



THE OLIVER WYMAN
AUTOMOTIVE MANAGER

SOLVING THE DIGITAL DILEMMA

Dear Readers,

The world is fast becoming dominated by powerful digital players with deep pockets and innovative business models. Their influence has already disrupted industries such as telecommunications, media, and consumer electronics, leading to the demise of one-time giants such as Kodak and Polaroid.

The automotive sector will not be spared. The diversity of offerings from digital rivals means that traditional automotive businesses are at risk of being attacked anywhere along the value chain. As a result, long-established companies must make their core processes more agile and better geared toward serving customers' needs.

This issue of the Automotive Manager looks at how automotive companies can not only survive but also thrive in this new and challenging environment. To do so, automakers and suppliers need to think more about what it means to be digitally connected. The companies that solve this riddle have the opportunity to provide not only a product but also an "experience" to customers, who are searching for ways to extend their "digital lives" into their vehicles.

To meet these changing needs, automotive companies will need to innovate their business models and processes. And they need to collaborate more than ever. We are already seeing the trend evolve today, as one-time rivals turn into partners. The leverage generated by two or more companies working together can be tremendous in the capital- and resource-intensive industry, giving the new allies a big competitive advantage.

This is a time of major unparalleled disruption for the automotive sector. The companies that are flexible, fast, and willing to adapt will reap substantial benefits from the upheaval that lies ahead.

Best regards,

AUGUST JOAS

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CONTENTS

CUSTOMER

04 COVER STORY:
WILL DIGITAL SPARK A NEW AUTOMOTIVE INDUSTRY?

09 UNLOCKING THE HIDDEN POTENTIAL
OF AUTOMOTIVE CAPTIVE BANKS

12 OUTSIDE THE CORE FOR AUTOMAKERS

RESEARCH AND DEVELOPMENT (R&D)

15 HOW SUPPLIERS CAN MAKE R&D A BUSINESS DRIVER

18 NEXT GENERATION COST
AND COMPLEXITY REDUCTION

PROCUREMENT

21 A STEP CHANGE FOR SUPPLIERS

PRODUCTION

24 THE NEGLECTED CHALLENGE OF OBSOLETE PARTS

27 A PARADIGM SHIFT TO TECHNICAL RISK MANAGEMENT

SALES

30

THE ANATOMY OF AN EFFECTIVE DIGITAL STRATEGY

SERVICES

33

TIME TO TAP NEW AFTER-SALES REVENUE STREAMS

36

AN UNREALIZED OPPORTUNITY FOR NON-URBAN MOBILITY

CROSS-FUNCTION

39

WILL YOUR FIRST ELECTRIC VEHICLE BE MADE IN CHINA?

42

WHAT SUPPLIERS MUST DO TO ATTRACT AND RETAIN TALENT



WILL DIGITAL SPARK A NEW AUTOMOTIVE INDUSTRY?

The automotive industry has been at the forefront of technological innovation for years, but the incumbents are facing increasing competition. Powerful digital players with their deep pockets and proven business models are gaining traction. While new digital services and mobility schemes are evolving quickly, automobiles are becoming more and more commoditized, causing major disruption at companies that have been in business for a century or longer. Core processes need to become more agile and better geared toward serving customers' needs, which will be a challenge in the notoriously slow-changing auto sector.

Now is the time to act, because the decisions being made today will determine tomorrow's winners. Laggards in the automotive sector risk facing the same fate as failed companies in other digitally disrupted industries such as telecommunications, media, and consumer electronics.

MATTHIAS BENTENRIEDER

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The rapid declines of Kodak and Nokia are proof of how dramatically digitalization can change entire industries. These are just two former market leaders that were turned into minor players as their products became obsolete after a digital revolution.

Today, traditional automotive manufacturers, many of which have been in business for more than 100 years, are experiencing unprecedented disruption in their business models. Innovation around the vehicle itself is slowing, making what was once the core product a commodity. Attention-grabbing breakthroughs are coming from digital solutions introduced by new players that are determined to shake up the conventional thinking of the entire automotive industry. These companies are offering solutions to customer hassles that go beyond what automakers could provide on their own, such as ways to navigate around congested roads or directions to a formerly elusive parking spot in a busy city. These new entrants are not just small startups capitalizing on a good idea. They are often giants with market capitalizations that are more than 10 times higher than the typical automaker's.

Companies such as Google, Apple, and Baidu can leverage their funds to penetrate global markets right from the start. They also can use their wealth and expertise to create vehicles with innovative, disruptive features that are capable of competing directly against established automotive brands.

THE STARTUPS AND NEW BUSINESS MODEL UNIVERSE

The coming years are expected to be the most disruptive in automotive history. Industry fundamentals will be challenged as

new ideas emerge for how vehicles will be powered, designed, built, and used. The diversity of the new digital players and their offerings means that traditional automotive businesses are at risk of being attacked anywhere along their value chains. New entrants have pushed into specific modules of a car. This usually has resulted in a shift from automaker-controlled, embedded systems to mobile devices.

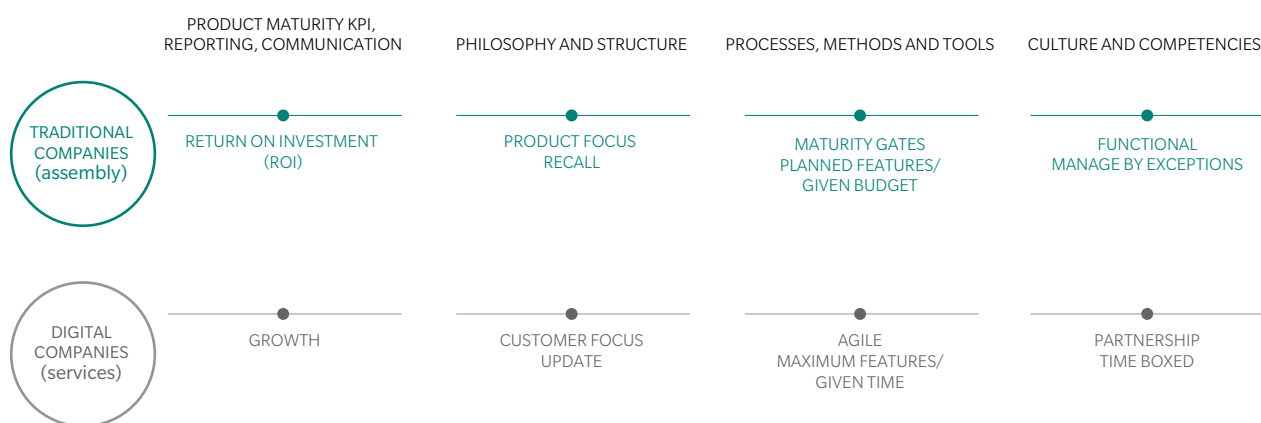
Connected and self-driving car projects unveiled by tech companies from Silicon Valley such as Apple and Google, as well as Chinese players such as Tencent and Baidu, are proof of a looming collision between consumer technology, cloud computing, and automotive players. Downstream parts of the automotive value chain also are under attack. TrueCar, mobile.de, RepairPal, Auxmoney, and dozens of others have successfully captured a share of the profits automotive manufacturers used to have to themselves via their affiliated dealers and financial services branches in areas such as car retailing, parts, services, and financial products.

Mobility services such as car-sharing and ride-hailing are not the exclusive domain of car manufacturers, leaving vast room for companies such as Zipcar and Uber to grow. In addition, the accelerated deployment of connected cars has put in-vehicle services startups such as Spotify and GottaPark in position to rapidly lure customers with their offers for music entertainment and parking, respectively.

Future automotive value pools will migrate toward digital offerings. Oliver Wyman predicts that by 2040 vehicle sales and vehicle-related services will only account for about 65 percent of the worldwide spend on personal transportation, down from 80

TRADITIONAL ASSEMBLY VS. DIGITAL COMPANIES

Automotive OEMs are facing fundamentally different metrics when dealing with digital services



Source: Oliver Wyman analysis

to 90 percent in 2014. While this change might appear to be far off and nobody can predict exactly what levels of income will be generated from the different value pools, Oliver Wyman believes that carmakers and suppliers need to acknowledge that the automotive industry's software revolution has begun. They need to prepare for some dramatic changes.

A DIGITAL AUTOMOTIVE VALUE CHAIN

New digital technologies are already changing the automotive landscape, which will evolve into a more open, multi-layered ecosystem. One of the major battlefields will emerge around the customer interface. New service and content providers are in position to rapidly launch new business models around mobility, infotainment, productivity, and functionality offerings that go well beyond the scope of traditional car manufacturers. Data aggregation and analytics are key to forecasting future demand. They also will play a big role in filling distribution channels in real time via online configurations by customers, actual sales trends, up-to-the-minute quality data, and discussions in online forums. Sales and marketing will leverage online channels more than ever before.

The traditional automaker-centered value chain will break up as new networks and partnership models evolve. Digital software platforms will be crucial because they will contain key data on the end customer that can be monetized by making offers that match the person's purchasing habits, driving styles, and travel needs. As value pools migrate toward the service-oriented customer interface, the vehicle "hardware" is becoming more and more a commodity. Hence, standardization and cost reduction through economies of scale and high utilization are crucial to win the hardware game.

Integrated data flows will enable flexible production as well as efficient mass customization, bringing down costs and improving plant utilization. Also R&D costs will fall, as expensive prototyping is simplified by 3-D printing solutions and the increased use of simulation. Real-time simulation and feedback loops between the shop floor and engineering will ensure a seamless production flow, which will speed up product launches. Also, automakers will be able to improve purchasing operations by leveraging real-time inventory monitoring.

The digitalization of the industry will fundamentally change the way traditional automotive value chains operate. It will also significantly change organizations, as well as the qualifications of the people they employ. New roles will emerge, and a significant number of traditional positions will disappear.

A NEW STRUCTURE OF THE AUTOMOTIVE INDUSTRY

As the line between car manufacturers and service providers gradually disappears, a new and competitive battlefield will emerge. New digital players will try to gain access to customers by moving into a territory that used to be owned by the vehicle manufacturer. New and established players will have to decide whether to fight for the customer or try another tact. While numerous possible approaches exist, there are five business models that have been identified to address these new playing fields.

DIGITAL DISRUPTION IN THE AUTOMOTIVE INDUSTRY

New business models will evolve to form a new structure for the industry

DISRUPTIVE REALIGNMENT OF THE INDUSTRY STRUCTURE

NEW BUSINESS MODELS EVOLVING IN THE AUTOMOTIVE INDUSTRY



Source: Oliver Wyman analysis

1. Connected life-solution provider. Companies that pick this model would position themselves closest to the end user. They would not manufacture or sell cars, choosing instead to offer apps and services that go beyond mobility. They design and operate cloud-based software platforms and develop advanced algorithms. These players need to partner with mobility providers and automakers to generate value based on customer behavioral data.

2. Platform specialist. Companies following this model would not manufacture cars but offer a platform to sell cars or mobility services to customers. Current examples include Uber, or even Amazon. The main focus of these companies is to control logistics

and the customer relationship by understanding customer behaviors and establishing trust.

3. Asset-light integrator. Apple is an example as companies here would focus on designing and developing key components and apps for driverless and connected cars in-house. The main goal of companies that choose this model is to maintain a strong brand and create a distinctive experience for the end customer. They design and operate cloud-based software platforms and design and sell cars to end users, thereby controlling the customer interface. They would outsource assembly and heavily depend on component manufacturers.

4. Integrated vehicle manufacturer. This model applies to the traditional car manufacturer, which would keep control of a broad part of the value chain including design, production, and sales. They would leverage their existing competencies and carry huge upfront cost and offer products and services to fleet managers and end customers. A good example of this model is Fiat Chrysler's agreement with Google to put the IT company's autonomous driving system into 100 Chrysler Pacifica minivans. The two companies will jointly develop the vehicles. Fiat Chrysler says this is the first phase of a relationship that could be expanded. In addition, earlier this year General Motors announced a long-term strategic alliance with Lyft to create an integrated network of on-demand autonomous vehicles in the U.S.

5. Manufacturing specialist. This model would be deployed by companies that would sell components to automakers as well as new entrants in the market, which means they would have no end-customer access. They focus either on high-volume, low-cost production of legacy hardware or specialize as a niche player that offers key technology hardware modules. In an extreme scenario, Asian volume manufacturers could evolve in this way by utilizing their footprint and low-cost competencies.

Today, dynamic and extremely agile new players are entering the automotive market with big ambitions, unmatched digital capabilities and enough cash to make things happen. No automotive players, however, possess the digital expertise to match these newcomers, and many have not decided how they would like to position their companies. Getting there will require decisive actions in the coming years. It also will demand patience because payback will take at least a decade. That is difficult for auto companies to grasp, especially since the industry thrives on immediate profit improvement and high asset utilization.

HOW TO DIGITALIZE THE COMPANY

While the degree and direction might vary depending on the targeted business model, automakers will need to act in five areas if they want to become competitive players in the future industry structure.

- Digital customer experience: Customer interaction will become seamless over multiple (online) channels ensuring a Zero Moment of Truth. A key differentiator here will be the integration into other ecosystems.
- Digital product: Automakers need to build a product that fits in the digital world. The car will be autonomously driven, highly connected, embedded in a larger ecosystem, and highly flexible to serve an exploding number of use cases of a global population.
- Establish new adjacent business models: Create solutions that actually address customer problems, while simultaneously tapping the full range of profit opportunities in the new value system, including mobility services, communication, infotainment, and more.

- Bundling: The business of producing and selling cars needs to be bundled with services to create a platform/solution that solves customer problems and that fits within the new ecosystem.
- Digital organization: Core processes along the entire value chain need to be digitalized, including idea-to-produce, sales-to-delivery, as well as overarching operations and services. Consequently, this requires a fundamental cultural change in talent capabilities, decision-making processes, and the leadership system.

Digital players think big, but start small. They rapidly launch prototypes to quickly learn and adapt their solutions because they want to achieve hyper scale as quickly as possible. So far, auto companies do the opposite, which means they will need to make sweeping, fundamental changes.

