5G - OPPORTUNITY FOR RETAIL, CPG, AND LOGISTICS

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Executive summary

Retail, consumer products, and logistics enterprises must capitalize on 5G to offer memorable customer experiences. Brands can offer unique customer journeys and delight customers by developing customer-centric solutions.

5G is the fifth-generation technology standard for broadband cellular networks enabling superior bandwidth, higher speed up to 10 Gbps, lower latency below 1ms, and enhanced scalability.

The global 5G market is estimated to touch US$ 667.9 billion by 2026, serving the needs of billions of connected devices[1].
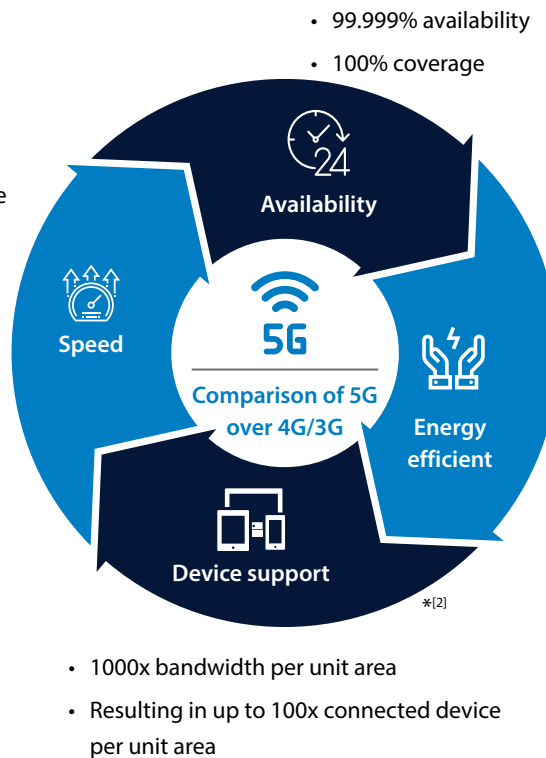
However, there may be some challenges –
- Supporting consumer devices only compatible with the 3G or 4G standard
- Cost to build 5G-compatible infrastructure for consumers to pay
- Security protocols, which may need to be revised for new network frequencies

- 99.999% availability
- 100% coverage

Benefits
- No loss of connectivity even in rural areas, providing opportunities for retail pop-up stores
- Better and continuous tracking of trucks even in dead zones
- Mobile battery will operate longer without charging

- Up to 10 Gbps data rate
- 1 millisecond latency

Speed / Availability / Energy efficient / Device support

5G

Comparison of 5G over 4G/3G

*[2]

Benefits
- Productivity gains for retail stores, resulting in cost savings
- Truly haptic applications such as virtual repair can be developed to share a sensation or experience live
- Network slicing can be achieved easily to create an exclusive network for dedicated users
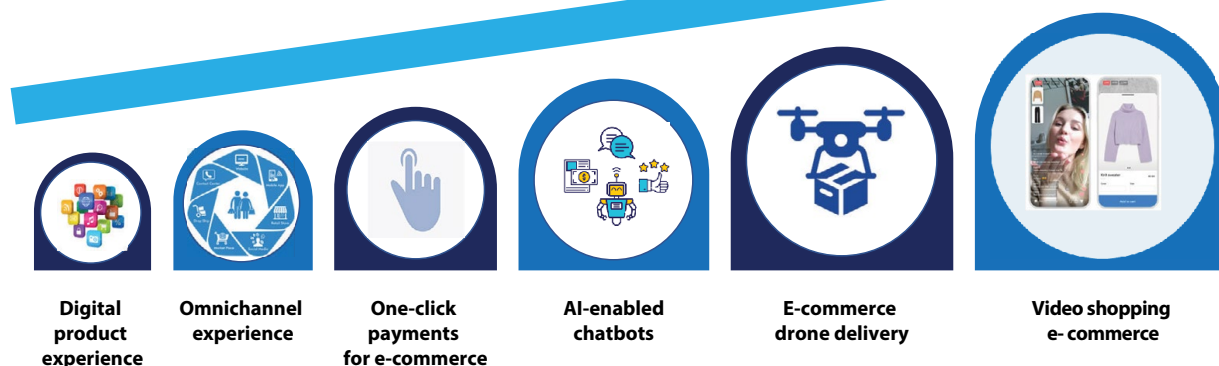
- 90% reduction in network energy usage
- Up to 10 years battery life for low power IoT devices

