Digitization

The Way Forward for Automotive Companies
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Automotive companies are caught in a catch-22 situation - on one hand, the industry is grappling with the challenge of maintaining healthy balance sheets; and on the other, it is attempting to adopt the latest technologies to address the issue of competitive differentiation. The evolving technology investment environment has a deep influence and impact on how value chain collaboration, internal operations, and customer experience for both products and services, will emerge in the immediate future. Be they automotive OEMs (Original Equipment Manufacturers) or Tier-1 suppliers and dealers, automotive companies need a multifaceted, technology-enabled strategy that promotes collaboration and is responsive and adaptable to market forces, in order to attain sustainable growth in an environment that is more complex, dynamic and competitive than ever before.

There are several ways to create differentiators in a competitive and a dynamic market, but above all, the establishment of the 'digital enterprise' holds immense promise in bringing about the next wave of product innovation and business process transformation. The combination of next-generation technologies like cloud computing, big data, advanced analytics, social media marketing, mobility, voice of customer management and e-commerce are slated to change the very basis of engagement across businesses. As automotive customers increasingly turn to digital technologies, organizations that make the most of this opportunity will be at the forefront of the industry. Thus, in the near future, 'digital' and 'business' will be nearly synonymous for the automotive industry.

This white paper discusses trends that are emerging in the automotive ecosystem and chalks out a roadmap for growth and profitability for the industry, by leveraging insights drawn from what global automotive leaders and other industry players are doing in order to retain a leading edge in the marketplace.
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The Automotive Industry Today

Changing market dynamics are revving up the automobile industry today, even as it emerges from the recession in much better shape than was predicted. TCS’ white paper, ‘Manufacturing Reinvented,’ highlighted some key mega trends driving the transformation of the manufacturing industry - 'Consumerization of the Manufacturing Industry' was one such trend. The demand in the industry today is not just for the car as a product but for a bundled ‘experience package’ – with consumers seeking a slew of services from the ‘dealers’ supermarket,’ much like the ‘demand pull’ forces that drive the retail and consumer product industries. Traditionally, this ‘experience’ has been limited to basic vehicle services and packages like extended warranties, service contracts, insurance, etc. However, today the confluence of technologies such as cloud, mobility, social media, and big data has helped fuel demand for a whole new set of services like infotainment, loyalty-linked rewards, advocacy, etc. – all delivered to the consumer via a network of service providers and through multi-channel integration. The emerging context of the automotive enterprise therefore needs to be viewed through the prism of these developments.

These changing industry dynamics are largely driven by the ‘aspirations’ and ‘changing behavior’ of the customer, and the impact of the same can be seen in the forces such as:

- Forced obsolescence, driven by competition, is putting enormous pressure on the portfolio management and life cycle management strategies of automotive manufacturers;
- Shifting patterns of demand and supply are driving ‘lift and shift’ of manufacturing operations, product platforms etc. to meet demands for product variety and shorter time-to-market;
- Stricter regulations and norms concerning emission, energy and fuel efficiency, and safety are being enforced by authorities around the world leading to enhanced customer consciousness altering the buying behavior;
- Highly ‘interconnected supply chains’ to overcome the risks of disruption and to ensure continuity in serviceability & availability; and
- Increasing levels of digitization and usage of electronic components in the car are allowing for a range of next generation convergence solutions to be deployed as part of new product and service offerings.

In the light of these market trends, automotive players are facing new challenges, such as:

- The complexity of managing portfolios of global platforms, products and brands, leading to ‘co-opetition,’ or cooperation between competing companies
- The need to reduce product innovation cycle times from the traditional 48 months to about half, or even shorter, exerting immense pressure to innovate the new product launch process
- The necessity to put in place a global supply chain network to leverage the economies of scale and standardize operations as lean processes

Automotive companies can respond to emerging business challenges and can create competitive differentiators, by leveraging digital technology’s potential - right from product design to customer lifecycle management.
The need to integrate multiple channels and customer touch points

The need to provide customers with a consistent and seamless virtual and real-life experience

The necessity to upgrade the technical and functional capabilities of the entire eco-system to be able to respond to competitive challenges with agility

The need to drive down the 'Total Enterprise Cost' to meet customer aspirations, and

Capability upgrades needed to leverage the increasing 'digital disruption' caused by the convergence of emerging technologies like mobility, cloud, big data and social business.