To maintain their leadership position, traditional automotive companies need to transform their business models and enterprises along four dimensions:

- Define a clear target and get everyone to follow along.
- Ensure rapid execution by identifying and aligning the most impactful "digital initiatives" and quickly setting up digital nuclei to move toward the targets.
- Build relevant digital capabilities to ensure a sustainable transformation; attract people with digital expertise to further instill that culture into the company.
- Create a digital leadership system that encourages a customer-centric approach, promotes a test-and-learn environment, and demands rapid decision-making.

Automakers also need to establish a concrete transformation plan by defining rapid cycles of improvement with an aggressive timeline, challenging goals, and wide-ranging responsibilities to ensure agile execution. Initiating a digitally enabled, data-driven customer approach is critical for the future. But this will require changes from top management to bring relevant digital capabilities in-house and to instill a new mindset across the entire organization. ●

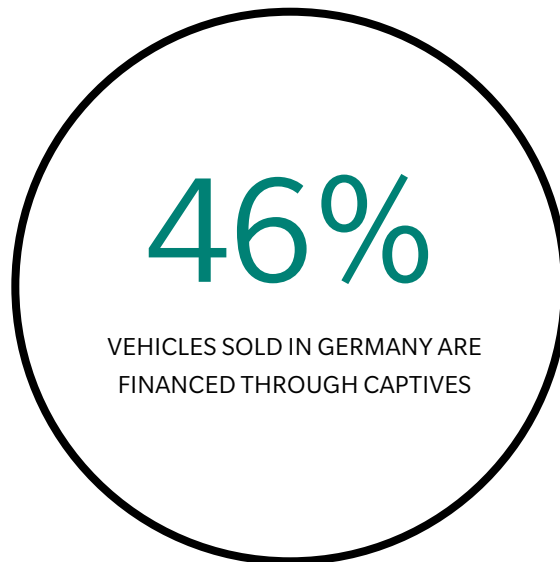


UNLOCKING THE HIDDEN POTENTIAL OF AUTOMOTIVE CAPTIVE BANKS

The role of automotive captive banks is changing. In the past, they served as a sales booster to the vehicle manufacturer by enhancing the value chain and offering innovative financing solutions, which helped subsidize the parent company's sales.

To ensure sustainability, however, captives need to move away from reactive, product-centric operating model driven by the automaker. They should consider offering a customer-centric portfolio of digitally based mobility solutions tailored to the fast-changing requirements of car buyers. Leveraging their unique position in the value chain – direct access to customers – provides captives an advantage that needs to be unlocked. If it is, captives could become the most powerful channel for future business.

SASCHA COCCORULLO



UNIQUE POSITION

Captives are uniquely positioned in the automotive value chain vis-à-vis the brands and dealers they are linked with. They can accumulate a vast amount of data as part of the financing and service contracts they enter into with customers. Automakers and vehicle retailers, however, get only limited access to this data because of their fragmented network coverage. The power of captives is growing as they gain market share (as is the case in Germany, where the captives' financing share increased to 46 percent in 2015, from 38 percent in 2009).

Despite these advantages, the product innovation rate at captives has been low. Major additions to their traditional financing and leasing products have been after-sales products, insurance, and rental solutions. Also, attempts in the 1990s and 2000s to offer mortgage, investment, and credit-card products have proved unsuccessful for most players. As a result, the products generating the lion's share of captives' revenue are the same as when they were started (for example, traditional installment and three-way credit typically account for up to 50 percent of the contract portfolio).

NEW RIVALS, NEW SOLUTIONS

Another reason captives need to re-invent themselves is because competition from other players is disrupting the industry. The new rivals are luring the younger, tech-savvy generation with peer-to-peer lending and mobility offerings. Digital loans providing immediate access to cash will come into the market soon. In addition, non-captive banks are also moving into captive segments such as mobility.

Hence, captives must replace their product-centric approach with a customer-centric approach by understanding customers' mobility demands throughout their car-using/car-buying life cycle. Automakers already have established departments that deal with mobility solutions. These units should be either within the traditional captive world or strongly tied to them to create a holistic portfolio of products. This includes mobility solutions such as car sharing, peer-to-peer lending, and autonomous driving, as well as classic options such as financing and leasing.

The captives that can cover both traditional and new needs will have an advantage. However, it is important to overcome artificial product silos between the business areas and create a mobility ecosystem for their customers. Revisiting the organizational design, incentive system, and steering concept is key because it will be just as important to measure "rides per customer" and "number of client interactions" as it has been to measure "cars sold" to determine business success.

UNLOCKING THE POTENTIAL

By providing new payment solutions to customers who use their mobility products, captive banks would gain access to a new and large stream of relevant transaction data as well as customer-usage patterns. This is an important source of information to determine changing customer demands and behaviors.

Doing this will require captives to integrate the data between different legacy contract management systems for financing, leasing, and insurance with data from new mobility services. This could be painful for many captives (especially from

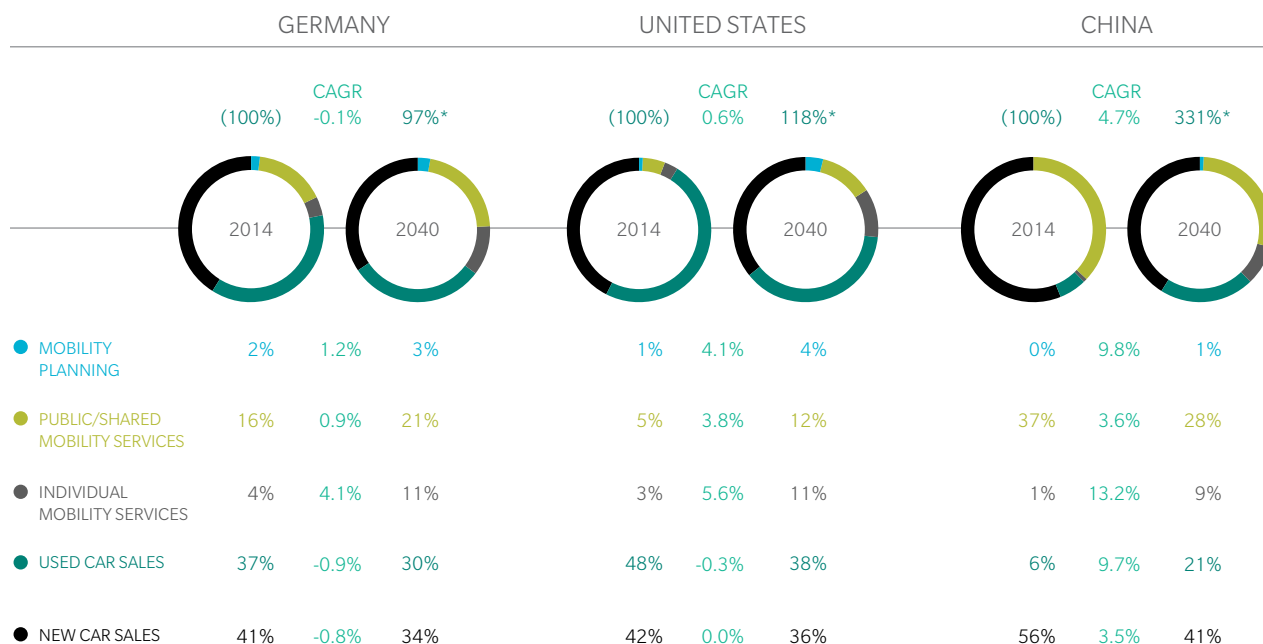
DEMAND FOR NEW MOBILITY SOLUTIONS IS ON THE RISE

New and used car sales will fall over the next 30 years

Percentage of mobility segments in 2014 vs. 2040, by country

(100%) = indexed volume of passenger transportation in 2014

* = indexed volume of passenger transportation in 2040 compared to 2014



Source: Oliver Wyman market model

a regulatory point of view), and the immediate benefit may be low. However, this is the crucial foundation for remaining competitive against new rivals that have a cutting-edge advantage because they set up their entire businesses around a holistic, single-customer view.

It is important to get access to new and younger target groups and tie them to the brand early on with a holistic mobility concept. The investment into such an effort can reap greater benefits later, when, for example, a person starts as a car-sharing customer and afterwards buys a vehicle from the automaker using a traditional financing product.

In this scenario, the captive bank jumps ahead of the dealer as the lead generator for future financing products. Structured behavioral analysis allows captives to detect patterns across customer groups. This can be used to understand the customers' needs during different stages of their lives. It is information that helps tailor future offerings to maximize value. In addition, as the customer lifetime value (CLV) approaches, the data can enhance the traditional return on equity (ROE) steering.

Establishing a competitive online sales and financing process is the minimum requirement for captives to succeed because up to 20 percent of all vehicle purchases will be done using digital products in the next five to 10 years. However, long-term success requires more than just bringing traditional financing products online. In addition, captives need to add innovative, connected services especially in the field of mobility. Also, because of the emergence of subscription-like models, captives need to move beyond a transactional-based view of the customer to a more behavioral view.

Although the traditional financing and leasing business is still growing for many captives, they need to make changes to their business models now to pre-empt a sudden disruption in the future. Moving away from old-fashioned product-centric offers toward a customer-centric mobility portfolio that addresses different customer demands along the person's life cycle is crucial. Automotive companies have to transform into mobility solution providers – and their captives are the ones best equipped to deliver these products to their customers. ●



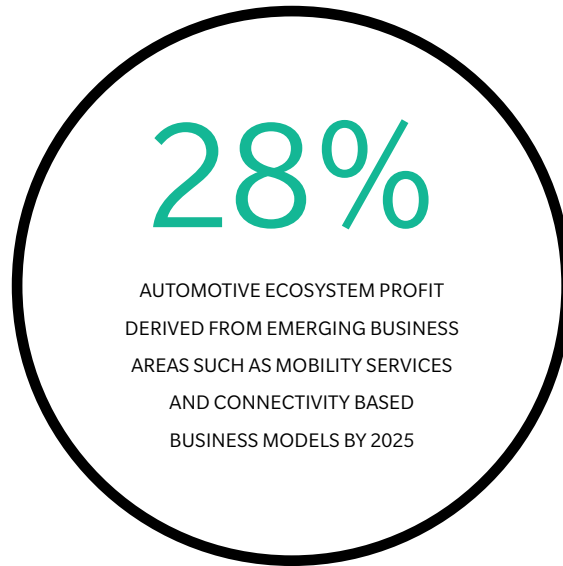
OUTSIDE THE CORE FOR AUTOMAKERS

New mobility and connectivity services are not a core competency at most automakers, which specialize in manufacturing, sales and service. So achieving success will require them to function more like software and Internet service startups. Automakers that decide to enter these new business areas will have to compete against a whole new set of rivals, which means they will need a systematic approach to establish themselves as key players.

JUERGEN REINER

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ALEXANDER HAHN



Automakers entering new business areas such as car-sharing or ride-hailing services will need to move beyond their traditional structures and processes, which have been fine-tuned for decades as they focused on delivering high-value products in multi-year life cycles. Automakers have created successful processes for developing, producing, and selling vehicles around the world. These systems have been upgraded and enhanced in response to factors such as growing model complexity, a fast-expanding global footprint, the need for an ever-greater volume of production, without sacrificing on quality or safety.

Mastery of the above mentioned areas, however, does not help automakers when faced with non-core challenges such as developing connected fleet management services or offering intermodal mobility solutions or connected-life applications. The business logic here is radically different, requiring expertise in creating and selling services instead of products. Automakers will not only compete against each other but also against large digital players.

To enter this sector, automakers will need to employ a portfolio management approach while carefully deciding how much independence to give these new business areas.

NEW AREAS MEAN NEW REQUIREMENTS

Business areas driven by services and data have very different requirements than automakers' core businesses. The most significant difference is the very high rate of innovation and

constant transformation of this sector. This means that in most cases there is no blueprint to borrow and follow. There are, however, some keys to achieving success.

- Customer orientation is crucial because solving the users' problems determines whether a digitally dominated business model will succeed.
- Having strong innovation capabilities is critical because companies that are fast and first are rewarded.
- It is pivotal to build up the ability to test thoroughly and to quickly discard ideas that do not work. Life cycles are dramatically shorter in these sectors.
- Flexible structures, flat hierarchies and direct communication channels are needed.
- Strong partnerships with digital players are required because software and data are at the heart of these business areas.
- Following "platform logic" is critical – especially in the mobility space – to quickly reach massive scale and create rapid growth through network effects.

GETTING STARTED

When setting up a new business area, automakers need to decide how close the unit initially should be to its core operations. What often works is giving the new unit organizational and operational independence because if it functions as a separate entity it is not encumbered by the same corporate rules as the company's legacy businesses. Physical detachment should be considered, as well as setting up the unit's headquarters near independent competitors, which likely will mean having a location in a city that places a high

GLOBAL PROFIT SPLIT BY BUSINESS AREA 2014 VS. 2025

By 2025, new business areas will have over €60 billion profit opportunity

2014 €273 BILLION



2025 €~433 BILLION



■ NEW CAR SALES ■ USED-CAR SALES ■ FINANCIAL SERVICES ■ AFTER-SALES ■ MOBILITY/CONNECTIVITY ■ NEW BUSINESS AREAS

Source: System profit study, Oliver Wyman

value on entrepreneurial spirit. Hiring dedicated, specialized staff for the new unit also is recommended because this expands the company's talent pool by adding people with expertise in areas where it is lacking.

The automaker may serve as a supplier to the new business unit, providing vehicles, after-sales services, and financing. But the new unit should not be forced to use products from the parent company that do not fit its cost structure. The new unit also should have separate midterm strategic and financial targets.

DEVELOPMENT PATHS FOR NEW BUSINESS AREAS

When the new business matures, three different development paths can be taken.

