LABOUR MARKET STUDY FOR AUTOMOBILE INDUSTRY UNDER PROJECT SANKALP IN ANANTAPUR DISTRICT OF ANDHRA PRADESH INDIA

By

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Disclaimer

The data for this study were collected from various stakeholders. PLF is not responsible for any errors in data. The views expressed in this report may not necessarily be that of PLF, Save the Children, Bal Raksha Bharat and KIA Motors.

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ABBREVIATIONS

AI	:	Artificial Intelligence
AICTE	:	All India Council for Technology Education
AP	:	Andhra Pradesh
APSSDC	:	Andhra Pradesh State Skill Development Corporation
ATS	:	Apprenticeship Training Scheme
BC	:	Backward Caste
CSO	:	Civil Society Organisation
CSR	:	Corporate Social Responsibility
CSTARI	:	Central Staff Training and Research Institute
CTS	:	Craftsmen Training Scheme
DDUKGY	:	Deen Dayal Upadyay Grameen Kaushal Yojana
DGET	:	Director General of Employment and Training
DGT	:	Director General of Training
DIPP	:	Department of Industrial policy and promotions
FDI	:	Foreign Direct Investment
FDP	:	Faculty Development Programme
FGD	:	Focus Group Discussion
GOI	:	Government of India
HOD	:	Head of the Department
HR	:	Human Recourses
IOE	:	Institute of Excellence
IOT	:	Internet of Things
IT	:	Information Technology
ITC	:	Indian Tobacco Company
ITI	:	Industrial Training Institute
JNTU	:	Jawaharlal Nehru Technological University
MODROB	:	Modernization & Removal of Obsolescence Program
MOLE	:	Ministry of Labour and Employment
MSDE	:	Minister of skill development and entrepreneurship
NCVT	:	National Council for Vocational Training
NGO	:	Non-governmental Organisation
NIMI	:	National Instructional Media Institute

ABBREVIATIONS

NITTTR	:	National Institute of technical teachers training and research
NSDC	:	National Skill Development Corporation
NSQF	:	National Skills Qualification Framework
NVQEF	:	National Vocational Education Qualification Framework
OEM	:	Original Equipment Manufacturers
PLF	:	Poverty Learning Foundation
PMKVY	:	Pradhan Mantri Kaushal Vikas Yojana
RTC	:	Road Transport Corporation
SCI	:	Save the Children India
SBTET	:	State Board of Technical Education and Training
SC	:	Scheduled caste
SCVT	:	State Council for Vocational Training
SDC	:	Skill Development Centre
SEEDAP	:	Society for Employment Generation and Enterprise Development in Andhra Pradesh
SIAM	:	Society of Indian Automobile manufacturers
SIP	:	Summer Internship Programme
SIVE	:	State Institute of Vocational Education
SSC	:	Sector Skill Council
ST	:	Scheduled Tribe
TSDI	:	Technical Skill Development Institute

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Research Team
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STRUCTURE OF THE REPORT

This report presents skills requirements and supply for automobile sector in Anantapur district of Andhra Pradesh. The report is organised into five sections.

Section 1 provides introduction to the study and methodology followed in carrying out the study.

Section 2 provides insights on the automobile industry in Anantapur district.

Section 3 examines availability of human resources required for the industry as well as demand and supply gap.

Section 4 looks into skill gaps faced by the industry.

Section 5 presents initiatives for strengthening ITIs and Polytechnic colleges, and upgrading skills.

The final section (6) discusses the means and ways to address gap in human resource and skills in the industry; and presents the areas that may need attention from SANKALP.

EXECUTIVE SUMMARY

SANKALP, an initiative of the Save the Children and KIA Motors, aims to promote vocational education for better employability of youth. This initiative has greater relevance for the employability ITI and polytechnic graduates, who constitute a significant part of the total manpower in automobile sector. The initiative recognised that there is demand-supply gap in human resource and skill requirements. For better understanding this aspect and guide the project's strategy, a labour market study was carried out in the district.

