Leveraging Advanced Analytics for Digital Transformation of Aftermarket Service Parts Management

Abstract

For global Original Equipment Manufacturers (OEMs) in the automobile industry, the margin on service parts is typically 10 times greater than that on initial vehicle sales. Clearly, the availability of service parts at the right place and at the right time is key to securing customer loyalty and profitability. To ensure effective aftermarket support of service parts, OEMs must not only plan in advance but also align processes to proactively anticipate requirements. Today's customers are more demanding than ever when it comes to after-sales operations, making the provisioning and deployment of service parts a major concern for most original equipment manufacturers. Uncertainty driven by the demand fluctuations across different phases of product lifecycle makes demand forecasting for service parts a major challenge.

The need of the hour for automotive enterprises is to come up with a unified approach to build digital capabilities for achieving agility and generate insights that drive growth and profitability. In addition, a well-defined analytical modelling approach can ensure that OEMs deliver the right parts, when and where needed. This can definitely result in an optimized service parts management strategy that leads to improved customer confidence and higher revenues while reducing stock out nightmares.

Service parts – a significant driver of auto OEM profitability

Maintaining high customer satisfaction scores in after-sales service is key to preserving and growing customer loyalty for automobile brands amidst the increasing variety of choices in the market. With technology advancements leading to increased vehicle longevity, complexity of service parts, and re-manufacturing opportunities, predictive service parts management is critical to maintaining OEM revenue targets.

In developed markets such as the US and Europe, the parts business is the key driver of overall profits. In these markets, parts carry around 30% to 40% profit margins and account for 35% to 50% or more of the overall OEM revenues. Although OEMs in developing markets gain only 5% to 10% of their revenues from service parts, profit margins of 20% to 30% and business growth rates in excess of 25% make service parts business a strategic focus area.[1]

While this is a rosy picture, the challenge for OEMs lies in the fact that demand for service parts fluctuates during the different phases of product life cycle - a complexity that is further accentuated by customer demographics and lifecycle. For instance, demand fluctuations can result due to changes in end customer preferences for accessories, some of which may be triggered by marketing activities such as promotional events. Service parts demand often tends to show a pattern commonly referred to as lumpy demand. Managing inventories when demand is lumpy is complex as OEMs have to cope with both a sporadic pattern as well as a highly variable order size.

Optimization of service parts management using predictive analytics

Analytics combined with other digital forces provide a plethora of opportunities for OEMs. OEMs can look at these solutions to solve their long-standing worries in terms of efficiency and cost. A powerful predictive analytical tool can help address the challenges and optimize service parts management business. A breakthrough can be expected in the following areas:

1) Service level monitoring/improvement

Often, organizations in the automotive value chain struggle to meet customer expectations in terms of part availability. To address this, they tend to overstock parts to avoid

backorders and customer dissatisfaction. Analytical model will help the OEMs to create a customer-centric, multichannel sales and service network with differentiated offers.

2) Demand forecasting

Demand for spare parts is typically sporadic. Many widely used forecasting models are largely based on historical demand averages and do not produce acceptable results. Implementing analytics-driven forecasting practices helps organizations proactively understand demand and plan their supply requirements. Analytical solution senses real-time market demands and assorts billions of part/store combinations.

3) Inventory optimization

A large number of stock keeping units (SKUs) makes the manual management of inventory control parameters for each item and stock location impractical. Analytical solution enables inventory optimization by pooling inventory from multiple nodes, using exchange curves and simulation to achieve the optimum mix of Annual Cycle Stock, Replenishment Costs, Safety Stock, and Level of Service. The traditional inventory planning methods can be augmented with sensor data to gain insights on in-hand stock, demand patterns, and drivers.

4) Service package optimization

It is a known fact that the OEMs are focusing on the lifetime value (LTV) of customer. Analytical model can accurately estimate the total cost to design specific service contract-product combinations that will help maximize service revenue.

5) Obsolescence management

Predicting end of life demand for a service part is the most challenging concern for OEMs. Excessive stock will result in a higher cost while short supply will the service levels. An analytical model will help OEMs to automatically determine the most appropriate cluster for a part to assign an appropriate life cycle curve. This will accurately predict the long-term demand and lifetime forecast.

Enabling Digital Re-imagination: outlining a future roadmap

According to a TCS survey, over 70% of business leaders across industries believe that digital initiatives, including advanced analytics, are critical for their business success.[2] Advanced analytics helps automotive OEMs deliver exceptional customer experiences by increasing efficiency and enabling auto OEMs' to shift from a break-fix, reactive model of service management to one that maximizes product uptime. However, the bigger question is – how should an automotive organization implement digital initiatives?

A unified approach helps organizations identify the key business and technology objectives, evaluate each technology in light of its business value, and implement digital technologies in a phased manner. Figure 1 shows a high-level digital strategy roadmap and execution framework that automotive OEMs can leverage to envision – ideate long term business vision, assess and strategize current capabilities and leading practices to adopt and continuously evaluate business results and make course corrections to deliver industry-leading analytical capabilities.

