



2025

AUTOMOTIVE SAMPLE REPORT

Get an in-depth analysis of the current state, trends, and future of the automotive technology market, including insights into key drivers, changing product lifecycles, and manufacturing challenges.

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1. Overview

The automotive market entered 2025 with expectations of flat growth, amid a mix of stabilizing supply chains and persistent geopolitical and economic headwinds. Global automotive sales are projected to rise slightly to XX million units from XX million in 2024 (S&P), indicating a recovery in progress but tempered by policy uncertainty, trade frictions, and volatility, particularly in the US and EU markets. Shifting regulation, evolving tariff policies, and tightening emission standards are shaping OEM strategies and weighing on sentiment, contributing to the industry's cautious outlook.

Electric vehicles (EVs) remain central to the long-term evolution of the sector. While early 2025 experienced a slowdown in EV demand due to affordability concerns, regulatory ambiguity, and consumer hesitation, recovery is anticipated by mid-year. Battery electric vehicle (BEV) sales are projected to reach XX million units globally, up XX% year-over-year, capturing XX% of the market. In China, short-term confidence is buoyed by scrappage incentives and robust domestic demand, with NEV penetration expected to exceed 50% in 2025. Over the longer term, the EV segment is expected to maintain a compound annual growth rate (CAGR) of approximately XX% through 2030, supported by maturing supply chains, wider model availability, and regulatory pressure for decarbonization.

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive electronics and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal systems integration technologies, designed to enhance the life and range of EV batteries. Additionally, 3M OEM adhesive tapes allowed for easy scratch release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS gas- and gel-formulating substrates. These "fluoropolymer" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$25.7 million agreement aimed at addressing PFAS contamination in oil-water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. 3M had already announced in 2022 its plan to end PFAS manufacturing by the end of 2025. The move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avaya Services has officially opened its first PFAS-free and lead production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, PFAS, logistics, and retail sectors. This marks a significant milestone under the "Made in India" initiative and position. Avaya Services, as the first ISO-certified PFAS-free manufacturer in India, introduced a new PFAS-free called 60 Teflon, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2. Market Overview

2.1 Global Automotive Market Outlook

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy dislodge release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, Jabil received a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for Jabil, it adds to the burden of a previously announced \$200 million agreement aimed at addressing PFAS contamination in US water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. Jabil had already announced in 2023 its plan to exit PFAS manufacturing by the end of 2025. This move not only addresses regulatory liabilities but also helps improve Jabil's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avaya Services has officially opened its first BPO (business process outsourcing) and call production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avaya Services as the first ISO-certified BPO and call manufacturing in India, introduced a new BPO unit called AI India, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

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- 1. **Advanced Thermal Management Solutions:** Jabil showcased its latest innovations in thermal management, including high-performance thermal interface materials (TIMs) and advanced heat exchangers. These solutions are designed to enhance the efficiency and longevity of EV powertrains and battery packs, addressing the critical need for thermal stability in electric vehicles.
- 2. **Automotive OEM Assembly Lines:** Jabil's new assembly lines in India are designed to support the growing demand for automotive components, particularly in the electric vehicle (EV) segment. These lines are equipped with advanced manufacturing technologies, enabling Jabil to provide high-quality, cost-effective solutions for its automotive customers.
- 3. **Medical Adhesive Solutions:** Jabil's medical adhesive solutions are designed to meet the stringent requirements of the medical industry, including high purity, biocompatibility, and long-term adhesion. These solutions are used in a wide range of medical applications, from wound care to surgical drapes, and are designed to provide reliable performance in critical medical settings.

2.2 Regional Outlook

2.2.1 The United States

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Avary Services has officially opened its first HFC (high frequency) ring and coil production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, HFC, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and position. Avary Services, as the first HFC-certified HFC ring manufacturer in India, introduced a new HFC ring called 40 Colors, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.2.2 Europe

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2.2.3 China

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Avery Dennison has officially opened its first WFO (wet) and label production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avery Dennison, as the first ISO-certified WFO (wet) manufacturer in India, introduced a new WFO (wet) label called 4D Label, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.2.4 Japan

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2.2.5 South Korea

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2.3 Market Growth Enablers

2.3.1 Government Regulations and Incentives

Emissions Targets, Incentives, and Infrastructure Shape the 2025 EV Landscape

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Avary Services has officially opened its first BPO wing and retail production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Services as the first ISO-certified BPO wing manufacturer in India, introduced a new BPO wing called 4D Colors, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.3.2 Green Financing and ESG-linked Investments

Green Finance Emerges as a Strategic Lever Driving the Auto Industry's Decarbonization and Investment Momentum.

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Avary Services has officially opened its first HFO (hydrogen fuel oil) mix and label production facility in Pune, India, which supports the growing demand for products in the aerospace, pharmaceutical, HFO, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and position. Avary Services, as the first HFO-certified HFO mix manufacturer in India, introduced a new HFO mix called HFO India, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.3.3 Consumer Incentives and Subscription Models

Flexible Ownership Models and Incentives Fueling Consumer Adoption of Sustainable Mobility.

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2.3.4 EV Charging Infrastructure Expansion

Growing networks remain critical, but progress is uneven.

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2.4 Market Inhibitors

2.4.1 High Upfront Cost of EVs

Price disparity with ICE vehicles, though narrowing, remains a barrier for consumers globally.

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Avary Services has officially opened its first WFO (wet) and roll production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Services as the first ISO-certified WFO (wet) manufacturer in India, introduced a new WFO (wet) roll-off 40' trailers, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

BATTERY PRICE AND BATTERY ELECTRIC CAR PRICE CHANGES IN SELECTED COUNTRIES, 2023-2024



2.4.2 Limited EV Range

Some models still don't match the range of fuel vehicles, impacting long-distance travel suitability.

