



2024

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.

JABIL

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1. Report Overview

The automotive market presents a promising outlook in 2024 characterized by both emerging recovery trends alongside persistent challenges. As supply chain issues begin to ease and inventory levels improve, market dynamics show a prominent growth in the global vehicle sales by 2030. Predominantly, the electric vehicle (EV) segment is poised for significant growth, with an estimated compound annual growth rate (CAGR) of ~18% from 2024 to 2030. This growth is driven by government regulations and strong consumer interest. Despite a temporary decline in the demand of EV in early 2024, due to economic uncertainties and geopolitical tensions, the industry is expected to rebound by mid-year. The resurgence of electric vehicles is expected to be driven by improved supply chains, supportive policies, increased consumer interest, and the availability of more affordable models. These factors are anticipated to make EVs more accessible to a broader market.

The smart home market in North America is characterized by its industry focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

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2. Market Overview

2.1 Global Automotive Market outlook

The automotive market showcased moderate growth in 2023. Looking ahead to 2024, global vehicle sales are forecasted to slightly increase to 89.05 million units from 86.6 million units in 2023 (S&P), reflecting a continued, albeit slower, recovery momentum. This growth was propelled by strong demand across key markets such as China, the United States, and Europe, alongside significant recovery in emerging economies. The sector benefited from easing supply chain disruptions, increased consumer confidence, and a notable surge in EV adoption, driven by governmental policies and incentives. The market is expected to navigate through challenges such as rising material costs, geopolitical tensions, and evolving consumer preferences towards sustainable mobility.

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2.2 Regional Outlook

2.2.1 The United States

The United States automotive market experienced a notable recovery in 2023. This growth is supported by the continued expansion of the electric vehicle segment, supported by federal incentives and a growing consumer appetite for sustainable mobility solutions. Additional state-level consumer rebates further support these initiatives. The National Electric Vehicle Infrastructure Formula Program is also contributing significantly, allocating billions to build a nationwide network of EV charging stations. Regulatory measures, such as the Zero-Emission Vehicle Standards set by the California Air Resources Board and adopted by many states, mandate automakers to increase the sales of zero-emission vehicles.

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2.2.3 China

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant growth in adopting smart home control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, along with a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which remains a barrier for many users.

Europe's smart home market thrives on a solid foundation of sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. The market is partly driven by regional cultural and geographical nuances, which, along with differing regulatory policies, have led to a rise in demand for smart locks. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility in older adults' needs.

2.2.4 India

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2.3 Market Growth Enablers

2.3.1 Government Regulations and Incentives

Emissions standards, EV subsidies, and infrastructure investments heavily influence the shift towards electrification.

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2.3.2 Advances in Battery Technology

Decreasing costs, increasing energy density, and faster charging speeds are making EVs more viable.

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2.3.3 Shifting Consumer Preferences

Prioritization for tech-savvy vehicles, connectivity, and brands with strong sustainability commitments.

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2.3.4 EV Charging Infrastructure Expansion

Growing networks to accelerate EV adoption.

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2.4 Market Inhibitors

2.4.1 Limited EV Range

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

While EV ranges are continuously improving, most of the models still fall short of typical fuel-powered vehicles in terms of how far they can go on a single charge/tank. This range concern is a major psychological barrier for consumers, particularly those accustomed to the flexibility of long-distance travel in internal combustion engine vehicles. While fast-charging infrastructure is expanding, it's still not as ubiquitous as fuel stations, which adds another layer of planning complexity. A prime example is that in sparsely populated regions, even a 300-mile range EV might necessitate careful route planning due to limited charging infrastructure.

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2.4.2 High Upfront Cost of EVs

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

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2.4.3 Cybersecurity Risks

Connected/SDX vehicles increase vulnerability to hacking and data breaches.

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2.4.4 Regulatory Uncertainty

Varying emissions standards and EV policies across regions can impact sales.

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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 Advanced Driver Assistance Systems (ADAS), Connectivity, Electrification, and Software-Defined Vehicles (SDVs). This framework enables systematic exploration of the technological advancements driving the industry forward.