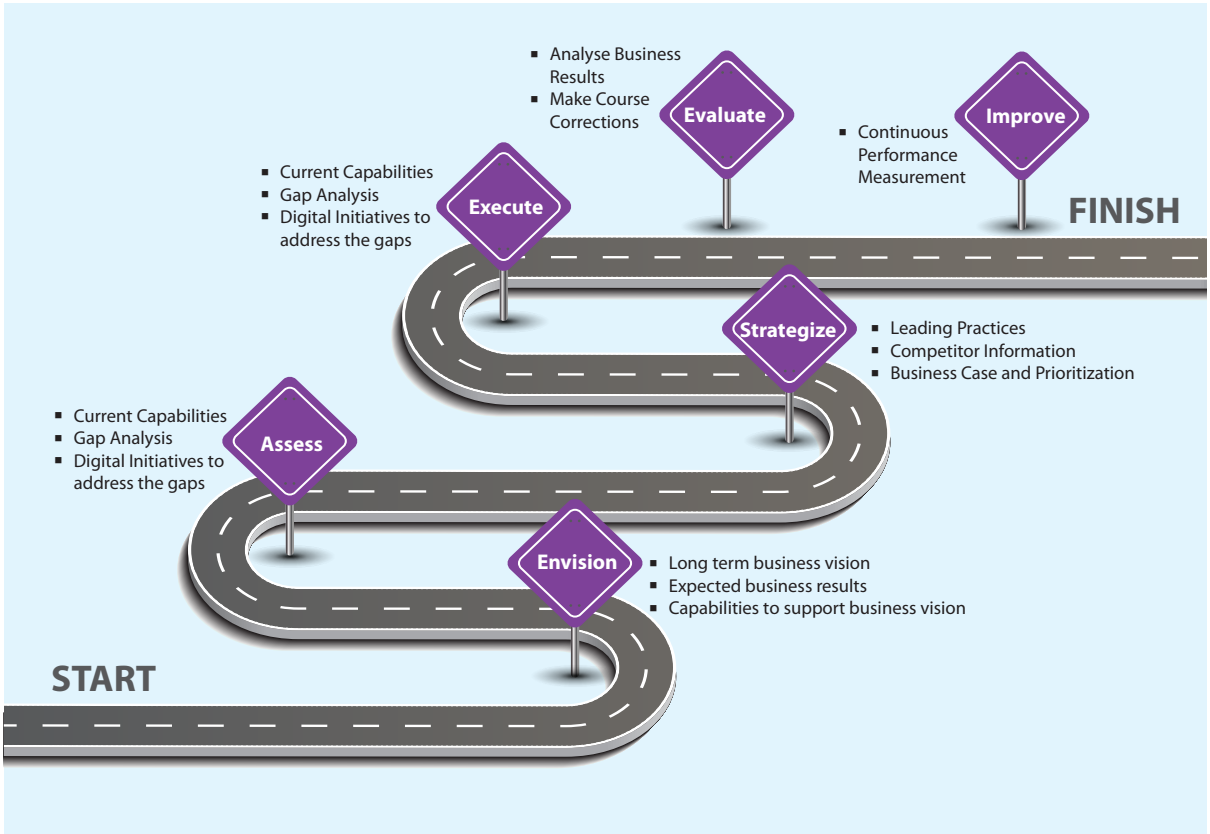

Figure 1: A digital strategy roadmap and execution framework to deploy advanced analytics capabilities at automobile OEMs

Getting the basics right - key to effective analytics

In the age of IoT, AI, and machine learning, automotive manufacturers need to adopt a digital platform, built using advanced analytics, to address the evolving demands of their customers in real time. The platform can help businesses fully exploit revenue opportunities, forecast demand at the point of consumption, and enable advanced inventory optimization and automatic replenishment. This is especially true for large data-driven companies as commonly used relational databases are incapable of providing contextualized analytical data for superior decision making and customer experience. Before embarking on creating an advanced analytics platform, OEMs need to:

- Identify top strategic and operational advanced analytics priorities
- Identify objectives, define scope (global or regional) and the business area for implementation (planning or operations), as well as the expected analytics maturity level after implementation (prescriptive or predictive)
- Chart execution roadmap for the defined objective
- Create a cross-functional team with the business as well as data science knowledge
- Pilot initiatives with the themes aligned with business priorities of the enterprise

Upgrading spare parts management: driving after-market value

As digitization continues to transform the global automotive business, it is imperative that manufacturers have a comprehensive view of their operations to make time-sensitive decisions to drive greater after-market value. The success of the digital platform implementation will, however, depend on the ability of the organization to formulate a forward-looking strategy; align people, processes, and technology; and create relevant use cases and an implementation roadmap aligned with business objectives.

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