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HBE sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$450 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$2.2 billion agreement aimed at addressing PFAS contamination in US water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. 3M had already announced in 2022 its plan to exit PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avaya Services has officially opened its first BPO (business process outsourcing) and call center production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avaya Services, as the first BPO-certified BPO (business process outsourcing) manufacturer in India, introduced a new BPO (business process outsourcing) unit called 4D Center, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.4.3 Cybersecurity Risks

Cybersecurity Risks in Connected and Software-Defined Vehicles

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Avary Chemicals has officially opened its first WFO (wholly owned) and sales production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Chemicals as the first ISO-certified WFO (wholly owned) manufacturer in India, introduced a new WFO (wholly owned) called AV India, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

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Avary Chemicals has officially opened its first WFO (wholly owned) and sales production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Chemicals as the first ISO-certified WFO (wholly owned) manufacturer in India, introduced a new WFO (wholly owned) called AV India, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

2.4.4 Challenges and Implications from Raw Material

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and EM shielding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M EMF-compatible tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$200 million agreement aimed at addressing PFAS contamination in US water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. 3M had already announced in 2022 its plan to exit PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avary Denison has officially opened its first WFO (wax and resin) production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Denison as the first ISO-certified WFO wax manufacturer in India, introducing a new WFO wax called AD Color, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

3. Technology Trends

In this report, the acronym ACES has been used to examine the core technology trends within the automotive industry. ACES stands for **A**dvanced Driver Assistance Systems (ADAS), **C**onnectivity, **E**lectrification, and **S**oftware-Defined Vehicles (SDVs). This framework enables systematic exploration of the technological advancements driving the industry forward.



3.1 Advanced Driver Assistance Systems (ADAS)

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive electronics and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HMI convertible tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$100 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$20.3 billion agreement aimed at addressing PFAS contamination in US water systems. The long-term ~~settlement~~ commitments may impact the company's cash flow and financial reporting. 3M had already announced in 2023 its plan to end PFAS manufacturing by the end of 2025. This move not only addresses regulatory liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

AUTONOMY LEVELS EXPLAINED



Data sourced from secondary research

3.1.1 Stride Towards Levels 2+, 3, and beyond

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy switch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, Jabil reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for Jabil, it adds to the burden of a previously announced \$200 million agreement aimed at addressing PFAS contamination in all water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. Jabil had already announced in 2023 its plan to end PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve Jabil's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Jabil Services has officially opened its first WFO (welding and metal production) facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the 'Make in India' initiative and positions Jabil Services as the first WFO-certified WFO (welding and metal production) manufacturer in India. Introduced a new WFO (welding and metal production) facility specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

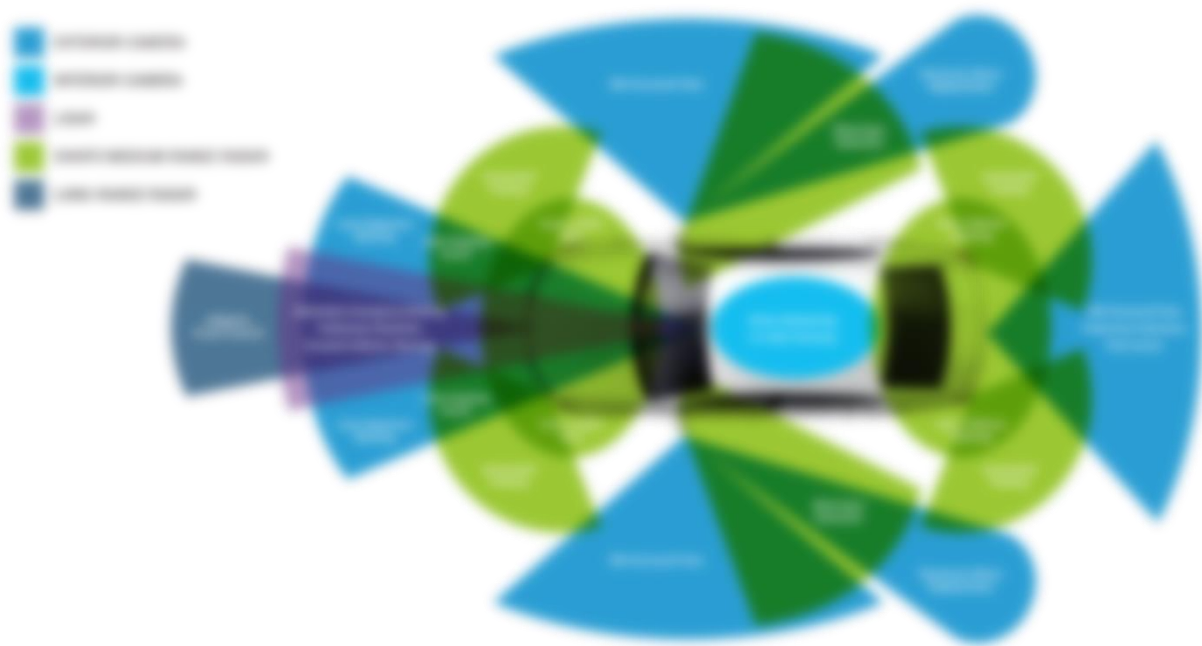
3.1.2 Innovations in ADAS

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HBI sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

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Avary Devices has officially opened its first WFO (wire and robot) manufacturing facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Devices, as the first WFO-certified WFO (wire and robot) manufacturer in India, introduced a new WFO (wire and robot) line, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

