compensation and other incidental costs. This can affect company's growth and performance.



Group Health

- a. Employees are the backbone of an organization and the most valued asset. Our Group health insurance product is designed to offer health coverage to suit employees of all business types ranging from small & medium enterprises to large organizations.
- b. **Solutions:**
 - i. **IL Take Care** - AI enabled mobile app for employees
 - ii. **Health assistance services** - Health Assistance is a dedicated medical care service that assists you in all your health related queries for identifying specialist/hospital/fixing an appointment with doctors/nutritionist /facilitating 2nd opinion
 - iii. **Tele Consultation** – Hello Doctor
 - iv. The insured is eligible to avail unlimited General Physician consultations for routine health issues over the phone by a qualified doctor
 - v. **Diagnostics & pharmacy services** – Book a lab test or home delivery of medicines



Bibliography

<https://www.adlittle.com/en/insights/viewpoints/rising-inflation-how-are-telecoms-reacting>

<https://economictimes.indiatimes.com/industry/telecom/telecom-news/high-inflation-bites-into-telecom-revenue-growth/articleshow/92500532.cms?from=mdr>

<https://assets.kpmg.com/content/dam/kpmg/in/pdf/2022/02/telecommunication-budget-2022-23.pdf>

https://www.ev.com/en_in/alerts-hub/2023/02/budget-2023-telecom-sector

<https://www2.deloitte.com/za/en/pages/technology-media-and-telecommunications/articles/telecommunications-industry-outlook.html>

<https://dipa.co.in/e-Boks%20Telco%20Industry%202022%20e-Book.pdf>

<https://www.businesswire.com/news/home/20221209005162/en/India-Telecoms-Industry-Report-and-Database-2022-Market-Sizing-Forecasts-Insights-Key-Telecom-Trends-5G-Digital-Infrastructure-2023-2028---ResearchAndMarkets.com>

<https://www.bdo.global/en-gb/insights/global-industries/technology-media-entertainment-and-telecommunications/2022-telecommunications-risk-factor-survey>

<https://timesofindia.indiatimes.com/blogs/voices/year-2022-reforms-driven-progress-for-indian-telecom/>

<https://www.capgemini.com/in-en/insights/expert-perspectives/sustainability-in-telecom-india/>

<https://asiatetelecom.com/event-news/digitalisations-significance-in-driving-sustainable-social-infrastructure-in-telecom>

<https://www.bing.com/search?q=higher+costs+for+commodities+in+the+Indian+telecom+industry&cid=45c9eca6ff88408794ea84b18273ed4c&aqs=edge..69157.119860j1&pglt=43&FORM=ANNTA1&PC=U531>

High spectrum prices, network costs to impact Indian telecom sector: Airtel | Business Standard News (business-standard.com)

<https://simplywall.st/markets/in/telecom>

https://www.business-standard.com/article/economy-policy/indian-telecom-market-saw-36-offline-retail-value-growth-in-2022-123030900834_1.html

<https://www.pelsue.com/workplace-safety-for-telecommunications-industry/>

India may need 22 million skilled workforce by 2025: Telecom skills body, Telecom News, ET Telecom (indiatimes.com)

<https://www.indmoney.com/articles/stocks/how-is-the-indian-telecom-sector-looking-to-global-brokerage-jefferies-let-s-decode>

<https://www.livemint.com/industry/telecom/telecom-debt-to-touch-6-trillion-11659462460650.html>

<https://economictimes.indiatimes.com/news/economy/policy/tra-looks-for-powers-to-penalise-telecom-companies-which-fail-to-meet-regulations/articleshow/52664684.cms?from=mdr>

<https://indianexpress.com/article/opinion/columns/the-privacy-concerns-we-must-prepare-for-with-the-arrival-of-5g-8484873/>

How Can Telecom Companies Reduce Data Security Risks | Endpoint Protector

<https://www.ispartnersllc.com/blog/cybersecurity-telecommunications-sector/#:~:text=Insider%20threats%20are%20one%20of,and%20connections%20to%20unsecured%20networks.>

Sample format (esri.in)