Digital Disruption in the Automotive Industry - Shifting Center of Gravity

The automotive industry has always been at the forefront in defining new paradigms for the manufacturing industry. Based on our internal research and experience gained over multiple engagements, our analysts have defined five such defining moments (Figure 1) in the history of this industry:

Wave 1 – Growth: During the early stages of industry growth, mass manufacturing, deployed by large scale assembly plants, brought in economies of scale, making it possible to drive down costs and create new price points for buyers.

Wave 2 – Lean Adoption: Lean manufacturing emerged during the middle stage of maturity, and was deployed to great effect by Japanese automotive manufacturers. This further reduced cost and time-to-market, improved quality and reliability, and improved the ability to manage a portfolio of products while providing the flexibility of a rapid change over. Thus, tiered supply chains were born.

Wave 3 – Globalization: The globalization of networks and the maturity of tiered supply chains led to shifts in the sources of supply and demand. The global spread of larger OEMs created new tiered suppliers in local markets. This encouraged suppliers to spread their networks as well.

Figure 1: Innovation waves in the automotive industry

Wave 4 – Consolidation: An increasing number of mergers and acquisitions among both manufacturers and suppliers led to the emergence of global multi-brand groups. As the levels of optimization in Wave 3 peaked, these groups had few other options but to collaborate with local players, interchange platforms for economies of scale and acquire other companies, either for their product portfolio, or to gain access to newer markets. This period also saw the emergence of large multi-brand dealer groups. These groups, earlier restricted to mature markets, have also started to play a critical role globally. Multi-brand retailing and alternate channels as ‘e Commerce’ truly signifies the first signs of consumerization.

Wave 5 – Digitization: As the differentiation amongst players started narrowing, the search was on for a new source of competitive advantage. The emerging technologies, as shown in Figure 2, provided the impetus for a new wave – the digital wave. The current wave of digital disruption-led consumerization is a result of the power and impact of converging technologies like big data, high performance computing (HPC), cloud, mobility, and social media, enabling automotive enterprises to explore new business models and differentiation opportunities, both on the production side as well as the customer engagement side of the business.

Impact of Digital Disruption and Consumerization

Based on our engagements with some of the world’s leading manufacturers, and upon careful observation of the business patterns in the market place, we analyzed the key trends that are shaping the way the automotive industry operates. The most prominent and pervasive theme amongst all is the impact of ‘digital disruption’ caused by the convergence of emerging technologies. In order to have a structured assessment of the concepts being discussed, we have created a simple assessment matrix, the ‘Digital Convergence Use Case Matrix,’ that can help enterprises take stock of the digital impact, and find opportunities for leverage (Figure 3).
Figure 3 shows how each disruptive technology — cloud, mobility, big data and advanced analytics, social media, and connected or digital marketing — can impact key stakeholders as well as the various areas of the value chain. Illustrative use cases for each technology exemplify one of many possible scenarios where technology can impact the stakeholder or the value chain. For instance, big data and advanced analytics can have a high impact on Tier-1 suppliers analyzing product performance feedback, as using this technology; companies can mine data to discern trends, patterns, and opportunities, leading to innovations in the area of product design and competitive advantage.

It is important to note that this is only a generic assessment. Each company must evaluate the framework and its impact in the light of its own strengths, market positioning and business strategies, before embarking on a digitization plan. At a high level, every automotive company may end up with the same set of use cases.

<table>
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<tr>
<th>Key Stakeholder</th>
<th>Cloud</th>
<th>Mobility</th>
<th>Big Data &amp; Advanced Analytics</th>
<th>Social Media</th>
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<tr>
<td>Tier 1 Suppliers</td>
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<td>Reduce Cost of Business Systems</td>
<td>M / L</td>
<td>Collaborate on the move</td>
<td>H</td>
<td>Analyze product performance feedback</td>
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<td>New Product Development</td>
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PI = Potential Impact, UC = Illustrative Use Case, H= High, M=Medium, L=Low, NA= Not Applicable

Figure 3: Digital Convergence Use Case Matrix

The value of a digitization strategy lies in enabling the core competencies of the enterprise and aligning them with its unique core capabilities to create competitive differentiation.
A few opportunities in the digital space relevant to the use cases mentioned in the matrix in Figure 3 are elaborated below in some detail:

**The Digital Buying Experience**

Customer-centric business systems (Figure 4) such as Point of Sale (POS) promotions, e-commerce rewards and incentive-linked loyalty management, service contracts for customer lock-in etc. are already drawing a significant portion of the IT budget. Investments in digital marketing, social media, mobile device usage and managing an integrated customer experience across channels are also gaining ground. These technologies allow the automotive company to personalize the user experience. For example, an automobile maker could virtualize ‘you’ and ‘your’ car, and personalize the configuration and accessories through virtual dealer showrooms. ‘Dealership as a Supermarket’ is a fast growing concept – where one can chose from a plethora of additional services and not just the traditional service and warranty packages. Services like ‘reward points’ and ‘loyalty cards’ are flourishing, as are virtual user clubs that allow users to share experiences and build communities.