INTERIOR AND EXTERIOR SENSOR TECHNOLOGY



Data sourced from secondary research

3.1.3 Edge AI: Driving Intelligence to the Edge

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Avery Dennison has officially opened its first WFO (wet) and label production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avery Dennison, as the first ISO-certified WFO (wet) manufacturer in India, introduced a new WFO (wet) label called 4D Labels, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

3.2 Connectivity

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy switch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

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Data sourced from secondary research

3.2.1 Infotainment

Sensor fusion

Sensor fusion is a key technology employed in Amazon GoTM stores. The stores are equipped with a network of sensors, including cameras and weight sensors embedded in shelves. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer vision

Computer vision plays a vital role in Amazon GoTM operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track customers, detect items picked up or returned to shelves, and monitor overall store activity. Computer vision algorithms enable accurate item recognition and tracking, forming the core foundation for technology-based and eliminating the need for traditional checkouts.

Deep learning algorithms

Deep learning algorithms are utilized in Amazon GoTM to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

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3.2.2 Telematics

Sensor Suite

Sensor Suite is a key technology employed in Jabil's IoT devices. The devices are equipped with a network of sensors, including cameras and weight sensors embedded in shelves. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer Vision

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Deep Learning Algorithms

Deep learning algorithms are utilized in Jabil's IoT to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

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3.2.3 V2X

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Computer Vision

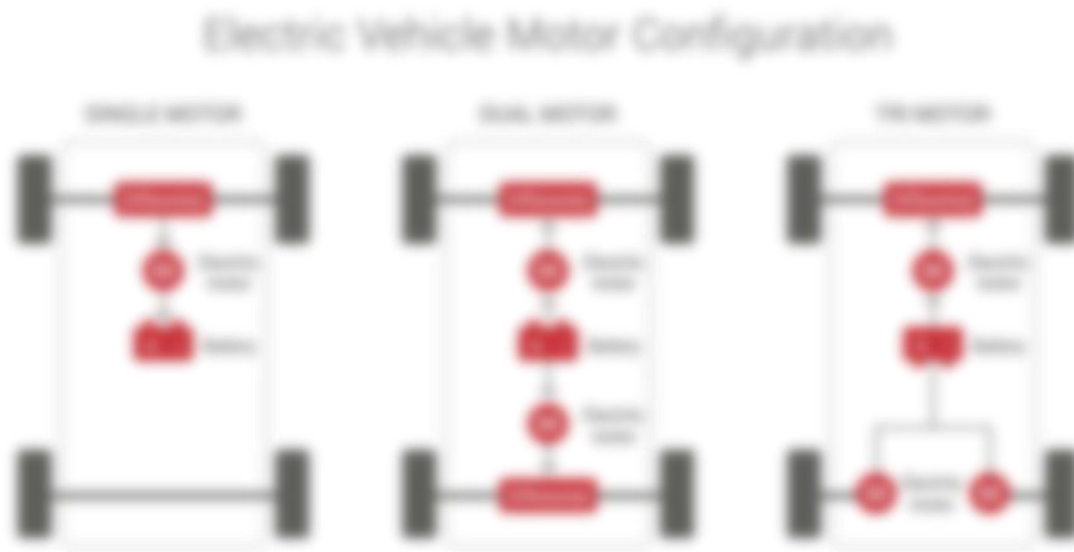
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Electrification

3.2.4 Electric Vehicle Motor Configuration



3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and EM shielding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M EMF shielding tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$250 million agreement aimed at addressing PFAS contamination in US water systems. The long-term settlement payments may impact the company's cash flow and financial reporting. 3M had already announced in 2023 its plan to end PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avary Services has officially opened its first WFO (wet) and roll production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avary Services as the first ISO-certified WFO roll manufacturer in India, introducing a new WFO roll called 40 Calore, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

3.2.5 Electric Vehicle (EV) Batteries

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HPL sustainable tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

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Avaya Services has officially opened its first WFO (wireless foundry) relay and relay production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avaya Services, as the first ISO-certified WFO relay manufacturer in India, introduced a new WFO relay called 4D Future, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

Battery Prices Forecast to Continue to Fall

Global average battery pack prices (USD/kWh)



3.2.6 800V Architectures

Sensor Fusion

Sensor fusion is a key technology employed in 800V EV systems. The sensors are equipped with a network of sensors, including cameras and weight sensors, embedded in the vehicle. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer Vision

Computer vision plays a vital role in 800V EV operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track customers, detect items picking up or returning to shelves, and monitor overall store activity. Computer vision algorithms enable accurate item recognition and tracking, forming the core foundation for intelligent recommendations and streamlining the retail fulfillment process.

Deep Learning Algorithms

Deep learning algorithms are utilized in 800V EV to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

3.2.7 EV Charging Infrastructure

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and EM shielding tapes. At the Q1 2025 Strategic Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HMI scratchable tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

EV CHARGING ECOSYSTEM



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3.2.8 Smart Charging

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3.2.9 Hydrogen Fuel Cell Technology

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Operational Hydrogen-Powered Vehicles And Their Manufacturers

Specifications/Features		
	1	Supports a variety of vehicles, from heavy-duty trucks, city buses, shuttles and last-mile delivery vans, leading to a diverse market opportunity.
	2	Designed for high-density storage, improved space utilization.
	3	Increased handling of pellets, tubes, cylinders, and industrial tanks.
	4	Increased throughput, accuracy, and reduced labor demands.
	5	Integration with JABIL's software for inventory management and order fulfillment.
	6	Scalable design to meet varying operational needs.