0.1 Study methodology

The study was carried out in Anantapur district covering Anantapur, Hindupur and Penukonda mandals which form part of the core and immediate catchment areas of KIA Motors industry. The data for the study were collected using both qualitative and quantitative methods. The sample for the study comprised of 16 employers, six training providers, 21 students and 13 unemployed youth. Employers were selected using convenient sampling, while all other category of respondents selected using purposive sampling. Information from the sample respondents was collected using questionnaire from students, employees and unemployed youth, and checklist in the case of employers and training providers.

The quantitative information collected was fed into excel sheet. After checking for its quality, the data was analysed on key variables and indicators of the study. For each of the variables, frequency tables were generated; and percentages and averages computed. Qualitative data collected were presented into notes or written text. In other words, summaries were prepared for each transcript or piece of data. This was further analyzed through content and narrative analysis.

0.2 Key Findings of the Study

- The employee's knowledge and skills are critical for any company. The automobile industry is no exception to this. The automobile sector in Anantapur is set to continue its growth trajectory with opportunities created by the KIA Motors in the district.
- The proportion of direct employment provided by the automobile industry, in the country, to indirect employment is in the ratio of 30:70. The share of direct employment in the district is 81%, primarily due to the presence of KIA Motors.

- The key players in the value chain of automotive industry who are providing employment in Anantapur district include KIA's OEM and 18 component manufacturers, dealers, authorized service centers, unorganized service centers, other service providers.
- ITI and polytechnic graduates get entry level jobs as helper or technician. Across the value chain ITI students were employed in higher number when compared to polytechnic graduates.
- The district has 39 ITIs and 16 polytechnic colleges with the total intake capacity of 6,240 and 3,240 students per annum respectively. There was a supply gap of 1,966 and 584 ITI and polytechnic graduates in the district during 2019-20. KIA is addressing this gap by recruiting from other parts of the AP state as well from Tamilnadu and Karnataka.
- There would be demand for 990 more diploma holders in the next five years as against the supply of 2,024 trained persons. The demand for ITI graduates during the same period is 4,361 as against the supply of 4,430. So, the problem in the next five years would not be about availability of human resources, but about the quality of the available manpower.
- Skills required in the industry include basic knowledge on tools and equipment, basic principles, mechanics and operations, etc. Awareness on mechanical, fabrication, electrical and automation would be added advantage. In view of advances in technologies, basic understanding is required automation; electrical drives and power electronic drives; artificial intelligence (machine learning); and sensors, sensing equipment and devices.
- The faculty assigned low score when asked on the ability of ITIs and Polytechnic Colleges to respond to Skills required in the market.
- A wide range of skill gaps were listed by employers and employees. There appears to be a huge lacuna in communication and soft skills. Employability of ITI and polytechnic graduates is affected due to inadequate trade knowledge, lack of practical skills and poor application of the available trade knowledge. They were also not familiar with the sophisticated machines used in the industry.

- The main factors determining skills gap were lack of infrastructure, inadequate staff, lack of functional lab facilities, outdated curricula, problems in Institute-Industry linkages, lack of additional skilling opportunities and less opportunities (see pages 24-29).
- The study found that there are several initiatives for improving infrastructure facilities, upgrading curricula and upgrading skills available. What is needed is to make effective use of them (see section 5).

0.3 Suggested Strategies for bridging skills gap

As discussed earlier, the changes in technology, auto manufacturing, repair processes and equipment used will have a significant impact on the skill requirements for the sector. The study recommends an emphasis on the following aspects to reduce the skill gap among ITI and polytechnic graduates. Government, technical education institutes and industries have a major role in bridging demand and supply gap.

Upgrading Technical Education Institutes: The study recommends the up-gradation of ITIs and polytechnics in order to improve the quality of the human resources supplied in the district. The study proposes the following measures for up-grading technical education institutes:

- These institutions must proactively engage in building growing partnerships with industry for technical support and guidance, improving infrastructure and lab facilities, and to equip and respond to skill requirements in the industry.
- Issues pertaining to classroom infrastructure, lab facilities, lab technicians and faculty need attention. Lab technicians are to be provided in required number. The teaching faculty should get hands-on experience in new technologies. CSRs and donors should be approached to fill the above critical gaps.
- There is a need to tap and effectively use various government schemes/initiatives towards strengthening and upgrading ITIs and Polytechnic colleges (refer to section 5).
- The faculty in ITIs in particular is not well trained and lacks the necessary knowledge and skills. Further continuous skill upgradation through periodical refresher training courses is not emphasized. So, greater emphasis is needed on faculty's training to

bring them abreast with new technologies and help them to engage in improving quality of teaching.