These changes in the buying experience are giving rise to a host of new generation service providers who provide a service menu encompassing anything from reserved or free parking to ball game tickets, and from coffee shop seating to priority airline and hotel bookings.

*Figure 4: Customer Centric Systems in Digital wave*
Targeted Marketing

Automotive companies are trying to understand each customer better and are developing tailored approaches to cater to different customer segments by defining persona-based customer life cycles.

Every stage in the customer life cycle – right from inquiry to after-sales — is now important, and the various areas that are involved while traversing the cycle are; customer management, finance, service, parts, buy-back, replacement, and complementary solutions and services. Traditionally this would have been a collaboration challenge between the dealers or channel partners and the OEMs, but today it may be addressed by a big data-driven solution that can benefit all stakeholders.

Many automotive companies are encouraging channel partners to upgrade to systems that can integrate with the sophisticated digital strategies of the OEM. Cloud-based solutions today allow OEMs to make these systems available at affordable price points even to small dealers, and help them integrate via next-generation Dealer Management Systems that help dealers and OEMs collaborate effectively. These systems provide OEMs with a 360-degree view of the customers and the dealership operations; enable better operations management for the dealers; and provide other supplementary services to the customers. Big data tools help refine the social media chatter and fuse it with structured market research, creating meaningful insights into the customer behavior.

‘eVoice of the Customer’ for Product Innovation and Collaboration

With big data creating numerous avenues to analyze high volume, variety and velocity data streams; automotive OEMs are better able to understand the emerging trends and product issues, and respond proactively to enhance product performance, reliability and quality. This information is broken up between the internal business groups, the network of suppliers and distributors, and the technology using which the information is captured.

Big data and analytics also help OEMs understand the finer sub-segments in the user population and offer specific product configurations. This closed loop process (as shown in Figure 5) allows manufacturers to move from mass marketing to customization. Further, by leveraging cloud-based services, automotive OEMs can collaborate with geographically dispersed suppliers to share the cost of product development by allowing them access to new technology, resulting in quicker time- and reduced cost-to-market.
Connected Car for a Connected Customer

Recent advancements in automotive electronics, wireless technology, and smartphones; along with changing lifestyle demands are driving the new concept of having a ‘connected car for a connected customer’ — making ‘the automobile you drive an extension of who you are.’ Connected car technologies that provide vehicle-to-vehicle and vehicle-to-infrastructure communications are high on the investment agenda of the OEMs. These services are opening new avenues in areas like improving driver safety, easing traffic congestion thereby reducing the carbon footprint, etc. Automotive OEMs are also using connected car technologies like the vehicle information hub and remote diagnostics to bring about innovations in the area of after-sales service, taking customer experience to whole a new level.

Digitized Manufacturing Operations

In the automotive industry, digitizing manufacturing operations has immense potential to provide high impact results over a period of time, as the integration of machine to machine communication capability with analytics and mobility will provide levels of reliability and quality like never before. Figure 6 shows how plant operations, when digitized, can make the life of plant floor personnel a lot easier.
Mobile Service

The service segment in the automotive industry can derive huge gains from digital solutions, ranging from field service optimization to rapid analysis of sensor data, and finally, to undertake fault diagnostics. The customer experience side of the automotive industry is already high up on the mobile maturity ladder, with large OEMs and premium car manufacturers developing an integrated mobile device in the vehicles, with digitized vehicle information and service management.²

Choosing Where to Digitize

The 'Digital Convergence - Use Case Matrix' shown in Figure 3 offers a prioritization framework. In order to provide an additional guidance framework to decide where to digitize first, we have created the 'Model for Automotive Business Management' (Figure 7). However, as stated earlier, one size does not fit all and each company will have different framework. While it can have many other business applications, the framework will also help create a differentiated story in the context of the enterprise's specific businesses strategy and business model.

