

## 5G Impact on the Warehousing sector in India

The demand for warehousing space in India increased significantly in 2022 as well as in the first quarter of 2023 on the back of the growing e-commerce sector and organized retail. The notable aspect being investments being made even in tier 2 and tier 3 cities in India. There is clearly a rising demand for organized warehousing facilities in India which can be attributed to some of major initiatives like the Digital India, Production Linked Incentive ( PLI ) scheme taken by the Govt of India over the last few years. With the launch of the National Logistics Policy last year , this is bound to give a huge fillip to the warehousing sector and we are likely to see creation of world class warehousing spaces going forward. India's strategic location at the crossroads of major trade routes between Asia, Europe, and the Middle East presents an opportunity for the development of logistics and warehousing hubs. India's increasing focus on multi-modal transportation, such as road, rail, air, and waterways, presents an opportunity for warehousing companies to develop integrated logistics solutions. With the increasing demand for fresh and frozen food products, there is a growing need for cold storage facilities in India. This presents an opportunity for warehousing companies to invest in specialized cold storage infrastructure.

India's industrial and warehousing sector reported a robust absorption of approximately 11 million square feet, with the tier-I cities driving 77% of the demand, according to a report by well-known Global real estate advisory firm Savills India. The report reveals that grade-A space constituted 52% of both total absorption and supply in the market, signalling a growing appetite for premium space. The NCR region, Mumbai, Bengaluru, Chennai, and Pune were the major contributors to India's industrial and warehousing segment, with Delhi-NCR leading at a 19% absorption rate, followed by Mumbai at 14%. Bengaluru and Chennai registered absorption rates of 9% and 8% respectively, while tier-II and tier-III cities accounted for the remaining 23% of total absorption. The industrial and logistics sector is poised for significant growth in 2023, with a projected absorption of over 40 million sq. ft. This demand is expected to be driven by emerging Tier-II and Tier-III cities, a growing need for urban warehousing, and a major transformation in the Indian manufacturing sector. The 3PL sector has been a major contributor to the growth of the warehousing industry, accounting for 40-50% of the total demand over the last 2-3 years.



While there are tremendous opportunities in the Warehousing and logistics sector, there are some challenges that need to be addressed such as :

- Limited availability of land: The availability of land is a major issue for warehousing companies in India. Due to the high cost of land, many companies are forced to set up their warehouses in remote areas far from major cities and transportation hubs.
- Fragmented supply chain: India's supply chain is highly fragmented, with multiple intermediaries involved in the movement of goods. This results in inefficiencies and delays in the delivery of goods.
- Lack of skilled labour: The warehousing sector in India faces a shortage of skilled labour. Most of the workers employed in the sector are unskilled and require training, which adds to the cost of operations.
- Inefficient inventory management: Poor inventory management leads to high inventory carrying costs, stock-outs, and delays in the delivery of goods.
- Security concerns: The security of goods stored in warehouses is a major concern for warehousing companies in India. The risk of theft and damage to goods is high, especially in remote areas.

The increasing need to leverage Technologies like IOT, AI, AR/VR powered by 5G networks is an imperative to transform the way warehouses operate, enabling them to become more efficient, productive, and cost-effective. The role of Automation and artificial intelligence (AI) in warehouses has already been growing significantly in recent years, and the advent of 5G is likely to accelerate this trend further. With 5G's faster and more reliable connectivity, warehouses will be able to process and transmit data much more quickly and efficiently, enabling greater automation and more advanced AI capabilities. One major impact of 5G on warehouses will be the ability to connect and control a larger number of devices in real-time.

### **The role of 5G in improving supply chain management and logistics in Indian warehouses !!**

Given its inherent characteristics of extremely low latency, very fast speeds, massive capacity, and extremely high reliability, 5G technology has tremendous potential to significantly improve supply chain management and logistics in Indian warehouses. Here are some of the ways in which 5G can play a role:

**Faster speeds and highly reliable connectivity:** With speeds of 400 Mbps and higher and with a potential reliability of 99.99999% uptime being possible with 5G technology, warehouses can enjoy faster and more reliable connectivity, enabling real-time data exchange and communication between different stakeholders in the supply chain. This can help to improve the efficiency and speed of operations, reducing delays and improving overall productivity.

**Better visibility of Inventory :** 5G technology can ensure advanced tracking and monitoring of systems, enabling near and accurate real-time tracking of inventory levels, location, and status. This can help Warehouses to manage their inventory more efficiently, reducing the risk of stockouts, overstocks, and other inventory-related issues which are very common .