- 1000x bandwidth per unit area
- Resulting in up to 100x connected device per unit area

5G ENABLERS	BENEFITS
High throughput	A significant number of devices can simultaneously connect to the network, helping retailers to build scalable in-store consumer experiences
Low latency	Helps retail applications and services make real-time decisions
Edge computing	Provide high security and faster computing experience at the edge, distilling insights instantly to businesses
Network virtualization	Helps optimize network resources and save costs for industries to build flexible, agile, and faster go-to-market services
AI / ML in-store experience	AI / ML cognitive capabilities with 5G's high speed, low latency will help consumers make real-time decisions
IoT inventory management	5G connected IoT sensors and automated robots will enhance real-time inventory visibility from suppliers to end stores helping logistics in automating processes

Impact on E-commerce

| Digital product experience | Omnichannel experience | One-click payments for e-commerce | AI-enabled chatbots | E-commerce drone delivery | Video shopping e- commerce |

Advancements

Omnichannel e-commerce:

High-speed 5G will help enhance the omnichannel e-commerce experience.

A customer, shopping in-store, will be able to save products in the shopping app while shopping offline, merely by taking a photo of the product. An in-store retailer can track the customer's preferences through technologies such as computer vision, and send digital offers to encourage online purchases. This enhanced quality of interaction is possible only with a high bandwidth and low latency network.

Digital product experience:

The buying experience for digital products such as e-books, movies, music, or podcasts will be enhanced with 5G. Retailers can make use of ultrareliable, low-latency communication to provide secure and quickly downloadable digital products.

Faster evolution

Payments for e-commerce:

Secure and fast connectivity provided by 5G can revolutionize the payment experience for e-commerce with fast and frictionless facial recognition authentication or invisible payments.

AI-enabled chatbots:

Assisted by 5G, AI-enabled chatbots can provide an interactive experience without any latency. Customers can connect and place orders quickly through these AI assistants.

AR/VR:

5G's ability to handle huge amounts of data at high speed will help transform the customer experience through AR and VR. Virtual fitting rooms and product visualization will become necessary features for every e-commerce platform.

IoT and machine learning:

5G will speed up e-commerce automation, embedding machine learning within every network element and machine-to-machine communication.

5G exclusive

Smart connected devices:

E-commerce platforms can advertise and sell anything from groceries to medication through connected utilities - doorbells, thermostats, wearables, smart refrigerators, autonomous vehicles, boosted by 5G's capacity, reliability, energy efficiency, and low latency.

E-commerce delivery using drones:

5G-enabled drones can provide safe and contactless delivery of e-commerce purchases, essential supplies, and groceries.
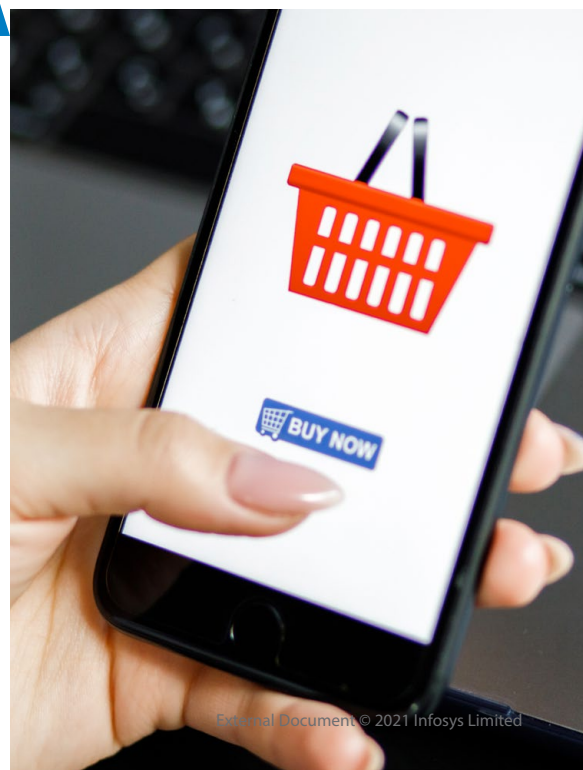
Video shopping platform for e-commerce:

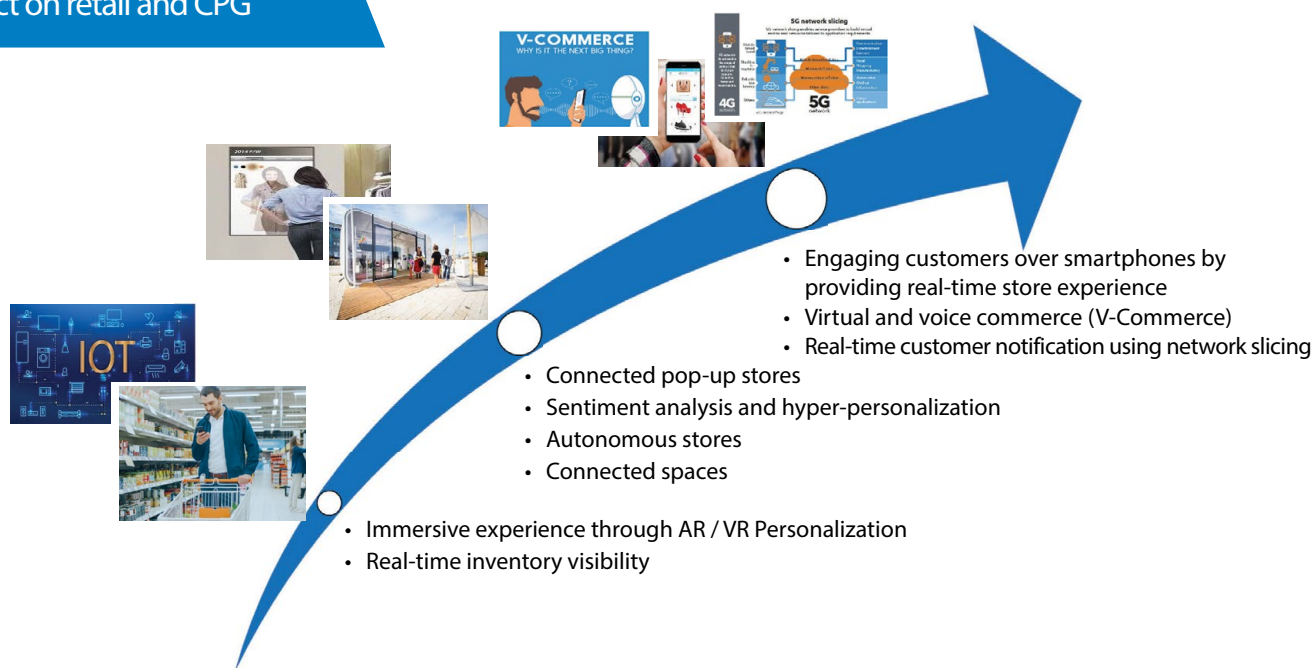5G creates new sources of revenue for e-commerce by supporting livestreamed shopping and store walk-through video shopping. 5G high bandwidth and low latency can provide a seamless experience to millions of users purchasing products in real time.