3.1 Advanced Driver Assistance Systems (ADAS)

ADAS encompasses a suite of intelligent technologies that enhance vehicle safety, automate routine driving tasks, and lay the groundwork for the future of autonomous transportation. While ADAS has been around for some time, recent years have seen a significant acceleration in the availability and affordability of advanced safety features. Systems such as adaptive cruise control (ACC), automatic emergency braking (AEB), lane departure warning (LDW), and blind-spot monitoring are steadily transitioning from luxury options to mainstream necessities.

Regulatory bodies, driven by substantial evidence of life-saving potential are planning to mandate the inclusion of these features in upcoming vehicles. This regulatory push, combined with growing consumer awareness, is propelling the widespread adoption of ADAS safety technologies. For instance, Subaru has rolled out its advanced EyeSight Driver Assist Technology as standard equipment across a significant fleet. This suite includes AEB, ACC, and other crucial safety features – a move that could help highlight the increased use of ADAS within the industry. Additionally, the Insurance Institute for Highway Safety (IIHS) has recognized numerous automakers for their advanced ADAS implementations, with Toyota/Lexus, Honda, and Hyundai frequently recognized for safety innovation.

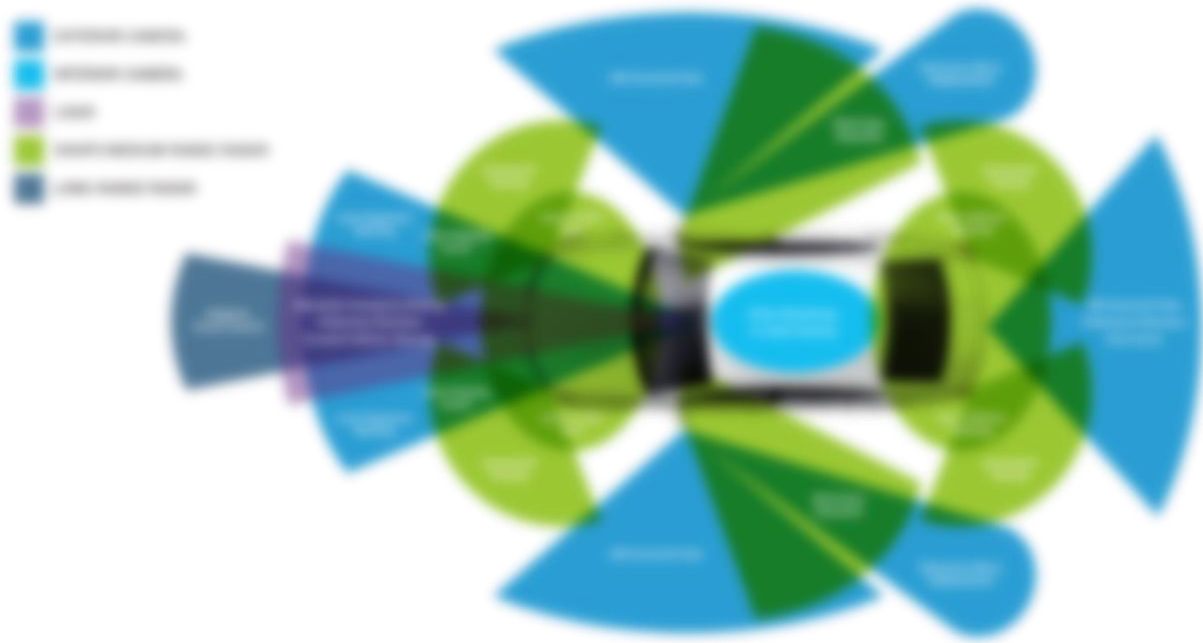


3.1.1 Stride Towards Levels 2+, 3 and beyond

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3.1.2 Innovations in ADAS

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3.1.3 Edge AI: Driving Intelligence to the Edge

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3.2 Connectivity

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What do we mean by Connectivity?