**Automation and use of Robots :** Autonomous robots and other automated systems inside warehouses can work more seamlessly and safely alongside human workers, leading to much better and higher efficiency and productivity. For example, automated material handling equipment like forklifts and other equipment can be controlled remotely and can coordinate with each other in real-time, allowing for more efficient and faster movement of goods. By leveraging the insights from AI systems it can help warehouse managers leverage the Data for better decision making and obtaining

predictive insights . This will go a long way in optimizing their operations, Predict demand, and identify inefficiencies or opportunities for improvement.

**Video analytics** : 5G will also enable new video analytics capabilities, which includes real-time full video capture of the various products being shipped, the truck being loaded , how many containers and pallets being used and real time inventory visibility . Through cloud-based applications, the high-definition video feeds could instantly be processed into real-time 3D asset models that enable warehouses to determine the optimal positioning, path and timing of movements.

**Predictive maintenance:** 5G technology can enable the use of IOT based sensors and Data analytics to predict equipment failures and maintenance needs, enabling proactive maintenance and reducing downtime. This can help warehouses to maintain their equipment and infrastructure more effectively, reducing maintenance costs and improving overall productivity. Unplanned downtime has a huge impact on operations and impacts revenue and profitability negatively.



### **Potential cost savings and efficiency gains that Indian warehouses can achieve by adopting 5G technology**

Since warehouses are expanding in size and scale, 5G offers lower total cost of ownership (TCO) than Wi-Fi and other alternate wireless technologies that have been tried in warehouses. As per certain studies the connectivity cost for a connected warehouse with Wi-Fi incur 22% higher per sq. ft. than cellular technologies Capex will be higher and opex will be lower for 5G and the other way around for Wi-Fi.

As per a report ABI Research which analyses warehouse companies in the US, that connected their existing apps, security camera systems, robot automation projects and more to their private 5G networks saw a significant ROI . The firm stated an average U.S. warehouse with “a private network for smart warehousing applications” could see \$13.80 for every dollar invested during a five-year span. Additionally, “an average warehouse” could see an almost 12 percent increase in gross profit margin and \$284.17 million in operational cost savings during that same time period.

On the other hand, warehouses that opt not to deploy a 5G network could potentially forgo \$231 million in unrealized profit and ship 6 million less packages, according to the same report.

In India, while the 5G pricing dynamics may vary compared to the US, as warehouses in India scale their 5G deployments covering larger warehouses and multiple locations across India, there is bound to be cost savings and efficiency gains if their architect the 5G network correctly and choose the right use cases.

### **The future of 5G technology**

5G telecom networks are expected to represent nearly 2% of India's GDP by 2030, according to a recent report by India's National Association of Software and Services Companies (NASSCOM) and Arthur D. Little. The report anticipates that the 5G sector will generate revenues of nearly \$180 billion by 2030. As per this report, there are likely to be 500 million 5G users in India by 2030. 5G has the potential to be truly transformational for the economy and is bound to create new opportunities for businesses and developers to create innovative applications and services. 5G technology can enable more sophisticated AI and Machine learning applications, enabling real-time data processing and analysis. The other important dimension is that 5G is always going to be a part of a larger solution and hence it needs to Integrate with other emerging technologies such as Edge Computing, Blockchain, AR/VR etc to create new applications and services that can create huge business impact. The future of 5G technology is promising, and it has the potential to transform the way we live, work, and interact with the world around us

### **The future of 5G in Indian warehousing sector**

5G can be a potential game-changer and a great competitive differentiator for Indian warehouses by enabling a range of new technologies and applications that can improve operational efficiency and reduce costs.

When the 5G ecosystem evolves in India and with the likely cost of 5G wireless devices, 5G bandwidth costs and AI getting a lot more democratized, here is what I would envision in the future

**Smart and Connected Warehousing:** 5G can enable the implementation of smart warehousing solutions, such as real-time inventory tracking, automated picking, and packing, and predictive maintenance. These solutions can help warehouse managers optimize their operations and reduce errors, leading to cost savings and increased productivity.

**Autonomous Vehicles:** 5G can also enable the deployment of autonomous vehicles in warehouses, such as AGVs (Automated Guided Vehicles) and drones. These vehicles can navigate the warehouse autonomously and perform tasks such as transporting goods from one location to another, reducing the need for human intervention. Many large Amazon warehouses have already been using AGVs significantly over the last few years across the world including India and have seen significant business impact.