- Other options recommended are: Promoting ‘mobile labs’ for courses related to automobile industry to deal with on-availability of lab facilities in many polytechnics.

Upgrading Curricula: Enriching the curricula (on theory, practice and soft skills) in polytechnics and ITIs is necessary in order to respond to the changing needs of industry. There is an existing mechanism for updating curricula, periodically, both in Polytechnic and ITIs. Added to this, NVEQF has set up common principles and guidelines for a nationally recognised qualification system; and would play a key role in reforming the curricula along with the existing mechanisms of ITI and Polytechnics. The study identified the following areas for enriching curricula:

- There is a need for strengthening existing curricula revision and updating process. For instance, provision is to be made for the participation of faculty in the case of ITIs.
- ITIs and Polytechnics will have to give equal importance to both technical and non-technical skills and attributes in a well-ordered teaching methodology that emphasizes hands-on training and industrial attachment for the students.
- Greater emphasis is required on practical classes and employability skills. Soft skills should be integral part of the syllabus and introduced right from the beginning. Approach to soft skills should be broad based to include communication, safety environment, leadership, teamwork, IT literacy, etc.
- As per norms, the proportion of practical classes to theory-sessions in ITIs and polytechnic colleges is 75% and 40% respectively. In practice, this is not adhered to. It is suggested to adhere to this norm and ensure enough time for practical classes, which is critical in addressing skill gaps.
- As suggested by the faculty, co-curricular activities (e.g., technology exhibition, Industry-Institution interface, debates and assignments) are to be promoted for preparing students from campus to industry; and this should be done by linking to industries and sector specialists.
- Along with syllabus change, efforts are needed to upgrade laboratories with advanced technologies and equipment. The supply of raw materials is to be ensured

so that students can learn by doing experiments. The institutes are to be provided with adequate budget in this regard.

- Pilots may be taken up for bringing demonstrative influence on curricula and courses with the help of industry, CSR, etc. These pilots may be used to systematically sync trades in the institutes with local industry requirements.
- Institutes may be given option for evolving a portion of the syllabus (in every semester) in collaboration with local industries to help students acquire industry specific skills. Probably, up to 10% of the syllabus can be done this way.

Promotion of Skill up-gradation activities: The study stressed the need for additional skilling opportunities during the course and immediately after the academic course (i.e., before getting into job). This is the best option to overcome skill deficit or gap. Other suggestions emerging from the study were:

- A number of skill development initiatives are available. What is required is strengthening and effective use of existing programs, whilst expanding the scope of this intervention. Students must be encouraged to participate in other skilling programmes offered under various government schemes (e.g., TSDI, SDC), CSRs, etc. Towards this end, efforts are needed to provide information to students on such opportunities.
- Industry should invest in equipping students with specific requirements of each company. The staff members from Industries are to be used as guest faculty. Greater support from the industries for industrial visits, equipping labs with advanced technology, extending technical support (and knowledge partnership) in preparing students to local industry will be needed.
- There is a need for strengthening linkages between ITIs and industries.
    - Industry should take the initiative to introduce new technologies to both lecturers and students and also play a key role in facilitating training in the institutions.
    - Polytechnics should consult industry in the development of their teaching curricula and skills training activities in order to respond adequately to industry skills needs and also enhance the employability of their students.
    - Industrial attachment for students should, as a matter of policy, be made a requirement for the award of certificates.

- There is a huge role for industry to build-on the skills horned in polytechnics and ITIs; and this where in-house trainings (induction and refresher trainings) of the industries will have a major role to play. It is also necessary to establish industry specific training centres in ITIs/polytechnic colleges on the lines of KIA; and SANKALP may explore the possibility of collaboration with APSSDC in this regard.