ABSORB: If the new business generates synergy effects for the company's core business then it makes sense to absorb it. Bringing the unit closer to the core, however, must be done with caution to ensure competitiveness. The level of integration should be determined by how well the new unit fits within the parent company's existing structure. A good example is the evolution of the performance arms at some automakers. Often founded by entrepreneurs to provide independent tuning services to boost the power or improve the handling in the automaker's base models, many of these companies have been acquired by automakers and integrated into their core businesses. Some of the performance units now take over significant responsibilities related to the automakers' product and options portfolios.

COMPLEMENT: Business units that are outside the parent company's core, such as mobility platforms, are more likely to maintain their entrepreneurial independence if they are run separately. Furthermore, they can serve as compensation for value created in the core business, which might to some extent be replaced. Mobility offers give the customer a usage right, but this does not necessarily result in instant vehicle sales for the automaker.

OUTGROW AND CAPITALIZE: Automakers may need to adopt a portfolio management view for their new business units. This way they have financial objectives that need to be met and a clear timeline so that startups can be developed and grown with a clear exit strategy.

Establishing new business areas used to be viewed as something that only happens occasionally, therefore, everything needed to be re-invented each time. With so many emerging business areas to address, automakers need to set up a portfolio management approach across divisions and functional units. This way they can oversee the development and provide support – across multiple entities, divisions and functional areas.

Regardless of which paths are chosen for the development of the new business areas, automakers eventually will need to adapt their longtime practices so that they can cope with the rapidly growing need to have digital and, data-driven business models. The set up of new business areas can serve as a guide to the company, while also providing a test lab for new approaches, ideas, and processes. ●



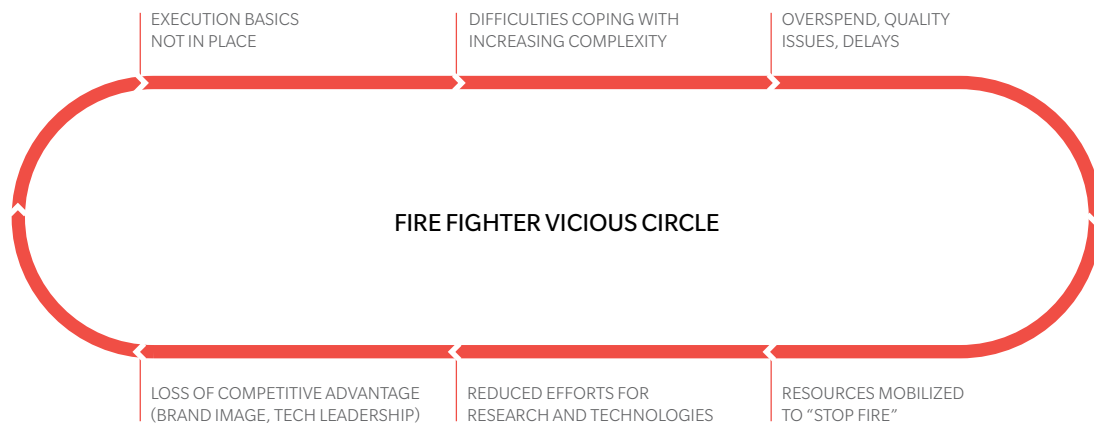
HOW SUPPLIERS CAN MAKE R&D A BUSINESS DRIVER

Automotive suppliers are facing increasingly fierce challenges when it comes to their R&D. One of those challenges is the rising pressure from vehicle manufacturers to cut prices, which reduces the ability of supplier to invest in R&D. To meet these challenges, suppliers must shift their focus from projects to products and leverage standardization to help free up the resources required to invest in future technologies. To achieve this, however, suppliers will need to be more selective commercially and better aligned with automakers.

MARC BOILARD

CIRCLE OF DEMANDS

Suppliers need to break away from the cycle of demands and focus on investing in new areas of opportunity



Source: Oliver Wyman analysis

The structure of the automotive industry has been changing over the years, evolving from a hierarchical supply chain into a network of players that increasingly share competencies, capacities, and tasks. Automakers continue to focus on their core competencies, while simultaneously seeking reliable partners that can handle new and complex technologies as they look to strengthen their long-term positions.

Despite this progression, the expectations that traditionally have been placed on the shoulders of suppliers have not gone away: cutting costs, shortening time to market, and providing components with impeccable quality. Nonetheless, using R&D as a key innovation driver is a major factor in the cooperation model between suppliers and automakers.

ESCAPING THE VICIOUS CIRCLE

Most suppliers have not found an answer to these challenges because they struggle with operational issues, including: focusing on too many projects; fighting time constraints; overcoming unresolved management constraints; and, most importantly, coping with extreme pressure to cut costs. They are overwhelmed by the demands of their day-to-day business and by the technological complexity they face, leaving them little room to explore alternative options. Suppliers, therefore, often fail to sufficiently invest in new areas and miss the opportunity to realign themselves and their products to meet the fundamental tests that will affect their future. Breaking this vicious circle of "firefighting" is fundamental to positioning the supplier to achieve success.

EXCELLENCE IN EXECUTION

The first priorities for suppliers that struggle with day-to-day R&D activity are to reinforce the basics and address all major structural issues. These are often related to enhancing management expertise rather than improving technical know-how.

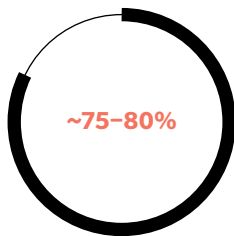
Suppliers should first pay special attention to building a strong pool of project managers who possess the right skills. Experience shows that 75 percent to 80 percent of suppliers have well-established internal R&D basics (R&D roles and responsibilities, processes, tools, and quality gates).

However, there is clearly room for improvement when it comes to collaboration processes with external partners (engineering service providers, universities, joint ventures, etc.), cross-functional coordination, and decision making. Instability in staffing should also be addressed, as 10 percent to 20 percent of R&D resources, on average, are allocated to firefighting activities. To solve this, the supplier needs to improve its upfront project preparation, and, in the midterm, develop a higher level of polyvalence of resources so that its engineers can cover a wider range of activities.

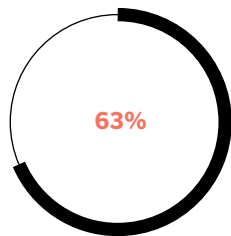
There is also room for improvement in measuring R&D performance, which is often inadequate at firefighters, as well as leveraging advanced simulation tools in the early stages of the development process, which can help accelerate product design.

PROPORTION OF SUPPLIERS PERFORMING WELL IN KEY AREAS

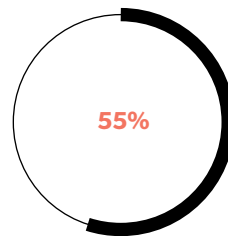
Room for improvement on external collaboration, cross-functional coordination and decision making



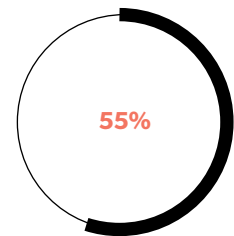
R&D ROLES, PROCESSES,
TOOLS, GATES



DECISION-MAKING PROCESS



COLLABORATION WITH
EXTERNAL PROVIDERS



CROSS-FUNCTIONAL PROCESSES

Source: Automotive suppliers survey, Oliver Wyman

STANDARDIZE AND REUSE AS MUCH AS POSSIBLE

Finally, standardization and modularity are extremely effective levers that can be used to slash engineering costs and reduce lead-time. Through modularity, a supplier can cut engineering costs and development lead-time by 20 percent in each area. A recent Oliver Wyman survey found that standardization has been the top priority at the majority of leading global suppliers over the past three years, but there remains much room for further improvement. One way to optimize standardization would be to deploy a Product Lifecycle Management (PLM) tool.

PICK YOUR BATTLES

Suppliers must face up to the fact that they can't bid on every automaker program around the world, that in doing so they risk spreading themselves too thin: Preparing and developing a large number of bids serves to dilute engineering resources. Moreover, the total cost of the bidding process is often underestimated, given the inefficiency of the requests for proposals (RFP) process. Instead, supplier should seek to become more selective in their bidding, thus conserving valuable resources.

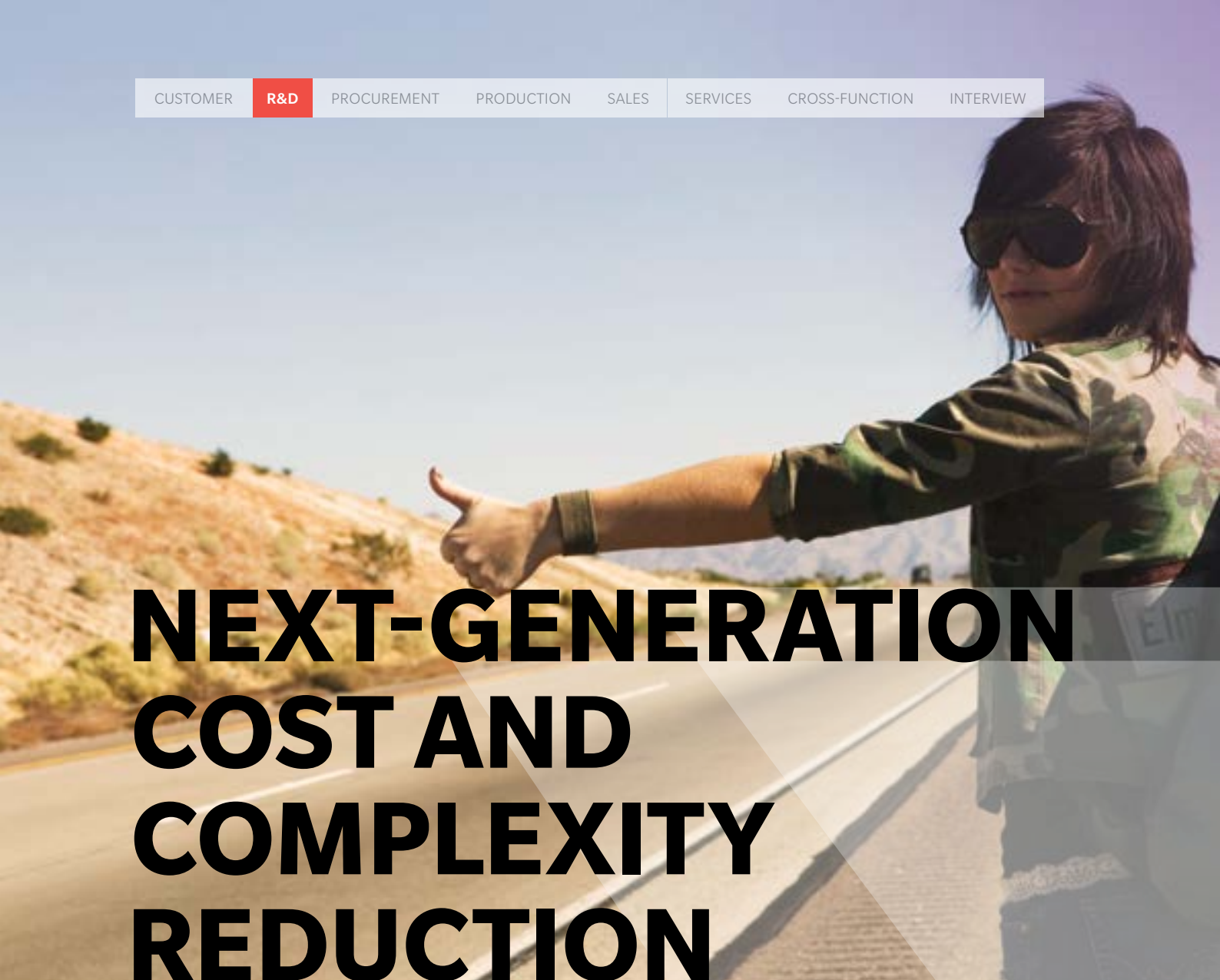
It is also important to align processes with customers, as this can lead to a stronger, more reliable partnership, while also anchoring a service mindset across the entire organization.

These two items are important regardless of whether the suppliers are innovators or followers. Experience shows that less than 20 percent of R&D projects are currently conducted in alignment with an automaker's advanced engineering teams. To address this weakness, many suppliers need to undergo a substantial business transformation, which needs to be thoroughly assessed, planned, executed, and monitored.

JOURNEY TOWARD INNOVATION LEADERSHIP

On their road to excellence, suppliers should first focus on optimizing the efficiency of their execution. After that they can move on to developing product or standardization strategies. Implementing modularity/standardization in a non-mature engineering organization is complex and has the potential to put the company at risk. Switching to a product/standardization strategy helps simplify matters, which frees up resources in the short term. However, this change could limit overall cost performance and innovation capacity going forward.

All suppliers aim to innovate more, but the increasing complexity of automotive programs often drains them of their R&D resources. Freeing up resources to concentrate more on innovation requires flawless execution capabilities, as well as a strong product orientation and a dedication toward achieving product standardization. By doing this, suppliers will be able to safeguard their innovation and technology efforts and increase their competitive advantage. ●



NEXT-GENERATION COST AND COMPLEXITY REDUCTION

Automakers have excelled at boosting their lineups, while reducing their platforms. They have spent decades achieving scale through the use of common parts, designs, and assembly processes. Many automakers, however, are reaching the point of diminishing returns. While there are fewer platforms to cut, there is more demand than ever for a wider range of models to meet the needs of a more diverse customer base.

To gain even greater scale and provide additional value to consumers, automakers must look outside their own corporations. By partnering with rival automakers or suppliers, they have the potential to reduce their capital requirements and better leverage scarce engineering resources, helping them achieve the next generation of complexity and cost-reduction benefits.

ANDREW CHIEN

ALAN WILKINSON



Challenges are mounting for automakers. They are targeting an increasingly segmented market with more models. The demand for improved technology is rising as they race to meet fuel economy and emissions requirements, develop alternative propulsion systems, and carve out a place for themselves in the market for self-driving vehicles.

