

The Socio-Economic implications of the Coronavirus (COVID-19) pandemic in India

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Abstract— *The recent pandemic resulted in a global drift into impending economic crisis and recessions. The immediate strategy against the covid-19 pandemic included social isolation and distancing and bans on travel. The responses of various sectors differed. Some fell drastically while others took advantage of the situation. The purpose of this review is to critically examine all the research that has been done on the impact of COVID-19 from a financial, economic and business perspective in general and in the specific context of India. The survey is developed in terms of future research.*

Keywords—*Economy, India, Economic impact, social impacts, economic comparisons, COVID-19, Indian economy, Coronavirus, Covid policies*

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I. INTRODUCTION

The 21st century is becoming a victim of serious infectious diseases such as Ebola and Middle East Respiratory Syndrome (MERS) that threaten health and the economy. The outbreak of COVID-19 was a shock to all around the world. The first known report was from China's Wuhan Municipal Corporation who reported 27 cases of pneumonia, followed on December 31, 2019, at the Wuhan seafood market in southern China[1]. Further laboratory tests called the pneumonia of unknown origin a coronavirus. The World Health Organization (WHO) declared the virus a pandemic and declared the issue a Public Health Emergency of International Concern (PHEIC) [2]. The name for this unknown demon was given on the 13th of February 2020 in Geneva, Switzerland, designated as COVID 2019. As a strategy against the spread of the virus[3], governments enforced strict and mandate rules such as shutdown of borders, travel restrictions and quarantine [4,5] in countries which constitute the world's largest economies, which includes India[6]. The employment rate dropped rapidly, with the CIME claiming the highest rate of 7.78% in February of 2020. To better understand the effects the pandemic had on the country of India and its economy, we focus on the various sectors - primary which includes, the extraction of raw materials (agriculture included), secondary sectors - which involves the production of goods from the materials gathered in the primary sectors and tertiary sectors, which are involved in services provision [7]

II. IMPACT OF COVID-19 ON THE PRIMARY SECTOR

1) The primary sector of India includes industries which are involved in the extraction of raw materials for processing or direct consumption. For a third world, developing country like India, this remains the largest sector and is the source of most of the employment. The pre-covid statistics (as of 2019) says that 42% of Indians were employed in the primary sector, highlighting the impact that this sector has on the population. There was a steady in the employment rates of this sector pre-covid which has been further impacted by the pandemic. [21]

A. Agriculture

The COVID-19 pandemic was a big danger to people's health, the economy, and food security all over the world[8]. We learned from what happened in China that measures like lockdowns to control the virus made it harder to produce food, which could lead to problems with the food supply[9] in the long run. It also hurt the economy, causing it to go down and causing crises[10].

The COVID-19 pandemic has had a significant impact on India's agriculture sector. In the early stages of the pandemic, restrictions on movement and supply chain disruptions affected transportation and distribution of agricultural produce [11]. The lockdown also disrupted the supply of farm labor, which affected agricultural operations such as planting and harvesting.

However, despite these challenges, the agriculture sector demonstrated resilience by adapting to new modes of operation and ensuring uninterrupted food supply to the country. According to a report by the Food and Agriculture Organization (FAO), India's agriculture sector performed relatively well during the pandemic and maintained food security [12]. This was due to various government interventions, such as facilitating the movement of essential commodities and ensuring the availability of agricultural inputs

The pandemic-induced disruptions also affected the prices of some crops. For instance, the price of onions, a staple vegetable in Indian households, fell by almost 50% during the pandemic due to lower demand and transportation challenges [13]. Similarly, the prices of milk, eggs, and other perishable items were affected by the disruption in the supply chain

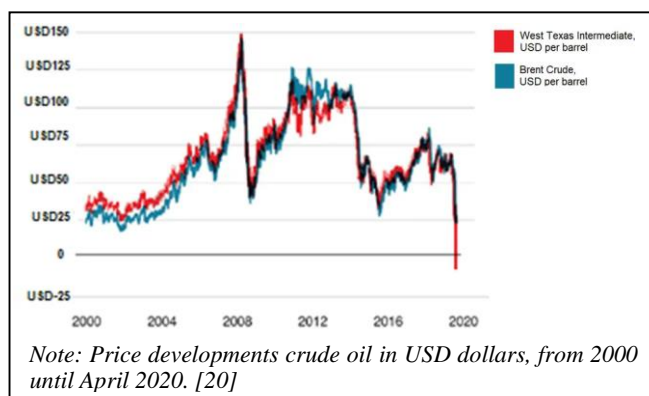
Despite these challenges, India's agriculture sector registered a growth rate of 3.4% in 2020-21, compared to 4% in the previous year [13]. This growth was driven by record production of food grains, which touched an all-time high of 303.34 million tonnes during the 2020-21 crop year[14]. The increase in production was due to good monsoon rainfall, favourable weather conditions, and the adoption of new technologies.

However, the pandemic has also highlighted the need for investments in rural infrastructure, such as cold storage facilities, to improve the storage and distribution of agricultural produce. The government has announced various initiatives, such as the Agriculture Infrastructure Fund and the Pradhan Mantri Kisan Urja Suraksha evamUtthanMahabhiyan, to boost investment in rural infrastructure [14].