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Figure 7: Model for Automotive Business Management

The Model for Automotive Business Management in Figure 7 depicts a hierarchy of interactions that drive good customer experience management which in turn can lead to the attainment of the business objectives of ensuring customer satisfaction and retention, creating an optimal business mix of products and services, and improving revenue and profit performance, ultimately leading to positive-word-of-mouth, sales pull and purchase of complimentary and supplementary services. Good customer experience in turn is influenced by the three drivers of engagement, experience and execution; which lead to favorable outcomes. The model can therefore serve as a framework to identify digital strategies that can create high impact.
Drivers for Digital Strategies

Our observation of market behavior reveals that the drivers for digital strategies could be a set of one or more objectives, which could include:

- Having connected social customers who want their voice to be heard and seeks to collaborate meaningfully in the product design or service execution by providing active feedback
- An integrated customer experience across all the channels of communication and touch points to provide uniform experience during interactions, with real time 360 degree views available to all stakeholders
- Customer centricity in the business processes of OEMs, NSCs, distributors and dealers, by aligning the systems to sense and respond to market changes and demands

Experience Drivers

The customer interacts with the auto OEM, dealer or NSC, in person or through various communication channels, at various points in the customer lifecycle — from information search, dealer interaction, purchase, ownership, to the end-of-ownership stage. These interactions can be in the form of online research for the product, inspecting virtual dealer showrooms, in-person interactions during the purchase process, Point of Sale (POS) promotions, execution of after-sales service contracts, customer-centric interactions like reminders for service visits and remote diagnostics. Each interaction creates an impact that helps define the overall customer experience. Good experiences create trust in the brand and help develop a meaningful and long-lasting relationship. This, in effect, is the front end of the digital interventions.

Engagement Drivers

Whether the interaction with the customer is in-person at trade show booths, promotional events, dealerships, call centers; or online via an e-commerce portal; the quality, speed and ease of interactions should be exceptional and consistent to create a quality experience that builds customer loyalty. Use cases and business scenarios that add most to the business objectives and outcomes should be put on priority for defining investment strategies.

Execution Drivers

The underlying business processes are the key to enabling a robust customer experience. The digital front end always rests on a network of business processes. The automation or digitization of these processes is therefore critical for having an effective front end. Further, the IT Infrastructure on which the processes reside, provides the backbone for robust business operations. Any digital initiative cannot afford to ignore the need for a state of the art, scalable, reliable, integrated architecture that can support the consumption of digital services.

In a nutshell, automotive companies will be able to stand out in the marketplace if they can create a high level of customer-centricity in their business processes, foster technology-enabled collaboration, and optimize their choice of technologies.
Becoming a Game Changer

Automotive companies can respond to market challenges and address the emerging trends by implementing a phased digital business strategy, choosing the right digital technology portfolio across the value chain, and aligning these with the core competencies and the chosen strategies of the organization. Successful organizations will be those who can create a personalized customer experience, embrace technology-enabled collaboration, respect and leverage the voice of the customer, and develop a scalable and cost-efficient infrastructure to support the aforementioned initiatives.

Automotive companies are investing in collaborative product design, innovation and launches, along with analytics, e-commerce in service and parts management, mobility and field force automation, and modernization of customer care centers through the integration of customer relationship management (CRM) tools. There is significant focus on customer-centric digital marketing, mobile services-enabled engagement models, social media-driven voice-of-customer management, use of telematics to drive connected car-related technologies like vehicle information hubs, and remote diagnostics, to establish meaningful and sustainable engagements with prospects, customers and business partners. These investments must be aligned with initiatives on business intelligence, advanced analytics, and the use of big data to create innovation in product design and in business processes. Many organizations are looking at cloud technology to meet the needs of information sharing at an optimized cost and to make the most of globalization. Together, these will converge to feed the growing consumer appetite driven by the ‘consumerization’ of the automotive customer.
About the Manufacturing Solutions Unit

Global manufacturers are trying to reduce operational expenditure, invest in process improvement, utilize existing capacity optimally and increase efficiencies, while maintaining product quality and meeting safety and regulatory norms. TCS’ Manufacturing Solutions provide you the bandwidth to innovate on business models, leveraging contemporary technology solutions.

We believe in leveraging learning from across the segments in developing business solutions. Be it in applying the concepts of lean new product introduction from discrete industries to a chemical manufacturer, or leveraging the aerospace industry experience in service management for the automotive sector, our dedicated Manufacturing Centers of Excellence (CoEs) under these focus vertical industries are continuously looking at breakthrough solutions. Clients can benefit from our rich experience in both the discrete (automotive, industrial machinery and equipment, aerospace) and process industries (chemicals, cement, glass and paper).

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