The comprehensive communication between vehicle users and infrastructure



3.3 Electrification

The global power market in North America is characterized by its reliance on... focusing on... efficiency, cost-effectiveness, energy efficiency, and security. The region... significant... in... through... and... which... The... is... by... providing... and... for... challenges... and the complexity of... which... and...

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Figure: Electric Vehicle Types



Figure: Region-wise Targets for ICE Ban

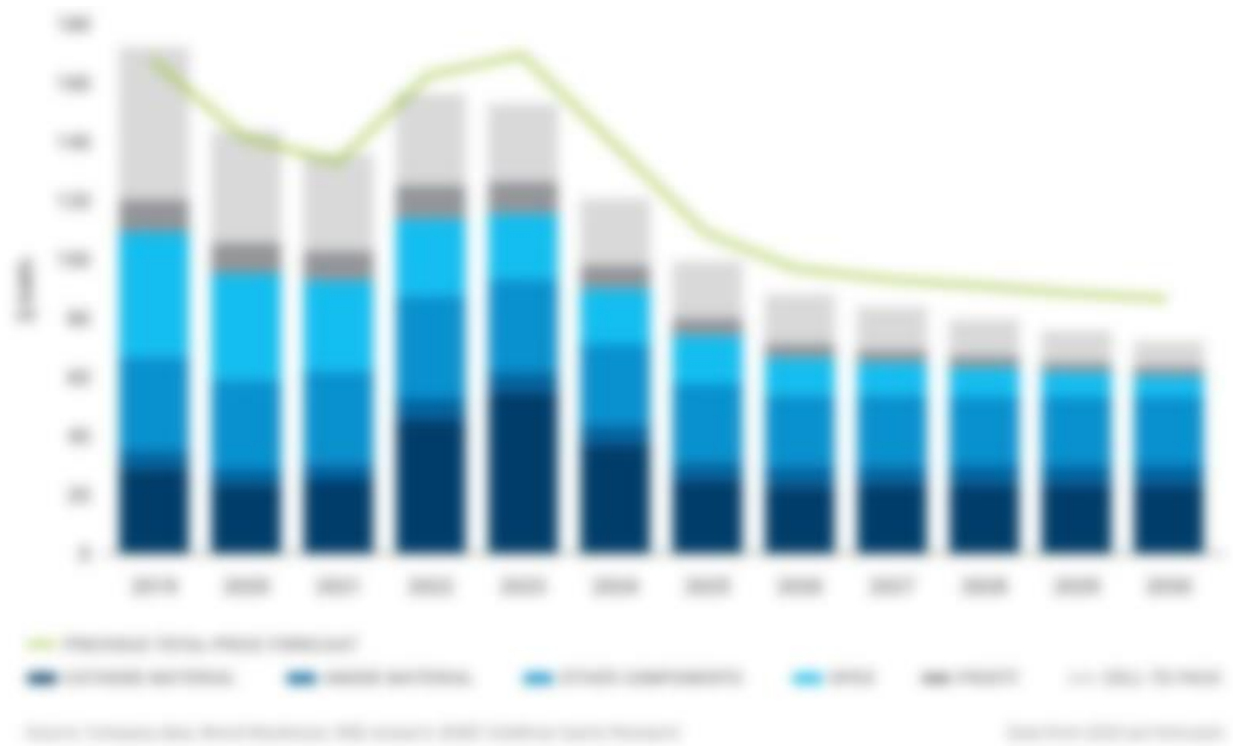


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3.3.1 Electric Vehicle (EV) Batteries

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Figure: Global Average Battery Pack Prices



3.3.2 800V Architectures

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3.3.3 EV Charging Infrastructure

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Figure: EV Charging Ecosystem



3.3.4 Smart Charging

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Figure: Software Defined Vehicles Simplified