4 Challenges to Supply Chain Management in the Telecom Industry (appian.com)

20 Inventory Management Challenges and Solutions for 2022 and Beyond | NetSuite

Indian Telecom Equipment Industry – Will 5G Drive The Future Growth? | Communications Today

4 Challenges to Supply Chain Management in the Telecom Industry (appian.com)

<https://atos.net/en/blog/transforming-inventory-the-cornerstone-of-modern-telecoms>

<https://www.kearney.com/technology/article/-/insights/it-in-the-telecom-industry>

How telecoms and digital infrastructure companies are shaping the new normal - EY India

<https://www.clearias.com/cybercrime-against-women/#:~:text=The%20most%20common%20cybercrimes%20committed,the%20establishment%20of%20fake%20profiles.>

[https://dig.watch/topics/telecommunications-infrastructure/#:~:text=Telecommunications%20infrastructure%20is%20very%20similar,generation%20\(5G\)%20mobile%20networks.](https://dig.watch/topics/telecommunications-infrastructure/#:~:text=Telecommunications%20infrastructure%20is%20very%20similar,generation%20(5G)%20mobile%20networks.)

<https://telecom.economictimes.indiatimes.com/news/in-depth-shrinking-investment-in-infrastructure-lack-of-access-discouraging-indias-5g-dividends/97265797>

<https://arstechnica.com/information-technology/2022/07/global-shortage-of-fiber-optic-cable-threatens-digital-growth/>

https://nidm.gov.in/pdf/trgReports/2022/July/Report_18-22July2022aak.pdf

<https://www.infrastructure.gov.au/media-technology-communications/phone/communications-emergencies/telecommunications-emergencies-natural-disasters>

https://www.business-standard.com/article/economy-policy/telecom-infrastructure-in-india-may-soon-get-disaster-resilient-standards-119102600658_1.html

<https://www.geo-tel.com/telecommunications-infrastructures-disaster-recovery/>

<https://files.techmahindra.com/static/img/pdf/telecom-covid-19.pdf>

https://www.vnsqu.ac.in/iqac/naac/dvv-clarification-1/c3/c34/c345/files/1loUOL7ZxgQCyK_HLVaE15ziswhngOVAa.pdf

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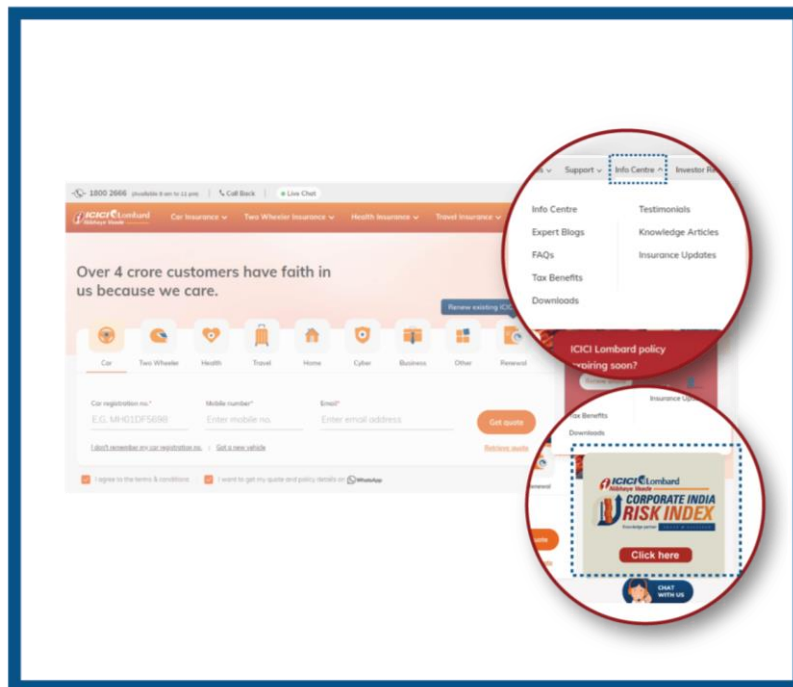
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