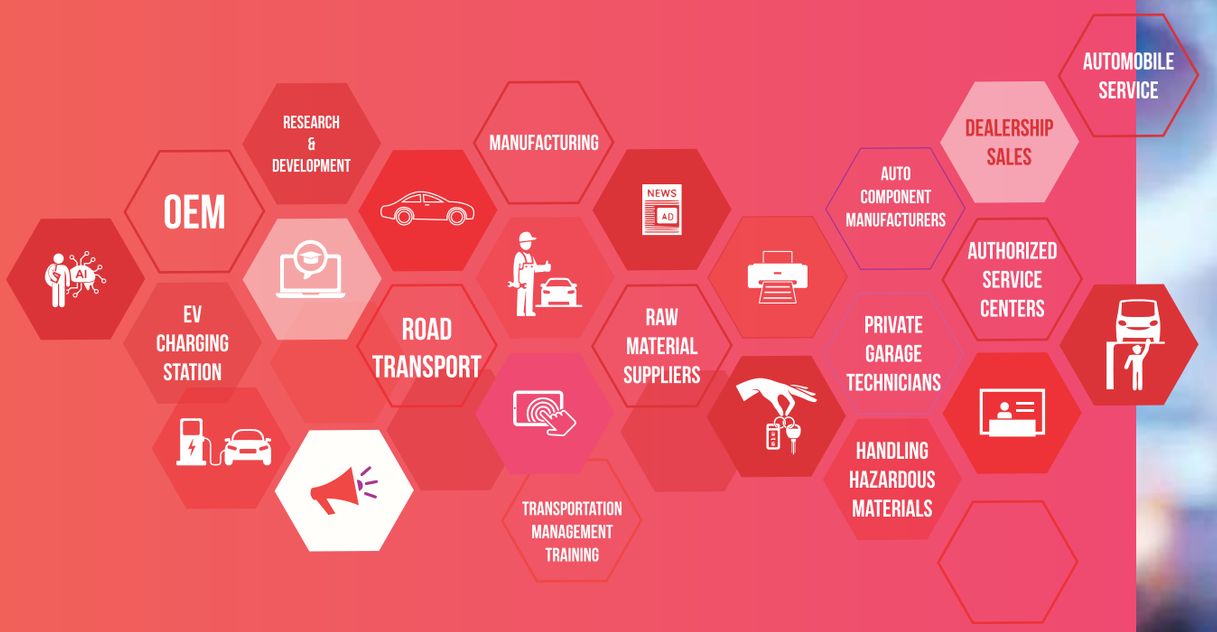

CAREER GUIDE

2022

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Skill India

ASDC
AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

Shri Narendra Modi

Hon'ble Prime Minister of India

"While education tells us what to do, skill guides us in the actual operational implementation and this has been the guiding principle of Skill India Mission."

Shri Dharmendra Pradhan

Hon'ble Minister of Education and Minister of Skill Development and Entrepreneurship, GOI

"The economy is growing at a rapid pace and the future of India is looking very promising. Building skill capacity is a key to enhance productivity and drive the economy"

ABOUT AUTOMOTIVE INDUSTRY

The Indian Automotive Industry is one of the fastest-growing markets of the world and contributes significantly to the country's manufacturing eco-system. The future workforce of this industry will need to work on a series of non-routine tasks that require social intelligence, complex critical thinking and creative problem-solving ability to remain relevant in the auto industry.

The Automotive Industry is an important part of the Indian economy, it is the fourth largest in the world with an annual turnover of $100 billion and employs 37 million people contributing to 7% to the country's GDP. This consists not just dealership but vehicle manufacturers, parts suppliers, and related businesses including 2-Wheelers, 4-Wheelers, Passenger Vehicles and Commercial Vehicles

Changing market demand: The launch of smart, connected vehicles points towards the presence of more Electrical and Electronics parts in newer vehicles. To meet up with this trend Original Equipment Manufacturers (OEMs) /Auto component manufacturers now also require electronic and electrical engineers, Telematics, Vehicle Networking, Automation, Artificial Intelligence (AI), Internet of Things (IoT) specialists and Data Analytics.

In the coming decades, the automotive industry will undergo a substantial transformation:

Vehicles it build and the companies that build them will require different skill sets as the needs of the consumers who buy them will change with time.

Disruptive changes brought in by technology advancements are drastically changing the current job landscape with the impact ranging from job creation to job displacement & increased labour productivity to widening of skill gaps.

The future workforce will need to work on a series of non-routine tasks that would require social intelligence, complex critical thinking, and creative problem solving to remain relevant in the auto industry.

ASDC AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL | ACMA Automotive Component Manufacturers Association | SIAM Society of Indian Automobile Manufacturers | FADA Federation of Automobile Dealers Association

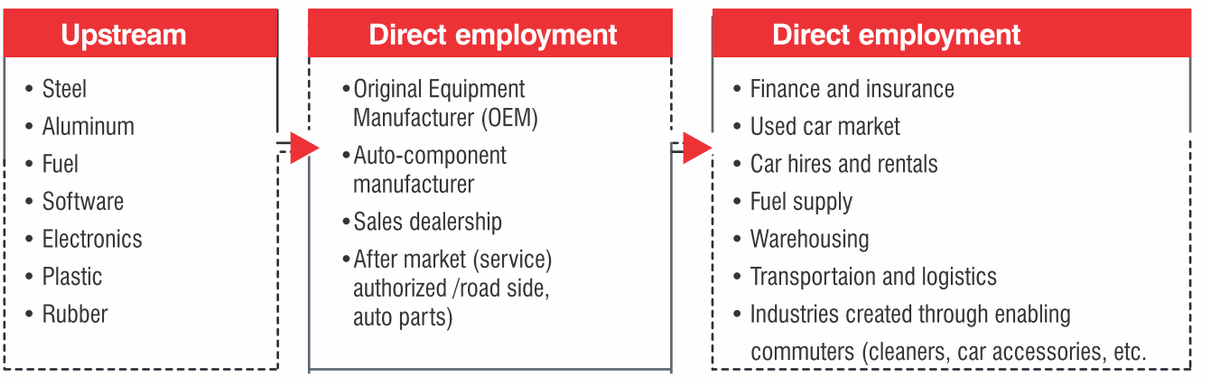
Automotive sector value chain

Automotive sector supports various business segments both in its upstream and downstream value chain. Every vehicle produced in the industry creates forward and backward employment linkages in associated industries. The automotive value chain is depicted as below:

Upstream: The upstream comprises of industries providing raw material and services to vehicle and component manufacturers

Downstream: The downstream comprises of industries that are involved post-production and sales of vehicles

Direct employment: this includes companies that are directly involved in the manufacturing of vehicle and its components, vehicles sales and service



Source: EY Analysis

This study focuses on the analysis of skill gap in the following segment of the value chain:

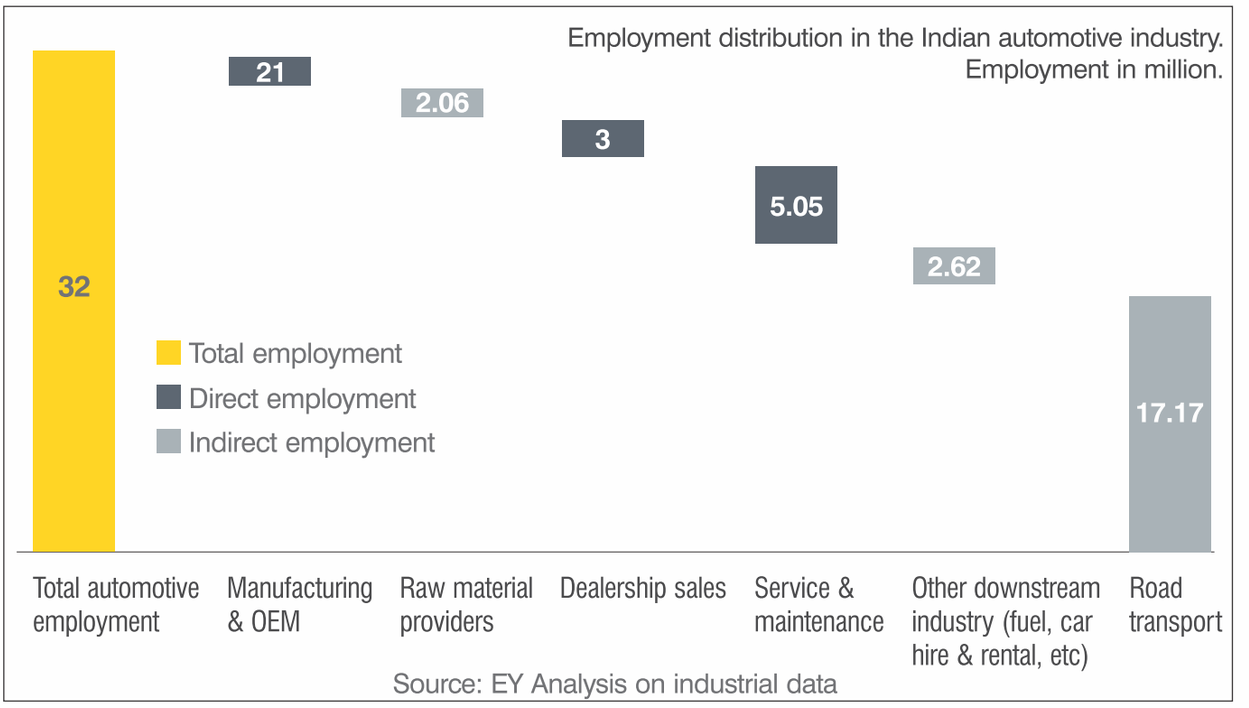
- **Manufacturing and R&D:** This segment comprises of OEM and Auto component manufacturers
  - OEMs are focused on designing vehicle, promoting vehicular mobility solutions.
  - Auto component manufacturers primarily includes manufacturers of automobile components or parts required in manufacturing automobiles. This sub sector is primarily divided into four segments tier 1, tier 2, tier 3 and tier 4.
    - Tier 1 suppliers are companies that supply parts or systems directly to OEMs.
    - Many firms supply parts that are used in cars, even though these firms themselves do not sell directly to OEMs. These firms are referred to as tier 2 suppliers.
    - Tier 3 and tier 4 refers to suppliers of raw, or close-to-raw materials, like metal or plastic. OEMs, tier 1 & tier 2 companies all need raw materials, so the tier 3's supply all levels. Tier 3 & tier 4 are part of the upstream value chain.
- **Dealership sales** are local vehicle distribution channels, owned & operated as individual businesses. These sales outlets are authorized by OEM vehicle manufacturers to sell new or used vehicles. This sub sector of the automobile industry also looks at vehicle finance and insurance.
- **Dealership services** are locally owned businesses comprising of OEM authorized service center & road side garages. These setups provide vehicle service, tunexups, scheduled maintenance & repair of vehicles. The sub-sector is also involved with the sales of automobile spare parts and process of warranty claims.
- **Road transport** segment comprises of transport and logistics, fuel outlets, two-wheeler ecommerce delivery agents, chauffer/taxi drivers, commercial vehicle operators

Direct & Indirect Employment Distribution

According to Department of Heavy Industry (DHI) the automotive industry employed more than 32 million people both directly & indirectly.

Direct employment: Includes personnel working with automobile manufacturers (OEM) and auto component manufacturers.

In-direct employment: Personnel working in the upstream and downstream industries



Source: EY Analysis on industrial data

Disruptive industry trends

But will the 54million be skilled enough to support Industry 4.0, automation & new technologies like electric vehicles?

The projected 54 million jobs by 2026 include both direct and indirect jobs . However, given the movement of the automotive industry towards higher involvement of technology and new concepts like electric vehicles (with lesser number of moving parts and lesser need for maintenance), the number of routine and unskilled jobs are slated to reduce. Automation and Industry 4.0 demand new skill sets, which the current training facilities might not be ready to dispense, or the candidates may not possess the threshold qualifications for these skill sets. In the future, current skills that may become obsolete, will lead to: (a) Endangering of jobs; (b) Development of new skills leading to the fulfilment of new evolved job requirements, thus continuing the old job, or take up a new job.

