

Human resource and skill requirements in the automotive sector (2026)



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Executive summary

The current workforce does not possess the skills that will be required with the arrival and adoption of new industrial trends. Industries have limited options to ascertain that the workforce is skilled enough to take on challenges of the future. Two of the most popular options are turning to robots (automation) or reskilling the existing workforce. The most pertinent aspect for sustaining the high growth of a sector is to create a future-ready workforce by bridging the gap between the demand and supply side of manpower, addressing the scale and quality paradigms.



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The global automotive market is undergoing a rapid transformation and India is not oblivious to this phenomenon. The sector is being impacted by a diverse set of forces of demand for environmentally sustainable mobility solutions, changing consumer preferences, digitization across the automotive value chain and the emergence of Industry 4.0 technologies. These trends have not only enabled firms to boost efficiency and encourage breakthrough technological innovations but have simultaneously required firms to innovate in not only traditional mobility solutions but to bring disruptive solutions like electric mobility solutions, autonomous driving vehicles and a slew of social mobility innovations. The automobile industry is likely to feel the dampening effect of new mobility concepts on car sales.

This transformation is coming at a time when the industry is predominantly dependent on a legacy powertrain technology, i.e., a combustion engine and transmission. In the newer models, the share of the powertrain is either diminished or even absent. This coupled with changing consumer preferences and the emergence of new mobility solutions such as car-sharing, bike-sharing and dynamic car-pooling is significantly impacting the growth prospects of the sector and the human resource requirements. Evidence of this phenomena can be witnessed in the current stagnation and decline in automobile sales.

The Indian automotive sector is witnessing a similar scenario with a decline in vehicle sales, maturation of cab aggregation models and the advent of connected cars and electric vehicles. The decline in sales is new to the sector, which has seen a continuous rise in sales over the past 18 years. The steep decline in automotive sales is concurrent with the government's new policies focused on promoting sustainable mobility solutions. However, the current stimulus and incentives announced by the government are expected to provide much-needed relief to the sector in these pressing times and sales are expected to rebound in coming times.

The future of the automotive industry in India will be determined by the sector's response to the inevitable impact of the interplay of three key trends impacting the Indian market:

- ▶ **Manufacturing trends:** Manufacturing trends: Exponential technologies are affecting each element of the value chain in the automotive sector. Industry 4.0 technologies such as autonomous robots, 3D printing, industrial IoT, machine learning and artificial intelligence have started to revolutionize the automotive

sector. These technologies have dramatically increased industrial productivity. In India, industrial IoT has had the strongest impact. The system is promoting the rise of connected factories wherein machines can interact amongst themselves to adjust their configuration and adapt to changes. Industrial IoT, along with other technologies, is integrating the entire automotive value chain to bring about significant productivity gains. Some noticeable changes are the increase in automation, displacement of lower-skilled human resources and the requirement for higher-skilled labor for managing these exponential technologies.

- ▶ **Policy initiatives:** A consensus has been reached by the policy setters and consumers, which says automobile players need to become environmentally sustainable through innovations in mobility solutions that reduce greenhouse gas emissions. Diesel engines are notorious for being one of the largest emitters of these gases. The demand for a clean environment and stringent sustainability norms are bringing a sweeping change in the components of automobiles as well as their manufacturing processes. Regulators and the Judiciary have become proactive in regulating the environmental impact of the automotive sector. The migration from BS IV emission levels to BS VI, FAME policy, CAFÉ norms are examples of policy initiatives disrupting the automotive sector in India.
- ▶ **Changing market demand:** The launch of smart, connected vehicles points towards there being more electric parts in newer vehicles. OEMs/Auto component manufacturers now require mechanical and electric engineers, IoT specialists and data analysts. However, it is estimated that not many job roles will be threatened due to this trend as vehicles are still largely mechanical. Further, with the population increasingly shifting to urban cities and people becoming more cost conscious, shared mobility and ride sourcing platforms are growing exponentially.

