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Point of view

Elastic Value Chain for **Auto Joint Ventures**

The automotive industry today is confronted with not just futuristic demands from its consumers but also withevolving complexities of environmental needs. Automotive OEMs have long realized that they need to look at collaboration with other OEMs to drive the needed pace of innovation that eliminates individual deficiencies by capitalizing on mutual strengths.

Joint ventures and collaborations are not new for the automotive industry. The industry witnessed innovations in recent times that achieved great success, proving that competition and collaboration working in sync can create wonders.

Here are some recent collaborations that helped the automotive industry make technology strides:

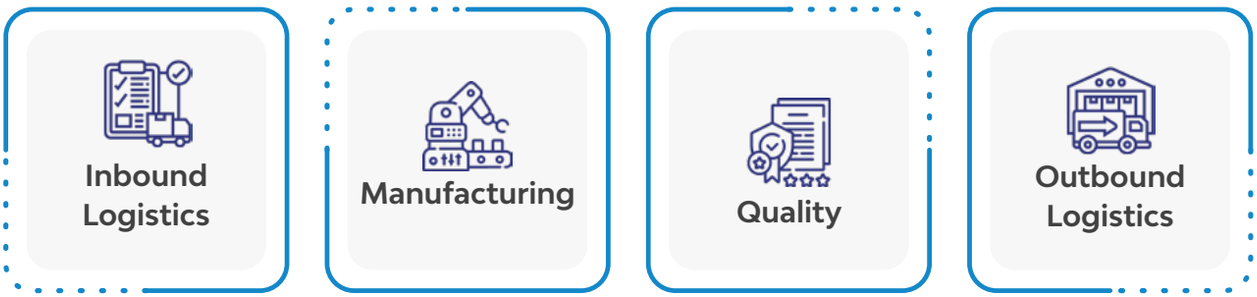
- Volvo planned a joint venture with ECARX, a smart car technology startup, to innovate in-car operation software systems [1].
- Bosch, the world's premier Tier 1 supplier, partnered with Mercedes-Benz to develop urban automated driving using an app-based ride-hailing service for Mercedes-Benz S-Class vehicles [2].
- The Hyundai Motor Group and Motional alliance announced that the all-electric crossover would begin public service in two years through a partnership with ride-hailing giant Lyft. The robotaxi will be Motional's first commercial vehicle [3].
- Bugatti, industry pioneer in electric technologies, and Rimac, with more than a century of experience in the development of top-class cars, produced two hypercar models: the Bugatti Chiron and the all-electric Rimac Nevera [4].
- Honda and GM will jointly develop two new electric vehicles for 2024. Honda will design the exterior and interiors and GM will incorporate its new electric vehicle architecture and Ultium batteries. The vehicles will also boast GM's OnStar safety and security services and its hands-free advanced driver assistance technology, Super Cruise [5].

In the future, partnerships will extend beyond OEMs to invite the technology giants such as Google and Nvidia and mobility leaders such as Uber and Lyft to shape the automotive future.

Value Chain Elasticity Assessment

With the OEMs exploring joint ventures, the underlying value chain is constantly being challenged to seamlessly facilitate the collaborations. These challenges will only multiply as ventures expand to include new partners and complex designs. The time is right for OEMs to introspect their underlying value chain and supporting systems to gauge the needed building blocks that can enable needed flexibility and elasticity to realize corporate strategy and goals.

The performance of the value chain should be vetted by relaying the complexities of ventures on the existing model. Let us examine some key aspects the existing value chain could be challenged with:

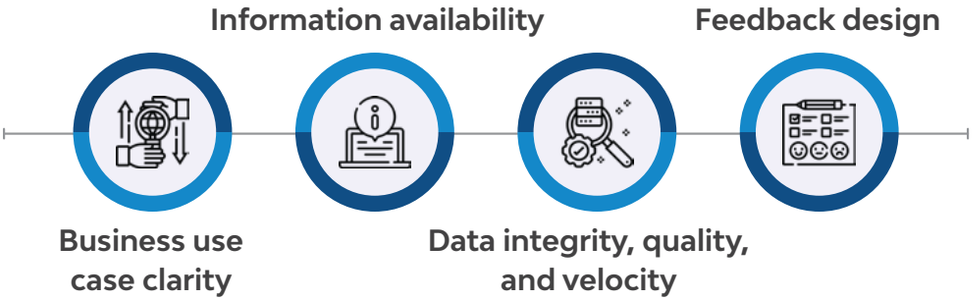


- **Inbound logistics:** The OEM manufacturing the vehicle will have to integrate parts from partnering OEM suppliers on fairly short notice. For a fairly sustainable process design, the complexities in the business process of patterning OEM supply chains such as design change tracking, supplier quality, and performance tracking, etc. need to be accounted for.
- **Manufacturing:** The primary responsibility of manufacturing will remain with the manufacturing partner. However, there might be a need to incorporate complexities such as mandatory compliance needs, compulsory process checkpoint, in-house defect tracking, end-of-line vehicle certification, etc. from the sponsoring OEM's operational requirements.
- **Quality:** The impact the product makes on the consumers will determine the future of any collaboration. The ability to track, react, and mitigate any in-house and aftermarket issues will empower ventures with agility. Moreover, with the suppliers from both OEMs joining forces with a partnered designing and manufacturing team, the speed to countermeasure will be impacted if the enabling systems are not appropriately calibrated to deliver speed and appropriate segregation.