Key Trends

Manufacturing trends

Industry 4.0 will disrupt the value chain of current auto manufacturing industry. It will bring with it:

- Additive manufacturing
- Industrial robotics
- Industrial internet of things
- Next generation MES

Government interventions

- Vision statements and initiatives : AMP 2026, FAME 2, Corporate Average Fuel Economy (CAFÉ)
- Regulations : BS VI, mandatory ABS in 2W, airbags, 150 CC and below 2W segment to be electric by 2023, etc

Changing market demand

- Shifting mobility preference
- Awareness about vehicle safety features Well informed and prepared vehicle buyer
- More inclination towards automated, connected, electric, and shared vehicles

a) Manufacturing trends:

With the increase in the use of technology, automation, Industry 4.0 & electrification of vehicles, new methods of manufacturing will render routine jobs obsolete and will demand a higher degree of skill for emerging job roles.

Electrification of vehicles brings about a new product class that requires less labor to build and maintain. There will be an increase in jobs due to new technology, need for speedy & large-scale adoption of the technology, skills to customize designs, etc.

Bottom of the pyramid job roles requiring lower skill levels will be endangered.

b) Changing market demands:

Customers are becoming more informed & demand a better class of services; this automatically increases the level or degree of skills required to dispensesuch service.

Shift in customer preference from owning cars to shared mobility.

Increase in the demand for omnichannel experience.

Shift towards autonomous, connected & electric (ACE) cars raises the bar for the skill level of workforce.

c) Government interventions:

Relaxation of taxes would lead to boosting manufacturing.

Policy initiatives towards facilitating exports & imports.

R&D in the sector facilitated through government grants and R&D cost waivers.

Directives such as emission norms and safety norms to create technology and skill challenges for the industry

Key job role evolution New job roles

Equipment Maintenance Technician

- Install, maintain and repair mechanical and electrical systems, factory automation and robotics
- Perform Preventative Maintenance (PM) on all industrial production and mechatronics equipment
- Perform Corrective Maintenance on Electrical systems, Mechanical Systems, Conveyor Systems, Hydraulics, Pneumatics, OLC and networks, Robotics

Operations & Maintenance Data Analyst

- Assist with software development, form requirements gathering & architecture, through coding, testing & deployment
- Development, enhance and critique data processing techniques to evaluate performance and find malfunctions
- Evaluate energy generation performance of components
- Perform comparative analyses between equipment manufacturers
- Mine raw data to identify trends in equipment reliability, installation quality, degradation, etc.
- Create reports and presentations for upper management, finance partners and others
- Write scripts, macros and programs to automate routine analyses and actions

Industrial Machine Builders, Mechatronics

- Building, customizing, testing & installing highly custom automated production equipment at manufacturing operations
- Perform mechanical assembly, electrical panel wiring, field wiring, troubleshooting and machine integration of industrial mechatronics equipment
- Work from mechanical/electrical drawings or verbal instruction
- Work with engineering to optimize equipment performance and related continuous improvement activities

Motor Controls Engineer

- Model, design, implement, test and benchmark the motor controls of traction motor drives.
- Understand, drive design of, and implement motor controller functionality, behaviors, and algorithms
- Develop, test, and validate motor control algorithms in the laboratory and in-vehicle
- Strong fundamentals of AC electric motors and drive system analysis, modelling and control. Basic proficiency with embedded firmware development in C/C++

Source: EY Analysis based on industry survey

Packing executive | Total room operator | welding assistant | Production (forging) | Production (machining)

Source: EY Analysis based on industry survey

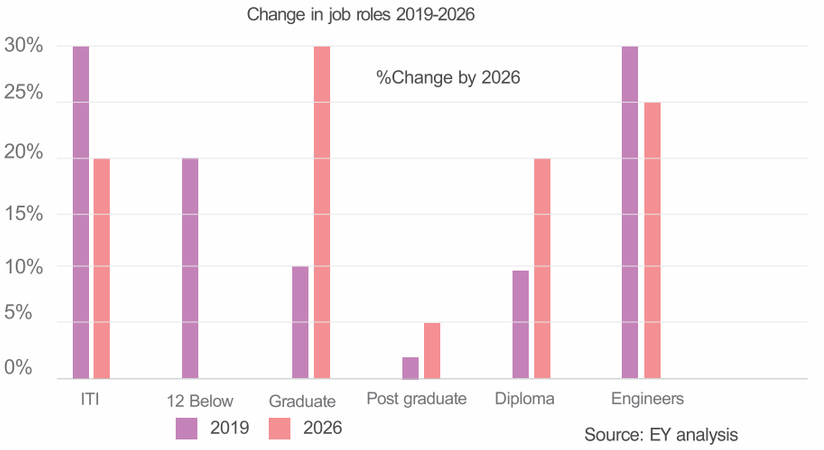
• Skill set requirements of key existing job roles: Production (forging) and machining component comprises more than 75% of the blue-collar jobs in an auto component manufacturing organization.

CNC machining and casting: Setup and operate CNC mills, lathes and fabrication of equipment.