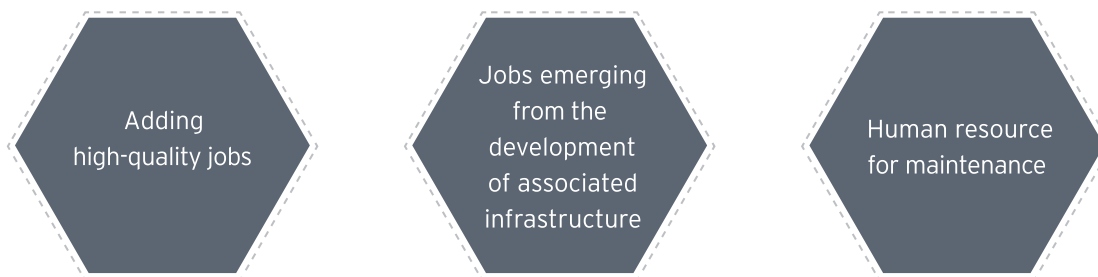
These trends are expected to pave the way for changes in the production process, the emergence of new business models, newer sales and service delivery models along with reconfiguration of workforce strategies. Further, there is a lot of negative sentiment in the market regarding job losses because of the adoption of Industry 4.0. There is a necessary distinction between the potential of Industry 4.0 automation and actual adoption of Industry 4.0. While a significant portion of the vehicle production process has the potential to be automated, the actual adoption will depend upon on the interplay of a host of complex factors including the supply of cheap labor in the Indian market, the skill level of the current

and future workforce, policy intervention of automation and associated job losses, labor laws, availability of ancillary infrastructure and societies perception towards technological innovations.

The shift from the internal combustion engine (ICE) to electric vehicles is being viewed as a market disruptor. This shift is expected to have a major impact on the nature of jobs throughout the automotive value chain. Some job losses are

expected since the manufacturing process for ICE-based cars differs significantly from that of electric vehicles that require fewer parts. This will have a major effect on the business of auto component manufacturers as they will have to make a substantial shift from their current business of supplying engine parts, gearbox, exhaust pipes, etc. to battery, electric motors, etc. This will lead to the emergence of new players in the value chain.

Infusion of new technology in the sector will have the effect of:



Our analysis suggests that the current employees will have to be skilled to match the automotive sector's evolving requirements. Electric vehicles will have a profound impact on the mix of the automotive workforce at OEMs and auto component manufacturers.

One of the major transformations is being witnessed in the dealership segment. The rise of digitization and increasing population of millennials is reshaping the automobile sales experience and firms have responded with a commitment to increase the digital footprint and attempting to shift their focus to individual customer needs, prioritizing retention and relationship management. Now more than ever, customer retail interaction is becoming one of the key aspects of dealership development. Today, personalization is becoming critical to consumers who expect personalized relationship management or a concierge. As a result, it is expected that value creation will shift towards creating capabilities pointed towards the customer interface and less towards manufacturing the physical product. This has led to automotive players building a seamless omnichannel presence, exploiting data analytics capabilities, utilizing top-up digital services and skilling employees to become trusted advisors to the customers. The skilling of the dealership workforce needs to be taken at an unprecedented pace with the rapid change in customer service expectations and increased awareness. The dealership workforce must be trained in the nuances of emerging technologies such as connected cars and IoT, as well as on how to personalize

the customer's purchasing journey. The customer facing employees should be appraised of the critical nature of a customers' needs, desires and character even before the start of their interaction.

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The road transport sector accounts for a majority of the workforce in the automotive sector. However, despite constituting a major share of employment, this segment has received very little attention from the industry and government alike. The sector has often highlighted the pressing need to frame better human resource policies to create a competent workforce and attract people to join the sector. The working conditions of the drivers may be described as pathetic, as drivers are subjected to long working hours and are away from home for extended

periods. They often do not have proper access to basic facilities, dehumanizing the job of drivers and making it unattractive option. Further, research suggests that due to the non-transparent driver licensing system, drivers joining the workforce are not adequately skilled. Industry executives have voiced their concern on driver training infrastructure being inadequate.

A survey was conducted during the making of this report, which indicated that the Indian automotive sector has a high potential for automation, mainly because of massive inefficiencies across the automotive value chain. However, most of the value addition is taking place in the auto component sub-sector, which engages a relatively low to unskilled workforce. It may be easily derived that it is unlikely that the Indian automotive sector will experience massive job loss due to the adoption of Industry 4.0 technologies. Further, the supply of a low-cost labor force will continue to hold the pivot for the Indian automotive workforce against any disruptive adoption of exponential technologies. However, jobs within OEMs are expected to see a change in the skillset due to the organized nature and potential for automation of OEMs.