Suggested Framework for Evolving Project's Strategies

To sum up, the project's strategies should be designed taking the following factors into consideration: Technical education institutes can only provide basic knowledge of particular trade. It is impossible to train students according to varied industrial requirements, as different industries have different requirements. While there is a need for strengthening the existing mechanisms for up-gradation of syllabus in ITIs and polytechnic, other mechanisms are also required for preparing students for smooth transition from campus to corporate are suggested. The overall framework that should guide project's strategy and interventions of other stakeholders involved in the industry is as follows:

- Up-gradation of ITIs and polytechnics in order to improve quality human resources supplied in the district.
- While ITIs has responsibility in equipping students on theory and practice of the trade, the industry should take responsibility of preparing them to industry specific requirements.
- Promotion of closer industry-Institute partnership; updated equipment, updated courses and curriculum
- Well-trained teachers with latest industrial knowledge and introduction of soft skills in curriculum.
- Strengthening existing curricula revision process is an important area to work with. Pilots may be taken up in initiating trades relevant to local industries and revision of curriculum. Model institutes should play greater role in this activity.
- Students are to be provided with additional skilling opportunities such as SDI in polytechnic colleges; and existing initiatives must be strengthened and effectively used. Opportunities for further expanding such activities should be explored in partnership/collaboration with industries.

- It is also necessary to establish industry specific training centres in ITIs/polytechnic colleges. For example, KIA Motors[1] has established a training centre in Government Polytechnic College- Anantapur in collaboration with APSSDC; and this centre has been conducting a 'Basic Training Course' to the students before recruiting them.
- There is also need for encouraging students to participate in the courses offered by different institutes (e.g., promoted through respective CSRs) and various government schemes (e.g., PMKVY and DDU-GKY). For example, the Indian Tobacco Company (ITC) Limited has been conducting certificate course on Car mechanics for ITI students.

1It was also reported that the company directly recruits experienced people for supervisory and management positions through *Naukari.com*. It was their experience that people with past experience in R&D come with better exposure on technology.

SECTION 1: INTRODUCTION

Save the children is India's leading child rights organization. Supported by KIA Motors and Save the Children-Korea, SCI has conceived and been implementing a project 'SANKALP' in Anantapur district of Andhra Pradesh: It is a three-year project (i.e., from July 2018 to June 2021) with its operations spread in Anantapur, Hindupur and Penukonda Mandals. The core objectives of the project are:

- To build the technical and vocational skills of youth for their better employability in the local industry; and
- To facilitate integrated development of the local community in and around the KIA Motors.

Vocational training is, thus, one of the strategic objectives of the project. For realization of this objective, the project engages in activities such as Skill Training; Curriculum Development; Centre for Excellence; and KIA Machinery Support. These actions are critical for upgrading ITIs/Polytechnics. Keeping the above in view, the project has already supported selected Polytechnic Colleges and ITIs[2]in re-building physical infrastructure. And it also has a plan to develop strategies for addressing critical skill gaps among diploma/ITI students.

In this context, Save the Children has commissioned the Labour Market Study for Automobile Industry in Anantapur District of Andhra Pradesh. The study aims tomap human resource and skills requirements for the automobile industry in the district. It had sought the services of Poverty Learning Foundation, a macro-policy think tank based in Hyderabad, for carrying out this study. The study was conducted between December 2019 and January 2020.

1.1 The Purpose and Objectives of the Study

With KIA motors starting its operations in Anantapur district, there is an impact on the automobile service sector and skill requirements. ITIs and Polytechnic graduates constitute a significant part of the total manpower in automobile sector. There is, however, demand-supply gap in human Resource and Skill Requirements. One of the reasons for this is the

[2]In addition, it started a course on defensive driving for ITI students; involved in evolving module for life skills training; and planned for changes in curricula at polytechnic and ITI level.

changes in technology, auto manufacturing, repair processes and equipment used. This is bound to have a significant impact on the skill requirements for the sector.

The project SANKALP, which is into its second year of implementation, felt the need for evolving a need-based intervention strategy for skill development. It had, therefore, proposed to understand the concerns and issues affecting youth employability in the automobile sector; and barriers and enablers across demand and supply side in the automobile industry. Hence, it commissioned a labour market study in order to generate evidences for further strategic planning in relation to skill development for ITI and polytechnic graduates. The objectives of the study are:

- To understand the perceptions of key stakeholders from automobile industry on demand for skills in the automobile industry and need for upgradation in the skill development curriculum.
- To identify the supply and quality of skilled and semi-skilled labour in automobile industry in Anantapur district.
- To evolve suitable strategies for bridging demand and supply of employment for ITI/Polytechnic students across trades in the form of a guidance note issued to the institutes related to need for upgradation in the skill development curriculum.