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



3.5 Cybersecurity

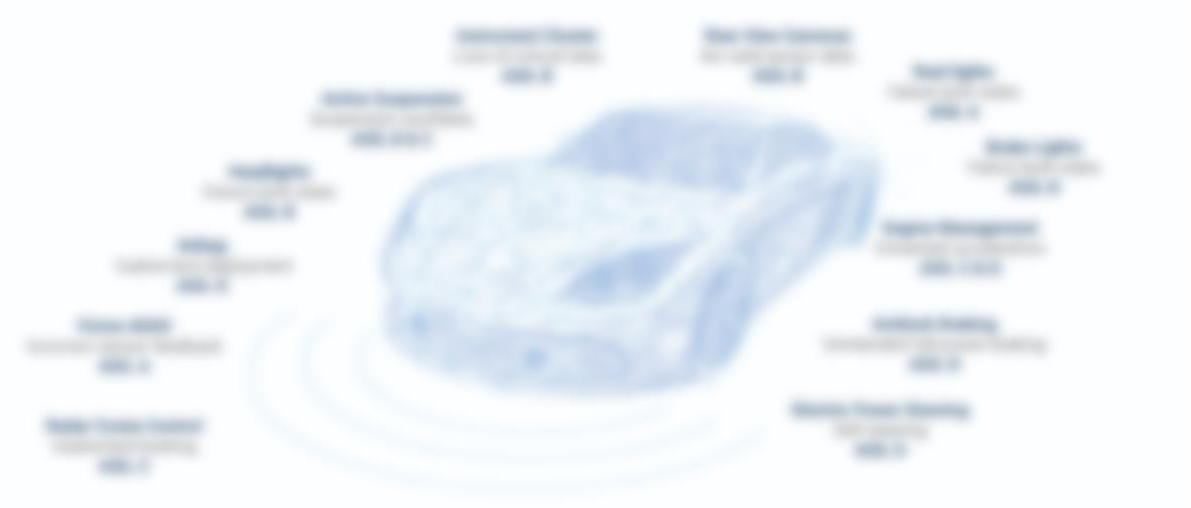
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3.5.1 Evolving Threat Landscape

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3.5.2 Regulatory Compliance and Evolving Standards

Figure: Typical Automotive ASIL Classifications



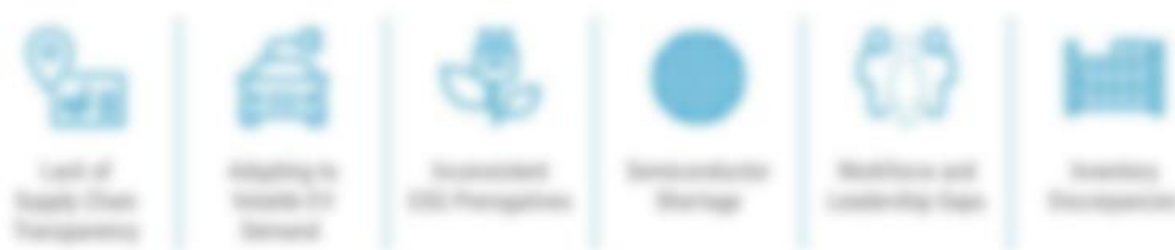
4. Supply Chain

4.1 Supply Chain Overview

The automotive supply chain is navigating through a period marked by significant transformations, facing unprecedented challenges and opportunities alike. This dynamic period is characterized by a rapid shift towards electric vehicles (EVs), driven by environmental considerations and technological advancements. The transition is reshaping the automotive landscape for suppliers and manufacturers, compelling the stakeholders to innovate and adapt to capture higher market share.

The past few years have tested the resilience of the global automotive industry, with suppliers at the heart of the storm. From semiconductor shortages to volatile raw material prices, the supply chain has been under constant pressure. Despite these challenges, the industry has not only endured but also uncovered new growth avenues and profitability strategies. A pivotal factor in this resilience has been the shift to EVs, a movement accelerated by both consumer demand and governmental policies aimed at reducing carbon emissions.

Figure: Automotive Supply Chain Challenges



Suppliers are finding themselves at a critical juncture, where innovation in EV technology is not just an advantage but a necessity for market survival. This shift has placed an added strain on suppliers, requiring substantial investment in R&D to keep pace with the changing dynamics.