Data sourced from secondary research

3.3 Software Defined Vehicles (SDV)

3M reported strong FY 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive electronics, and medical adhesive solutions, including thermal management and EMI shielding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HMI composites tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

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Avery Dennison has officially opened its first WFO (white) and red production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and position Avery Dennison, as the first ISO-certified WFO (white) manufacturer in India, introduced a new WFO (white) called 40 Colors, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

Software-Defined Vehicles Simplified



Data sourced from secondary research

3.3.1 Key Technologies Enabling the SDV Revolution

1. **Next-Generation Sensor Technology** - Increasingly, more sophisticated sensors are being integrated into vehicles, enabling them to perceive their environment more accurately. This includes sensors for detecting objects, measuring distance, and identifying the location of other vehicles. These sensors are essential for enabling autonomous driving and for providing the data needed to build digital twins.
2. **Advanced Software Architectures** - The software architecture of a vehicle is critical to its ability to function as a software-defined vehicle. This includes the operating system, the application layer, and the data layer. The software architecture must be designed to support the integration of new software components and to enable the vehicle to be updated over the air.
3. **Cloud-Based Data Management** - The data generated by a vehicle is vast and complex. It must be stored and managed in a secure and scalable manner. Cloud-based data management solutions are essential for enabling the vehicle to access the data it needs to function and to provide the data needed to build digital twins.
4. **Next-Generation Sensor Technology** - Increasingly, more sophisticated sensors are being integrated into vehicles, enabling them to perceive their environment more accurately. This includes sensors for detecting objects, measuring distance, and identifying the location of other vehicles. These sensors are essential for enabling autonomous driving and for providing the data needed to build digital twins.
5. **Advanced Software Architectures** - The software architecture of a vehicle is critical to its ability to function as a software-defined vehicle. This includes the operating system, the application layer, and the data layer. The software architecture must be designed to support the integration of new software components and to enable the vehicle to be updated over the air.
6. **Cloud-Based Data Management** - The data generated by a vehicle is vast and complex. It must be stored and managed in a secure and scalable manner. Cloud-based data management solutions are essential for enabling the vehicle to access the data it needs to function and to provide the data needed to build digital twins.

Traditional Tiered Supply Chain Evolves into the Software-defined Vehicle Ecosystem



Data sourced from secondary research

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and EM shielding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HMI extrudable tapes allowed for easy scratch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$450 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$250 million agreement aimed at addressing PFAS contamination in US water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. 3M had already announced in 2022 its plan to end PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avay Services has officially opened its first WFO (wet and cold) production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avay Services as the first ISO-certified WFO (wet and cold) manufacturer in India, introduced a new WFO (wet and cold) facility, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

3.3.2 Drivers & Opportunities

- 1. **Key Challenges & Opportunities:** In a growing, more regulated, and competitive environment, organizations must adapt to new challenges and opportunities. The automotive industry is facing significant challenges, including the need to reduce costs, improve efficiency, and meet regulatory requirements. However, there are also opportunities for growth, such as the development of new technologies and the expansion of global markets.
- 2. **Key Challenges:** Organizations must address the challenges of a highly competitive market, the need to reduce costs, and the need to improve efficiency. The automotive industry is facing significant challenges, including the need to reduce costs, improve efficiency, and meet regulatory requirements. However, there are also opportunities for growth, such as the development of new technologies and the expansion of global markets.
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3.3.3 Challenges and Considerations

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3.3.4 Use Cases

- 1. **Key Challenges & Opportunities:** In a growing, more regulated, and competitive environment, organizations must adapt to new challenges and opportunities. The automotive industry is facing significant challenges, including the need to reduce costs, improve efficiency, and meet regulatory requirements. However, there are also opportunities for growth, such as the development of new technologies and the expansion of global markets.
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Avaya Services has officially opened its first BPO (business process outsourcing) and call production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and position. Avaya Services, as the first ISO-certified BPO (business process outsourcing) manufacturer in India, introduced a new BPO (business process outsourcing) line called 4D (four dimensions), specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

3.4 Cybersecurity

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3.4.1 Evolving Threat Landscape

The connected car is a complex web of Electronic Control Units (ECUs), sensors, and software, communicating both internally and with external networks. This expanding attack surface offers determined hackers numerous potential entry points. Recent incidents highlight these dangers:

- 1. **Remote Access of Vehicle Systems:** In 2015, researchers demonstrated the ability to remotely access a vehicle's infotainment system and, in some cases, the engine control unit (ECU) via a Bluetooth connection. This was achieved by exploiting a vulnerability in the system's security protocol, allowing attackers to gain unauthorized access to the vehicle's internal network.
- 2. **Denial of Service (DoS) Attacks:** In 2016, a group of researchers demonstrated a DoS attack on a vehicle's infotainment system by flooding the system with a large number of requests, causing the system to become unresponsive.
- 3. **Malware Infection:** In 2017, a group of researchers demonstrated a malware infection on a vehicle's infotainment system by exploiting a vulnerability in the system's software, allowing attackers to install malicious code on the system.