Automakers and their suppliers spend €130 billion annually on R&D. The pressure on capital and engineering resources has never been higher. Simultaneously, designs for many mature automotive systems are converging so that the components will meet customer and regulatory requirements across multiple automotive brands in a wide range of markets. What has resulted is a proliferation of vehicle variants that look different on the outside but are almost functionally equivalent underneath despite having been designed and manufactured by a large number of different companies.

In the U.S. and around the world, the number of light-vehicle models has increased by more than 30 percent in the past 15 years. This has happened as automakers have slashed the number of vehicle platforms, components, and modules they use in an effort to better leverage scarce capital and engineering resources.

However, opportunities for continued platform and component consolidation are diminishing. According to researcher IHS, the percentage of annual global light-vehicle production on platforms with greater than 50,000 units was only 33 percent in 2000 and

increased to 65 percent in 2012. By 2019, this figure is estimated to increase to just 74 percent, as opportunities for further consolidation dwindle. The next generation of commonality and scale improvement will be defined by those willing to try something new.

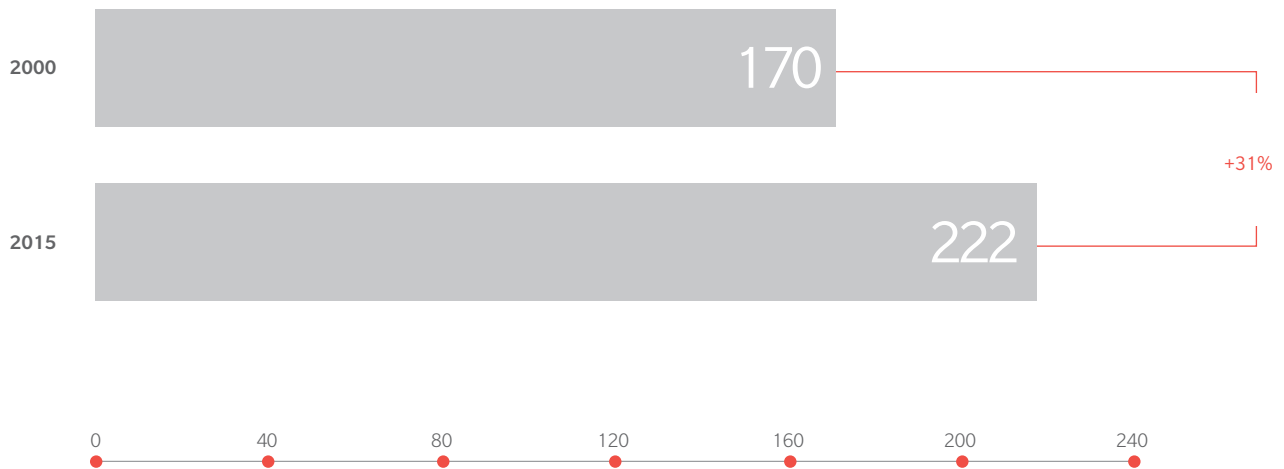
UNDIFFERENTIATED BUT UNIQUE DESIGN SOLUTIONS

The automotive industry is going through its greatest transformation since the early 1900s. Many vehicle system designs and manufacturing technologies are relatively mature, with incremental improvements made on each successive generation. This has led to somewhat undifferentiated design solutions across the industry. This is especially true at the component level, where designs have converged to fairly common solutions needed by all automakers to meet either regulatory requirements or common customer demands. One example is the engine, which most automakers still design and manufacture in-house due to their belief that it differentiates them from their rivals.

Today's engine sizes, technologies (variable valve timing, direct injection, turbocharging, etc.), cost, and performance are nearly the same across most volume manufacturers, yet nearly all automakers design and build their own engines at great expense. By avoiding collaboration with rivals or suppliers, automakers are missing a big opportunity.

U.S. CAR MARKET IS BECOMING INCREASINGLY SEGMENTED WITH DIFFERENT MODEL TYPES

The number of new models for sale has increased by over 30 percent in the past 15 years



Source: Statista Research

There are a number of reasons why automakers are reluctant to partner with other vehicle manufacturers. Most believe they have a competitive advantage and don't want to share their capabilities. Some are concerned that a partnership – especially one that was struggling – would pull management attention away from more crucial tasks. These are legitimate concerns, but if a strong and compatible partner is found, the potential benefits in many cases would outweigh the risks.

PARTNERING: THE NEW FRONTIER

Better partnering is the new frontier. One avenue is collaboration between automakers and suppliers, with automakers allowing partsmakers to work more efficiently in conjunction with other vehicle manufacturers. Another option is automakers or suppliers partnering with competitors, either directly or through consortiums, to develop more comprehensive industry standards.

For these partnerships to succeed, there must be a paradigm shift in thinking. Automakers should seek partners to help spur innovation, yet share in the cost of developing those innovations. Choosing the right partner is paramount; therefore, automakers should seek companies with similar priorities, business objectives, and work cultures. Partners should be able to leverage their strengths, but both sides must contribute equally for the relationship to prosper. Having full, senior management support from each partner is mandatory, as is having appropriate management structures. In some cases, for example Daimler's

partnership with Renault-Nissan, equity stakes can be taken across companies to cement the relationship.

A downside to partnerships is that speed to market is often compromised when two or more independent companies work together. To avoid this pitfall, the partners should focus on systems and components that are relatively mature in design, as for example, the partnership between Ford and General Motors on transmissions, or on high-investment commodities or systems, where there are sufficient benefits to justify the risks, such as the partnership between Nissan, Ford, and Daimler for hydrogen fuel cell technology.

Unfortunately, a number of partnerships and mergers have not delivered the desired results. In most cases, these partnerships failed because the companies didn't properly identify synergies during the planning phase, or management didn't sufficiently communicate and articulate the planned common vision during the execution phase.

However, for companies committed to careful planning and execution, partnerships are an effective way to diffuse the high cost of developing new vehicles and new technologies. The leverage generated by two or more companies working together can be tremendous in this capital- and resource-intensive industry. The result is the ability to provide greater value to consumers at a lower cost and with less complexity, providing the partnership with a big competitive advantage. ●



A STEP CHANGE FOR SUPPLIERS

Automotive suppliers need to perform in an increasingly challenging business environment – customers demand lower costs and better quality, their share in value creation is growing, and supply chain complexity is rising. To sustainably realize performance enhancements, C-suite executives at suppliers need to rethink their purchasing strategies. This includes embedding procurement across the whole company and leveraging the entire supply system for both innovation and performance improvement.

LARS STOLZ

TOBIAS SITTE

CHRISTOPH MÖLLER

Challenges for automotive suppliers remain high. They face intense flexibility requirements from automakers because of volatile fluctuations in global demand, increasing portfolio variety and complexity, as well as shorter product cycles. As such, they need to realize a significant annual performance improvement just to balance imposed price downs from automakers. At the same time, supply chains are getting more complex.

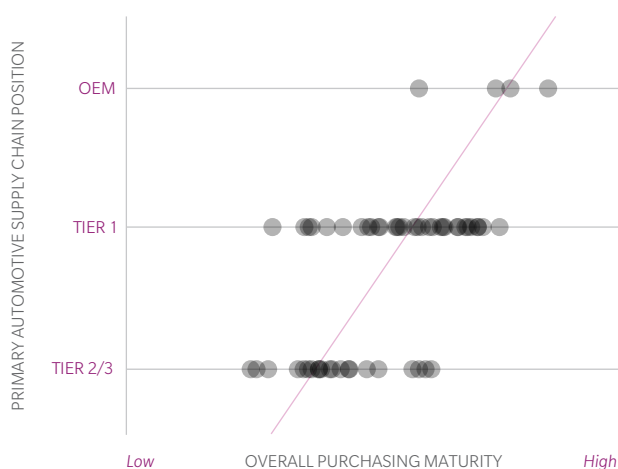
Both car manufacturers and their suppliers continue to globalize their production footprints: Value creation continues to migrate toward emerging markets, especially Asia. In addition, supplier integration into automakers' production processes continues, creating global, cross-linked supply-chain networks. Increased supply-chain complexity exposes component makers to significant risks, such as quality issues, production disruption, logistics breakdowns, and, in worst cases, financial default. To address these challenges and remain competitive, suppliers need to holistically manage costs, quality, and risks. They also should look for ways to trigger additional growth from their value chains.

THE DILEMMA

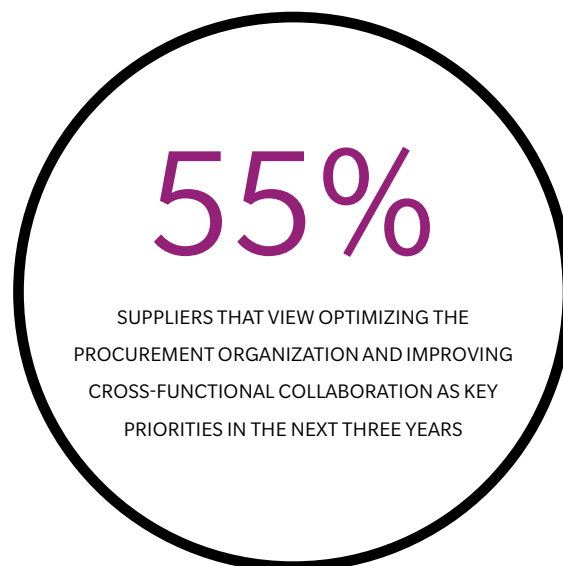
The automotive industry is at the forefront of developing robust sourcing benchmarks, but nearly all of the so-called "low-hanging fruit" has been harvested. That means new solutions are needed. Oliver Wyman has found sector-specific evidence that a company's purchasing performance is strongly driven by the maturity of its operating model, such as the purchasing strategy, organization, processes, people, and tools deployed.

ROOM FOR IMPROVEMENT

Automakers remain ahead of suppliers on purchasing maturity



Source: Oliver Wyman analysis



Companies that are more mature are generally able to optimize a larger amount of goods and services sourced and realize higher savings per commodity addressed. Oliver Wyman research has also unveiled that automakers consistently outperform suppliers in sourcing best practices. This is largely due to suppliers' less mature purchasing operating models, which prevent them from creating additional value for their customers and themselves. Suppliers need to ask themselves what other innovative approaches they should take to improve future competitiveness.

IT'S NOT JUST A CHIEF PURCHASING OFFICER PROBLEM

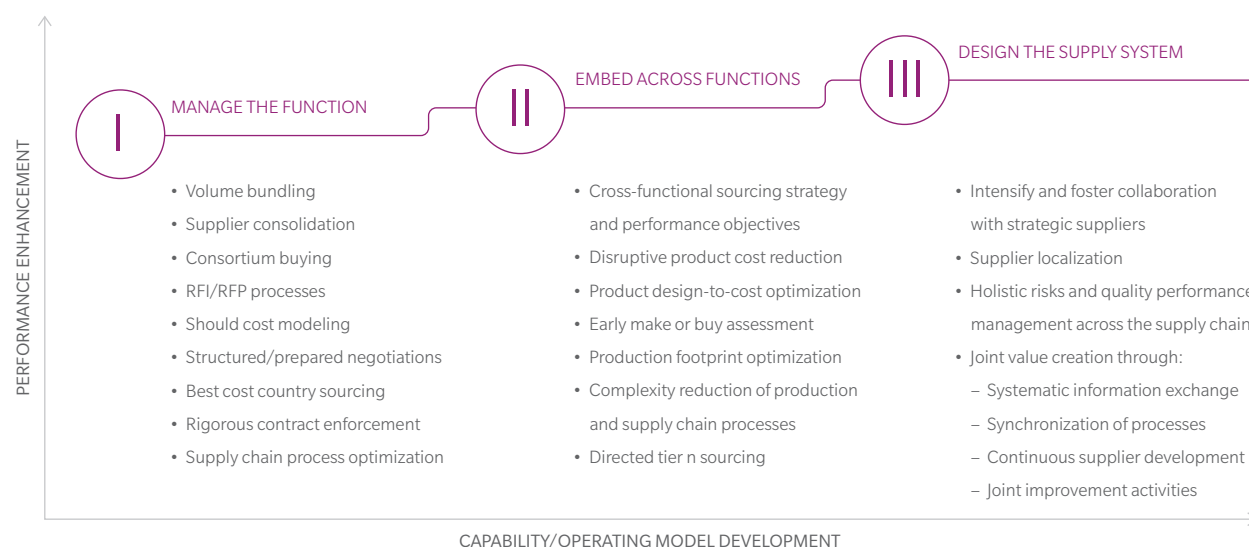
Requiring the chief purchasing officer (CPO) to fix these shortfalls by properly executing his tasks is unlikely to result in the desired performance effects. Tapping into new products or markets obviously affects the sourcing strategy. Costs and supply-chain risks are driven by R&D decisions in the early stages of a product's life cycle. Supply-chain issues that could arise during launch, production or after-sales limit the potential supplier pool. The bottom line is that to best leverage material cost and risk-related improvements, the company's top executives must think well beyond just the purchasing function.

HOLISTIC VALUE SOURCING

Managing the procurement function right – achieving excellence in each sourcing category and establishing synergies across purchasing commodities – is the basic requirement of a holistic transformation process. Over and above, the aim is to embed purchasing across the company and within the supply's ecosystem. Typical improvement levers arise during each step of this transformation.

HOLISTIC VALUE SOURCING

Stepping stones and improvement levers



Source: Oliver Wyman

It is critical to fully align the purchasing system with the company's strategic decisions and value creation model. Key levers include having a cross-functional sourcing approach to link the purchasing strategy with the company's overall strategy: sharing cross-functional performance objectives; enabling talent rotation to ensure collaboration and knowledge transfer; deploying processes that systematically leverage the group power; and implementing integrated systems and tools. Fostering such collaboration between departments allows the company to tap into additional value by unlocking more sophisticated improvement levers, such as product cost reduction in early stages of the design cycle, complexity reduction of production and supply-chain processes, or early make-or-buy assessment.