B. Petroleum and Oil

The global scene for petroleum has to be set before diving into the localised effects on India.

The COVID-19 pandemic had a significant impact on the petroleum and oil industry globally, with the price of oil experiencing a sharp decline in March 2020. The OPEC-Russia alliance, which controls a significant share of the global oil supply, fell apart due to a dispute over production cuts, leading to a significant drop in oil prices as oil-producing countries engaged in a price war, flooding the market with excess oil [15]. The pandemic also led to a decrease in demand for oil due to travel restrictions and reduced economic activity. As countries around the world implemented lockdowns and travel restrictions to control the spread of the virus, demand for oil plummeted [16]. This decline in demand was exacerbated by the decreased economic activity in many countries, with factories closing down, and people staying home, leading to reduced consumption of oil.



The combined effect of the production dispute and reduced demand led to a sharp decline in oil prices and stocks, which had a ripple effect on global markets. In addition to the oil industry, the stock markets and bitcoin also experienced significant declines as investors reacted to the uncertainty caused by the pandemic and its impact on the oil industry [16]. The decline in oil prices also had implications for oil companies and oil-producing regions worldwide, leading to job losses and reduced revenues.

As the price of crude oil fell, the value of existing oil stocks also fell, which has negatively impacted the industry. Furthermore, the COVID-19 pandemic has led to a significant reduction in global demand for crude oil, which has further contributed to the decline in revenue in India.[17] The pandemic has disrupted global supply chains, leading to a shortage of key raw materials required by the industry.[18] The lockdowns and restrictions imposed to contain the spread of the virus have had a significant impact on the demand for petroleum products, resulting in reduced refining activities and lower demand for crude oil.[18]

The decline in demand for petroleum products has resulted in the first annual decline in fuel consumption in India in 21 years[19]. Diesel consumption fell by 12.5%, and gasoline consumption fell by 6.7% in 2020. The reduction in fuel consumption has not only impacted the oil industry but also the broader Indian economy.

III. SECONDARY SECTORS

The secondary sector deals with production and manufacturing of raw materials that is procured from the primary sector. As per statistics, this sector has the lowest employment rate in India (25.1%) [21] but is the connecting sector between primary and the service sectors and is crucial when determining the economy of a country.

A. Manufacturing

The COVID-19 pandemic has caused a significant decline in manufacturing output in India. India's industrial output contracted by 18.8% in March 2020 compared to the previous year, with manufacturing output declining by 21.3% [22]. In the second quarter of 2020, manufacturing output declined by 39.3% compared to the same period in the previous year [22].

The automotive, electronics, and pharmaceutical industries were the most affected by the disruption in global supply chains caused by the pandemic [23]. The report also estimates that the Indian manufacturing sector is expected to recover by the end of 2021 and grow at a CAGR of 12% from 2021 to 2026 [23]. Reports suggest that the manufacturing sector in India is expected to grow at a CAGR of 8.1% from 2021 to 2026, reaching a value of INR 79.8 trillion (approximately USD 1.07 trillion) by 2026 [25]. India's manufacturing sector accounts for approximately 17% of the country's GDP and employs around 35 million people [25].

The Indian government's "Make in India" initiative has been a major focus during the pandemic. According to a referenced literature, the government has identified 12 sectors, including automobiles, chemicals, and textiles, for focused support under the initiative [24]. The report also notes that the Indian government has introduced several measures to support the manufacturing sector during the pandemic, such as providing relief measures to businesses and simplifying labor laws to encourage investment [25].

Statistic	Value
Industrial output contraction in March 2020	18.8%
Manufacturing output contraction in March 2020	21.3%
Manufacturing output decline in Q2 2020	39.3%
Expected CAGR of Indian manufacturing sector (2021-2026)	8.1%
Estimated value of Indian manufacturing sector (2026)	INR 79.8 trillion (approximately USD 1.07 trillion)
Indian manufacturing sector as a percentage of GDP	17%
Number of people employed in Indian manufacturing sector	35 million

A summary of crucial statistics pertaining to India's secondary sector [22,23, 24]

IV. TERTIARY SECTORS

The tertiary sector deals with the delivery of services rather than physical products. The services offered under this sector is also known as "intangible goods,"[26] may include attention, advice, experience,

access, and affective labour. The creation of information has traditionally been categorised as a service, but some economists now classify it as a part of a fourth sector called the quaternary sector[26]. In this paper, we do not make such differentiations and classify all services under an umbrella of the tertiary sector.

2) This sector remains the choice of most people in urban areas of India. The pre-covid statistics (as of 2019) say that 38% of Indians are employed in the tertiary sector[21]. Contrary to intuition, there has been an unprecedented growth in the services sector during the pandemic

A. Education

(1) According to the World Health Organization (WHO) [27], by the end of March 2020, more than 1.5 billion students were affected by school closures in 165 countries, which was about 90% of the world's student population. The pandemic forced countries to close educational institutions and transition to remote learning as a means to continue providing education to students. As a result, the education system faced unprecedented challenges and disruptions.