4.1.1 EV Supply Chain

The electric vehicle market in North America is characterized by its reliance on importing components, energy efficiency, and security. The region faces significant challenges in managing its raw material content, primarily through direct access to the American, China, and Europe markets, which have become increasingly complex. The environment is complicated by consumers' growing concern for energy efficiency, which affects device and system, along for a number of other factors. Despite its advances, the market continues to face increased challenges related to energy concerns and the complexity of device design, which require a certain level of IT expertise.

Energy's electric vehicle market drives on a solid commitment to sustainability and energy efficiency. Environmental protection and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. The market is partly driven by regional conflicts and geopolitical tensions, which, along with shifting regulatory policies, has led to a rise in domestic energy costs. Consequently, there's a heightened interest in advanced security products, including smart home cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility in older homes.

4.1.2 Reshoring/Nearshoring Automotive Supply Chains

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4.1.3 EV battery recycling and its impact on the automotive supply chain

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. The increase in cyber threats and regional conflicts and geopolitical tensions, which, along with shifting regulatory patterns, has led to a rise in demand for smart locks. Consequently, there's a heightened demand for enhanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility in older adults' needs.

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

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4.3 Impact of AI on Supply Chain

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4.4 Use Cases – Using Super trends as part of Supply Chain

4.4.1 Blockchain in the Automotive Supply Chain

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4.4.2 AI for Supply Chain Resilience

The global supply chain in North America is characterized by its complexity, focusing on enhancing convenience, energy efficiency, and security. The region needs significant strides in integrating AI and data control, primarily through devices like sensors, IoT, and storage devices, which have become household staples. This advancement is propelled by consumers' growing competitiveness between different devices and systems, aiming for a seamless user experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5. Jabil Insights & Strategic Considerations

5.1 Jabil Insights

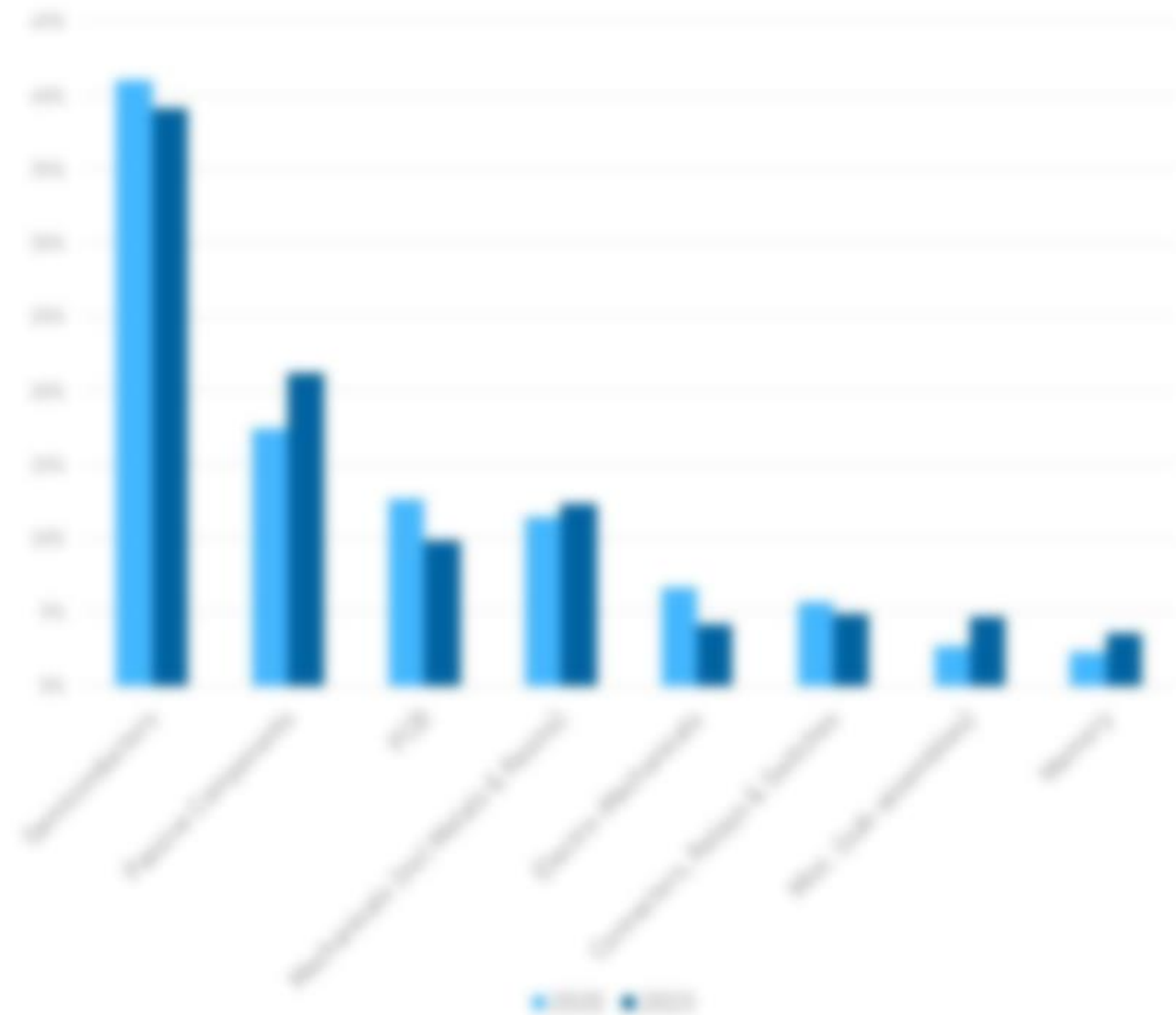
The automotive market faces a mixed outlook marked by gradual recovery and ongoing challenges. While easing supply chain bottlenecks and inventory replenishment support moderate growth, persistent inflation, geopolitical turbulence, and rising interest rates restrain further expansion. Despite the early 2024 slowdown attributed to a variety of factors including economic headwinds and geopolitical tensions, the sector is expected to rebound robustly by mid-year. This anticipated recovery is buoyed by improving supply chain dynamics, policy support adjustments, and evolving consumer sentiments toward sustainability and electric mobility.