- **Outbound logistics:** Collaborating OEMs could possibly share distribution channels, warehouses, and logistics to optimize operations. Optimum solutions would leverage both OEMs' market reach to efficiently mobilize the vehicles.

Technology Enablers Assessment

The hygiene and agility of the value chain's technology foundations ensure that the collaboration objectives are met with minimum disruptions. Assessment of these factors ensures the OEM's tech health and ability to take on the challenges of joint ventures. Key focus areas include:



- **Business use case clarity:** The clarity of business processes changes to the established value chain will determine the velocity of adoption. Well-designed information architecture ensures simplicity in capturing nuances such as new supplier contracts, government approvals, manufacturing process manuals changes, etc. The clarity of information helps create effective technology applications.
- **Information availability:** Collaborating OEMs and relevant partners must share valuable information. The focus should be on the data that specifically contributes to the success of the venture. The technology partner's sound understanding of mandatory information will accelerate the collaboration.
- **Data integrity, quality, and velocity:** One of the key challenges in joint ventures is to ensure segregation of data ownership and business process. IT systems should enable insights with maximum transparency. Also, the checks and balances around the systems should be designed to ensure the quality of data remains close to pristine.
- **Feedback design:** The feedback loop among collaborators should be extremely versatile, elastic, and agile. Aftermarket response, particularly, needs to be extremely responsive with a well-architected collaboration platform.

Designing Systems for Ventures

Fortunately, technology has evolved to provide a sound architectural foundation for an enhanced next-generation value chain model that delivers seamless collaboration. Here are a few key technology accelerators:

- **Distributed Secure Processing**

  OEMs need to identify key systems that would enable the collaboration and ensure that the monolithic nature is broken securely, exposing its components through APIs. These systems can be enabled to interact securely with distributed platforms such as blockchain to capture, secure, and distribute the data.

  The distributed nature of blockchain and rock-solid security will ensure both data availability and security. Due to the inherent nature of blockchain, any change made to data by any entity will be retained and cannot be reverted, and this will give a much more reliable platform to increase velocity, accuracy, and traceability to efficiently find countermeasures for the issues experienced across the value chain.

- **Amplified Data Collection**

  Data is the language of systems. The more meaningful data we capture, the more decision-making capability we provide through insights generated from the data capture.

  We have seen great advancements in fields such as:

  - **Sensors:** There are practically unlimited use cases for capturing microdata using sensors. They can be deployed in the value chain to help optimize productivity through data to information transformation.
  - **RFID tags:** Radio frequency identification (RFID) tags are extremely tiny sensors with antennas that are invisible to human eyes. They are typically used to track assets and capture data.
  - **Telematics:** This is a method of monitoring vehicles, equipment, and other assets using GPS technology and onboard diagnostics (OBD) that sends location as well as other monitored data to connected systems.

With advances in IoT, coupled with edge computing, a network of intelligent data collection points, in millions, can be deployed across the value chain. When judiciously deployed, the IoT framework can create swarm intelligence throughout the value chain.

- **Insight Generation**
  Transforming data into information is technology's chief challenge. The task assumes great complexity due to dependence on experts to define what is good information and how to measure it. This is an iterative learning process that systems need to adapt to.

  The information also needs to be mapped to decision-making. Data architecture in an enterprise is like the DNA of the organization. Technology enablers such as big data lay the foundation to siphon in data and then provide the capability to meaningfully visualize the information. Data processing using options such as Kafka streaming is being explored. Moreover, there has been a significant shift to self-service from all the analytics product providers such as Tableau, Qlik, and MS Power BI.

- **Process Automation**
  Automation has evolved from being a complex solution to a self-service model. Automation across the value chain will not only optimize delivery through reliability but also bring forth value realization possibilities based on new data discoveries. Automation allows the workforce to focus on complexities imposed on the value chain instead of performing repeatable tasks.

- **Proactivity**
  Artificial Intelligence (AI) has made significant progress in predictive maintenance. Avenues to predict and augment decision-making will grow as technologies such as digital twins, augmented reality, and anonymous systems evolve. AI may have more use cases after OEMs promote their systems in other areas mentioned above.

Ensure a Smooth Ride

OEMs must introspect and future-proof their systems for joint ventures to ensure that IT systems do not create a bottleneck in their pursuit of a dream ride. The best practices mentioned above can help aspiring OEMs begin their journey on a sound footing.

About the Author

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Since 2001, Manojeet has been architecting solutions by decoding complex business problems and ensuring optimum value realization. He executed multimillion-dollar global programs in a highly diverse environment and pioneered transformation through digitization and innovation. He led agile adoption by architecting tailored, adaptable processes, and standards to support a transformation journey of many organizations.

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