A major concern of the industry is focused on the skill shortage and the ability of the current workforce to adapt to the changing industry dynamics. The pace of change in the technology and changing consumer demand patterns are leading to potential skill gaps. Our interaction with industry executives suggested that apprenticeship may be a robust program to meet the requirements of a qualified workforce. However, a deeper investigation suggested that the current practice of implementing apprenticeship programs in the automotive sector is prevalent only among the OEMs and tier 1 and tier 2 auto component manufacturers. The apprenticeship system within these segments is well established because of these players being pioneers in the country in undertaking apprenticeship as a method to supplement workforce demand. Discussion with employers suggested that as apprenticeship is driven by employer demand, the chances of a mismatch between skills taught and supplied and skills demanded in the work place are less likely to occur than when training is provided in school, industrial training institutes (ITI) or a polytechnic-based course.

However, even within the mentioned segments, apprenticeship programs are initiated and managed exclusively by the sector's players, who are disassociated with the apprenticeship promotion schemes of the government like the National Apprenticeship Promotion Scheme (NAPS), National Employment Enhancement Mission (NEEM) and the Employability Enhancement

Training Program (EETP), among others. Because major employment providing segments of the automotive sectors – dealership sales and service, are completely oblivious to apprenticeship programs, it is important to expand the scale of apprenticeship training within these segments and provide more workers the opportunity to enter via formal employment routes.

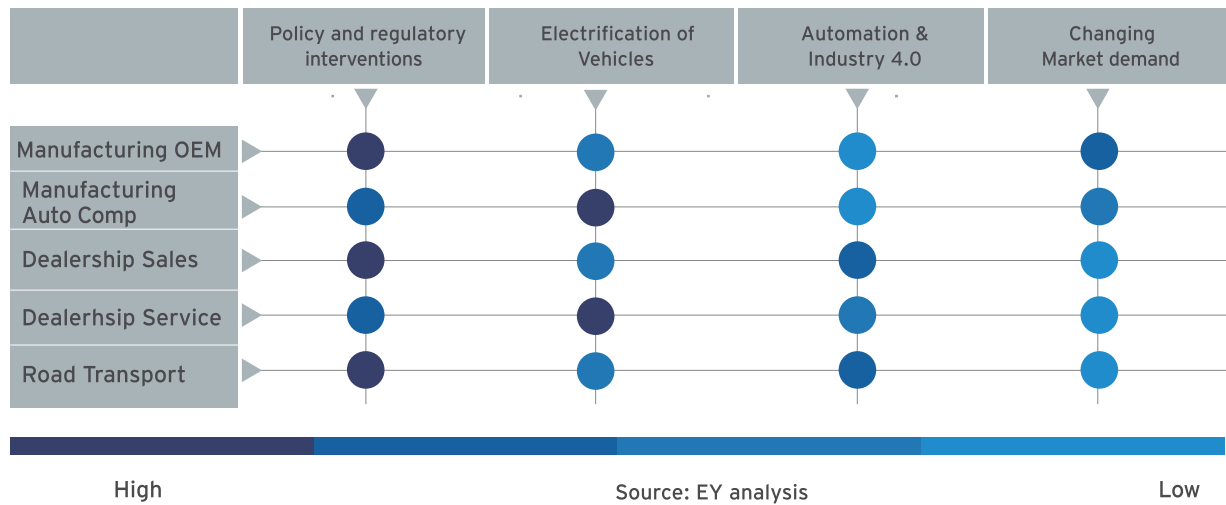
Further, the nature of manufacturing is continuously changing across the automotive value chain. Sector players have therefore, highlighted their critical focus on reskilling the current talent and paving the way forward to upgrade their skills. The sector is seeing a renewed interest in upskilling and reskilling of the current workforce across the sector, with multiple initiatives aimed at building a learning culture within the workforce.

Our analysis on the supply side of the spectrum of the automotive sector suggested that the sector players mainly meet their workforce demand through the higher education sector, technical and vocational education segment and the Not in Educational and Employment (NEET) segment.

Besides the NEET segment, an analysis of the other two segments, higher education and TVET suggest that these segments differ in many ways, particularly in their approach to learning and student profiles. TVET learning is competency-based and the higher education segment is knowledge-based. The sector's learning and instruction modes are closely linked to the desired employment outcomes for each sectors' graduates. Due to this, the students coming out of these modes have an aspiration for jobs, either with OEMs or tier 1 auto component manufactures, and to an extent with OEM-owned/ larger vehicle sales dealerships. This scenario leaves the other major employment generating sectors – dealership services, tier 3 and tier 4 auto component manufactures dependent on the NEET segment to meet their workforce requirements. Interactions with players in the lower tiers of auto component manufacturers, dealership sales and service players and transport fleet owners suggest that the skilling infrastructure is currently highly constrained and lacks capacity to meet demand. This makes a compelling case for policy makers, sector players and the ASDC to develop skilling capacity for the NEET segment making up a majority of the supply base for the automotive sector.