Technological innovation, driven by ACES technologies (autonomous, connected, electric, and software-defined/centralized architecture), continues to transform the automotive landscape, reshaping consumer choices. The trade-off for consumers is becoming more pronounced: the price of EVs must be weighed against their superior performance, range, and sustainability benefits. Alongside this, while the excitement around autonomous driving technologies persists, a realistic assessment is necessary. Current autonomous driving capabilities offer significant assistance but still fall short of full autonomy. Overcoming regulatory hurdles and achieving widespread consumer acceptance will likely extend into 2030 or beyond, though semi-autonomous vehicles (autonomy levels 2+ & 3) are expected to make significant inroads in the near future.

The smart home market in North America is characterized by its rapidly growing and enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.2 Jabil Spend Analysis

JABIL SPEND IN THE AUTOMOTIVE SECTOR, BY CATEGORY (2020 VS 2023)



Data based on Jabil's historical spend data for Automotive Customer Segment

JABIL CATEGORY SPEND IN THE AUTOMOTIVE SECTOR YOY (%)



Data is based on Jabil's historical spend data for Automotive Customer Segment

AUTOMOTIVE SEMICONDUCTOR COMPONENTS SPEND (%)



Data based on Jabil's historical spend data for Automotive Customer Segment

5.3 Strategic Considerations

5.3.1 Competitive Scenario

The automotive market is undergoing an extraordinary transformation as tech-focused companies and ambitious EV startups directly challenge the long-standing dominance of traditional automakers. Companies such as Tesla, Lucid, and Rivian have spearheaded the EV revolution, demonstrating the potential of innovative software and sleek electric powertrains. Chinese EV makers like BYD and Nio are rapidly expanding their global presence. Meanwhile, technology giants such as Google (Waymo) and Apple (Project Titan, which has been anonymous but anticipated to be halted now) has been investing heavily in autonomous driving. These investments point to a future where increased vehicle autonomy could profoundly disrupt transportation models, offering end customers more diverse options.

5.3.2 Shifting Business Models

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5.3.3 Evolving EMS Relationship

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5.3.4 Co-Creation Model

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

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