**Augmented Reality:** With the cost of AR hardware like Microsoft HoloLens costs likely to come down in the future, 5G in combination with AR in warehousing can help workers perform tasks more efficiently by overlaying virtual information on top of the physical environment. For example, AR can help workers locate items in the warehouse, guide them through picking and packing processes, and provide training on new tasks.

**Remote Monitoring and Operations :** 5G can enable remote monitoring of warehouse operations, allowing managers to keep track of their operations in real-time from anywhere in the world. This can help them identify issues before they become problems and make decisions based on data-driven insights.

## **Role of the Indian government in the adoption of 5G technology in the logistics and warehousing sector**

The Indian government can play a crucial role in the adoption of 5G technology in the logistics and warehousing sector by creating a supportive regulatory framework and investing in the necessary infrastructure. Last year the Government released the National Logistics Policy which was very much awaited by India Inc. India's current logistics cost is almost 14% of GDP and this impacts our competitiveness as a manufacturing hub. The much-awaited policy framework caters to all the key stakeholders across the country's vast yet fragmented logistics landscape. The new framework comes with a special emphasis on streamlining processes for seamless coordination, and reduction in overall logistics cost, besides pushing employment generation and skilling of the workforce. The policy is expected to lower warehousing costs and eventually ensure our logistics costs is less than 10% of GDP and thus improve India's competitiveness.

Also, the government can collaborate with industry stakeholders to identify and address any regulatory barriers that may hinder the adoption of 5G technology. For example, the Government can work with telecom operators to allocate the necessary spectrum for private 5G networks and ensure that the spectrum is affordable and accessible to all players in the logistics and warehousing sector.

In addition, the government can support R&D efforts in 5G technology by providing funding to universities and research institutions. This can help develop new technologies and applications that can improve the efficiency and effectiveness of logistics and warehousing operations. In the recent budget the Govt announced setting up of 100 labs for developing application using 5G services in various Engineering institutions across India. The warehouses can leverage these labs in the future to test out 5G use cases.

### **Conclusion**

The impact of 5G on the Indian warehousing industry is expected to be significant. The adoption of 5G technology can help address some of the challenges faced by the industry which was outlined earlier. 5G working in conjunction with the Internet of Things (IoT), Artificial Intelligence (AI), and automation can go a long way in help improving efficiency, reduce costs, and enhance the overall customer experience which is extremely important in the times that we live in since we live today in an Economy of Experiences. Overall, the implementation of 5G technology has the potential to revolutionize the warehousing industry in India. By leveraging the benefits of 5G, warehousing companies can improve their competitiveness, reduce costs, and meet the evolving needs of customers. However, the successful implementation of 5G will requires constant collaboration between the Government, industry stakeholders, and the Telecommunications Service Providers to ensure adequate infrastructure, regulatory framework, and Technology adoption.

### **ABOUT THE AUTHOR**





## **Sunil David**

Sunil David is an Independent Digital Technology Consultant with 29 years of experience in the IT and Telecom Industry. He currently is empanelled as an Independent Consultant in the Manufacturing and Process Control Practice Area with Frost and Sullivan India. He also Advises an IOT and AI Focused Technology firm, Flamenco Technologies in their Go to Market strategy, Branding initiatives and building of their partner ecosystem, specifically targeting use cases around Connected Manufacturing, Digital Supply Chain and Technology Enabled Sustainability solutions. Sunil was recently inducted as a Mentor into T-Hub (Telangana Hub), one of the largest startup Incubators in India supporting some of the most innovative and disruptive startups in the World.

He is an alumnus of Symbiosis Institute of Management Studies, Pune and spent almost 20 years with AT&T India. Sunil who was the Regional Director – IOT (India and ASEAN) for AT&T India in his last stint has had extensive experience in Business Strategy, Sales, Business Development and Alliance & Partnership building. He is a very frequent speaker at Industry forums on topics related to IOT, AI, 5G, Digital Transformation, Metaverse, Future of Work, Cyber security etc. He has been a recipient of a number of Awards and Recognitions from various Industry bodies and Media conglomerates in recognition for his work in Digital Technology Advocacy and Digital Skilling initiatives for Women. He has also written a number of articles on topics related to Cyber Security, Digital Transformation, Metaverse, IOT, 5G etc. for leading business publications and technology focused websites. He is affiliated with a number of industry bodies like CII, NASSCOM, IET, IACC etc. working on a number of national initiatives around Digital Skilling, Digital Technology awareness and advocacy, Startup-Corporate connect etc.

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