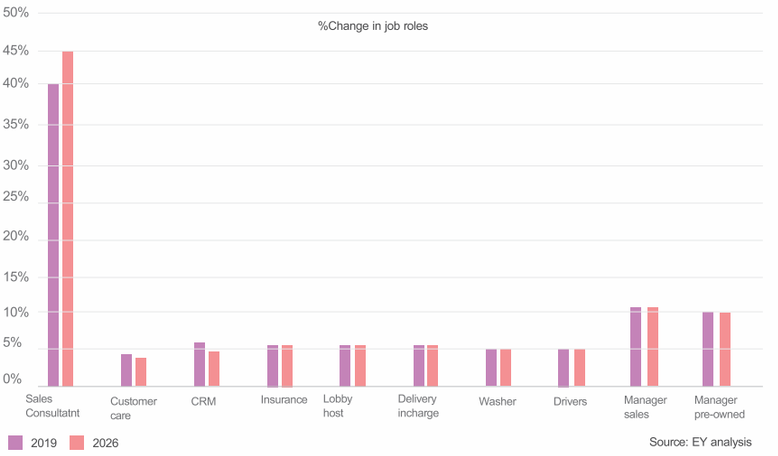
New skills required

- Operate 3-axis, 4-axis and 5-axis vertical machining centers and boring mills.
- Program 2D manually, setup & operate CNC milling machines.
- Provide crucial input on design, optimization & production for machining, manufacturing & assembly.
- Review electronic or paper blueprints to ensure parts meet specifications.
- Program & setup multi axis CNC vertical mills & CNC lathes.
- High speed machining and toll path optimization.
- Excellent written & verbal communication skills & people skills, comfortable presenting ideas & issues to peer & supervisors.
- Mastery of high-speed machining & toll path optimization.
- Ability to machine complex and high tolerance components.
- Work with material like: aluminum, stainless steel, steel, plastics, copper, brass, cast iron and silicates,
- Microsoft office, word and excel.
- CAM programming software.

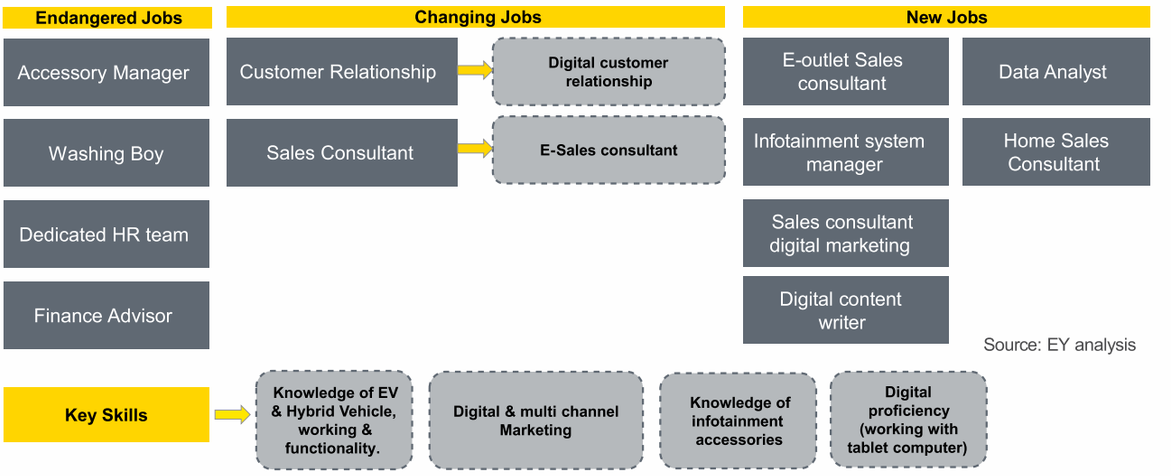
Impact on jobs and skills



Impact on jobs and skills



Key job roles evolution



NEW & RESKILLING JOBS

IN THE VARIOUS SUB-SECTORS OF THE AUTOMOTIVE INDUSTRY

Sub-sectors of automotive industry	New jobs	Jobs which will require major reskilling
Research & Development R&D and Manufacturing (OEM, Auto Component Manufacturers, Raw Material Suppliers)	• Mechatronics Technician • Electronics Technician • Automation and Robotics Engineer • Equipment Maintenance Technician • Automotive Data Analyst	• Machining • Maintenance (Mechanical and Electric) • Automotive Test Technician • Welding • Vehicle and Component Assembly • Casting • Painting Process
Dealership Sales	• Home Sales Consultant • Sales Consultant Digital Marketing • Digital Content Writer • E-Outlet Sales Consultant	Sales Consultant
Automobile Service OEM Authorized Service Centers and Private Garage Technicians)	• Auto Expert Technician • Advance Paint Technician • Battery Technician • Electric Vehicle Technician • Predictive Analyst	Service Technician
Road Transport EV Charging Station	• Charging Attendant / Station Supervisor • Car Washer / Tyre Inflator / Punctures Repair • Field Failure Analysis Engineer • Customer Support Engineer	
Road Transport (New Skills required by Commercial Vehicle and Cab Drivers as a complementary skill to driving)	• Hospitality • Loading / Unloading • Handling Hazardous Materials • Basic Mechanics • Tablet Computer Training • Financial Management • Vehicle Detailing • Self-motivation Training • Transportation Management Training	

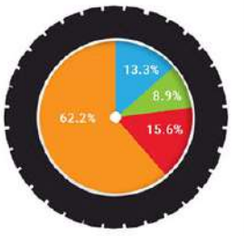
The Sub Sectors providing direct Employment

The break-Up of Employment Projection Sub Sectors wise estimated:

In India, almost 30% of Employment is contributed by Auto Sector. Below chart represents the domains which provide employment opportunities in Automobile Industry

