STATXO

powering smarter decisions

Key Trends: Automotive Industry

August 2022

Key Automotive Trends [1]: Electric Vehicles (EVs) Adoption Increases Worldwide

Improvement In EV Infrastructure

Stringent emission standards, lowering costs & increasing efficiency of batteries, growing access to charging infrastructure, and increasing consumer acceptance are creating strong momentum for penetration of EVs, like, Hybrid Electric Vehicles *(HEVs)*, Battery Electric Vehicles *(BEVs)*, Fuel Cell Electric Vehicles *(FCEVs)*, etc.

- **ChargeX**, a Germany-based electric car charging solution start-up**,** offers modular EV charging solutions that converts parking spaces into charging stations
- In June 2022, **Solid Power**, backed by **Ford** and **BMW**, began pilot production of solid-state EV battery with a longer range *(~50-80% increase in battery energy density over conventional Li-ion battery)* and quicker recharging *(<15 mins)*

Growing Demand For Hydrogen Vehicles

- With Hydrogen being considered as the best fuel alternative for the future, FCEVs, i.e., Hydrogen Cars can outplay the BEVs that had a competitive head start
- Major benefits of Hydrogen powered vehicles over BEVs, like, the ease of refueling an FCEV *(similar to as in filling a gasoline tank),* more range compared to a BEV, etc. are making Hydrogen Cars a better alternative to IC engines powered cars
- Automakers and governments around the globe are ploughing more money into FCEV development.
    - Two (2) major automotive companies, **Hyundai** and **Toyota** are already manufacturing FCEV models
    - Other companies, like, **Renault**, **Land Rover**, and **BMW** have introduced FCEV concept models

Key Players

"Over 55% of all new car sales could be fully electrified by 2030."

- PWC

"In China, 3.3 Mn EVs were sold in 2021, which is more than the entire world EV sales in 2020 (3 Mn)."

- IEA

Sources: *Frost & Sullivan, Forbes, PWC, IEA, Gartner, Hindustan Times, CNBC, Reuters, Statista, Financial Times*

Key Automotive Trends [2]: Autonomous Vehicles (AVs) Are Changing The Face Of The Auto Industry

The rapid progress in artificial intelligence (AI), machine learning (ML), and deep neural networks (DNN) is helping in the development of AVs which require no human intervention even in complex traffic situations

Automakers have begun to work on the development of Level 3 *(Conditional Driving Automation)* autonomous driving cars as well as Level 4 *(High Driving Automation)* self-driving trucks and commercial Robo-taxis

Mercedes-Benz becomes the world's first to get Level 3 autonomous driving approval. This will be available in S-Class and EQS

Several innovative start-ups, like, **Einride**, **Zoox**, and **Udelv** have entered the AVs market in the recent years

AVs use RADAR sensing technology, light detection & ranging (LiDAR) technology, and AI to detect vehicles nearby and create an active 3D map of their surroundings

Cruise, **Tesla**, **Waymo**, **Pony.ai**, and **Aurora** are among many companies aiming to deploy fully AV technology

Key Players

- Mercedes
- ZOOX
- einride
- Aurora
- cruise
- udelv

"In 2030, the global sales of Level 3 AVs are projected to reach a value of around 58 Mn units."

- Statista

"12% of the total cars sold in 2030 will be AVs, with 26 Mn driverless taxis operating worldwide."

- UBS

Sources: *Frost & Sullivan, Forbes, PWC, IEA, Gartner, Hindustan Times, CNBC, Reuters, Statista, Financial Times*

Key Automotive Trends [3]: Cars Become Even More Connected with IoT

IoT enables secure communication between vehicles as well as vehicles and infrastructure components. The technology improves road safety, solves traffic congestion, and reduces pollution `& energy expenditure with better fleet management

Start-ups and emerging companies are developing advanced sensing technologies to gather more data about the vehicle as well as allow the vehicle to understand its surroundings.

EcoG, an IoT-based start-up operating from Germany, offers an IoT-based operating system and platform for EV charging

KonnectShift, a Canada-based IoT & AI-driven mobility start-up, provides IoT solutions to optimize fleet and asset management.

- It develops Konnect – GS01, an automatic electronic logging device (ELD) to continuously track vehicular health

Key Players

Microsoft | IBM | cisco | Alphabet

> ***In 2020, 91% of new cars sold in the US were IoT-connected. It is estimated that by 2025, 115 Mn connected cars will be sold.***
>
> ***- Oracle***

> ***By 2030, almost 80% of new vehicles shipped globally will be equipped with at least Level 2 Autonomy (Partial Driving Automation)***
>
> ***- Gartner***

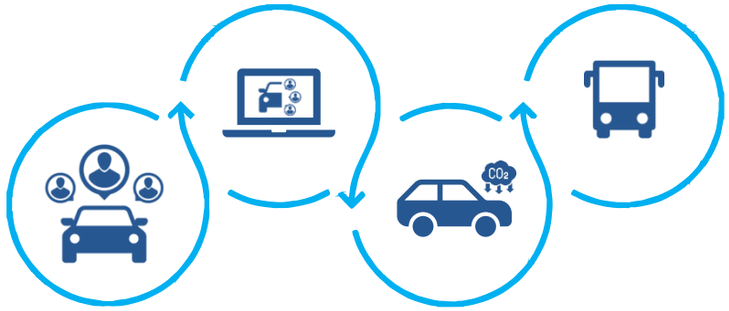
Sources: *PWC, Gartner, Mckinsey - Shared Mobility (2021), Mckinsey - IoT (2021), Capgemini, AIG, Forbes, Oracle*

Key Automotive Trends [4]: Shared Mobility Business Model Becomes Widespread

Technology is not only taking over model design but also business models, as 'Mobility-As-A-Service' (MaaS) and Car Rental Services become widespread.