Designing the optimal supply system goes beyond identifying quality and cost opportunities at suppliers. Reaching substantial performance improvements requires a total view of the supply chains and understanding interconnections between them to create competitive advantages. This includes important strategic parameters, such as:

- Identifying those strategic suppliers with which to strategically collaborate and co-innovate
- Optimizing supplier footprint and leveraging best cost country sourcing opportunities
- Managing risks and quality performance holistically across the supply chain
- Improving costs and reducing risks jointly with the supplier

Focusing on the entire supply system provides more than just savings and risk reduction. It can boost growth via open

innovation, getting products to market faster, helping support international expansion, and sparking development of new products and services.

A supplier's top management needs to rethink its sourcing approach, ideally by establishing dedicated innovation teams and encouraging regular exchanges between all stakeholders to identify and deploy new ideas. An open innovation culture needs to be built, while also aligning incentives and the organization's structure. New forms of collaboration need to be established that go beyond suppliers and learning institutions to leverage digital platforms, such as:

- Data-driven, automated operational purchasing
- Real-time inventory and lead-time monitoring
- Broader supply base through easy exchange of digitalized models and new quality systems
- More flexible outsourcing to third party manufacturers, for example via capacity brokers

It is a common mistake to think of purchasing as a single functional division when it can be extended to include so much more. Cross-functional levers need to be pulled and performance needs to be driven by all stakeholders. This will happen when the entire purchasing ecosystem is brought to the table, synchronized in a digital environment, and leveraged to create and implement joint improvement opportunities, reduce risk, and enable mutual growth. Suppliers need to start this transformational journey today to make sure they are ready to create even more value for their customers tomorrow. ●

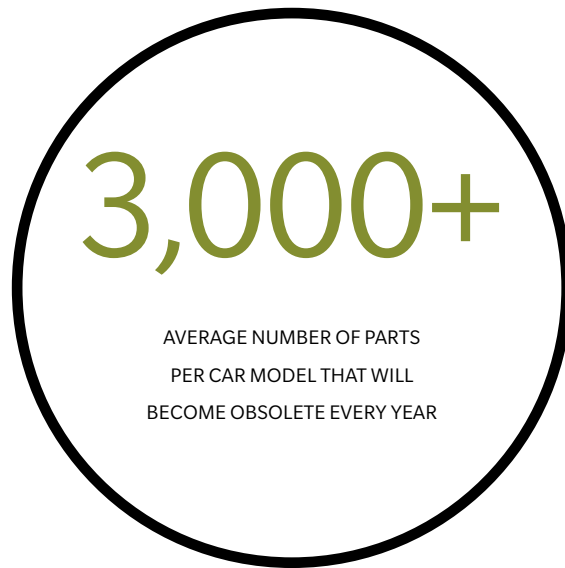


THE NEGLECTED CHALLENGE OF OBSOLETE PARTS

Since the early days of automotive manufacturing, the industry has had to deal with obsolete parts, which are the stepchildren of vehicle makers and suppliers alike. Mountains of these parts and their respective tools are aggregating at an alarming rate, tying up millions of dollars, clogging warehouses, and creating inefficiencies. Active management of obsolescence is paramount because without it, the problem will grow exponentially, especially for suppliers.

JOERN BUSS

TIM HOYLAND



Based on government regulations and automaker requirements, parts are “active” and guaranteed to be available for 10 to 15 years following the end of production of the last vehicle. That means parts for vehicles that have not been produced since 2000 – and not used in any other model after – would be considered obsolete. Assuming roughly 30,000 parts per car, with a full redesign every five to 10 years across 200-plus car models and you can imagine the glut of components that become obsolete every year even if many parts are transferred.

In a perfect world, a supplier should no longer be required to make or stock this obsolete part. Whatever is left in raw material, work-in-progress goods, and finished goods (including all tools, which typically are owned by the automaker), should be scrapped or reused. Oliver Wyman research has found that processes to manage obsolescence are rarely robust and are seldom properly embedded within the organization. This is especially true at suppliers. A contributing factor is that automakers often delay decision making on obsolete parts and their respective tools, which, along with leaving suppliers in limbo, creates a serious storage issue for all parties.

In one example, an interiors supplier uses a 120,000-square-foot building to warehouse more than 4,000 “obsolete” large injection-molding tools that date back to the 1950s. There are two reasons for this: 1) many of its automaker customers won’t make up their minds on whether the supplier is allowed to scrap the tools and 2) the supplier didn’t have a properly established process for managing the tools. For example, the supplier never threatened to ship tools back to the automaker. Instead, the supplier has paid for this “tool graveyard” and employed

two people to look after it. The supplier even debated whether to expand the warehouse.

In another example, an engine-components manufacturer, which also competes in the independent aftermarket, has millions of dollars’ worth of obsolete parts (finished and unfinished) in its warehouses. The supplier doesn’t know how long the parts have been on the shelf or whether they could have been sold because it is unclear if the parts were catalogued correctly.

STRAIGHT-FORWARD SOLUTIONS

The good news is that there are straight-forward solutions. While they require some initial effort, the end benefits include streamlined operations, reduced inventories, and, in some cases, enhanced customer satisfaction, as well as financial benefits. The starting point is answering the following two questions: How does one avoid accumulating so many obsolete parts? How does one best manage the obsolete parts one has?

There are three rules to follow:

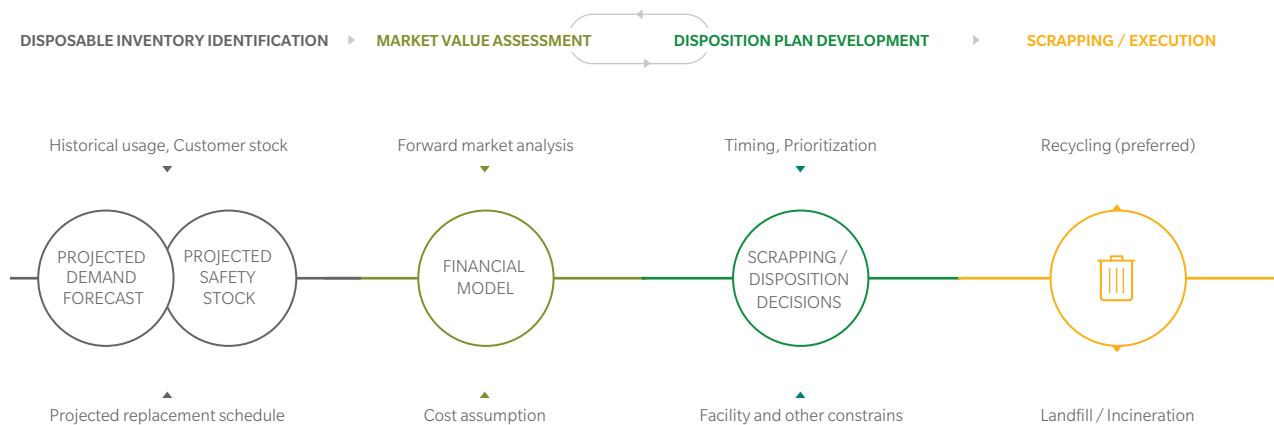
1. Know your parts
2. Follow a process
3. Maximize the value

KNOW YOUR PARTS

This sounds simple, but it requires truly comprehending what your parts are used for, where they are used, and when as well as what parts are in your enterprise, where they are located, their date of production, their shelf life, and any other critical information.

EFFECTIVE MANAGEMENT OF OBSOLETE PARTS

Having a disposition/scraping strategy will help to maximize the value of aging components



Source: Oliver Wyman analysis

The main problem faced by the above-mentioned interiors supplier was that the company didn't properly track the true end-of-production date of the parts it was making. That made it impossible to ascertain exactly when the parts and tools became obsolete. Meanwhile, the engine-parts manufacturer lacked data on which vehicles the components were installed during production, so it couldn't know how many vehicles fitted with the parts were still on the road. This is particularly risky for parts that have a shelf life, such as rubber components.

FOLLOW A PROCESS

This rule often distinguishes the winners from the losers in the management of obsolete parts. One example of a best-in-class process is a disposition/scraping strategy. This helps a company track/monitor a part from cradle to grave (know your parts), making sure that someone is always responsible for the part. In typical best-case examples, the order management unit "owns" the part and respective tool throughout its life cycle and decides when to declare a part or tool to be obsolete. At this point a final disposition strategy needs to be formulated. There are a number of items that need to be considered.

DISPOSITION OPTIONS

- Variety of dispositions: action relative to safety/minimal stock and current population
- Strategic decision to hold or dispose of excess/obsolete inventory (quantity & timeline)

NETWORK/WAREHOUSE REQUIREMENTS

- Safety/minimal stock management across own company and supplier (Tier 2 and 3) network – and even better for your customers

OWNERSHIP STRUCTURE

- Clear documentation on consigned, own, and customer owned (e.g. tooling ownership)

SCRAP EXECUTION PRIORITIZATION

- Appropriate priorities with which to categorize the disposition/obsolete parts pool
- Relative importance of each dimension and the general order in which to scrap

MAXIMIZE THE VALUE

While high-volume, low-value parts (especially those with aging components) and their tools should be scrapped immediately, some parts have the potential to even increase in value. For low-volume, high-value parts, which usually are fitted on limited-edition vehicles, it becomes crucial to "know your parts," otherwise the company will miss out on a final opportunity to benefit financially.

Suppliers should approach the automaker or, in the case of aftermarket sales, prior customers to gauge their interest in these parts. This tactic has proved to strengthen customer relations and to provide added value. For instance, the engine component manufacturer has kept producing some pistons for low-volume, high-performance models because being the only source for the parts has resulted in high-margin sales and strong brand recognition.

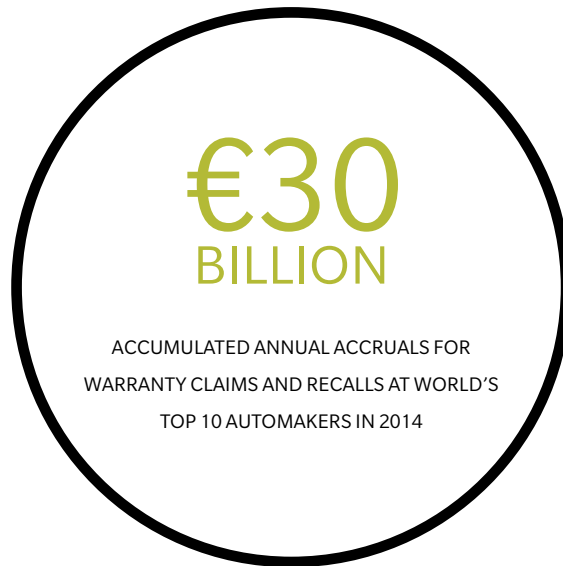
In a nutshell, managed well, obsolete parts don't have to be a burden on the organization, as they are the representation of one's history, laid to rest effectively. ●



A PARADIGM SHIFT TO TECHNICAL RISK MANAGEMENT

The constant trend in the automotive industry to equip next-generation vehicles with more sophisticated technology has caused a huge increase in complexity, raising the risk that the new systems will fail and increasing concerns over reliability. This trend affects warranty costs and customer complaints, and has pushed the industry's key players to rethink their strategies for technical risk management and problem solving.

RICHARD HELL



Consumer demand for new models that offer high-powered, fuel-efficient small-displacement turbocharged engines, intelligent driver assistance systems, as well as autonomous driving features, is forcing automakers to rapidly deploy new technologies. Although the industry is doing its best to master the technological challenges that have accompanied this push, automakers increased their warranty accruals by more than 20 percent, to 2.9 percent of revenue, from 2011 to 2014. At the same time, the recall quota has almost tripled, damaging the reputations of affected automakers, which in turn may hinder their ability to retain customers.

Historically, the billions of dollars invested in continuous improvement training and structured problem-solving programs were mainly geared toward reacting to production and quality issues that already occurred. Very little cash was spent trying to find ways to prevent problems from happening in the first place, but that is about to change, as more attention is focused on preempting technical risks. To succeed, automakers must employ a more preventive and agile way of dealing with quality and reliability challenges, including leveraging advanced analytics and big data.

AGILITY AND SPEED

Agility has become a crucial organizational component. Companies have been integrating their problem solvers in their line functions to ensure a closer proximity to the daily issues. While this setup successfully fosters a continuous improvement mindset, it does not allow for a fast response to complex, multidisciplinary problems. Traditional problem-solving and process-improvement methods have become overburdened with structural and bureaucratic elements over the years.

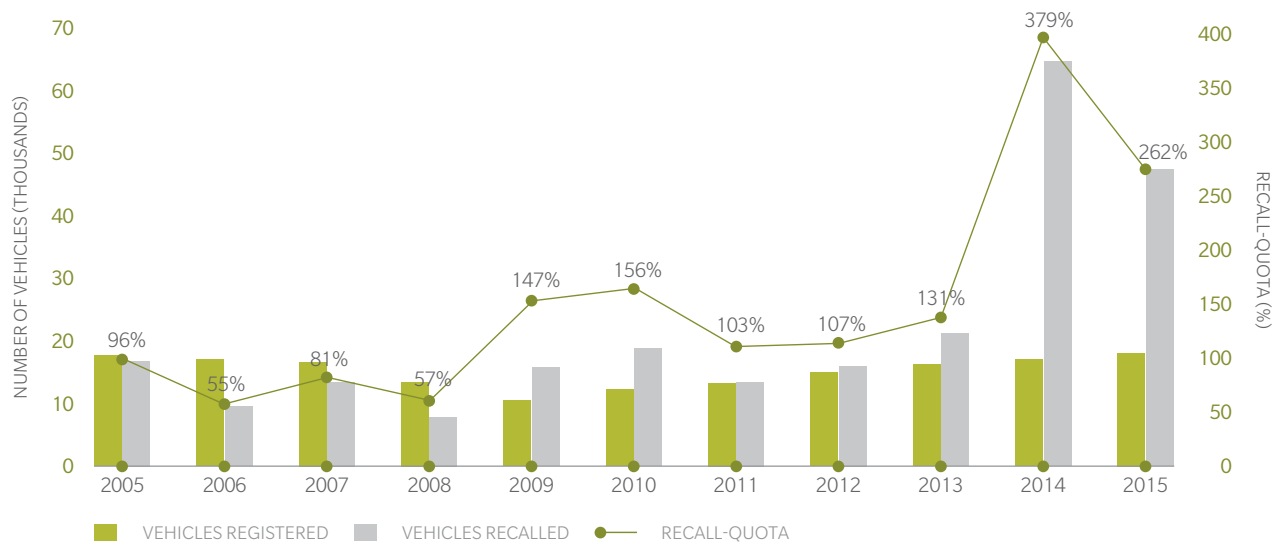
Today, automakers are under pressure to try to match the speedy development cycles of software and electronics providers. This is causing them to rethink their problem-solving methods. The trend now is to undertake a more flexible, multidisciplinary methodical approach. Instead of emphasizing a few tried-and-tested methodologies, market leaders have developed the proper situational awareness to pick the methods and tools that best match the nature and complexity of a given problem. Furthermore, they are tapping the power of big data and advanced analytics much more effectively, resulting in faster and more agile decision making. A key change here is fostering a company culture that enables the problem-solving team to approach a problem in a different way. Sometimes this requires assigning the problem to a team that is not too closely associated with the existing establishment. This team also needs management support to abandon the approach of the past and replace it with a more rigorous, fact-based structure of today.