3.4.2 Emerging Best Practices

- 1. **Secure Development Lifecycle (SDLC):** Implementing a secure development lifecycle (SDLC) is a critical best practice for ensuring the security of automotive systems. This involves integrating security considerations into every stage of the development process, from requirements gathering to testing and deployment.
- 2. **Secure Coding Practices:** Following secure coding practices is essential for reducing the risk of vulnerabilities in automotive software. This includes using secure coding standards, conducting code reviews, and performing static code analysis.
- 3. **Secure Configuration Management:** Implementing secure configuration management (SCM) is a critical best practice for ensuring the integrity and security of automotive systems. This involves maintaining a central repository of configuration data and using automated tools to manage configuration changes.
- 4. **Secure Testing Practices:** Conducting secure testing practices is a critical best practice for identifying and mitigating vulnerabilities in automotive systems. This includes performing penetration testing, fuzz testing, and other types of security testing.
- 5. **Secure Deployment Practices:** Implementing secure deployment practices is a critical best practice for ensuring the security of automotive systems. This involves using secure channels for deploying software updates and implementing robust authentication and authorization mechanisms.
- 6. **Secure Maintenance Practices:** Following secure maintenance practices is a critical best practice for ensuring the security of automotive systems. This includes implementing a secure process for handling security incidents and conducting regular security audits.

3.4.3 Regulatory Compliance and Evolving Standards

The automotive industry is subject to various cybersecurity regulations and standards. These include:

- ### 3.4.4 Use Cases

4. Recent Developments

Recent developments in the automotive sector highlight a growing focus on electrification, autonomous mobility, and software-driven innovation. Leading manufacturers are strengthening strategic partnerships and accelerating product launches to improve their market positions and drive next-generation vehicle adoption.

Month & Year	Vehicle Supplier/ Manufacturer (Company 1)	End User (Company 2)	Development Type	Description	Deal Value
May-25	Mitsubishi Motors Corporation (Japan)	Nissan Motor (Japan)	Product Development & Launch	Mitsubishi Motors will launch a new battery electric vehicle (BEV) in North America in the second half of 2026, supplied by Nissan as an OEM model based on the next-generation LEAF. Reciprocally, Mitsubishi will leverage its PHEV expertise to supply an OEM model to Nissan in North America in 2026, strengthening their partnership and accelerating electrification efforts.	-
May-25	Toyota Motor Corporation	Subaru Corporation	Product Development & Launch	Toyota and Subaru have announced a joint venture to develop and launch a new battery electric vehicle (BEV) platform for the Japanese market. The joint venture, named Toyota Subaru EV Development, will focus on developing a BEV platform for the Japanese market, with a target launch in 2026. The joint venture will leverage Toyota's expertise in BEV development and Subaru's expertise in platform development.	1.5 billion JPY
May-25	Hyundai Motor Group	Genesis Motor	Product Development & Launch	Hyundai Motor Group and Genesis Motor have announced a joint venture to develop and launch a new battery electric vehicle (BEV) platform for the Japanese market. The joint venture, named Hyundai Genesis EV Development, will focus on developing a BEV platform for the Japanese market, with a target launch in 2026. The joint venture will leverage Hyundai's expertise in BEV development and Genesis's expertise in platform development.	1.5 billion JPY
May-25	Hyundai Motor Group	Genesis Motor	Product Development & Launch	Hyundai Motor Group and Genesis Motor have announced a joint venture to develop and launch a new battery electric vehicle (BEV) platform for the Japanese market. The joint venture, named Hyundai Genesis EV Development, will focus on developing a BEV platform for the Japanese market, with a target launch in 2026. The joint venture will leverage Hyundai's expertise in BEV development and Genesis's expertise in platform development.	1.5 billion JPY
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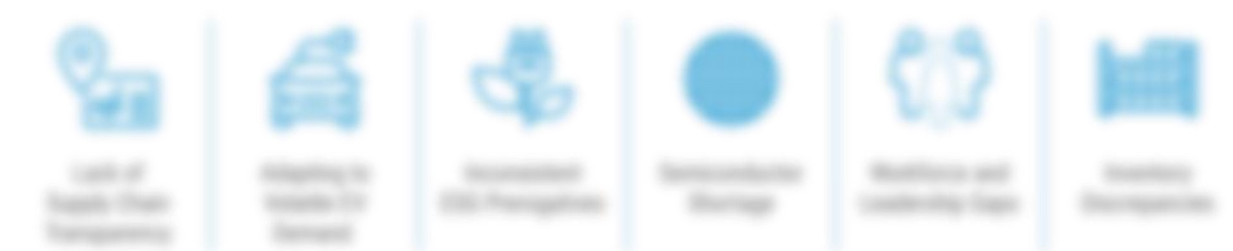
5. Supply Chain

3M reported strong FY 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM bonding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M HSE sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

Resilience Amidst Disruptions

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AUTOMOTIVE SUPPLY CHAIN CHALLENGES



Data sourced from secondary research

Sensor Data

Sensor Data is a key technology employed in Smart City systems. The sensors are equipped with a network of sensors, including cameras and weight sensors embedded in streets. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer Vision

Computer vision plays a vital role in Smart City operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track customers, detect items picked up or returned to shelves, and monitor overall store activity. Computer vision algorithms enable accurate item recognition and tracking, forming the core data for intelligent inventory management and streamlining the need for traditional methods.

Deep learning algorithms

Deep learning algorithms are utilized in Smart City to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

5.1 EV Supply Chain Policy

Governments worldwide are reshaping the EV ecosystem by tying incentives to local content, sustainability, and supply chain security, while battery technology continues to evolve rapidly toward next-generation materials.

Sensor Fusion

Sensor fusion is a key technology employed in Advanced Driver Assistance Systems (ADAS). The system integrates data from multiple sensors, including cameras and radar sensors, to create a comprehensive view of the vehicle's surroundings. This data is used to detect and track objects, predict their behavior, and make decisions about vehicle control. By combining data from multiple sensors, the system gains a comprehensive understanding of the road environment and can respond more effectively.