Therefore, given the above background there is an immediate requirement to skill/upskill the workforce or the country may automate before they educate, leading to jobless growth.

Figure 1- Trends affecting employment and value chain of the automotive sub-sectors



In this report, EY brings together:

1. Primary research conducted through extensive interactions with industry personnel;
2. Secondary research through detailed review of industry reports, news articles and expert opinions;
3. Numerical evidence through rigorous analysis by EY’s internal team of experts, to present a comprehensive report on the skill gap in the Indian automobile industry.

The report is divided into four sub-sectors to accurately explore the technological and market trends that each sub-sector faces and the respective skill gap that must be bridged. We also tracked the demand-supply dynamics of each sub-sector to provide a better guide towards long term planning.

The sub-sectors are:

- 01 Manufacturing and R&D (OEM, auto component manufacturers, raw material suppliers)
- 02 Dealerships sales
- 03 Dealerships servicing
- 04 Road transportation

Table 1: Summary of new, endangered and reskilling jobs in the various sub-sectors of the automotive industry.

Sub-sectors of automotive industry	New jobs	Endangered jobs	Jobs which will require major reskilling
Manufacturing and R&D (OEM, auto component manufacturers, raw material suppliers)	<ul style="list-style-type: none"> ▶ Electromechanical technician ▶ Electronics technician ▶ Networks and computer system applications ▶ Operators to manage robots and programming ▶ Equipment maintenance technician ▶ Operations and maintenance data analyst ▶ Industrial machine builder, mechatronics ▶ Motor control engineer 	<ul style="list-style-type: none"> ▶ Routing and simple assembly job ▶ Routine machine loading/unloading ▶ Logistics – internal material transfer and storage ▶ Paint application ▶ Manual spot welding ▶ Packing executive ▶ Welding assistant ▶ Production (forging) ▶ Tool room operator ▶ Production machining 	<ul style="list-style-type: none"> ▶ Machining ▶ Maintenance (mechanical and electric) ▶ Assembly and fitter (aggregate) ▶ Welders and body process ▶ Assembler and fitter ▶ CNC machining and casting
Dealership sales	<ul style="list-style-type: none"> ▶ Home sales consultant ▶ Sales consultant digital marketing ▶ Digital content writer ▶ E-outlet sales consultant 	<ul style="list-style-type: none"> ▶ Accessories manager ▶ Sales person ▶ Washing boy 	<ul style="list-style-type: none"> ▶ Sales consultant
Automobile service OEM authorized service centers and road side mechanics)	<ul style="list-style-type: none"> ▶ Auto expert technician ▶ Advance paint technician ▶ Battery technician ▶ Electric vehicle technician ▶ Predictive analyst 	<ul style="list-style-type: none"> ▶ Engine repair technician ▶ Service technician ▶ Sanding and priming jobs 	<ul style="list-style-type: none"> ▶ Service technician
Road transport: EV charging station	<ul style="list-style-type: none"> ▶ Charging attendant/ Station supervisor ▶ Car washer/ tyre inflator/ puncturers repair ▶ Security guard ▶ Field Failure failure Analysis analysis engineer ▶ Customer support engineer 		
Road Transport (New Skills required by commercial vehicle and cab drivers as a complementary skill to driving)	<ul style="list-style-type: none"> ▶ Hospitality ▶ Loading/Unloading ▶ Handling hazardous materials ▶ Basic mechanics ▶ Tablet computer training ▶ Financial management ▶ Vehicle detailing ▶ Self-motivation training ▶ Transportation management training 		

Source: EY Analysis

1.1. Summary of manpower projections from 2019 till 2026

- ▶ The industry has provided direct and indirect employment to 32¹ million resources in 2018.
- ▶ By 2026, it is expected 45.08 million people will be employed in this industry, creating additional employment for around 35 million people in 2026.
 - ▶ Around 15 million jobs will be created due to natural growth factors.
 - ▶ Around 20 million jobs will be created due to year-on-year employee replacement.