1.2 Data sources and Methods

The Automobile segment comprises of four broad categories of vehicles: Passenger Vehicles; Commercial Vehicles; Three-wheelers; and two-wheelers[3]. For the purpose of the study, it was decided to focus on the passenger 'car segment' within the automobile industry; human resources and skill requirement thereof with reference to polytechnic and ITI graduates[4]. Added to this, the geographical coverage of the study was restricted to Anantapur district. Within the district, greater emphasis was given to three mandals (i.e., Anantapur, Hindupur and Penukonda) which form part of core and immediate catchment areas of KIA industry.

[3]Two-wheelers, being the most popular means of personal transport, alone account for about 75% of the total automobile production in India, while passenger vehicles account for nearly 16% of the production. However, owing to their lower sales realisations, two wheelers account for only around 32% of the sales in terms of value while passenger-vehicles account for around 62% of the same.

[4]Job roles that are performed by diploma and ITI graduates in core, core plus and allied activities in the value chain. Hence forth, the term automobile means the passenger car segment.

This approach was finalised in consultation with SANKALP team on December 6, 2019 (i.e., during a preparatory meeting before start of the study).

Data Collection Methods: The study conducted a primary survey using qualitative and quantitative methods. The study also used available information from secondary sources (including mining online information). Complying with research ethics, the study did not recruit any children for field work. Further, the study did not collect any information from children, as it pertains to youth from ITIs and polytechnic colleges who are in the age-group of 16-24 years.

Study instruments: The tools used for collecting the data were: (i) a questionnaire was administered to gather information from Youth, Employers (Automobile industry) and Training Providers. A separate questionnaire was designed for each of the above category of respondents; and (ii) a checklist was used for conducting the key-informant interviews with the Education Institutes and Government Officials. The study tools are furnished in Appendix 2.

Sample for the study: The geographical unit for the study was three mandals (Penukonda, Hindupur and Anantapur) purposively selected in Anantapur district. The criteria used in the selection of the geographical area were: Mandals which form part of SANKALP's project area; presence of KIA Motors' OEM and component manufactures; and areas from where KIA recruits a large proportion of ITI and Polytechnic graduates.

The study purposively selected six training providers, from across the study area: one ITI and Polytechnic College[5] each per mandal. The best performing ITI and Polytechnic College were selected. As Penukonda don't have any polytechnic college, two Polytechnic Colleges were selected from Anantapur mandal. Within each of the sample institutes, four senior students were selected in consultation with the faculty. In addition, two unemployed youth were selected from the habitations adjoining each of the sample institutes. In all, 21 students and 13 unemployed youth were covered.

[5] The number of Polytechnic Colleges available in the sample mandals was seven: Five in Anantapur and two in Hindupur. There is Polytechnic College in Penukonda. The sample mandals have 18 ITIs, which includes 14 in Anantapur, three in Hindupur and one in Penukonda.

Table 1.1: Geographical Coverage and Units of Study

Sl	Study Unit	Narration	Total sample	Study tool
1	Employers	OEM	1	Checklist
		Component manufacturers	1	
		Dealers cum Authorised Service centres	4	
		Unauthorised Service centres	4	
		Manpower suppliers	3	
		Others	2	
2	Training Providers	3 polytechnics, 3 ITI	6	Questionnaire
3	Youth	Trainees in VTIs	21	Questionnaire
		Youth employed	16	
		Unemployed Youth	13	
4	Education institutes	JNTU Anantapur	1	Checklist
5	Government officials	APSSDC, DGET and department of higher education	4	Checklist

Table 1.1 gives information about the sample size of employers (Automobile industry), training providers, youth, education institutes and government officials. The table also provides the tools used in carrying out the study. The total number of employers covered by the study across the value chain is 15. They were selected using convenient sampling, as some of them were reluctant to participate in the study. However, care was taken to cover employers from all the sample mandals. Besides conducting interviews with employers, the study had also covered 16 employees from across the value chain. Above all, the study conducted key informant interviews with JNTU-Anantapur and government departmentsat the district level.