Opportunities for e-commerce

- Infosys 3D-OMNITRYON Virtual Trial Room: Realistic 3D simulation of products with dangling effects, color, and reflections with Virtual Try-On

- Infosys Contact Center AI bots boost ordering based on a deep knowledge of customer and agent profiles promptly throughout the customer interaction.

Impact on retail and CPG

V-COMMERCE
WHY IS IT THE NEXT BIG THING?

5G network slicing

4G

5G

IOT

- Engaging customers over smartphones by providing real-time store experience
- Virtual and voice commerce (V-Commerce)
- Real-time customer notification using network slicing

- Connected pop-up stores
- Sentiment analysis and hyper-personalization
- Autonomous stores
- Connected spaces

- Immersive experience through AR / VR Personalization
- Real-time inventory visibility

Advancements

Supply chain improvements :

5G-powered applications can help IoT-embedded sensors track store inventories with continuous communication back to remote computation systems. 5G-enabled smart shelves will be able to determine inventory in real time.

Immersive experiences:

AR and VR use a lot of processing power and network data. The high capacity of 5G networks can help retailers create richer, more detailed experiences while integrating the physical and digital worlds.

Faster evolution

Connected pop-up shops:

Powerful, agile, and flexible 5G networks wcan extend retail environments to any location. High-bandwidth, high-throughput connectivity will revitalize the brick-and-mortar retail experience.

Sentiment analysis, detailed customer insights leading to evolved hyper-personalization:

Using 5G, with its low latency, stores can add sensors to be tracked, adding value to

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the generation of insights and usage. The benefits - personalized advertisements or offers. Other features include real-time shelf displays, predictive inventory management, real-time integration of external partner data sources, video surveillance, security, and facial recognition.

Autonomous stores:

Such stores can provide a zero staff retail experience, smart mirrors, and smart payment technology. In-store sensors and connected cameras can transmit shopping data to help help to improve layout, offers, and product planning.

Connected spaces:

With constant exchange of data using smart devices, real-time information flow can bring efficiency to the system and process.

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New types of customer engagement:
With an augmented or mixed reality overlay on a smartphone screen, retail stores can guide consumers through the physical store to the exact location of the products they are interested in.

New forms of commerce:
5G's low latency enables consumer engagement channels such as virtual

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assistants and voice commerce (v-commerce) to communicate with a brand. v-commerce enhances the buying experience of a product and engages the consumer in an automated fashion through after-sales support and guidance in using the product.
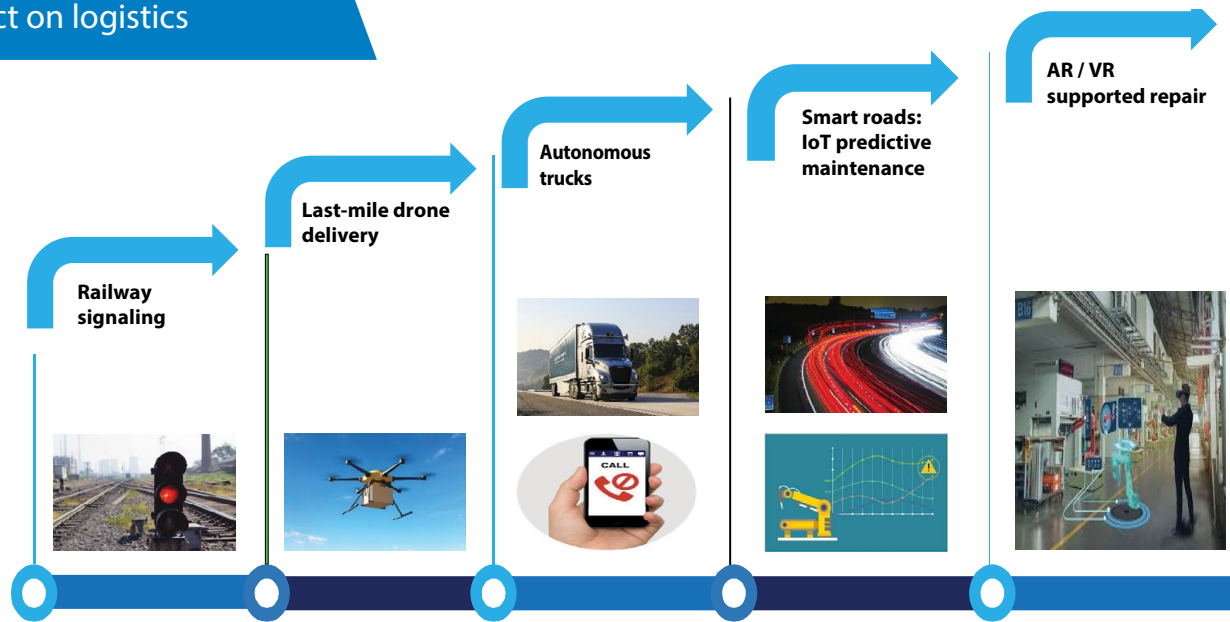
Provide mobile notification and customized offers using network slicing of 5G:

Once the customer's mobile device connects to a particular 5G network slice in store, the system can identify the customer and provide personalized notifications. Using this, the store can eliminate beacons and geo-fencing, which was used to send store notifications on the customer's mobile phone, using Bluetooth technology.

Opportunities for retail and CPG

- Infosys OMNIXSELL to help retailers redefine omnichannel shopping experience digitally through OMNIXSLOT, OMNIXTRYON, OMNIXFIT, OMNIXWEAR and OMNIXPAY

- AR solutions to create augmented catalogs, showcase product information and facilitate cross-sell / upsell, create unmanned stores

- Using the network slicing capabilities of 5G, identify customers and provide a hyper-personalized in-store experience

Impact on logistics

Railway signaling

Last-mile drone delivery

Autonomous trucks

Smart roads: IoT predictive maintenance

AR / VR supported repair

Advancements

Railway signaling:

The weight and speed of a train determine the space needed between two trains to avoid collision. Real-time visibility at 5G speed can improve the accuracy of signaling and reduce the space between two trains, allowing better utilization of trains.

Last-mile delivery using drones:

5G can bridge the gap for last-mile delivery with autonomous drones through connected sensors and high-bandwidth communication.

Faster evolution

Autonomous trucks:

Autonomous trucks need low-latency communication to function efficiently. 5G connected sensors with high bandwidth and low latency provide a common wireless infrastructure for high bandwidth functions such as video streaming, and safety systems such as collision avoidance and traffic signal priority through knowledge of the planned movements of surrounding vehicles.

Dead zone coverage:

High-speed 5G-enabled cameras, radars, and GPS features can improve location tracking, situation and road condition analysis, especially in 'dead zones' where real-time tracking does not work.

IoT predictive maintenance of shipping vehicles:

5G can help the logistics industry monitor real-time vehicle conditions based on diagnostic data from IoT sensors and enable predictive maintenance of the vehicle fleet.

5G exclusive

AR / VR supported repair :

5G will enable real-time repair through AR / VR with road-side assistance. This can save time and money with reduced downtime for shipments.

Smart roads:

Smart solutions such as 5G connected traffic control systems and toll plazas can reduce road congestion, and provide predictable and fuel-efficient travel.

Conclusion

5G is set to change the ecosystem of the retail industry. With the enablement of 5G connectivity along with 5G devices and edge computing, retailers can enhance the customer experience, both in-store and online, and glean data insights that were not possible earlier.

There will be challenges related to high investment in 5G-supported devices and infrastructure, and the current comfort level with Wi-Fi 6, 3G, 4G. But once it is mature, the retail and logistics sectors will witness a transformation in operations.

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