Table 2: Projected employment 2019-2026 (all figures in million)

#	Sub Sector	2018	2019	2020	2021	2022	2023	2024	2025	2026
1	Manufacturing & R&D	4.14	3.98	4.30	4.64	4.89	5.16	5.45	5.75	6.07
1.1	OEM	.33	.30	.31	.32	.33	.34	.37	.40	.42
1.2	Auto comp	1.75	1.68	1.81	1.95	2.05	2.15	2.25	2.36	2.48
1.3	RM	2.06	2.0	2.18	2.38	2.52	2.67	2.83	2.99	3.17
2	Dealership sales	3.0	2.71	2.78	2.89	3.0	3.17	3.43	3.64	3.86
3	Vehicle service total	5.05	5.37	5.64	5.84	6.02	6.23	6.50	6.78	7.09
3.1	Authorised service center	2.0	2.12	2.23	2.31	2.38	2.47	2.57	2.68	2.80
3.2	Road side mechanics	3.05	3.25	3.41	3.53	3.63	3.76	3.93	4.10	4.29
4	Road Transport	17.22	18.68	19.93	20.96	21.88	23.08	24.63	26.26	28.06
	Total	29.41	30.74	32.65	34.33	35.80	37.64	40.01	42.44	45.08

Source: EY analysis

¹https://dhi.nic.in/writereaddata/DHI_2017-18_annual_report/files/downloads/HEAVY%20ENGLISH%20ANNUAL%20REPORT%202017-18.pdf

²EY Analysis

Table 3: Incremental human resource requirement from 2019-2026 (All figures in million)

#	Sub Sector	Additional employment through natural growth	Replacement	Total
1	Manufacturing & R&D	1.93	1.61	3.55
1.1	OEM	.09	.11	.21
1.2	Auto comp	.73	.67	1.94
1.3	RM	1.11	.83	2.18
2	Dealership sales	.86	1.03	1.89
3	Vehicle service total	2.09	1.99	4.08
3.1	Authorised service center	.83	.79	1.61
3.2	Road side mechanics	1.26	1.20	2.46
4	Road Transport	10.84	15.53	26.36
	Total	15.72	20.16	35.88

Source: EY analysis

Summary of recommendations



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2.1. Summary of recommendations for the government

- ▶ Provide support to the competitiveness-enhancing initiatives of corporates in order to spur growth in the sector and boost employment
- ▶ Assist in building the workforce capacity of sub-sectors – especially vehicle services and commercial vehicle drivers by linking it to the Skill India Mission
- ▶ Promote apprenticeship among the largely unorganized tier 2 and tier 3 auto component manufacturers and the unorganized vehicle service segment
- ▶ Promote the recognition of the prior learning (RPL) route to create alternative career pathways
- ▶ Make the job of a commercial driver aspirational by investing in their capacity building and improving working conditions
- ▶ Support the different sub-sectors to utilize their in-house training capacity for upskilling and reskilling
- ▶ Support skilling of industry workforce on Industry 4.0
- ▶ Collaborate with and incentivize the industry to skill for Industry 4.0
- ▶ Create a fund to promote joint new technology or business model proposals from industry and academia
- ▶ Formulate life-long learning strategies and drive behavioral change among citizens to facilitate life-long learning

2.2. Recommendation for the industry

- ▶ Create collaborative learning ecosystems for the automotive sector
- ▶ The ASDC, in collaboration with national and global industry and institutional partners, must create an integrated framework to meet the imminent skill demand in the future
- ▶ Develop workforce retraining programs across organization levels
- ▶ The ASDC should support the unorganized segment – tier 3 and tier 4 auto component manufacturers and dealership services – in aggregating their workforce demand for apprenticeship
- ▶ The ASDC should support and actively engage with the labor-intensive sub-sectors such as dealership sales and service
- ▶ The industry needs to contribute towards the goal of creating a future-ready, skilled pool of manpower
- ▶ Work in close partnership with the government to ensure the success of its efforts to take advantage of the Skill India mission
- ▶ Evaluate building centers of excellence for emerging technologies
- ▶ Industry-academia collaboration for better demand-supply matching
- ▶ Industry-led upgradation of qualification packs
- ▶ Engage unorganized roadside garages in skilling initiatives
- ▶ Implement job rotation at a larger scale
- ▶ Support the largest employment providing segment of commercial drivers

2.3. Recommendations for academia

- ▶ Collaborate with industries
- ▶ Program upgradation of ITIs
- ▶ Focus on cognitive/judgement-driven skills

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