Factors, like, increasing consumer awareness, and growing numbers of funding being raised by new start-ups in the Shared Mobility space, are contributing to the growth of this market.

- In July 2021, **Zingbus**, an intercity mobility start-up, announced that it has raised over **$5.98 Mn** to develop technology for a better traveler experience and expand its services in new locations



Shared mobility solutions meet the requirements of a city or a business without adding new vehicles, thus reducing waiting time for fleets and pollution caused by petrol or diesel engines

New companies offering shared mobility options are popping up every day, creating an innovative, affordable, convenient alternative to the expensive options and many other responsibilities associated with the vehicle ownership.

- The US-based start-up, **Launch Mobility** developed a platform, *LM Mission ControlTM* that offers station-based car sharing, advanced shuttle services, shared dockless scooters, keyless rental programs, and peer-to-peer shared mobility
- Apps, like, **Zity**, **ShareNow**, **GoTo**, and **ZipCar** provide shared mobility services with large fleets of cars, particularly EVs

> ***"1 out of 10 cars sold in 2030 will be a shared vehicle and will lead to a subsequent rise in the market for fit-for-purpose mobility solutions."***
> ***- Mckinsey***

> ***"The e-hailing market accounts for more than 90% of consumer spending in shared mobility globally."***
> ***- Mckinsey***

Sources: *PWC, Gartner, Mckinsey - Shared Mobility (2021), Mckinsey - IoT (2021), Capgemini, AIG, Forbes, Oracle*

Key Automotive Trends [5]: Rise in use of 3D Printing Technology for Additive Manufacturing

Ease In Operations

Besides the conventionally manufactured parts, automotive giants, like, **GM**, **Ford**, **Tesla**, and **BMW**, are now using 3D-printed parts as well, to keep assembly lines running. It has three (3) main effects on the auto industry:

- In the pre-manufacturing stage, it allows rapid prototyping using 3D printed models to expedite the design and testing steps
- Durable 3D printing processes, such as, Fused Filament Fabrication (FFF) now allow manufacturers to produce spare parts which are suitable for end-use landscape and quickly adhere to manufacturing specifications
- Automotive components made of composite materials using additive manufacturing (3D) are lighter, stronger, and more durable

Raise the Production Standards

- Major Car manufacturers, e.g., **Ford** and **Volkswagen**, are focused on achieving high-performance standards, such as, better fuel efficiency, connectivity, and aerodynamics through 3D printed prototyping to reduce production time and cost
- Numerous start-ups are creating cutting-edge 3D printing technology for the auto industry
  - **9T Labs**, a Switzerland-based 3D printing start-up, employs additive manufacturing to produce carbon composites for use in the automotive industry
  - **Moi Composites**, an Italy-based 3D printing start-up, combines thermosetting composite materials and 3D printing to make high-performance automotive parts

Key Players

3DGENCE PRINT YOUR WORLD | stratasys | moi composites | Markforged | 9T LABS

> ***"Number of respondents that produced 10 or more parts via 3D printing rose from 36% in 2021 to 49% in 2022. Industrial 3D printer demand was greater than supply in 2021."***
>
> ***- Hubs, a division of Protolabs***

> ***"33% of engineering businesses increased their 3D printing usage, and 50% of engineering businesses maintained their usage."***
>
> ***- Hubs Survey***

Sources: *AIG, PWC, Fast Company, NY Times, Brand Finance, ABC News, Economic Times, Endeavor Business Media, HUBS, ET Auto*

Key Automotive Trends [6]: A Rise In Digital Automobile Sales

Automakers in North America and Europe have started offering consumers the option to skip the visit to the car dealership and shop online at their convenience and explore & select the features they want on a vehicle with the financing options.

- In 2019, **Tesla** shifted to selling cars entirely online where customers can buy directly from the manufacturer
- Leading automotive companies including **BMW** and **Volkswagen** have already made significant investments in their digital platforms
- In early 2021, **Volvo** announced that all pure EVs would only be available online for purchasing

Vehicle purchasing is shifting from traditional dealership settings, where customers spend over three (3) hours on average in the dealer's showroom, to digital retailing

Consumers are increasingly trusting non-OEM online retail start-ups, like, **Carvana**, **Vroom**, **Carvago**, **Cinch**, **Auto1**, **Cazoo**, **Kavak**, **CarNext**, **Carro**, and **Amaris** for the whole purchase and sales process for new and used cars

Key Players

Tesla | BMW | CARRO | vroom | AUTO1.com

> ***~30% of the US new car sales last year were completed online. Before the pandemic, less than 2% of vehicles were purchased digitally.***
>
> **- ABC News**

> ***About ~90% of car purchases in India are digitally driven, and ~44% of the survey respondents said that they will purchase online if the option is available.***
>
> **- Google, Kantar, & TNS**

Sources: AIG, PWC, Fast Company, NY Times, Brand Finance, ABC News, Economic Times, Endeavor Business Media, HUBS, ET Auto

About STATXO

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