PREVENT PROBLEMS BEFORE THEY HAPPEN

This new way to manage technical risk is focused on preventing problems before they happen by establishing a fact-based, structured qualification and quantification of high-risk areas based on the probability of failures in design, manufacturing, or in operations prior to the launch of a vehicle. Experience shows that many potential problems are not easy to identify during the prototype phase, giving a false sense of security that the design meets all required specifications. However, the failures and deviations are occurring as the vehicle or subcomponents progressing through the different launch stages, from development

RISING RECALL QUOTA IS PUTTING AUTOMAKERS' REPUTATIONS AT RISK

Since 2011, the recall quota has almost tripled in the U.S.



Source: Center of automotive management, LMC automotive, Oliver Wyman

to small series up to series production. Examples include problems with NVH (noise, vibration, and harshness) components and electrical/electronic (E/E) malfunctions. In both cases, part variability or process sequence can have a major effect on the end performance of the component. To properly apply a preventive risk reduction approach, the entire product life cycle needs to be taken into account, not just the development stage of a system.

A validation of a product or process design needs to be done with the right load spectra and under serial production conditions from a tooling, application, and manufacturing process-maturity perspective. Conventional techniques such as Design and Process, Failure Mode Effect Analysis are not geared toward such a holistic approach. The new paradigm of preventive risk management follows an integrative approach on product, process, and supplier facets, which substantially enhances the traditional technique. Furthermore, the new approach is centered on a functional orientation instead of a component- or parts-based orientation to determine possible cause-effect relationships a system will experience in the field.

This paradigm will be very helpful as automakers integrate more and more software, electronics, and new materials into their products, where evidence-based methods are losing their effectiveness. One approach being used is Oliver Wyman's Function Modeling, which helps reveal all variables of a given cause-effect relationship and provides support to build a conclusive mathematical equation reflecting the failure physics. Weak links, improvement areas, and hidden interrelationships are uncovered, preventing them from becoming bigger problems later, which improves the performance and quality of a system.

If applied across all high-risk areas, this new methodology can help encourage a step change that results in more robust, reliable product and process designs for complex systems by explaining a potential technical problem using the laws of physics.

DIGITALIZATION AND ADVANCED ANALYTICS

In the near future, big data and advanced analytics will become key contributors to further enhancing preventive and agile risk management and problem solving. An enormous amount of product- and process-related data already is being collected today. This information can be used to identify new correlations and patterns, which will help push preventive risk management to a new level. More and more advanced analytics will be used to deliver facts that explain complex cause-effect relationships in today's systems.

There is even more potential with new machine-learning based algorithms developed to detect abnormalities, allowing fast and intelligent pattern recognition for unknown, hidden relationships beyond the existing conventional failure specifications. This enables engineers to reveal additional peculiar parameters directly related to the performance of the part or system. Furthermore, simulation and modeling tools are providing additional insights by generating clues that help confirm root causes.

Although it will take years before a fully computerized root-cause analysis or preventive risk management approach is a reality, the trend toward increased digitalization is a solid foundation on which to build a more agile paradigm for preventive risk management. ●



THE ANATOMY OF AN EFFECTIVE DIGITAL STRATEGY

The digitization of the automotive industry is one of the most challenging topics facing vehicle manufacturers. While the pace of change driven by digitization is accelerating across all sectors, automakers have only just started to make this fundamental paradigm shift. The open question is: How can an automaker embrace digitization effectively? From a retail perspective, the digitization of the car-buying process already is well underway. In the future, it will become the standard channel used for car purchases. This is also true for all transactions related to the portfolio of mobility solutions that automakers will offer.

As the “mobility paradigm” edges closer, digital will be an essential part of any strategy for building enduring customer relationships across the automotive experience. As far as the car is concerned, it will increasingly act as a platform for connected services and on-demand content. The challenge for automakers will be in determining how they can create brand differentiation based on a proprietary mobility experience.

DYLAN STUART
RANDALL STONE



DIGITAL CAN'T EXIST IN ISOLATION

The word digital can be misleading because, in reality, there is no digital any more. The challenge is actually about creating completely integrated customer experiences. That means strategy, platform, and analytics must work in total harmony. When we look at disruptive digital businesses across all sectors, success has coincided with the level of seamless integration they offer.

Today, most brand engagement starts in the digital channel, and the majority of communication takes place here. In automotive, the sales, service, mobility, and connected in-car technology all need to be able to talk to each other to create a seamless customer experience. However, achieving this will require automakers to change their thinking. They will need a solution that transcends customers' silos and stretches traditional organizational boundaries.

There is a lot at stake as studies show that 39 percent of drivers value in-car technology above all other factors when purchasing a new vehicle. The key to success here is creating real differentiation in that experience. To do this, however, the automaker has to put the user at the center, which is a big change because for more than 100 years the product has been at the center. In the future, carmakers won't just think about products, sales, and service experiences, instead they will direct most of their attention to offering integrated human, product, and digital interactions across the entire experience.

FOUR STEPS TO SUCCESS

So what makes a successful experience strategy that incorporates digital? The four points below answer that question.

1. PROVIDE AN EXPERIENCE VISION, NOT A DIGITAL VISION

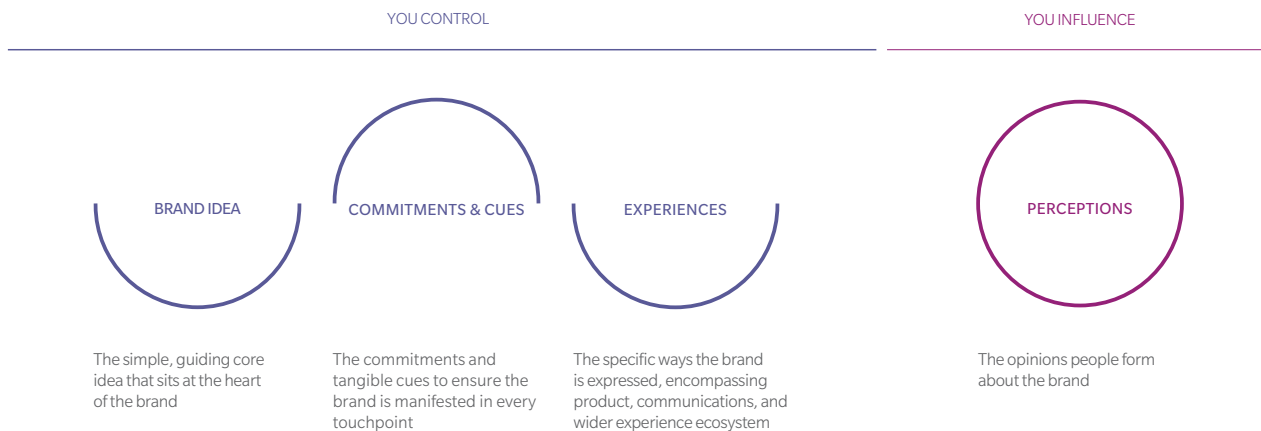
It is essential to conceive the experience first and then work backward because the technology should be used as an enabler. Developing a complete experience vision requires looking across siloes to understand and determine what the optimal overall experience should be like. This experience should be one in which everything from the in-car interfaces to mobility apps to the entire sales journey is designed to be integrated and holistic.

2. BUILD IN TESTING, LEARNING, AND EVOLUTION FROM THE START

Automakers are accustomed to long development cycles where consumers are prepared to wait five to seven years between product generations. In the future, however, it will be essential to embrace perpetual "beta" in the experience. Automakers will need to develop a willingness to take risks so that they can pilot new ideas that will allow them to innovate and evolve more rapidly. Carmakers have been good at internal experimentation, but in the future fast innovation cycles will demand strategies that embrace the beta state, with a measurement framework that enables ongoing optimization.

THE BRAND PERCEPTION JOURNEY

Strategy to action: translating strategy into brand perception



Source: Lippincott

THE WORD DIGITAL CAN BE MISLEADING BECAUSE, IN REALITY, THERE IS NO DIGITAL ANY MORE. THE CHALLENGE IS ACTUALLY ABOUT CREATING COMPLETELY INTEGRATED CUSTOMER EXPERIENCES.

4. RESPOND TO CUSTOMERS, BUT LEAD WITH THE BRAND

In the future, creating a digitally enabled experience will be something every carmaker pursues. The key will be creating a truly branded experience. Automakers will need to establish the design principles that guide the entire experience, not just the car. Ultimately, as the car becomes just one part of a broader mobility experience, delivering the brand across every touchpoint will become the key to building lasting, emotional connections with customers. ●

3. INTEGRATE WITH THE WIDER ECOSYSTEM

The car has long been a relative “walled garden” – a complete, integrated product using proprietary systems and interfaces. In the future, the automotive experience will need to effectively integrate third-party software and services – as Ford recognized when they opened up its interface to outside developers. Many brands and service providers will be eager to participate as automakers open themselves to new opportunities and ideas. As communication, information, and entertainment opportunities in and around the car increase, a strategy that helps drive seamless integration of these services will be essential.



TIME TO TAP NEW AFTER-SALES REVENUE STREAMS

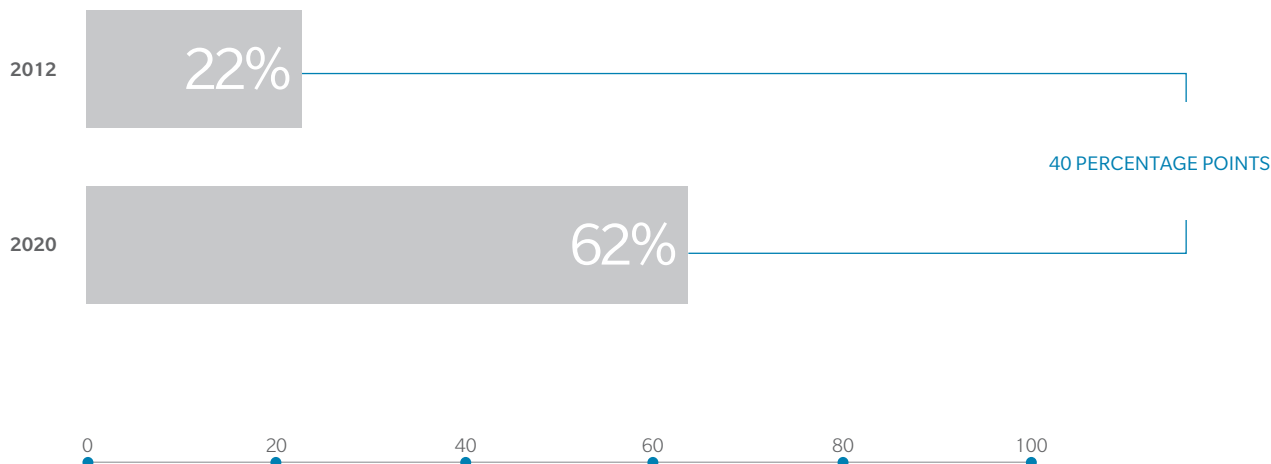
The after-sales business remains a reliable and significant profit center for automakers, even as increased service intervals and intensifying competition have caused challenges. Additionally, the future of the sector looks promising because new telematics technology could provide automakers and dealers with a powerful tool that can help them improve the ownership experience. At the same time, the new technology gives them the potential to win back the market share that they have been losing for years. But to capitalize on this trend, they must develop an infrastructure to connect with consumers.

KEVIN HAUSER

ALAN WILKINSON

GLOBAL GROWTH RATE FOR EMBEDDED TELEMATICS

Light vehicle sales with built-in telematics is forecast to increase by 40 percentage points by 2020



Source: SBD Research

After-sales business (including parts and service) is a €500 billion global market that accounts for nearly half the profit at some automakers. For dealerships, it can provide 40 percent of profit, although parts and service only account for 10 percent of revenue. Competition with independent aftermarket providers is intense, especially once the warranty period has expired, forcing automakers and dealers to fight for every point of market share. It is a battle that many automakers and dealers have been losing, but the arrival of new technology could reverse this trend.

The increased use of embedded modems in vehicles gives automakers newfound visibility into how their vehicles are performing in the field, when they need regular maintenance or repairs, and what may need to be replaced or serviced. More than 20 percent of new vehicles are sold with embedded modems, and that figure is expected to grow to between 60 percent and 75 percent by the end of the decade.

DATA PROVIDES THE OPPORTUNITY

The automotive after-sales market faces many headwinds. As vehicle technology and quality improves and active safety systems become more common, maintenance intervals increase and accident rates decline. As a result, the size of the market for service and repairs shrinks. However, after-sales will continue to provide automakers and dealers with a huge opportunity for a long time, if they are willing to invest in new ways to tap this lucrative revenue stream.