(2) The pandemic's impact on education was particularly severe in developing countries where access to technology and internet connectivity was limited, making it difficult for students to access online learning resources [31]. Many students in these countries rely on schools for access to basic resources such as meals, healthcare, and support, which became unavailable with school closures [31]. According to the Campaign for Education [28], 9.7 million children were at risk of dropping out of school due to the pandemic's impact.

(3) Higher education was also severely impacted, with many universities and colleges forced to close campuses and transition to online learning [29]. This disruption led to the loss of research opportunities, reduced enrolments, and financial losses for higher education institutions [29].

(4) The impact of COVID-19 on education was not limited to the academic aspect, as it also had a significant impact on the mental and emotional well-being of students and teachers [32]. The stress and uncertainty caused by the pandemic led to anxiety and depression in students, while teachers had to deal with the added pressure of transitioning to online learning while also managing their personal lives.

Metric	Indian Education	World Education
Number of School Closures	1.5 million schools	1.6 billion students
Impact on Learning Loss	60-80% of students	70% of learners
Digital Divide	90% rural students	50% of students

The situation is mirrored in India. The sudden closure of schools and universities in March 2020 disrupted the learning of millions of students across the country. According to the UDISE+ report for 2021-22, the number of out-of-school children in India increased by 22% during the pandemic, with the figure rising from 3.22 crore to 3.93 crore [36]. The closure of schools has also had a disproportionate impact on girls, with the dropout rate for girls being higher than boys. The study showed that in 2020-21, the number of girls who did not enrol in schools increased by 15.16%, while the number of boys who did not enrol in schools increased by 13.83% [36].

(5) The closure of schools has led to a shift towards online learning, with many schools and universities adopting online classes to ensure continuity of education. However, the digital divide in India has meant that access to online learning has been uneven. Only 8% of rural households have a computer and 15% have access to the internet [34]. The report further highlights that the majority of students in rural India do not have access to online classes due to lack of internet connectivity and unavailability of devices. The pandemic has also had an impact on higher education in India, with universities and colleges being forced to switch to online learning. A study published in the International Journal of Advanced Education and Research (IJAER) in 2020 found that the majority of students faced difficulties in attending online classes due to poor internet connectivity and lack of devices [37]. The study also found that the quality of education had been impacted by the shift to online learning. The pandemic has also led to a decrease in funding for education in India, with the government diverting funds towards healthcare and other pandemic-related expenditures.

Category	Impact	Statistics
School closures	Schools closed	Over 1.5 million schools closed in India during the pandemic [36]
	Students affected	Around 250 million students were impacted by school closures [34]
	Online learning	Only 7% of Indian students had access to a computer for online learning [35]
Learning loss	Disruption of learning	Disrupted learning led to an estimated loss of Rs 6.4 lakh crore (\$86 billion) in future earnings for students [36]
	Dropout rates	Nearly 25% of Indian students were at risk of dropping out of school [34]
Higher education	Campus closures	All colleges and universities in India were closed during the pandemic [37]
	Students affected	Around 36 million higher education students were impacted [37]
	Online learning	Only 29% of Indian higher education institutions were able to deliver online education [37]
Health and safety	Infections	Over 500 teachers and students tested positive for COVID-19 in the first week of reopening schools in 2021 [36]

(6) According to the UDISE+ report for 2021-22, the total expenditure on education by the government decreased by 3.7% during the pandemic [36]. The report further states that the reduction in funding has impacted the quality of education, with schools and universities struggling to provide basic facilities such as clean drinking water and functional toilets. The pandemic also highlighted the existing inequalities in the education system, with marginalised and vulnerable communities being disproportionately affected [28]. The digital divide became more apparent, with students from low-income families or rural areas struggling to access online resources and participate in remote learning. Additionally, the pandemic highlighted the importance of social interactions and support structures provided by schools, which became unavailable with school closures.

(7)

(8) While the full extent of the pandemic's impact is yet to be fully understood, it is clear that the education system will need to adapt and innovate to ensure that all students have access to quality education, regardless of their circumstances. Education is perhaps the only field which benefits from no political boundaries, and one, it is important to address the challenges and lessons learned from the pandemic to ensure that the education system is better prepared for future disruptions. The World Economic Forum [30] has suggested that investing in technology and digital infrastructure, providing support to vulnerable communities, and prioritising mental health and well-being should be key areas of focus.

B. The Finance Industry

The lockdowns and restrictions imposed to curb the spread of the virus led to a severe disruption in supply chains and a significant reduction in demand for goods and services. According to a report by the International Bar Association [38], the financial services sector in India was hit hard by the pandemic, with businesses facing challenges such as reduced liquidity, lower profitability, and increased credit risk.

The banking sector was also severely affected by the pandemic. A study found that the COVID-19 crisis had a significant impact on the Indian banking system. The study found that the pandemic had led to a decline in bank credit, an increase in non-performing assets (NPAs), and a decrease in bank profitability. The Reserve Bank of India (RBI) had to implement various measures, including reducing interest rates and providing liquidity support to banks, to mitigate the impact of the pandemic on the banking system.