Computer Vision

Computer vision plays a critical role in ADAS operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track vehicles, detect lane markings, and recognize traffic signs. Computer vision algorithms enable accurate lane recognition and tracking, forming the basis for many ADAS features and contributing to the overall safety of the vehicle.

Deep Learning Algorithms

Deep learning algorithms are utilized in ADAS to enhance lane recognition and optimize the driving experience. These algorithms learn from vast amounts of data, enabling the system to identify patterns and make more accurate predictions. Deep learning models are trained to recognize various driving scenarios, such as lane changes, vehicle merging, and more, ensuring accurate lane detection and reducing errors in the automated driving process. The algorithms continuously improve their performance over time as they are exposed to more data.

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5.2 Reshoring/Nearshoring Automotive Supply Chains

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Avery Dennison has officially opened its first WFO (wet) and label production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the 'Make in India' initiative and position Avery Dennison, as the first ISO-certified WFO (wet) manufacturer in India, introduced a new WFO (wet) label called 4D Label, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.

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5.3 EV Battery Recycling and Its Impact on the Automotive Supply Chain

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5.4 The “China+1” Strategy for Global Supply Chains

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Sensor fusion

Sensor fusion is a key technology employed in Jabil's IoT systems. The sensors are equipped with a network of sensors, including cameras and weight sensors, embedded in devices. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer vision

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Deep learning algorithms

Deep learning algorithms are utilized in Jabil's IoT to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

Sensor fusion

Sensor fusion is a key technology employed in Jabil's IoT systems. The sensors are equipped with a network of sensors, including cameras and weight sensors, embedded in devices. These sensors collect real-time data, capturing information about customer movements, product interactions, and inventory changes. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the store environment and customer behavior.

Computer vision

Computer vision plays a vital role in Jabil's IoT operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track customers, detect items picked up or returned to shelves, and monitor overall store activity. Computer vision algorithms enable accurate item recognition and tracking, forming the core data for technological tools and streamlining the need for traditional methods.

Deep learning algorithms

Deep learning algorithms are utilized in Jabil's IoT to enhance item recognition and optimize the shopping experience. These algorithms learn from vast amounts of data, enabling the system to identify products based on visual cues accurately. Deep learning models are trained to recognize various packaging, shapes, and sizes, ensuring accurate item detection and reducing errors in the automated checkout process. The algorithms continuously improve their performance over time as they are exposed to more data.

5.5 Use Cases – Using Super Trends as Part of Supply Chain

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil HMI control panel lines allowed for easy software updates during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

5.5.1 Blockchain in the Automotive Supply Chain

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy switch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

5.5.2 AI for Supply Chain Resilience

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy switch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

5.5.3 Supplier Diversification and Multi-sourcing strategies

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's OEM assembly lines allowed for easy switch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

Performance Indicators

- **2022–2023** U.S. vehicle sales increased by **XX%** year-over-year
- **2023–2024** U.S. vehicle sales increased by **XX%** year-over-year

Toyota's Strategy

Sensor Fusion
Sensor fusion is a key technology employed in Toyota's ADAS systems. The system integrates data from a variety of sensors, including cameras, radar, lidar, and ultrasonic sensors, to create a comprehensive understanding of the vehicle's environment. By combining and analyzing data from multiple sensors, the system gains a comprehensive understanding of the scene around the vehicle and its potential hazards.

Computer Vision
Computer vision plays a vital role in Toyota's ADAS operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track road users, detect lane markings, and recognize traffic signals. Computer vision algorithms enable accurate lane recognition and tracking, forming the basis for the system's lane-keeping and adaptive cruise control functionalities.

Deep Learning Algorithms
Deep learning algorithms are utilized in Toyota's ADAS to enhance lane recognition and optimize the driving experience. These algorithms learn from vast amounts of data, enabling the system to identify patterns and adapt to changing road conditions. Deep learning models are trained to recognize various driving scenarios, such as lane changes, lane departures, and lane narrowing, allowing the system to adjust its behavior accordingly. The algorithms continuously improve their performance over time as they are exposed to more data.

5.6 Tariff Impact

5.6.1 Tariff Timelines

BMW reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. BMW continues to invest in automotive electronics, and medical software solutions, including thermal management and EMI shielding tapes. At the 2025 Shanghai Auto Show, BMW showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, BMW introduced innovative tapes for easy disassembly during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

Date	Tariff/Measure
Jan 1, 2025	Increased the additional 25% tariff on all goods imported from mainland China, along with other security concerns.
Mar 1, 2025	Increased the additional tariff on all goods from mainland China to another 25%, bringing the total additional tariff to 50%.
Mar 1, 2025	Repealed a 25% tariff on imports from Canada and Mexico that are not CMAA/C.
Mar 12, 2025	Repealed a 25% tariff on steel and aluminum imports from all countries under Section 232, giving a further 25% tariff reduction.
Mar 1, 2025	Repealed a 25% tariff on all light vehicle imports from all countries under Section 232. The repeal for CMAA/C compliance vehicle imports ended. For CMAA/C compliance vehicles, the tariff is applied and can be based on the different value and the value of the CMAA/C compliance vehicle.
Mar 1, 2025	Repealed certain measures of tariffs for the European Union, the United Kingdom, Japan, South Korea, South Africa, ASEAN, and India for 90 days. During this period, a reduced 25% tariff applies to imports from these regions.
Mar 12, 2025	Increased 25% on all goods from mainland China, Hong Kong SAR, and Mexico by 25%, bringing the total additional tariff to 50%. The action also is reported to increase China's dependence of a 25% tariff on U.S. goods.
Mar 1, 2025	Repealed a 25% tariff on auto parts imports. CMAA/C compliance parts are exempted with the Commerce Department determines the method for identifying U.S.-sourced parts. Those included, the import value for CMAA/C compliance parts will be determined as of U.S. content. The tariff is applied.
Mar 12, 2025	The U.S. and China declared a 90-day tariff pause. During this window, the U.S. reduced its tariff on Chinese goods from 25% to 0%, and China lowered its tariffs on U.S. imports from 25% to 0%.

