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Transforming Supply Chain Management in The Digital Era with 5G Technology

WHITEPAPER

Abstract

5G technology can significantly transform supply chain management by reducing costs, optimizing operations, and giving companies differentiation compared to their peers. Changing technology landscape shall bring in tremendous change in which the supply chains perform. The supply chains of future would bring in new modes of working, enhanced technological resources. This would encompass leveraging technology to gather, manage & convert data resources into insights both for humans as well as automation platforms

Key Takeaways

The key areas covered in this whitepaper are as follows:

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A Brief Recap of The Essential Points and Suggestions for Companies Interested in Utilizing 5G for Managing Their Supply Chain.

5G Technology and its Impact on Supply Chain Management: A Brief Overview.

5G technology enables faster data transfer, lower latency, and increased connectivity faster than any existing mobile technologies. These features of 5G throw up multiple possibilities to transform Supply chains. Organizations can optimize their operations and reduce inefficiencies with real-time tracking and monitoring of inventory, shipments and logistics assets, inventory, and shipments, rendering greater transparency and visibility throughout the supply chain with the help of 5G. Using autonomous vehicles, drones, and internet of things (IoT) sensors, drones can augment the speed and accuracy of supply chain operations with the help of 5G. Furthermore, 5G can promote better communication and collaboration among supply chain partners, ensuring effective coordination and reducing the risk of disruptions or delays. 5G's impact on supply chain management can be significant, driving greater efficiency, agility, and innovation in the industry. The costs associated with deployment of 5G infrastructure and cyber security concerns are important considerations for organizations.



Figure 1: Impact of 5G on Supply Chain Management

The Role of Connectivity in Supply Chain Management

Exploring the challenges and opportunities for the industry with the seamless flow of information, goods, and services in the supply chain ecosystem heavily relies on connectivity. 5G connectivity will become more crucial in bringing forth opportunities to the industry. The supply chain ecosystem's complexity involving multiple stakeholders, systems, and geographies can lead to information and data silos, causing inefficiencies and supply chain operation delays. To address this challenge, stakeholders must prioritize collaboration, data standardization, and interoperability to facilitate seamless communication and coordination.

Ensuring secure and reliable networks is another challenge as supply chains become increasingly digital and connected. Cybersecurity threats like hacking, data breaches, and cyberattacks pose significant risks to supply chain operations. Hence, organizations need to implement robust security measures to safeguard their networks and data.

Leveraging connectivity for supply chain management presents significant opportunities for the industry. Real-time tracking and monitoring made possible by technologies such as 5G and IoT can improve operational efficiency, reduce waste, and provide greater visibility and control. Collaboration and communication between supply chain partners can also be enhanced, facilitating more responsive and agile supply chain operations.

Connectivity is a critical enabler of supply chain management, offering both challenges and opportunities for the industry. 5G and IoT can drive innovation and transformation in supply chain operations when security, interoperability, and data standardization are given due attention.

Revolutionizing Supply Chain Operations with 5G

5G enables supply chain stakeholders to access up-to-date information on inventory, shipments, and logistics assets. This can transform the way organizations manage their supply chain operations. Real-time data and analytics are one of the key benefits that can facilitate faster decision-making, enhance visibility, and optimize supply chain operations. 5G can enable the deployment of IoT sensors and devices at scale enabling the transmission and collection of large amounts of data. Low-latency and high-bandwidth capabilities of 5G & edge computing can also enable data processing and analysis capabilities closer to the source of the data. This can reduce latency and improve overall efficiency.

5G technology can enable the reduction of human intervention in SCM by facilitating the deployment of autonomous vehicles and drones, thus enabling faster and more efficient deliveries. Additionally, 5G can support the use of augmented reality (AR) and virtual reality (VR) technologies in supply chain operations, enabling remote collaboration, training, and maintenance. Real-time communication and collaboration are also possible with 5G, allowing supply chain stakeholders to coordinate better and respond more quickly to disruptions or delays. The high bandwidth and low-latency features of 5G can transform supply chain management by enabling real-time monitoring and faster decision-making. Although there are challenges associated with deploying 5G infrastructure, such as cost and security concerns, the potential benefits are significant, making it a technology that supply chain stakeholders should monitor closely.

Benefits of 5G Technology in Supply Chain Management

Supply chain management can greatly benefit from 5G technology due to its ability to provide faster data transfer speeds with Real-time data transfer which enhances visibility and facilitates quicker decision-making.



Figure 2: Advantages of the 5G Technology For Supply Chain Management

The deployment of 5G technology in supply chain management offers various benefits, including greater network capacity and bandwidth which enables precise data with multiple connected devices and sensors, resulting in more efficient supply chain operations.

The low latency of 5G enables collaboration and communication among stakeholders and improves coordination. The technology also offers improved reliability, reducing disruptions and delays in the supply chain.

With the support of new technologies like autonomous vehicles and drones, supply chain operations can become more effective and efficient. Enhanced security features like encryption and authentication in 5G improve protection against cyberattacks, keeping sensitive data safe.

In conclusion, while there are challenges in deploying 5G infrastructure, the benefits it offers for supply chain management are significant. Stakeholders should closely monitor the technology's potential and consider its adoption as it enables faster, more efficient, and more reliable supply chain operations.

Use Cases for 5G in Supply Chain Management

Supply chain management could experience a groundbreaking transformation with the incorporation of 5G technology. This innovative technology can potentially to improve operational efficiency and enhance visibility and control. 5G can be implemented in numerous ways in supply chain management, such as real-time tracking and monitoring, utilizing autonomous vehicles and drones, using augmented and virtual reality (AR/VR) technologies, improving supply chain security, enabling warehouse automation, optimizing transportation, providing predictive maintenance, ensuring quality control, improving safety, and increasing efficiency. It also reduces time and maintenance costs, has low latency and high bandwidth, and supports real-time communication and data transfer are some of the features of 5G.In conclusion, 5G technology could revolutionize the supply chain industry by enabling real-time monitoring, optimization, and connectivity.