The pandemic has also had a significant impact on the Indian economy as a whole. According to a study by S. Mahendra Dev and Rajeswari Sengupta [40], the COVID-19 pandemic led to a significant contraction in India's gross domestic product (GDP). The study found that the lockdowns and restrictions imposed to curb the spread of the virus led to a decline in economic activity in various sectors, including

manufacturing, services, and agriculture. The study also found that the pandemic had a significant impact on employment, with a large number of workers losing their jobs.

The pandemic also had a significant impact on the valuation of Indian companies. A study[41] found that the pandemic had led to a decline in the valuation of Indian companies. The study found that the pandemic had led to a decrease in earnings and an increase in the risk premium, which had resulted in a decline in the value of Indian companies.

The micro, small, and medium enterprises (MSME) sector in India was also severely affected by the pandemic. According to a study[42], the pandemic had led to a significant decline in the revenue and profitability of MSMEs. The study found that the MSME sector faced challenges such as reduced demand, disrupted supply chains, and a lack of access to finance.

The pandemic has led to a decline in economic activity, increased credit risk, and a decrease in the valuation of Indian companies. The Indian government and the RBI have implemented various measures to mitigate the impact of the pandemic on the economy and the banking system. However, the MSME sector continues to face challenges, and there is a need for continued support to help businesses recover from the impact of the pandemic.

To better understand the impact, covid had on Indian finance, we have identified some of India's States (by GDP) for a comparative analysis in their mitigation strategies. The survey is taken from private blogs and newspapers, but we have made an effort to remain as impartial as possible and point a complete picture.

1) *Maharashtra's response*

The state of Maharashtra, which is one of the most populous and economically important states in India, has been significantly impacted by the Covid-19 pandemic. According to a report by the Times of India [43], the state's economy has shrunk in the first quarter of FY 2021-22, although it recovered sharply in the second quarter, registering a growth of 12.1% for the year. Despite this recovery, the impact of the pandemic on the state's economy has been severe, with several key industries struggling to cope with the fallout.

One of the worst-hit sectors in Maharashtra has been the small and medium-sized enterprises (SME) sector, which is a significant contributor to the state's economy. According to a report by Business Today [44], the Covid-19 pandemic and subsequent lockdowns have caused a dent of around Rs 40,000 crore on the Indian economy, with Maharashtra being one of the worst-affected states. The report also notes that several key industries in Maharashtra, including the hospitality and tourism sectors, have been severely impacted by the pandemic.

A report by Moneylife [45] provides a systems view of the Maharashtra state economy amid the raging pandemic. The report highlights that while the state government has implemented several measures to support the economy and provide relief to affected industries, the impact of the pandemic has been severe, particularly for the informal sector. The report notes that job losses, supply chain disruptions, and a decline in demand have all contributed to the economic downturn in the state.

Another report by the Indian Express [46] suggests that Maharashtra's economy is headed for a double-digit fall as business consumption slows down. The report cites data from the Centre for Monitoring Indian Economy (CMIE), which suggests that the state's unemployment rate has risen sharply, with many businesses struggling to stay afloat. The report also notes that the state's agriculture sector, which is a significant contributor to the state's economy, has been impacted by the pandemic, with farmers facing a shortage of labour and transportation problems.

2) *Tamil Nadu's response*

According to a PRS India report [47], the Tamil Nadu Government implemented several measures to contain the spread of COVID-19, such as a lockdown, curfew, and public gatherings restrictions. These measures impacted various sectors of the economy. A Madras Institute of Development Studies working paper [48] reveals that the state experienced a 5.9% contraction in Gross State Domestic Product (GSDP) in 2020-21, compared to a growth rate of 6.1% in the previous year. The service sector was the hardest hit, with tourism and hospitality witnessing significant losses. The manufacturing sector, on the other hand, remained stable due to its importance in the medical and pharmaceutical supply chains.

The pandemic also exposed the unequalising infrastructure of financial inclusion in Tamil Nadu [50]. The paper highlights the impact of the lockdown on vulnerable groups such as informal sector workers and migrant workers, who suffered the most due to lack of financial access. A report by The Frontline [49] highlights the financial crunch and fatigue faced by the Tamil Nadu government during the pandemic, leading to delayed payments to government employees, public sector enterprises, and social welfare schemes.

However, the state's economy showed signs of recovery in the later stages of the pandemic, as indicated by a report from The Hindu Business Line [51]. The article mentions that the state's industrial production and exports increased during the second half of 2021, and sectors such as information technology,

automobile, and textiles showed positive growth rates. Additionally, the state government's investment in infrastructure and digitalization is expected to aid economic recovery.

3) *Bihar's response*

Moving to the opposite side of India's GDP by state, we have the study of Bihar.