R&D and Manufacturing
Automobile Sales
Automobile Service
Road Transport

Employment projected as per 2019

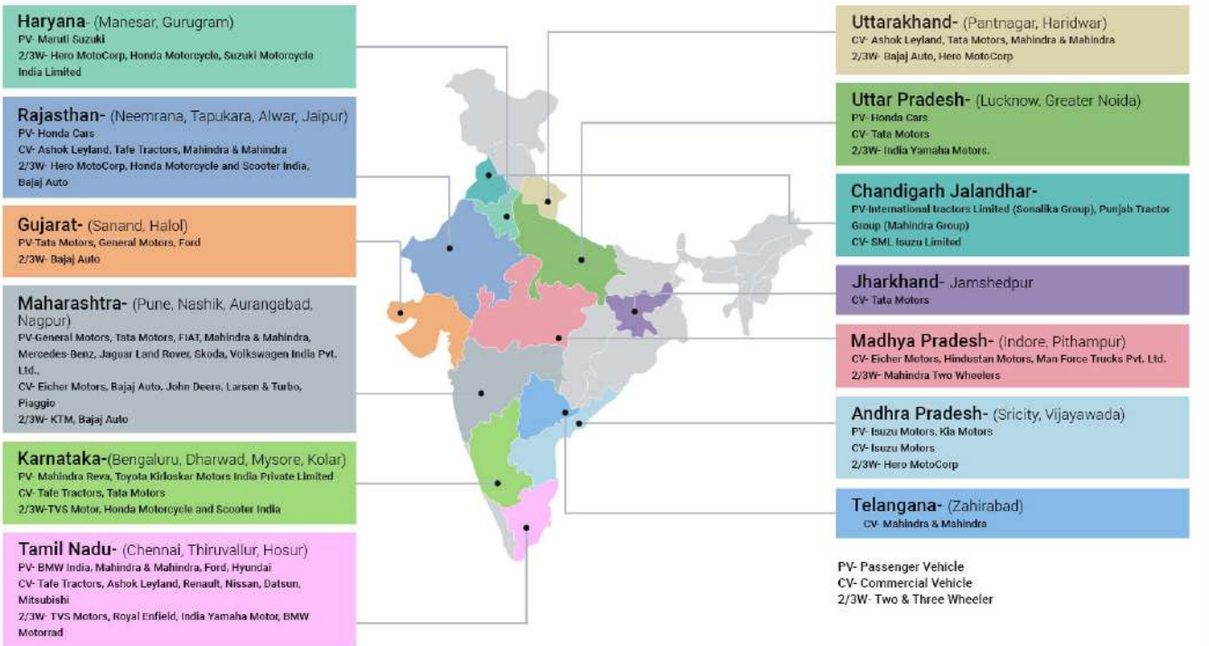


R&D and Manufacturing
Automobile Sales
Automobile Service
Road Transport

Employment projection till 2026

Source: EY analysis

Automobile Manufacturing clusters – Geographical locations



Source: EY analysis

RESEARCH & DEVELOPMENT (R&D)

RESEARCH & DEVELOPMENT:- Research and development (R&D) means set of activities that any company undertakes to innovate and introduce new products and services. The organization needs to follow development steps, starting from concept creation, prototyping, product designing and testing, before mass production and new product launch.

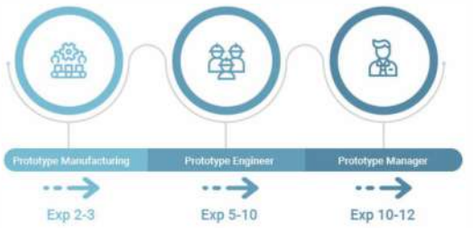
- R&D allows a company to stay ahead of its competition
- Without an R&D program, a company may not survive on its own

Course in R&D :

- Prototype Manufacturing Executive
- Manager – PLM (Product Lifecycle Management)
- Prototyping Engineer
- Product Testing Technician
- Product Testing and Validation Manager
- New Product Development Engineer
- RESEARCH & DEVELOPMENT

Education and Experience criteria of Research & Development shown below

S.No.	SKILLS	JOB ROLES	NSQF LEVEL	EDUCATION QUALIFICATION	LOCATIONS (Years)	MIN EXPERIENCE SALARY (INR.)	EXPECTED
1	Research & Development	Prototype Manufacturing Executive	4	ITI, Diploma	PAN INDIA	3-5 Years	30000-35000
2	Research & Development	Prototyping Engineer/Automation and Robotics Engineer	6	ITI, Diploma	PAN INDIA	5-10 Years	35000-40000
3	Research & Development	Prototyping Manager PLM (Product Lifecycle Management)	7	Diploma/BE/B.Tech (Mechanical & Automobile)	PAN INDIA	10-12 Years	40000-45000



ROAD TRANSPORTATION

WHAT IS IT LIKE BEING A CV DRIVER?

- Commercial driver can drive commercial as well as private vehicles.
- Not only do they provide their services to organizations, they also handle customers and report mechanical issues with their vehicles for optimum vehicle performance, reliability and longer life as well as to build a trusting relationship.
- They can become drivers to shift vehicles within dealer's facilities etc.,

JOB DESCRIPTION

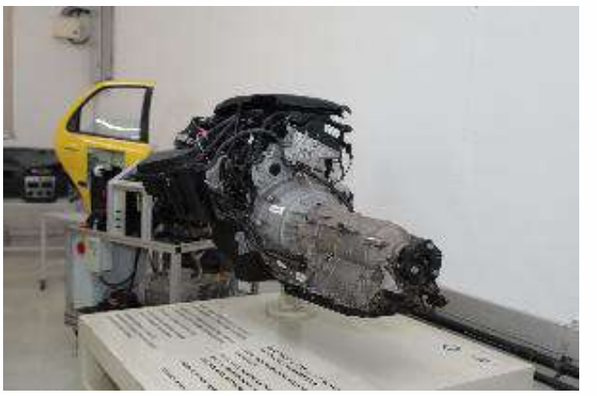
CV driver uses commercial vehicles for transportation.

- Perform daily inspection of vehicle.
- Drives by following all rules and law specified for them
- They take all safety precautions while driving
- Coordinate with control room and superiors
- Should be able to follow all norm setup be organization, HSE precautions etc.

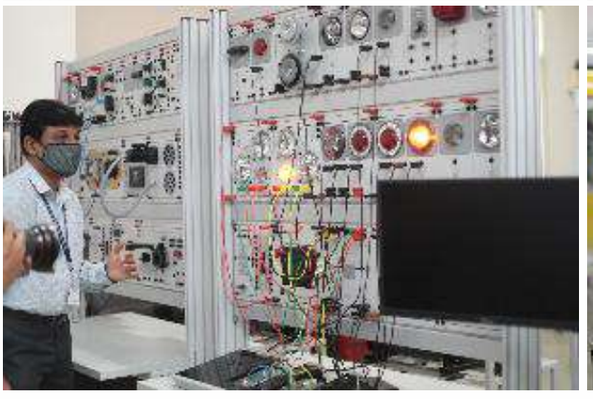
GROWTH POTENTIAL AND OUTLOOK

- Driver to Fleet Manager.
- Advancement to self–employment i.e. owning own vehicle
- Locations: PAN INDIA (The job opportunities in driving domain are there across globe)