Factors to Be Considered By Organizations While Adopting 5G Technology In The Supply Chain

While 5G technology offers multiple benefits for supply chain management, there are also several challenges and considerations that organizations must keep in mind while adopting it. Some of the key challenges include:

Investment in infrastructure: Adopting 5G requires a significant investment in infrastructure, including new network equipment and infrastructure. This investment can be a barrier for smaller companies.

Security and privacy concerns: Security and privacy concerns exist with any new technology, including 5G. Organizations must have robust security measures in place to protect sensitive data and comply with relevant data privacy regulations.

Interoperability: 5G technology may need to be fully interoperable with existing systems and networks, creating integration challenges for organizations.

This can make it difficult to achieve seamless connectivity between different systems and devices in the supply chain.

Talent and skills: Adopting 5G technology requires specialized skills and expertise, which may be in short supply. Organizations must ensure they have access to the necessary talent and skills to adopt and implement this technology successfully.

Regulatory challenges: 5G is subject to regulatory oversight, and organizations must ensure they comply with relevant regulations and standards.

Coverage limitations: Although 5G has greater coverage than previous mobile networks, coverage may still be limited in some areas. Organizations must ensure they have adequate coverage in the areas where they operate to fully realize the benefits of 5G.

It is essential for organizations to consider and address these challenges when implementing 5G in supply chain management to adopt and implement 5G technology in their supply chain operations and realize the benefits of this transformational technology.

Transforming Supply Chain for Customers with TechM's Holistic SCM NXT.NOW

Offerings Tech Mahindra has a solution that covers different areas such as planning and execution, sourcing, contract management, delivery, aftermarket, and control. They have vast experience in 5G technology and can work with clients to transform their planning and execution, delivery, service, and control tower operations by leveraging their expertise in 5G.





Tech Mahindra offers an array of capabilities, solutions, IPs, partnerships, and accelerators that cater to different areas of supply chain management (SCM). These capabilities facilitate the modernization of SCM operations and help realize the SCM NXT.NOW vision.



Figure 4: Supply Chain Management (SCM NXT.NOW) Capabilities



Figure 5: TechM Offerings

Tech Mahindra's suite of digital supply chain solutions combines state-of-the-art technologies, intelligent automation, visualizations, and analytics to deliver effective business outcomes for its clients. Tech Mahindra is a leading expert in supply chain management, and they work closely with clients to help them achieve their sustainability goals while increasing revenue and enhancing the customer experience. Their comprehensive expertise across the supply chain spectrum, coupled with their strong digital capabilities, makes them a unique partner for transformation in supply chain management.

Tech Mahindra's SCM NXT.NOW transformation portfolio is designed to drive growth, efficiency, and sustainability. The portfolio includes robust technology solutions in Blockchain, IoT, AI, and 5G, all integrated to maximize their effectiveness. They also work collaboratively with partners and in-house solutions to bring the best of both worlds to their clients. Tech Mahindra's offerings cover the entire supply chain, from product design to production efficiency, alternate sourcing, and traceability.

Tech Mahindra's extensive expertise in 5G technology allows them to partner with clients to revolutionize their planning and execution, delivery, service, and control tower operations, providing game-changing results.

The Future Of 5G And Supply Chain Management: Exploring the Long-Term Implications Of 5G Technology For The Supply Chain

As 5G technology continues to advance, its impact on the supply chain is anticipated to be substantial, carrying broad implications for the industry. The integration of 5G is projected to increase efficiency and automation, enhance visibility and transparency, promote sustainability, elevate customer experience, inspire new business models, and cultivate greater agility and responsiveness. These advancements are expected to revolutionize the industry, opening doors for



new opportunities. Consequently, it is critical for supply chain stakeholders to thoughtfully assess the implications of 5G technology and develop plans for its adoption and integration into their operations.

Maximizing the Potential of 5G Technology in Supply Chain Management

Faster and more dependable connectivity, real-time tracking, and improved communication and collaboration among stakeholders are some of the significant benefits that organizations can reap from 5G technology when it comes to supply chain management. Adopting 5G technology can improve operational efficiency, reduce costs, and enhance customer satisfaction. However, before investing in implementation, evaluating the existing supply chain processes, and identifying areas that can derive the most value from 5G technology is vital. For effective implementation and realization of the benefits of 5G technology in supply chain management, collaboration and communication among all stakeholders involved, including suppliers, manufacturers, distributors, and retailers, are crucial. Priority must be given to security measures to ensure that sensitive data is safeguarded and that the supply chain operations remain reliable and secure.

To optimize the benefits of 5G in supply chain management, organizations must assess their current processes, prioritize collaboration and communication, work with reliable technology partners, and provide adequate training and equipment to stakeholders. Monitoring and evaluating 5G-enabled supply chain management systems can help improve efficiency and effectiveness continually.

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Dr Shekhar's focus areas of work are strategy, digital transformation, leverage of digital technology for business transformation, business model innovation. He has 24+ years of work ex working in product R&D, manufacturing, and information technology domains. He has done his Doctorate (PhD) followed by MBA with distinction. Shekhar has been an invited speaker for a number of conferences, the recent being the Confederation of Indian Industries (CII) conference on the topic of Digital Transformation. Shekhar has seven international publications on a range of topics i.e., business model innovation, digital technologies etc.



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