According to a report in the Times of India, the Bihar economy has made a strong post-Covid recovery and was ranked third in the country in terms of growth rate in 2021-22. The report also mentions that the state's Gross State Domestic Product (GSDP) grew at a rate of 12.5% in 2021-22, which is higher than the national average growth rate of 9.5%. [52]

However, a study published in the World Development journal examined the economic impact of Covid-19 in India and found that Bihar was one of the states that experienced the most severe decline in economic activity during the first wave of the pandemic. The study used daily electricity consumption and nighttime light intensity as proxies for economic activity and found that Bihar's economic activity declined by 24% in April 2020. [53]

The Bihar government's response to Covid-19 was also examined in a report by PRS Legislative Research. The report mentions that the state government implemented various measures to mitigate the impact of the pandemic on the economy, such as extending the validity of various licenses and permits, providing relief to industries in the form of waivers and deferments of various taxes and fees, and launching a portal to facilitate the procurement of essential commodities. [54]

Despite the initial economic impact of the pandemic, the Bihar economy seems to have made a strong recovery. The government's response to Covid-19 has also played a role in mitigating the impact of the pandemic on the state's economy.

4) *India's policies and mitigation responses*

The Indian government implemented various fiscal and monetary policies to deal with the economic slowdown caused by COVID-19

1. In March 2020, the Reserve Bank of India (RBI) reduced the repo rate by 75 basis points to 4.4% to increase liquidity and ease the financial stress on individuals and businesses. This was followed by another reduction of 40 basis points in May 2020.

2. The government launched *the Pradhan Mantri Garib Kalyan Yojana (PMGKY)* in March 2020, which aimed to provide immediate relief to the poor and vulnerable sections of society. This included providing free food grain and cooking gas to beneficiaries, cash transfers to women Jan Dhan account holders, and ex-gratia payment to senior citizens, widows, and disabled people.[55]

3. The government announced a relief package of Rs 1.7 lakh crore (\$22.6 billion) in March 2020 for the poor, migrant workers, farmers, and others affected by the pandemic. This included a direct cash transfer of Rs 500 (\$6.7) per month for three months to Jan Dhan account holders, and a one-time transfer of Rs 1,000 (\$13.3) to senior citizens, widows, and disabled people.[56]

4. In May 2020, the government announced a Rs 20 lakh crore (\$266 billion) stimulus package, which included measures to support small businesses, farmers, and the agriculture sector. This package was equivalent to about 10% of India's GDP.[56,57]

5. The government introduced several structural reforms to boost the economy, such as opening up the coal sector for commercial mining, liberalising the agricultural sector, and increasing foreign direct investment in defence production.[55]

6. The RBI introduced a loan moratorium for borrowers, allowing them to defer loan repayments for six months without being classified as non-performing assets.[56]

7. The RBI also announced several measures to increase liquidity in the market, such as providing Rs 50,000 crore (\$6.6 billion) for refinancing of commercial banks, and reducing the cash reserve ratio for banks.[56]

There are some discrepancies between the figures mentioned in different sources. For instance, while the Ministry of Finance announced a relief package of Rs 6,28,993 crore (\$84 billion), the International Monetary Fund (IMF) estimates the total fiscal stimulus at 2.5% of GDP, which amounts to Rs 5.9 lakh crore (\$78.7 billion). Moreover, the government has faced criticism for the PM CARES Fund, a public charitable trust set up to raise funds for COVID-19 relief. The fund has been criticised for lacking transparency, as it is not subject to audit by the Comptroller and Auditor General of India (CAG). In September 2021, the Delhi High Court ruled that the PM CARES Fund is a public authority and subject to the Right to Information (RTI) Act.[58,55]

However, from the journalists and economists around the globe, the consensus was more or less the same. The measures taken by the Indian government were 'inadequate' as put in a report by the Brookings Institution[57] which highlights the need for a more targeted approach towards providing relief to the poor and vulnerable sections of the society, and the need for structural reforms in the labour and land markets to stimulate long-term growth. The IMF also suggests that the government should focus on implementing structural reforms to improve the business environment, increase productivity, and enhance the resilience of the economy[59].

C. The Pharmaceutical and Healthcare Industry

1) Pharmaceutical Industry

The Indian pharmaceutical industry has been impacted by the COVID-19 pandemic in several ways. [60] According to a report by the Indian Pharmaceutical Alliance (IPA), the lockdown measures imposed in the country had a severe impact on the industry's supply chain, with disruptions in raw material availability, transportation, and logistics. [60] Additionally, the industry was affected by the reduced number of doctor visits and non-essential surgeries, leading to a decline in demand for medicines. [61]

The Indian pharmaceutical industry is the third-largest in the world, with a market size of around \$41 billion in 2020. [61] The industry is also a significant contributor to the country's economy, accounting for 3.5% of India's GDP and 25% of its exports. [60] During the COVID-19 pandemic, the industry played a critical role in ensuring the availability of essential medicines, including those for COVID-19 treatment, both domestically and globally. [62]

Despite the challenges posed by the pandemic, the Indian pharmaceutical industry has shown resilience and adaptability. [60] Companies have re-engineered their supply chains and production processes, increased investment in digital technologies, and expanded their product portfolios to include COVID-19-related medicines and vaccines. [63] The industry has also collaborated with the government and other stakeholders to address the challenges posed by the pandemic. [62]

2) Healthcare Industry

The Indian healthcare system was already facing challenges before the pandemic, such as inadequate funding, shortage of medical personnel, and low health insurance coverage. The pandemic further exposed the vulnerabilities of the system and increased the demand for healthcare services.[64]

The pandemic has resulted in a significant increase in healthcare spending in India. According to a KPMG report[65], the total healthcare expenditure in India is estimated to increase from USD 180 billion in 2019 to USD 372 billion by 2022. This increase is driven by higher demand for healthcare services, increased health insurance coverage, and higher healthcare prices due to the pandemic[65]. The pandemic has also led to a surge in demand for medical equipment and supplies[64], which has led to a shortage of essential medical supplies such as personal protective equipment (PPE), ventilators, and oxygen cylinders. This has resulted in a significant increase in the prices of medical equipment and supplies. For instance, the price of PPE kits increased by around 300% during the pandemic.