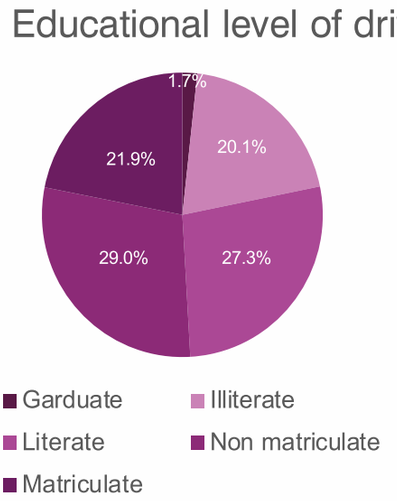
Road Transportation Career Progression

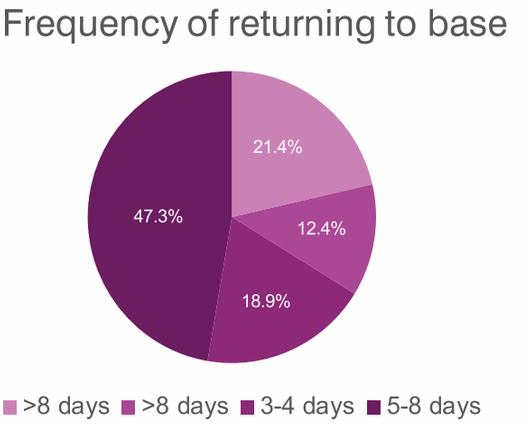



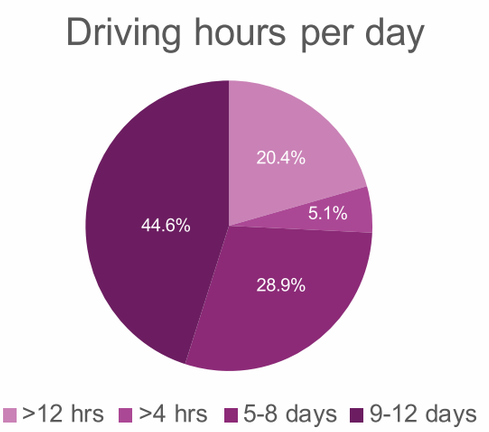


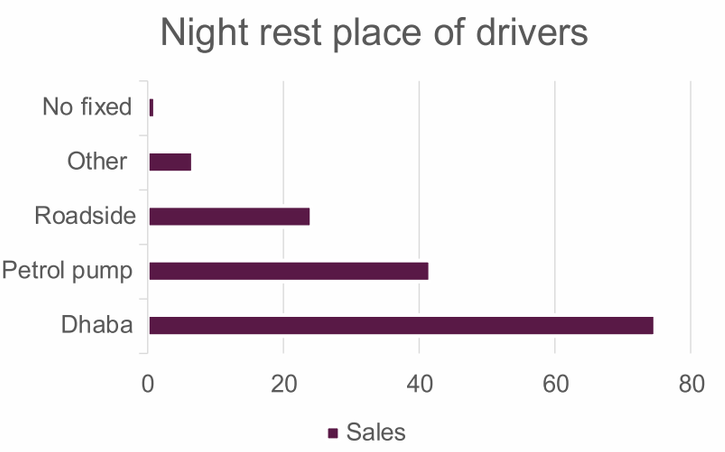




Statistics of education levels, frequency of returning to base, driving hours per day, night rest places of drivers









Source: EY Analysis

The industry accepts that the driver should be viewed as an important asset of the company. The vehicle as well the in-transit goods' worth economic and strategic value (to the destination or recipient) are in the driver's custody. Despite agreeing on this notion, much has to be done for the betterment of the working and financial conditions of drivers to inspire the drivers or their future generations to continue in this profession. Hence this sector is in a dire need of technological innovation, government interventions, and implementation of better industry standards.

Number of drivers migrated countries

Migrated from	Number of drivers (2017)
Uttar Pradesh	8568
Andhra Pradesh	4848
Rajasthan	2829
Bihar	2636
Tamil Nadu	2262
Punjab	2067
Kerala	1699
West Bengal	1189
Telangana	1084
Maharashtra	698
Karnataka	614
Assam	564
Jammu & Kashmir	554

Incremental human resource requirement

Global demand for commercial vehicle derivers which can be fulfilled by Indians

Total drivers required in GCC till 2025: 2,70,000 commercial vehicle drivers.

Table 18 Yearly requirement of drivers globally.

Year	2019	2020	2021	2022	2023	2024	2025
Requirement ('000)	33	34	36	38	40	42	44

Drivers year-on-year employment (Employment in Million)

Table 19: Year on year driver requirement

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026
Commercial Vehicle Driver	6.80	7.56	8.20	8.74	9.16	9.73	10.51	11.40	12.32
3-Wheeler Driver	9.42	10.03	10.54	10.93	11.30	11.81	12.43	13.03	13.73
Cab Driver	1.0	1.09	1.19	1.30	1.41	1.54	1.69	1.84	2.01
Total Employment	17.22	18.68	19.93	20.96	21.88	23.08	24.63	26.26	28.06

Employment getting generated from fuel pump stations

Given the aggressive growth in expansion of number of fuel stations, it is expected that this will drive the employment within this sub segment, exponentially.

Table 20: Employment projection in conventional fuel pump

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026
Fuel Pump	1.0	1.06	1.12	1.19	1.26	1.33	1.41	1.50	1.59

Source: EY Analysis

4. Vehicle driver:

Every driver will be expected to have at least one extra complementary skill in addition to driving. These skills will create a new generation of drivers, provide structured career paths and make the career more aspirational. A permutation and combination of the skills mentioned below can be imparted to drivers' basis their driving requirements.

