RethinkX

Disruption.
Implications.
Choices.

AUTONOMOUS VEHICLES AND THE END OF INDIVIDUAL CAR OWNERSHIP

RETHINKING TRANSPORTATION 2020-2030: KEY CONSIDERATIONS FOR BUSINESSES AND INVESTORS

We are on the cusp of the most radical transformation in transport since the internal combustion engine (ICE) replaced the horse-drawn carriage, and the implications for the global economy, the way we live and the planet we live on are just as profound.

Autonomous, electric vehicles (A-EVs) will soon replace not just cars powered by gasoline, but the very concept of individually-owned cars itself.

This revolution in road transport will trigger one of the biggest boosts to consumer spending in US history, as trillions of dollars are injected into the economy through disposable income and productivity gains. Whole new business opportunities will emerge on a grand scale, creating millions of new jobs.

But some companies will pay a heavy price.

Carmakers, parts suppliers, dealerships and garages will come under huge pressure. Five million jobs will be lost and the current value chain will be blown apart as a new metric – net cost per mile – becomes the key driver of competition. The knock-on effects for the global oil industry will be severe.

This could all happen as early as 2030.

Businesses and investors must start planning now for this transportation disruption. The early adopters will be greatly rewarded; the laggards will cease to exist.

THE PRIME NUMBERS:

The move from individuals owning and driving ICE vehicles to giving up their cars and instead hailing a fleet-owned A-EV – a model we call transport-as-a-service (TaaS) – will see:

- Savings of **$5,600** a year for the average American family
- A **$1tn** boost to US disposable incomes and **$1tn** in productivity gains
- TaaS providing **95%** of all vehicle miles within **10** years of widespread regulatory approval
- TaaS being up to **10** times cheaper than owning and running a car (and possibly free in some instances)
- Up to **five million** jobs lost
- Demand for oil falling by **30%**
- Oil slumping to a break-even cost of about **$25** a barrel
- More than **50%** of US oil becoming uncommercial.

CHALLENGES FACING THE AUTO INDUSTRY

This transition will involve far more than trading an ICE vehicle for an electric vehicle. It is not a technology substitution, but a fundamental business-model disruption.

- A-EVs will run for 500,000 miles (potentially rising to one million miles by 2030), two-and-a-half to five times more than ICE-powered cars
- Vehicle utilization rates will increase tenfold
- Depreciation cost of a fleet-owned vehicle will plummet as cost per mile, not upfront cost, becomes the key economic metric
- TaaS will see a 90% fall in finance and insurance costs, an 80% decrease in maintenance costs, and a 70% reduction in fuel costs
- The number of passenger vehicles in the US will drop from 247m to 44m
- Used ICE car values will plunge towards zero, as owners sell or abandon their vehicles
- TaaS will provide six trillion passenger miles in 2030, compared with four trillion by ICE vehicles in 2021, at a quarter of the cost: $393 billion vs $1.48 trillion in 2015.

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OPPORTUNITIES IN TAAS DISRUPTION

The current value chain will be completely dismantled and replaced by a model where everything is directed towards driving down the cost per mile. There will be opportunities for whole new businesses to develop:

- **Building the computer platforms.** This is the hardware that will provide the computing power to drive A-EVs.
- **Building operating systems.** Companies that develop A-EV operating systems could reap massive rewards. However, this market could become commoditized by an open-source system. A network effect will eventually operate globally, meaning few survivors.
- **Building TaaS platforms.** These companies will be the service operators and will soon take over as the recognizable brands in the auto industry. Open-source systems (equivalent to Android) might also commoditize this market. The network effects here are local – only two or three suppliers are likely to survive in each region.

  The biggest opportunity and the key determinant of success will lie in monetizing the user base by creating entirely new revenue streams. In a competitive market, these profits will be largely passed on to passengers, opening up the possibility of free transport:

  - Advertising
  - Entertainment
  - Sponsorship
  - Selling products and services
  - Grid balancing
  - Monetizing data
  - The unforeseen
- **Fleet management.** The fleets of A-EVs operated by TaaS platform providers will need maintaining to ensure costs-per-mile are minimized.

HOW CAN CAR COMPANIES ADAPT?

There is no guarantee that existing car manufacturers will survive. We believe there are four main strategies open to them:

- Focus on hardware manufacturing and assembling, for example by ramping up EV/AV production for an early market grab
- Build and operate fleets for TaaS providers. This means focusing on reducing vehicles' cost per mile and increasing vehicle lifespans
- Become a TaaS platform provider and develop new revenue streams
- Participate in all parts of the new value chain.

FURTHER INVESTMENT CONSIDERATIONS

To help identify the winners and losers from the transition to TaaS, investors should consider:

» Exposure to car loans.
The plummeting residual values of ICE vehicles mean that, at the end of their leases, cars will be worth much less than projected. Exposure to this loss is a major risk.

» Debt load/contingent liabilities.
High leverage or contingent liabilities will make adapting much harder.

» Culture/mindset/incentives.
Many incumbent businesses fail to adapt and get disrupted because they are geared towards incremental change.

CHALLENGES FACING THE OIL INDUSTRY

Global oil demand will fall by 30%, causing systemic disruption. The oil price will fall dramatically, laying waste to the value of oil-company assets. Revenues and share prices will tumble.

- Oil demand will peak at 100 million bpd in 2020, dropping to 70 million bpd by 2030
- The break-even cost of oil will fall to $25.40 a barrel
- Oil majors such as BP, ExxonMobil and Shell could see 40%-50% of their assets stranded
- Half the oil assets of countries such as the US, Canada, Brazil and Mexico could be stranded
- In the US, 65% of shale and tight oil will no longer be commercially viable
- Key infrastructure projects such as the Keystone XL and Dakota Access Pipeline will become unviable.

HOW CAN OIL COMPANIES PREPARE FOR TAAS?

OPTIONS AVAILABLE:

- Selling high-cost assets, which might include oilfields, refineries, petrochemical units and pipelines
- Selling the company before markets appreciate the scale of the disruption
- Splitting the business, separating oil-based assets from all other assets
- Focusing on maximizing cashflow by winding down the business, writing off or writing down high-cost assets, cutting capital expenditure and offloading liabilities.

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