However, the pandemic has also highlighted the existing disparities in access to healthcare in India, with a disproportionate impact on low-income and marginalised communities[65]. The pandemic has had significant economic consequences for the healthcare industry in India, with a decline in revenues for hospitals and clinics due to a decrease in elective procedures and outpatient visits[66]. It has also exposed the vulnerabilities of the healthcare financing system in India, with a lack of adequate funding and insurance coverage for healthcare services[66].

At the same time, the pandemic has also led to an increase in healthcare spending by the government, with a greater allocation of resources towards building and upgrading healthcare infrastructure[64]. The KPMG report also notes that the pandemic has accelerated the adoption of innovative financing models, such as outcome-based payments and health insurance schemes[65] These trends are likely to continue even after the pandemic is over, as the demand for healthcare services in India is expected to remain high.

D. Hospitality, tourism and aviation

Travel and tourism industry is one of the largest service industry in india with a contribution of 9.20% to the national gdp and providing 12.75% of total employment in the country(5.56% direct and 7.19 % indirect)[2].The covid-19 pandemic has severely impacted the hospitality, tourism, and aviation industries in india, leading to a significant decline in revenue and job losses.

3) Hospitality industry

[67]The hospitality industry, which includes hotels, restaurants, and event management, has been hit hard by the pandemic due to the imposition of lockdowns and travel restrictions. According to a report by the federation of hotel and restaurant associations of india (fhrai), the hotel industry suffered a loss of around INR 90,000 crore in

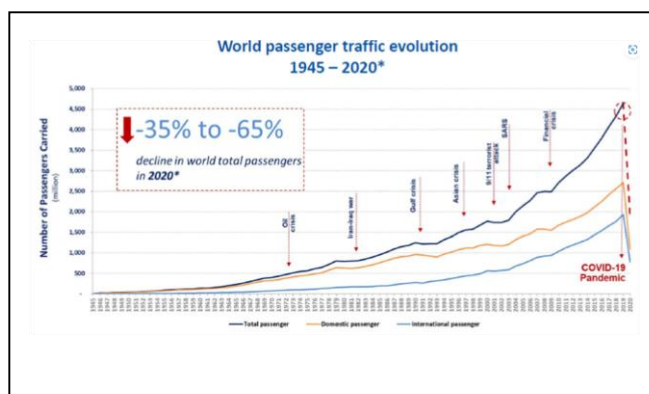
the first nine months of 2020. The report also found that the hotel occupancy rate fell to 17.6% in April 2020, the lowest in the last decade.

4) *Tourism industry*

[67]The tourism industry, which is a significant contributor to the Indian economy, has been severely impacted due to the closure of tourist destinations and travel restrictions. According to a report by the confederation of indian industry (cii), the tourism industry is expected to lose around INR 5 lakh crore due to the pandemic (pti, 2020). [68] The report also found that the number of foreign tourist arrivals in India fell by 65% in March 2020 compared to the previous year.

5) *Aviation industry*

[69]The aviation industry has also been severely impacted by the pandemic due to the suspension of domestic and international flights. According to a report by the centre for asia pacific aviation (capa), the Indian aviation industry is expected to lose around usd 3.6 billion in the first quarter of 2020-21 (pti, 2020). The report also found that the domestic passenger traffic in India fell by 30% in April 2020 compared to the previous year.



However, the Indian government has taken several measures to support these industries. The government has announced several relief packages and loan schemes to provide financial assistance to businesses in the hospitality, tourism, and aviation sectors. The government has also announced several measures to promote domestic tourism and encourage people to travel within the country.

a) *E. Real Estate and Housing Industry*

The pandemic of COVID-19 has had a significant impact on the Indian business and finance industries, including the real estate sector. According to [70] and [71] the pandemic has had an impact on the Indian real estate industry, causing a variety of challenges and disruptions. One of the most significant effects of the pandemic on the Indian real estate sector has been a decrease in demand for commercial real estate space, as companies have been forced to implement work-from-home policies in order to prevent the virus from spreading. As a result, demand for office space has decreased, resulting in lower rental and capital values for commercial properties.

The pandemic has also had an effect on the residential real estate sector, as [70] and [73] note that the number of property transactions has decreased and prices have been affected. However, [3] argues that house prices in India have remained relatively stable and even increased in some cities. The authors of [72] used a nonlinear autoregressive distributed lag (NARDL) model to examine the impact of COVID-19 on house prices in 12 major Indian cities, discovering that the pandemic had both short- and long-term effects on the housing market. In the short term, demand and prices fell, but in the long run, prices rose due to low interest rates and pent-up demand.