Hospitality	People Skills: Ability to communicate with clarity and confidence to interact with customers Personal Attributes: Polite and friendly nature to make customers feel welcome
Loading/ Unloading	Loading and unloading baggage that customers might be carrying with care.
Handling Hazardous Material	Precision: Handling chemicals and other equipment with care. Knowledge: Having the required informational capital to handle any faults, ie. Machine faults, chemical leakages etc.
Basic mechanics	Knowledge: Having the required information to troubleshoot in an event that the vehicle faults.
Tablet Computer Training	GPS Reading: Knowledge regarding use of GPS and satellite applications Route Optimization: Using technology and insight to minimize time and maximize effciency during a commute
Financial Management	Financial Literacy: Ability to make money-related decisions Ability to manage personal finances Ability to use technology based financial applications
Vehicle Detailing	Cleaning: Cleaning interiors and exterior to maintain hygiene and presentability.
Self-Motivation Training	Education – Educating the drivers on life-skills will lead to personal empowerment Realization of Purpose
Transportation Management training	Responsibilities for transportation of cargo & day-to-day operations Ability to resolve all the challenges that arise in the transport department. Overseeing the timely maintenance checks of all the vehicles In-charge of setting the routes for the vehicles, dispatch of the buses, working out their schedule, and managing the driver.

Source: EY Analysis

SERVICE

Service means carrying out scheduled Service/maintenance jobs over vehicles for obtaining optimum performance, reliability & longer life. Jobs of minor repairs/major repairs/overhauling either on chargeable basis or on free of cost (as per OEMs' warranty policies, if the vehicle is under warranty period). Repair of body and other aggregates caused by accident are also undertaken.

Generally, there are two occupations in Service-

- Vehicle Mechanical/ Electrical repair/Body Repair and Painting (Technical Service and Repairs)
- Spare Parts Operation

Role wise functions in the Auto Workshop

Technical Support

Automotive Washer - Washing scrubbing and polishing the vehicle exterior and cleaning interiors

Automotive Service Technician - Carrying out Scheduled Servicing jobs like change of lubricants/cleaning or replacing filters/minor adjustments & repairing the mechanical & Electrical aggregates of the vehicle as per the job card-

Automotive AC Technicians - Repairing of Engine/Brake/Clutch/AC

Lead Technician - Carrying out diagnosing of the faults and carrying out major repairs/overhauling of aggregates

Master Technician - Carrying advanced diagnosis and repairs (Mechanical & Electrical) and imparting training to other technicians

Automotive Electrician - Specialized repairing in electrical and electronics systems

Auto Body Repair Technician/Denter - Repairing the body and frame of a vehicle due to major/ minor accidents

Auto Paint Assistant - Applying paint & other coatings over vehicle body

Automotive Service Quality Controller - Inspection during the repairs and Inspection of vehicle after servicing /repairs

Service Support

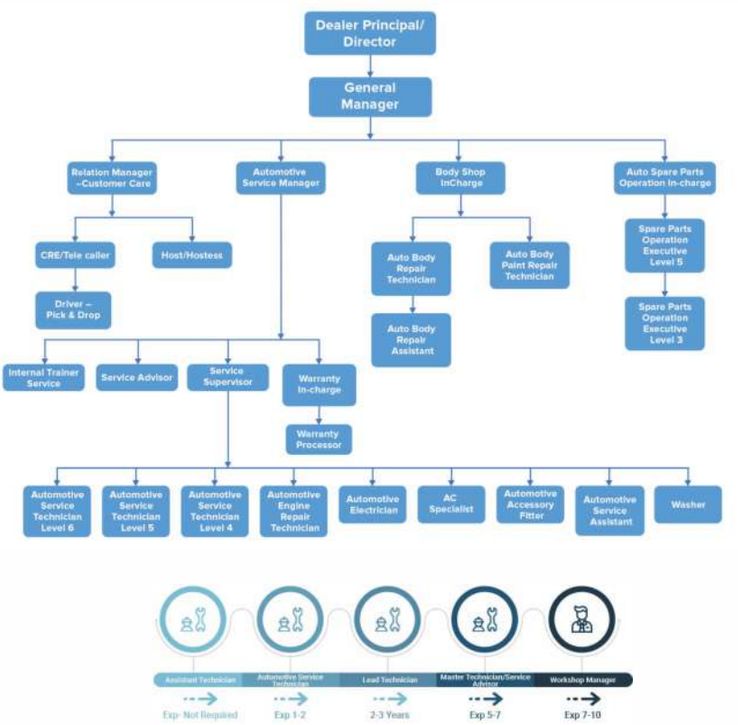
Tele-caller or Customer relationship Executive - Giving appointment to the customers for Service/repairs

Service Advisor- Assigning jobs to the concerned Technicians & overseeing the repair & maintenance jobs. Receiving customer & Vehicle & opening job card (Vehicle details & condition /jobs to be done/ estimated time & cost of vehicle repair/service) after inspection and road test by Service Advisor and possibly along with the customer

Spare Parts Operations In-charge - Managing overall spare parts department

Warranty In-charge - Management of warranty claims and spare parts replaced under warranty

Workshop Manager - Overall management of a workshop

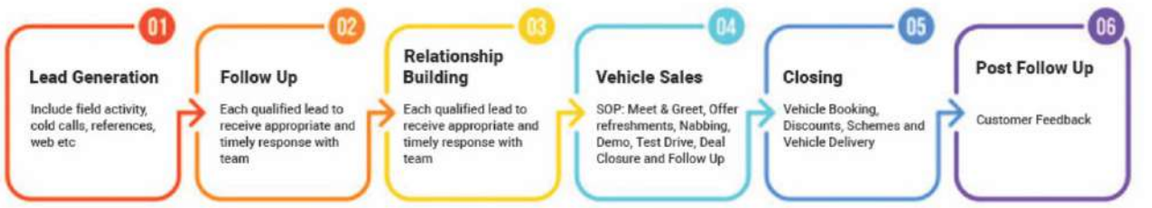


SALES

A sale is a transaction between two or more parties in which the buyer receives tangible or intangible goods, services, or assets in exchange for money.

Motor vehicle sales represent the number of domestically produced units of cars, SUVs, minivans, and light trucks etc. that are sold through dealership across the globe by sales professionals. The ability to explain the concept of cost of ownership of a vehicle is a skill that every successful sales professional needs. Helping a client make a positive buying decision means that we sometimes need to walk them through a logical cost of ownership through skill training and knowledge.