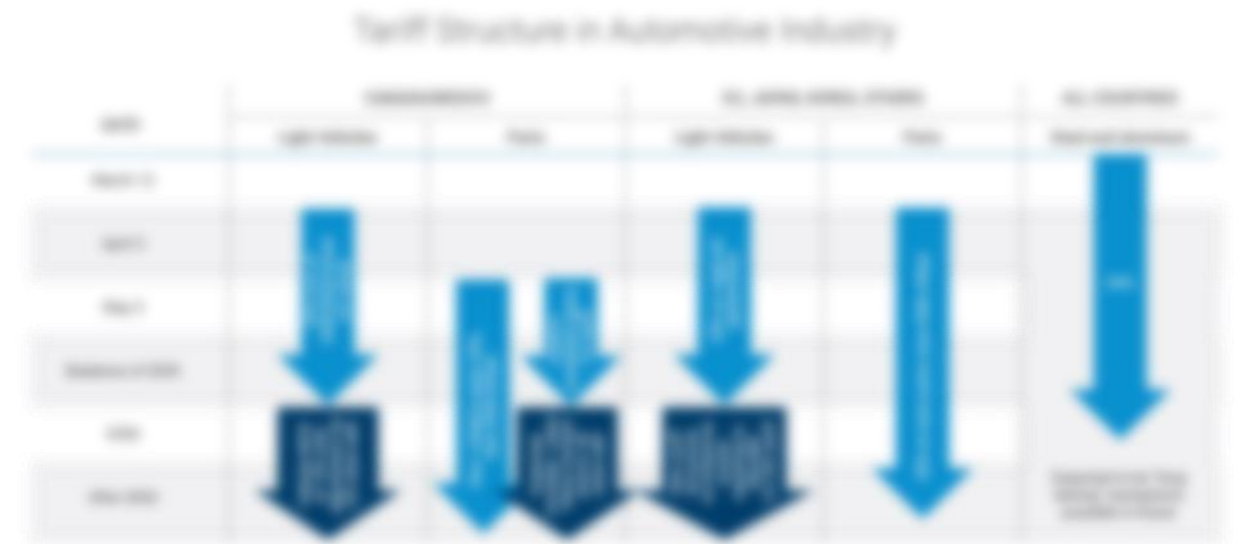
Note: Tariff updates recorded as of June 2025

5.6.2 Tariff Structure in the Automotive Industry

3M reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. 3M continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and EM shielding tapes. At the 2025 Shanghai Auto Show, 3M showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, 3M EM conductive tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

In May 2025, 3M reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for 3M, it adds to the burden of a previously announced \$200 million agreement aimed at addressing PFAS contamination in oil water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. 3M had already announced in 2022 its plan to exit PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve 3M's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.

Avay Devices has officially opened its first WFO (white) and retail production facility in Pune, India, which supports the growing demand for products in the apparel, pharmaceutical, FMCG, logistics, and retail sectors. This marks a significant milestone under the "Make in India" initiative and positions Avay Devices, as the first ISO-certified WFO (white) manufacturer in India, introduced a new WFO (white) called 4D Colors, specifically designed to meet the environmental and operational challenges of the Indian market and enhance supply chain responsiveness, thereby reducing lead times for Indian customers.



5.6.3 Tariff Structure: Key Developments in the Automotive Industry

Sensor Fusion

Sensor fusion is a key technology employed in Advanced Driver Assistance Systems (ADAS). The system integrates data from multiple sensors, including cameras and radar sensors, to create a comprehensive view of the vehicle's surroundings. This data is used to detect and track objects, predict their behavior, and make decisions on how to respond. By combining data from multiple sensors, the system gains a comprehensive understanding of the road environment and can make more informed decisions.

Computer Vision

Computer vision plays a vital role in ADAS operations. Advanced computer vision algorithms process the data captured by cameras in real-time, enabling the system to identify and track vehicles, pedestrians, and other road users. This data is used to detect and track objects, predict their behavior, and make decisions on how to respond. By combining data from multiple sensors, the system gains a comprehensive understanding of the road environment and can make more informed decisions.

Deep Learning Algorithms

Deep learning algorithms are used in ADAS to enhance object recognition and improve the system's decision-making capabilities. These algorithms learn from vast amounts of data, enabling the system to identify patterns and make more accurate predictions. Deep learning models are trained to recognize various driving scenarios, such as lane departure, pedestrian detection, and object classification. The algorithms continuously improve their performance over time as they are exposed to more data.

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6. Jabil Insights

Jabil reported strong Q1 2025 results, emphasizing its focus on strategic innovation and global supply chain resilience. Jabil continues to invest in automotive, electronics, and medical adhesive solutions, including thermal management and OEM assembly lines. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's new sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.