The pandemic has had an impact on the construction industry in addition to the impact on demand and prices. Construction activities have been halted or delayed as a result of pandemic-induced lockdowns, labour shortages, and supply chain disruptions. [70] notes that the workforce in the industry has been impacted, with many migrant labourers returning to their hometowns during the lockdown, resulting in a labour shortage.

Furthermore, the pandemic has had a broader impact on the Indian economy, with the World Bank reporting that the pandemic reduced India's GDP by 7.7% in 2020-21 [71]. As a result, economic activity has slowed, consumer spending has decreased, and investment has slowed. As a result, businesses have had difficulty meeting their financial obligations, with [70] reporting an increase in loan defaults and a decline in liquidity.

However, the impact on the residential real estate market has been more nuanced, with short-term declines in demand and prices in some areas offset by a long-term positive trend. The pandemic's broader impact on the Indian economy has been significant as well, with a decline in GDP leading to a decline in economic activity, reduced consumer spending, and a slowdown in investments.

b) *F. Sports Industry*

The COVID-19 pandemic has had a significant impact on the Indian business and finance industries, causing challenges and disruption in many sectors. The sports industry is one that has been particularly hard hit. According to [74] the pandemic has cost the Indian Sports League more than INR 20,000 crore (approximately USD 2.7 billion). The cancellation or postponement of major sporting events, such as the Indian Premier League (IPL) and the Tokyo Olympics, has been blamed.

The sports industry's decline is further examined in [75] which claims that the pandemic has resulted in a 45% decrease in global sports revenue, with India being no exception. As a result, sponsorship and advertising revenues for sports teams and organisations have decreased, resulting in a decrease in overall revenue. The loss of revenue from stadium ticket sales, merchandise, and broadcast rights has also exacerbated the Indian sports industry's situation.

The impact of the pandemic on the sports industry has also been discussed in [76], which emphasises the industry's importance to the economy and job creation. It notes that the pandemic has resulted in a significant reduction in the number of jobs in the sector, with many people losing their jobs as events have been cancelled or postponed.

Apart from the sports industry, the pandemic has posed significant challenges to the Indian business and finance sectors. According to a World Bank report, the pandemic will reduce India's GDP growth by 7.7% in 2020-21. According to the report, the pandemic's impact on India's informal sector, which employs a sizable portion of the country's workforce, has been particularly severe. Due to the economic impact of the pandemic, many small businesses have been forced to close, resulting in job losses and a decrease in overall economic activity.

c) *G. Information technology, media, research & development*

The IT industry, one of India's key economic drivers, has been severely affected. According to a report by Market Data Forecast, the global IT industry is expected to decline by 5.1% in 2020 due to the pandemic. [77] The pandemic has led to a significant shift in the IT industry's operations, including remote working, virtual collaboration, and cloud-based services. This shift is expected to accelerate digital transformation in the industry. [78] Additionally, the pandemic has led to a digital surge in India, with an increasing reliance on digital tools and platforms, including telemedicine and e-commerce. [79] According to a study published in *Frontiers in Public Health*, the digital economy is expected to play a vital role in India's economic growth in the post-COVID-19 era. [80]

The pandemic has also had a significant impact on media consumption and its role in spreading information. A study published in the *Indian Journal of Medical Sciences* found that mass media played a crucial role in disseminating information about the pandemic in North India. [81] Furthermore, social media has emerged as a critical tool for crisis communication and interaction among Gen Z and Millennials worldwide, according to a study published in *ReliefWeb*. [82]

The pandemic has also affected research and development activities, including clinical trials and scientific research. According to a study published in *Pediatric Research*, the pandemic has led to a significant disruption in research activities and highlighted the need for innovative research strategies to combat the disease. [84] Additionally, the pandemic has affected progress towards achieving the United Nations' Sustainable Development Goals (SDGs), including goals related to health, education, and economic growth. [83]

1) *Case Study: The Tata Consultancy Services (TCS)*

The boom of research and development during the pandemic can be best highlighted with a study on one of India's leading Services company - The TCS.

A study published in *Strategic Change* in 2021 analysed the impact of COVID-19 on TCS, one of the largest IT services companies in the world. The study found that TCS was able to navigate the pandemic crisis well due to its strong IT infrastructure and digital capabilities [85]. TCS was able to quickly transition to remote work, which enabled it to continue delivering services to clients. However, the study also highlighted that TCS faced challenges related to supply chain disruptions, employee safety, and client demand[85].

A press release by TCS in July 2020 reported that the company had seen a decline in revenue and profits in the first quarter of FY 2020-21 due to the COVID-19 pandemic. However, the company's revenue and profits improved in the subsequent quarters, indicating that it was able to adapt to the new normal and sustain its business operations. TCS was recognized as a leader in the Everest Group PEAK Matrix for Application Services in Banking and Financial Services in 2020. The report noted that TCS had successfully implemented a "virtual service delivery model" in response to the pandemic, which enabled it to continue providing services to clients while ensuring the safety of its employees[85].