Sales Functions:



Role of Technology:

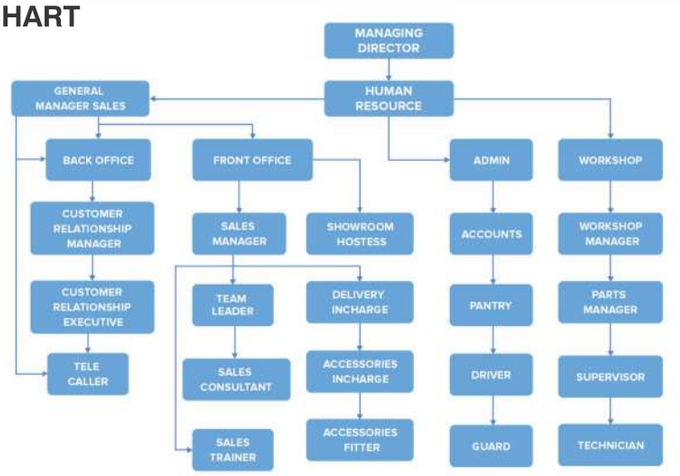
Today's technology has a key role in Sales for future growth. Using digital platform has shown an increase in Vehicle Sales. It not only helps to increase the dealership reach but also consumes less time for maturing a lead. Use of laptop, tabs, online configurator or even simulators can help enhance customer experience.

Another way is a CRM, who serves as a single resource to all client information. This information can help sales teams better understand how a customer becomes a lead. Use of DMS can also help manage real-time access to customer data.

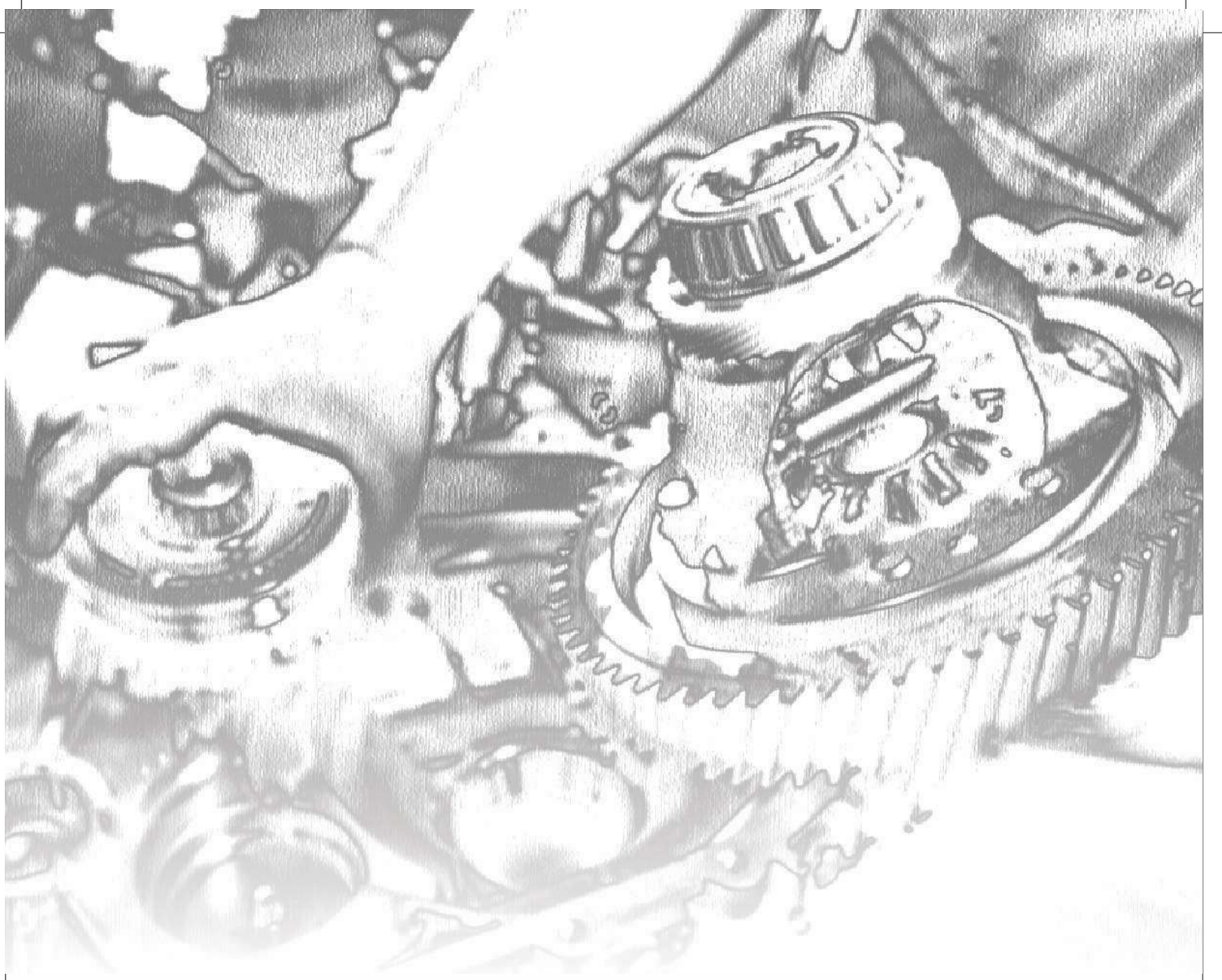
The idea of a "limited-time offer" is common at most dealership, but yet effective as it creates a sense of scarcity that is used as a tactic for vehicle sales. A limited opportunity may be limited by time (e.g. an offer good for this month only) or availability (e.g. the last pickup on the lot).

An effective salesperson uses nabbing technique to frame the benefits of a product or service regarding the needs of a client. This results in understanding the day-to-day challenges faced by a client and focuses on how a product can solve those issues. Using such approach helps in building strong relationship by showing a salesperson's interest in solving a customer's problem.

ORGANIZATION CHART



Sales Career Progression



AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

Automotive Skills Development Council

ACMA
Automotive Component Manufacturers Association

SIAM
Society of Indian Automobile Manufacturers

FADA
Federation of Automobile Dealers Association

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