With the growth of electronics and sensors in vehicles, nearly every major vehicle system has internal monitoring, which can be communicated back to the modem and, with the authorization from customers, read by automakers to help them improve user experience. Surveys have shown that if data is used to make the customer's experience better, most car buyers would be willing to share the information. As this data becomes more prevalent and accessible to automakers, they will be able to communicate directly with consumers via their vehicles to advise them when maintenance should be performed and recommend the nearest dealerships. For example, an algorithm based on input from the accelerometers could determine when brake pads need to be replaced. This could take place before the brake pad indicator bars begin to make noise. The customer would get a notification on the infotainment screen with a recommendation to make an appointment at a nearby dealership. Customers can still choose to take their vehicles to an independent repair shop, but pilot implementations of such services, such as BMW's TeleServices, show that these programs make it more likely that owners will return to the dealership vs. an independent rival.

EMBEDDED VS. SMARTPHONE ACCESS

Automakers have been divided on the best methods for incorporating telematics into the car, with some preferring to use the owner's smartphone to bring the cloud onboard, while others prefer to use a dedicated embedded modem. There are pros and cons associated with each approach. For instance, a benefit



of using a smartphone as the car's telematics channel is that the automaker has a smaller investment because the solution primarily requires software. But the trend is toward offering embedded modems, which are more robust and reliable, because they provide added value that most customers feel is worth the investment. The embedded modem provides customers connectivity even without their smartphones or if their smartphone connection is lost. This can offer an important safety benefit. Also, the embedded modem makes it possible to offer software updates and improvements to the vehicle and/or its infotainment system without having to take the vehicle to the dealership. Automakers also benefit because the data can be used to communicate with customers to improve vehicle maintenance, which helps improve resale value and bring more people into dealerships, thereby increasing sales of original parts.

MORE THAN 20 PERCENT OF NEW VEHICLES ARE SOLD WITH EMBEDDED MODEMS, AND THAT FIGURE IS EXPECTED TO GROW TO BETWEEN 60 PERCENT AND 75 PERCENT BY THE END OF THE DECADE.

ANOTHER RIVAL TO CONSIDER

As automakers seek to gain from this opportunity, they also will have to move fast to guard against the rise of new rivals, such as startups offering under-the-dashboard dongles that can plug into a car's electronics through the OBD-II data port. Once connected, the car can communicate data wirelessly to a smartphone or computer, turning any car into a connected car, albeit with limited capabilities. Automakers are mounting an offensive because these dongles threaten their control over connectivity services, which are increasingly defining today's vehicles. Mercedes-Benz has been testing its own device in Europe. The solution offers perks such as the ability to remotely check the fuel level of a car or find a lost vehicle. This is especially useful for older vehicles, which lack the built-in capabilities of modern connected cars.

The bottom line is that automakers and dealers that move into this area have the potential to boost the revenue of their crucially important after-sales businesses. Whether they can use this technology to their advantage depends on how they leverage the data to improve the customer's experience with the automaker and its retail network. Automakers and dealers must put the tools and infrastructure in place to capitalize on the information they will have at their disposal and use it to their competitive advantage, which will strengthen the relationship with their customers. ●



AN UNREALIZED OPPORTUNITY FOR NON-URBAN MOBILITY

New mobility concepts are established almost daily. Services such as car-sharing are already common in most big cities, where high population density helps make them attractive. The same cannot be said for non-urban areas, but by using existing knowledge and the current infrastructure, mobility service providers can tap into this attractive value space by adapting their offer structures.

MATTHIAS BENTENRIEDER
ANDREAS NIENHAUS



Today, mobility services such as car-sharing, ride-hailing or intermodal commuting have evolved from being a hot topic in the startup community to an established commodity, often provided by big players. Many automakers and transportation companies have launched a variety of mobility solutions either directly or via spinoffs. Smartphone apps have been created for these programs, making them easy to use. As a result, an influx of brightly branded vehicles from the different car-sharing programs can be seen operating in many big cities.

While there are a variety of services as well as a fast-changing portfolio of solutions and ideas, these mobility schemes have one thing in common: They all target large metropolitan areas. Most mobility concepts require a specific infrastructure. Areas with a high population density, a mature public transportation system as well as the possibility to interconnect different mobility options are preferred. There needs to be sufficient short-term interaction between users, modes and providers for most mobility-sharing business models to succeed.

TOO FOCUSED ON METROPOLITAN AREAS

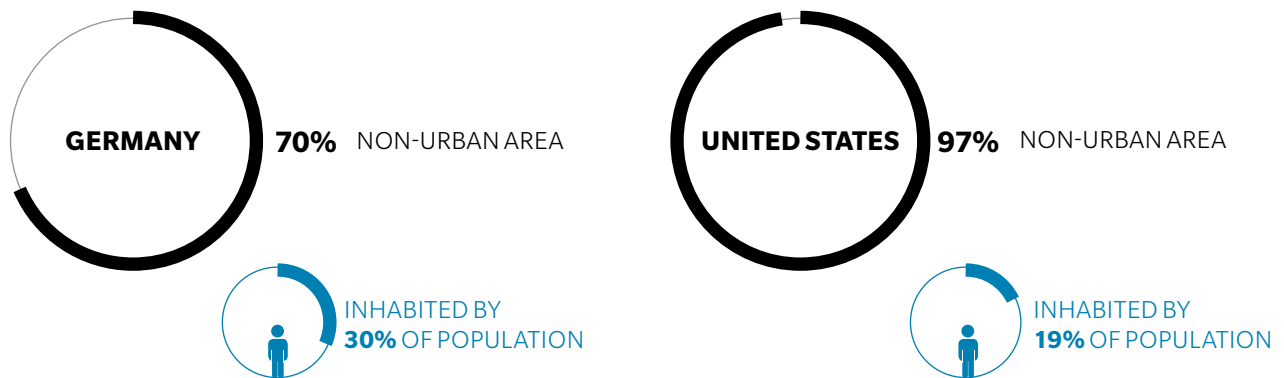
The countries currently targeted by mobility solution providers have a huge percentage of untapped non-urban areas. For instance, 70 percent of Germany is considered rural. In the U.S., 97 percent of the country's surface is classified non-urban territory. When population density is taken into account, 30 percent of Germany – about 24 million people – currently don't have access

to car-sharing schemes and other non-traditional mobility services. The U.S. population outside this scope is 60 million people. This is the case despite data showing that people in rural areas make roughly the same number of trips a day as city dwellers – 3.4 on average – and they are less likely to walk or rely on public transportation because they travel longer distances (42 kilometers a day compared with 36 kilometers for people in urban areas).

When quantifying the potential for the non-urban market, mobility service providers need to consider that the typical user has a lower average income than a person living in a city. In the U.S., the wage discrepancy is 30 percent. However, a significant portion of this disadvantage is neutralized by the substantially lower cost of living in non-urban areas. In addition, up to 80 percent of individual transport spending by people in non-urban areas goes toward vehicles and automotive-related services. These factors make non-urban areas an attractive value space for mobility service providers. In Germany, the market value for individual mobility solutions in urban areas is roughly €40 billion a year. Even if substitution rates for intermodal mobility services cannot be assumed to be very high, the big question that emerges is: Can mobility service providers afford to ignore the potential provided by non-urban areas?

NON-URBAN MOBILITY SOLUTIONS

The untapped opportunity in Germany and the U.S.



Source: German federal institute for construction, municipal and city research, Oliver Wyman analysis

FLEXIBILITY AND CROWD-BASED BUSINESS MODELS AS KEY LEVERS

To reach these new customers, mobility service providers must adapt their current business models. First, they have to optimize their overall system utilization to overcome the fragmented marketplace. The non-urban mobility system must integrate all travel modes available in the target community as well as adjacent communities. Only by creating a truly diverse, multifaceted intermodal platform can a mobility solution provider satisfy the needs of a large enough portion of the target area to succeed. A major challenge here is developing a solution that links different services in non-urban areas, where there is little to no commonality or cooperation between the existing players. Consequently, new providers will encounter resistance but those with an appealing, intuitive offer have the potential to emerge as true differentiators in the market.

Second, since the prevailing mobility infrastructure lacks sufficient coverage or frequency, it is pivotal for mobility service providers to embrace crowd-based solutions. Covering spacious non-urban areas with one's own car-sharing fleets would be too asset intensive. Consequently, offering a platform that connects individual demand and supply is essential. This means that ride-hailing or car-pooling will be integral parts of any provider's value proposition. The question is: How does the provider become a key player in deciding on a private commuter's travel arrangements? To remain attractive to users, the provider will need to rely on secondary services or

extra activities for its profits. And, it will be essential to connect peer-to-peer mobility solutions with other travel modes available to create a truly intermodal mobility service that is best tailored to meet the demands of customers in rural areas.

Third, an optimized cost structure and an even more flexible service offer will be needed to offset the anticipated lower usage rates compared with densely populated cities. Instead of providing a continuous mobility offering, it is better to offer demand responsive transportation (DRT), which helps minimize assets, reducing costs while still being able to meet customer demand. Using DRT, the services can be optimized to address demand during peak times and minimized when demand ceases. Public-private partnerships are commonly formed to leverage the existing public infrastructure, creating a flexible and attractive offering that in many cases provides door-to-door service.

The bottom line is that existing, well-established mobility solutions can be adapted to address the needs of non-urban areas. Although additional challenges will need to be overcome, crowd-based business models as well as demand responsive transportation are efficient approaches that can be used to meet the largely untapped demand for new mobility solutions in rural areas. ●



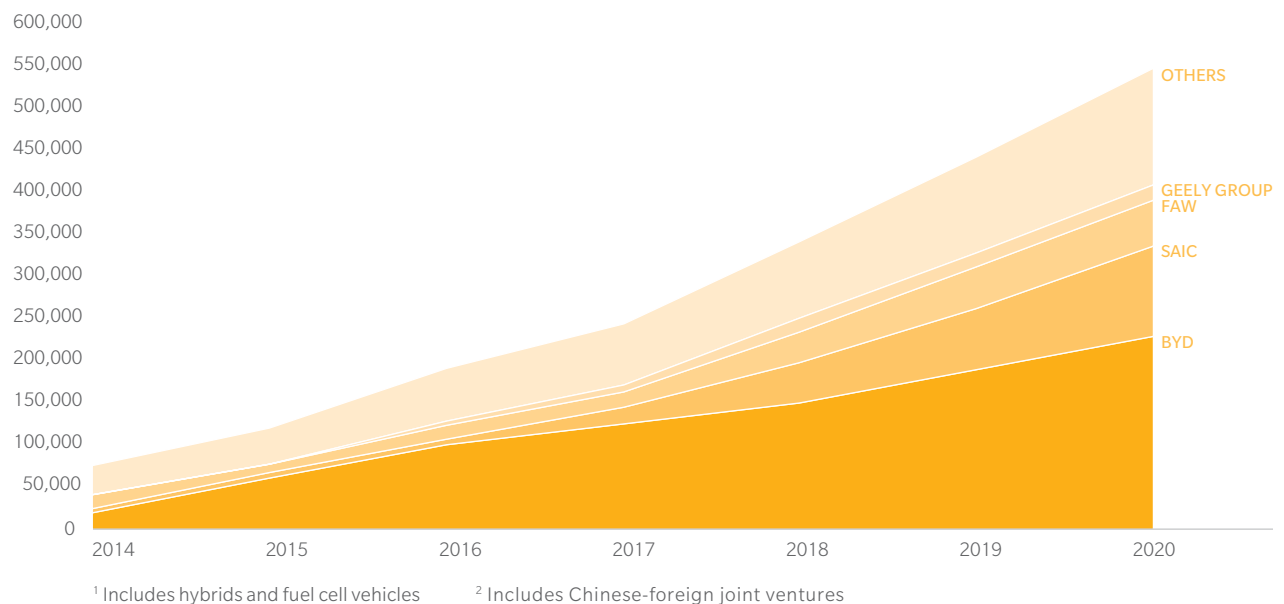
WILL YOUR FIRST ELECTRIC VEHICLE BE MADE IN CHINA?

Fifty years ago, motorists in Western markets would have laughed if told they would soon be driving Japanese vehicles, but sure enough the Toyota Camry has been the best-selling passenger-car in the U.S. for the better part of two decades. Thirty years ago, when Hyundai debuted its first car in America, few expected Korean brands to gain significant share. Today, many Americans and Europeans would scoff at the idea of driving a vehicle from a Chinese brand and would struggle to name one. That, however, may soon change.

HUNTER WILLIAMS

CHARGING AHEAD

China's domestic automakers are forecast to boost light electric vehicles production by 2020^{1,2}



Source: LMCA Q4/2015, Oliver Wyman

China's domestic automotive industry is becoming more challenging for a variety of reasons. The market remains highly fragmented, with the top four players accounting for just 40 percent of the market (vs. 60 percent in the U.S.). Chinese policymakers are getting serious about tackling both pollution and congestion. Beijing has restricted driving temporarily to help cut pollution, while Shanghai has reduced the appeal of car ownership by raising the price for a license plate to more than €8,000, which has spawned a secondary market for used vehicles.

Car-hailing apps, such as Uber and its much larger domestic rival, Didi Chuxing, are attaining widespread usage. At the same time, multi-year investments in public transportation infrastructure are coming online. For instance, Shanghai opened 27 new subway stations last December. As a result, vehicle sales growth has slowed to single digits from the double-digit gains common in the past. Local brands, which account for a fifth of the market, are losing share to foreign marques. Where are the Chinese players likely to look for their future growth? It's possible they will pursue sales outside China much faster than many think and may find a competitive advantage in a surprising niche.