In 2020, TCS announced a partnership with Microsoft to provide industry-specific solutions for the cloud. The collaboration aimed to help organisations accelerate their digital transformation initiatives and improve their agility and resilience in the face of the pandemic. TCS continued to invest in R&D during the pandemic, with a focus on emerging technologies such as artificial intelligence (AI), cloud computing, and the Internet of Things

(IoT). The company filed 7,317 patents between 2016 and 2020, and was granted 1,530 patents in 2020 alone [85]

According to TCS' annual report for FY 2020-21, the company's revenue for the year was \$22.2 billion, a 0.8% increase over the previous year. The company's net income for the year was \$4.7 billion, a 2.4% increase over the previous year. TCS' digital revenue grew by 31% year-on-year, and accounted for 38.5% of its overall revenue in FY 2020-21.

d) H. Food Sector

The COVID-19 pandemic has had a significant impact on India's business and finance sectors. On March 25, 2020, the country was placed under a nationwide lockdown that lasted until May 31, 2020, causing significant economic disruption. The lockdown reduced demand for non-essential goods and services, resulting in a drop in revenue for businesses in a variety of industries [86].

During the pandemic, the food and beverage industry in India was one of the hardest hit. According to Memon et al. (2021), the industry experienced a 30-35% drop in sales during the pandemic. According to the study, approximately 20-25% of food and beverage businesses in India have closed due to the pandemic. The closing of restaurants, cafes, and other food establishments had a significant impact on the country's food supply chain [87][88].

The pandemic also had a significant impact on India's agro-food industry. According to Poonia et al. (2020), the pandemic reduced demand for perishable goods such as fruits and vegetables, resulting in significant price reductions. The study also found that the pandemic had disrupted the supply chain of agricultural products, resulting in a decrease in farmer income [89].

The pandemic has had a significant impact on India's financial sector. Several measures were implemented by the Reserve Bank of India (RBI) to support the economy during the pandemic, including a reduction in the repo rate and a moratorium on loan repayments. The RBI also implemented a number of liquidity measures to help the banking system. However, the pandemic has resulted in a significant increase in bad loans for banks, which may have a long-term impact on their financial stability [86].

The COVID-19 pandemic has had a significant impact on India's business and finance industries. During the pandemic, the food and beverage industry, as well as the agro-food industry, were among the hardest hit sectors. The financial sector has also been impacted, with the RBI implementing a number of measures to help the economy. However, the pandemic has resulted in an increase in bad loans for banks, which could have a long-term impact on their financial stability.

V. SOCIAL IMPACTS

1) Family Dynamics: Domestic Violence

Domestic violence has long been a problem in India, and the COVID-19 pandemic has made matters worse. [92] Domestic violence has increased in India as a result of the lockdowns and restrictions imposed to control the spread of the virus.

During the lockdown period in 2020, the National Commission for Women (NCW) received a significant increase in the number of domestic violence complaints. [91] Domestic violence cases in India increased by 47% during the lockdown, according to the NCW.

Domestic violence cases increased during COVID-19 for a variety of reasons. [90] When people are forced to stay indoors for extended periods of time, they experience increased stress and anxiety, which can lead to domestic violence. Financial insecurity as a result of job losses and pay cuts has also contributed to the rise in violence. Furthermore, movement restrictions have made it difficult for victims to seek help or flee abusive situations.

2) Online Gaming

The COVID-19 pandemic has forced people to spend more time at home, which has resulted in an increase in home gaming in India. [93] With outdoor activities limited and social distancing measures in place, gaming has emerged as a popular source of entertainment and a means of staying connected with friends and family.

The Indian online gaming market grew by 21% during the lockdown period, according to a report by Mobile Premier League (MPL). According to the report, the number of new users increased by 84%, and the amount of time spent on gaming platforms increased by 21%.

During the pandemic, popular gaming categories included casual games like Ludo and Rummy, as well as multiplayer games like PUBG and Call of Duty. During the lockdown, many people turned to gaming to socialise and connect with friends and family. [94]

On the bright side, the pandemic has highlighted the importance of solidarity and a sense of belonging and community, with people helping each other. This has led to a new-found appreciation for health workers and increased recognition and support for the isolated. Governments are seen investing more in the healthcare and

social welfare schemes[64]. There is a marked difference between the pre-covid and post-covid work-life, communication and overall wellbeing of people across the world.

VI. CONCLUSION

The COVID-19 pandemic has had many far-reaching socio-economic implications for India. This affected the lives and livelihoods of millions of people across the country. From job losses and income disparities to increased poverty and inequality, the pandemic has exposed the fault lines in India's social and economic systems, and highlighted the urgent need for greater investment in healthcare, education, and social welfare programs. However, despite the challenges, India has also demonstrated resilience and innovation in its response to the crisis, with individuals, communities, and institutions coming together to support each other and find solutions to the challenges posed by the pandemic. As India looks towards a post-COVID future, it is essential that it builds on these strengths, while also addressing the underlying issues that have made its population so vulnerable to the impact of the pandemic. By doing so, India can emerge stronger, more equitable, and more resilient than ever before.

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