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Electrification Outlook: Resetting Expectations

- 1. **Electrification Outlook:** Jabil is focusing on key segments like automotive, electronics, and medical, emphasizing innovation and supply chain resilience. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's new sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.
- 2. **Environmental Settlement:** Jabil reached a \$400 million settlement with the state of New Jersey to resolve claims related to environmental damage caused by PFAS (per- and polyfluoroalkyl substances). These "forever chemicals" are highly persistent in the environment and have been linked to widespread contamination of air, water, and soil, as well as potential health risks. While the settlement is financially manageable for Jabil, it adds to the burden of a previously announced \$100 million agreement aimed at addressing PFAS contamination in oil-water systems. The long-term **settlement** payments may impact the company's cash flow and financial reporting. Jabil had already announced in 2022 its plan to exit PFAS manufacturing by the end of 2025. This move not only addresses legacy liabilities but also helps improve Jabil's public image, enabling a stronger focus on sustainable and innovative product lines that reinforce its long-term growth strategy.
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Tariff Disruptions

- 1. **Electrification Outlook:** Jabil is focusing on key segments like automotive, electronics, and medical, emphasizing innovation and supply chain resilience. At the 2025 Shanghai Auto Show, Jabil showcased its latest innovations, aligning with key automotive trends. These included battery protection solutions, such as thermal interface materials and thermal runaway mitigation technologies, designed to enhance the life and range of EV batteries. Additionally, Jabil's new sustainable tapes allowed for easy stretch-release during efficient battery pack assembly and disassembly. Optical films were used to improve display brightness, contrast, and reduce glare.
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Charging Infrastructure Lag

- 1. **Slow EV Adoption in Developing Markets** – In emerging markets, regulatory gaps, inconsistent charging infrastructure, and limited public charging stations hinder EV adoption. In India, a significant barrier is the lack of standardized charging protocols, leading to fragmented ecosystems. In Africa, infrastructure challenges, such as unreliable electricity grids, impede widespread EV use. In Latin America, limited government incentives and a focus on internal combustion engines slow EV market penetration.
- 2. **Infrastructure Bottlenecks in Europe** – Despite high EV adoption rates, Europe faces infrastructure challenges. The reliance on public charging networks is strained, particularly in rural areas and during peak travel times. The transition to faster charging technologies, such as ultra-fast charging, is slower than anticipated.
- 3. **High EV Costs and Limited Incentives** – In many markets, EVs remain significantly more expensive than internal combustion vehicles. Limited government incentives, such as tax breaks or subsidies, further slow adoption. In China, while government support is strong, the high cost of EVs remains a barrier for mass adoption.

Technology Transformation and Risk Dynamics

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Aftermarket Surge and Vehicle Retention

- 1. **Slow EV Adoption in Developing Markets** – In emerging markets, regulatory gaps, inconsistent charging infrastructure, and limited public charging stations hinder EV adoption. In India, a significant barrier is the lack of standardized charging protocols, leading to fragmented ecosystems. In Africa, infrastructure challenges, such as unreliable electricity grids, impede widespread EV use. In Latin America, limited government incentives and a focus on internal combustion engines slow EV market penetration.
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Regional Outlook Highlights

- 1. **Slow EV Adoption in Developing Markets** – In emerging markets, regulatory gaps, inconsistent charging infrastructure, and limited public charging stations hinder EV adoption. In India, a significant barrier is the lack of standardized charging protocols, leading to fragmented ecosystems. In Africa, infrastructure challenges, such as unreliable electricity grids, impede widespread EV use. In Latin America, limited government incentives and a focus on internal combustion engines slow EV market penetration.
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6.1 Key Takeaways

- 1. **Key Takeaway: Technology Gap** – In manufacturing, the technology gap is a critical factor affecting productivity and quality. This gap is often a result of outdated equipment and processes. To bridge this gap, manufacturers must invest in research and development (R&D) to develop new technologies and processes. This investment is essential for maintaining a competitive edge in the market.
- 2. **Key Takeaway: Workforce Shortage** – A significant challenge in manufacturing is the shortage of skilled workers. This shortage is often a result of an aging workforce and a lack of training programs. To address this issue, manufacturers must invest in training and development programs to upskill their workforce. This investment is crucial for ensuring a steady supply of skilled labor.
- 3. **Key Takeaway: Supply Chain Volatility** – The supply chain is a critical component of manufacturing, and its volatility can significantly impact production. This volatility is often a result of global events, such as the COVID-19 pandemic, which disrupted the flow of raw materials and components. To mitigate this risk, manufacturers must diversify their supply chains and build strategic relationships with suppliers.
- 4. **Key Takeaway: Sustainability** – Sustainability is becoming an increasingly important factor in manufacturing. Consumers are increasingly demanding products that are environmentally friendly and ethically sourced. To meet this demand, manufacturers must adopt sustainable practices, such as reducing waste and using renewable energy. This adoption is essential for long-term success in the market.
- 5. **Key Takeaway: Digital Transformation** – Digital transformation is a key trend in manufacturing, involving the integration of digital technologies into all aspects of the business. This transformation is essential for improving efficiency, reducing costs, and enhancing customer experience. Manufacturers must invest in digital technologies, such as artificial intelligence and the Internet of Things (IoT), to stay competitive.
- 6. **Key Takeaway: Innovation** – Innovation is a critical driver of growth in manufacturing. It involves the development of new products, processes, and business models. To foster innovation, manufacturers must create a culture of innovation and encourage employees to think creatively. This culture is essential for staying ahead of the competition.

7. Appendix

Key References

- [Global EV Outlook 2025](#)
- [Automotive Tariffs: Reshaping Vehicles, Sales, Pricing, and Production](#)
- [Electric Vehicle Consumer Preference](#)
- [Roadblocks to EV ownership](#)
- [Range Performance across different EV models](#)
- [EVS:2025 Smart Mobility Report](#)
- [Automotive & Smart Mobility Cybersecurity Report](#)

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