LEARNING CURVE

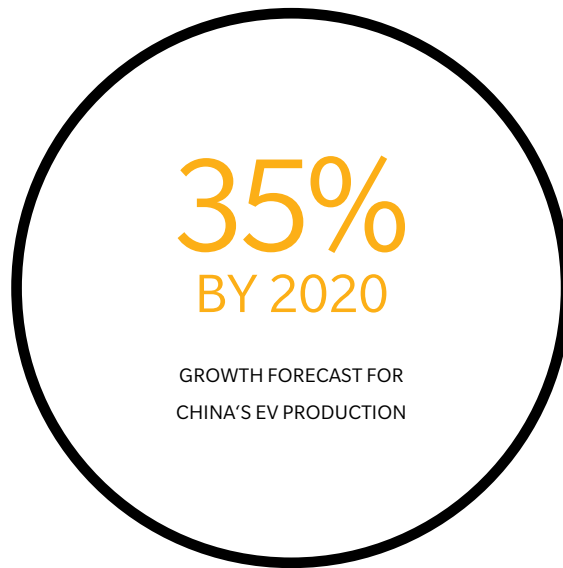
Chinese automakers are increasingly capable of producing vehicles that are good enough to be sold globally. SAIC Motor's joint venture with Volkswagen is 30 years old, and its JV with

General Motors is nearly 20, providing China's largest domestic automaker with world-class expertise. Chinese automakers also have imported know-how as illustrated by Zhejiang Geely Holding's 2010 purchase of Volvo and Dongfeng Motor's 2014 investment in PSA Group. Today, China's leading carmakers are increasingly debuting quality vehicles under their own marques. The expected consolidation of China's domestic players only will improve competitiveness.

GOING GREEN

Chinese automakers may have a surprising ace up their sleeve. China surpassed the U.S. as the world's largest auto market in 2009, but more quietly it became the largest market for electric vehicles (EV) last year. In addition, China has seen an exponential increase in the local production of EV since 2014. Output is forecast to grow by 35 percent by 2020. While sales of battery EVs remain subsidy-driven and highly protected, hybrids are becoming economically competitive as they win share in fleets. Shanghai commuters using Uber or Didi Chuxing frequently find themselves riding in a BYD or Roewe hybrid.

Globally, automakers are recognizing that they are in the business of helping people get from point A to point B. Rather than focusing solely on making vehicles with internal combustion engines, they are investing in their EV and mobility business models to avoid having to play catch-up when the next unforeseen spike in oil prices triggers a widespread shift.



SEEING GREEN ABROAD

It's no secret that Chinese automakers are looking at export opportunities beyond the Mideast and Southeast Asia, where inroads have already been made. Developed Western markets will prove tougher to crack, however. The first wave of competitors will arrive under familiar marques. Volvo announced in early 2015 that Chinese-made long-wheelbase versions of the S60 would be sold in the U.S. Meanwhile, General Motors plans to sell "made in China" Buicks in the U.S. market starting this year. Also, the recently revived Borgward brand, which is owned by Chinese truck manufacturer Beiqi Foton, intends to export its China-made vehicles to Germany in next few years.

Already, Great Wall Motor's Haval SUV is sold in Italy, while Lifan is among the top 20 brands in Russia, where it outsold Audi, BMW, and Land Rover last year. But what would convince U.S. or European customers to buy a vehicle from a Chinese marque? The niche they may end up filling could be low-cost EVs. Low oil prices make it even harder to produce cost-effective EVs. If there's one thing China is good at, however, it's low-cost manufacturing at scale.

How hard is it to imagine Roewe or BYD introducing a low-cost EV in Western markets? This car could undercut the Nissan Leaf, Chevrolet Bolt, and Tesla Model 3 on price. While low oil prices are bad for the EV sector in general, they favor the lowest cost producers. Western consumers may not be used to buying

Chinese vehicles – yet – but they are accustomed to buying expensive, Chinese-assembled electronics that run on lithium-ion batteries. EVs just happen to have wheels.

BARRIERS

Of course, barriers abound. A shake-up in the domestic market could be delayed, oil prices could continue sinking, or a proprietary "breakthrough" in battery technology could take place.

What is certain is that Chinese automakers should be considering how to best enter overseas markets, where they have a potential to carve out a competitive advantage and take pole position when oil prices rise again.

Likewise, non-Chinese automakers should prepare for the day when their partners in the world's largest market become their newest rivals at home. Before long, the competition will be as global as the supply chain. The Chinese are coming, and they are poised to arrive with a more sophisticated offer than most people might have expected. ●



WHAT SUPPLIERS MUST DO TO ATTRACT AND RETAIN TALENT

Suppliers face more competitors than ever when it comes to finding, hiring, and retaining highly talented workers. Since the rumors started that Apple will build an electric car, hardly a week passes without a headline saying the technology giant has hired yet another former Tesla engineer. Google also is aggressively seeking talented executives with automotive experience. Talent acquisition and management has become a field that companies need to leverage to gain competitive advantages and outperform their rivals.

DIETER KERN

HANNING KRUSE

Suppliers are under pressure to change the way they recruit. They must adapt to pivotal developments within the talent market, such as the new expectations of high-performing, high-potential talent, the rising need to add people with cutting-edge technological skills, as well as increased competition from not only automakers but also well-funded, well-known rivals such as Apple and Google.

They face these challenges at a time when the available talent pool is shallower than ever due to low unemployment, the overall aging of society, and growth of megacities. The global median age is set to increase to 36 from 30 by 2050, according to 2015 data from the United Nations. Slowly vanishing immigration policy boundaries (especially for highly skilled professionals) are further intensifying the competition for talent. This development is fueled by the convergence of once-separate industries. That means suppliers and automakers are vying for the same people as information technology and mobility specialists to cope with the fast move toward connected vehicles that can drive themselves. All this will make it tougher to find new employees with the critical profiles required for future business success.

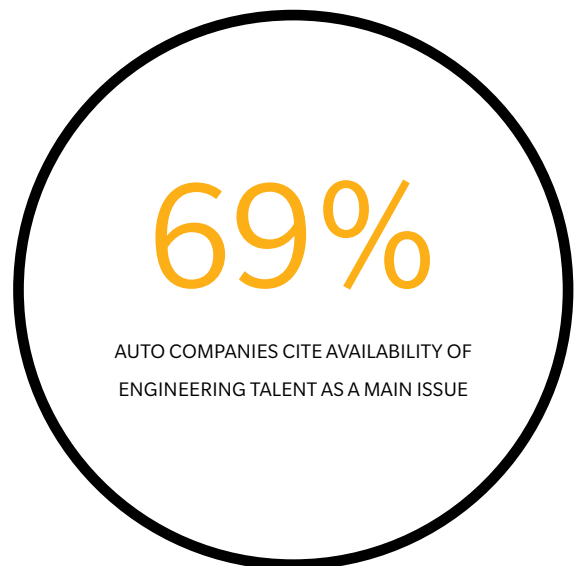
Mercer and Oliver Wyman research shows that more than 69 percent of automotive companies say that availability of engineering talent is a major issue. Nearly 80 percent of companies in the manufacturing sector and 95 percent in the technology industry report a shortage of highly skilled employees.

NEW EXPECTATIONS

Expectations toward employment are changing, especially among younger job seekers who demand a better work-life balance and more development opportunities than their longer-serving colleagues. Soft rewards, such as appreciation from the company, play an increasingly important role in a young employee's engagement. And research suggests that younger employees will be quick to change employers if their expectations are not met. Today, more than 85 percent of workers are either actively searching for a new job or would be open to a change if contacted by another employer, according to figures from LinkedIn.

These expectations need to be taken seriously and addressed from the initial contact with a potential employee. Managing the entire candidate experience is becoming crucial. Companies need to provide high accessibility, speed, simplicity, and a personal touch during recruiting to create a superior level of engagement with candidates, especially for business-critical profiles and high-caliber people.

For both employers and employees, technology is increasingly being utilized for all aspects of recruiting. Ninety percent of job seekers use their mobile devices to access employment



opportunities, according to Comscore. For selection, video interviews and gamification are already basic tools at many companies. Cutting-edge technology such as big data analytics and machine learning algorithms (MLAs) are starting to spread. Tools such as Mercer Match help predict successful workforce characteristics and accurately select employees easier and faster.

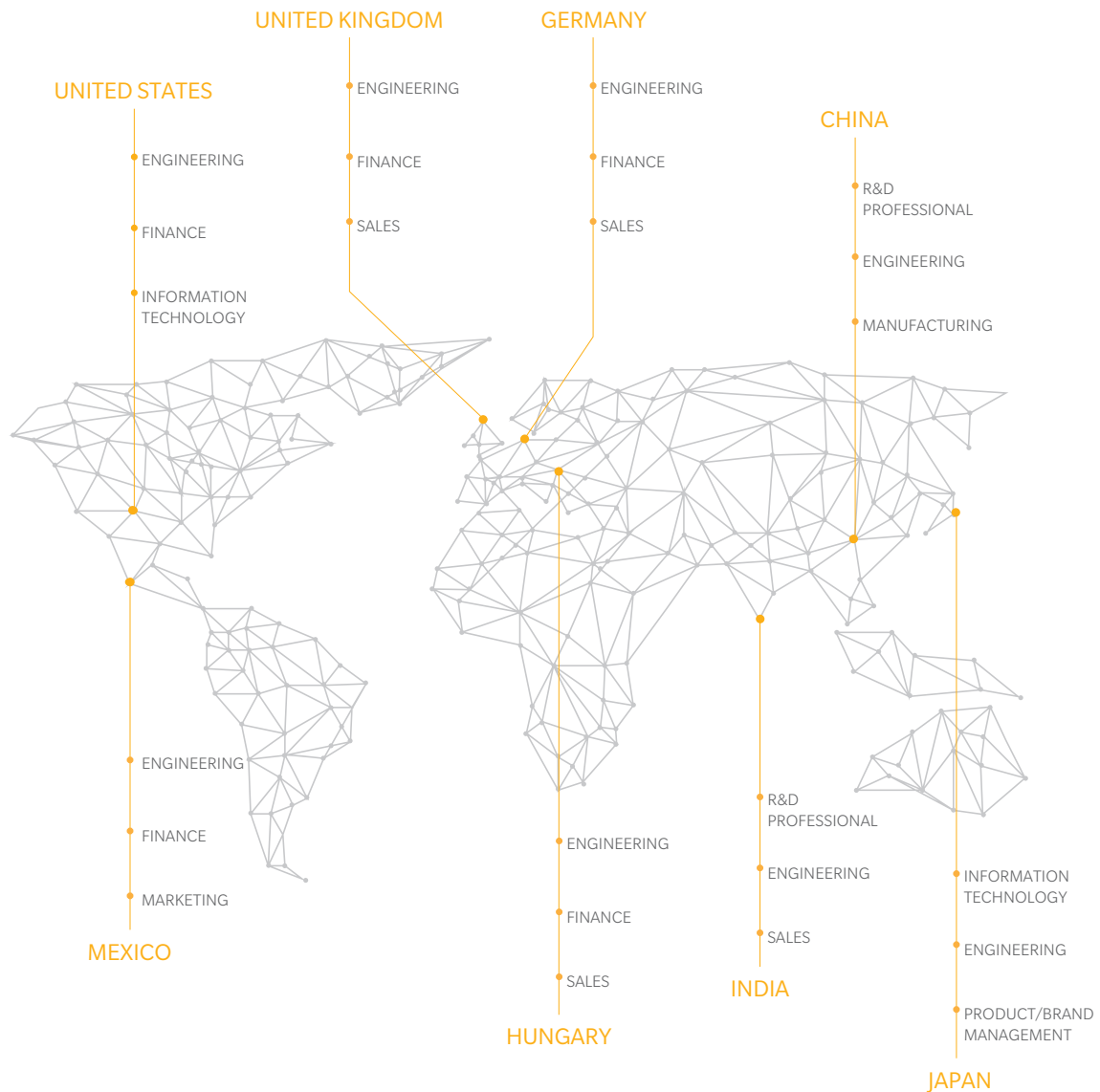
TOUGH FIGHT FOR TALENT

Automakers and other competitors for talent already are ahead of many suppliers in recruitment because they are better at defining long-term workforce plans. These companies excel at identifying ways to deal with talent gaps so that they can quickly attract high-quality internal and external candidates via active and passive sourcing channels, as well as managed candidate pools.

Leading companies have highly skilled recruiters to find the best talent, ensuring an engaging candidate experience. For example, Google is utilizing big data to re-evaluate its pool of second-best talent to see if they are suitable candidates for other positions. General Motors' so-called "silver medalists" talent pool for runners-up for jobs has identified an extensive list of strong candidates with a high potential if another job opens. Companies such as Microsoft and SAP professionalize active sourcing and use the recruiting process to not only fill a specific position but to also build up a portfolio of potential candidates for other posts within the company. Of course, improving recruiting efficiency through process streamlining and the implementation of companywide cloud-based recruiting systems remains a key task. Done effectively, companies can significantly improve efficiency. A recent example of this comes from Chinese automaker Geely, which reported a 20 percent efficiency gain after implementing its Taleo program.

THE CHALLENGE TO ACQUIRE TALENT

Most difficult jobs to recruit by country



Source: Mercer Research 2016

WHAT SHOULD SUPPLIERS DO?

Companies should forecast workforce needs and identify the areas that will pose potential challenges. They need to focus on business-critical, hard-to-hire profiles first. It is also important that recruiting organizations are flexible enough to adopt new trends so they can continue to successfully attract the best talent in the market. The following aspects will prove critical:

- Engage business leaders in the workforce planning process to provide visibility of midterm business plans
- Focus 80 percent of the effort on the roles that are hard to fill and are critical to the organization's future
- Implement data-driven solutions to find the best sources for hiring and the most efficient selection methods
- Proactively identify highly talented candidates from inside

and outside the company (for example, through LinkedIn or internal talent scouting)

- Develop a unique, honest employee value proposition to attract the right candidates
- Make the recruitment journey an engaging, fast, transparent, and personal experience
- Define technology needs to best support the process and engage candidates.

Suppliers face a tough battle in the war for top talent. Today's leading candidates need to be wooed. This puts certain job seekers in a very advantageous position. But with the right recruitment strategy and processes, suppliers will be able to attract and keep the talent needed to ensure the company's continued success. ●

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