Data Analysis: The quantitative information collected was fed into an Excel sheet. After quality checking, the data were analysed on key variables and indicators of the study. For each variable, frequency tables were generated; and percentages and averages computed. Qualitative data collected was presented into notes/written test. In other words, summaries were prepared for each transcript or piece of data. This was further analyzed through content[6] and narrative analysis. Wherever possible the data coding was also done manually, and it was interpreted and summarized. The report was prepared by interpreting the data and arriving at the key findings.

[6] Content analysis involves summarizing and tabulating the data), while narrative analysis involves reformulation of stories presented by respondents.

The ownership of data and its storage responsibilities are with Save the Children. However, copyright of the report will be with both SCI and PLF. Once the report is accepted, PLF would submit the hard and soft copies of the data to Save the Children.

1.3 Limitations of the Study

- The study was limited to the car segment of the automobile industry in Anantapur district. So, the findings from the study may not indicate overall scenario of automobile industry in AP and the country.
- The study estimated the manpower supply from within the district and demand of the value chain players operating in this specific geography. In other words, it didn't look into manpower supply and skills in other parts of the country, in particular the southern region, which also may contribute to supply of skilled workforce to KIA in Anantapur.
- Where interviews with employers (i.e., HR wing) were not possible, the study team interacted with staff in different management positions to get industry perspectives. In this process, the perspectives of HR people may have been missed out.

SECTION 2: AUTOMOTIVE INDUSTRY IN ANANTAPUR DISTRICT

2.1 Automotive industry in India

The automotive industry in India, comprising of Original Equipment Manufacturers (OEMs) and auto component manufacturers, is one of the largest manufacturing industries in the country[7]. It is a critical sector for India's economic growth. India is expected to emerge as the world's third-largest passenger vehicle market by 2021[8]. The government's 'Make in India' initiative has played an important role in attracting Foreign Direct Investment (FDI)[9] in different sectors including the automobile industry.

The Automobile Industry, due to its very nature, has grown in clusters. The clusters have Original Equipment Manufacturers (OEMs) as hubs or centers of growth while the suppliers have formed their bases around the OEMs. There are three major automobile and auto component production clusters across the country[10], namely, the Western Region (Mumbai-Pune-Nasik-Aurangabad); the Southern Region (Chennai-Bangalore-Hosur);andthe Northern Region (Delhi-Gurgaon-Faridabad).In the Eastern region, activity in the automotive sector is seen in Jamshedpur and Kolkata, but the development in this region has been to a lesser extent than in the others. KIA motors being in Anantapur district forms part of the southern region.

The Auto services sector currently employs an estimated manpower of 7,877,702[11], with 58% of being in the passenger car segment. There is an increasingly diversified skill requirement in the sector for effective service delivery, spares management and support functions. The supply from ITIs and Polytechnics in India for the entire Auto sector is 530,000 graduates per annum.

2.2 Main trends and their impact on the work place

The speed at which change is taking place in the automobile sector would lead to a paradigm shift in manufacturing. Several trends are shaping the industry today, i.e., disruptive technology change, automation of various processes, generation of additional direct and

[7]Automobile sector's contribution to GDP. Press Information Bureau, Government of India, Ministry of Heavy Industries & Public Enterprises. (2017). http://pib.nic.in/newsite/PrintRelease.aspx?relid=169436
[8]IHS auto data base, Light vehicle sales Forecast, ihsmarkit.com
[9]Government of India opens 100 % FDI's in Automobile sector as part of Make in India initiative. [source: Department of Industrial Policy and Promotion (DIPP),GOI]
[10]Automotive: Market & Opportunities. Indian Brand Equity Foundation.
[11] KPMG &CII: **Skills for New Era in Auto Service Sector-**http://www.ciiautoserve.in/document/Skill_Gap_in_Auto_Services_Sector.pdf

indirect jobs, etc. The main factors that would determine the industry's evolution in future are the level of sophistication; and speed of application of new age technologies such as IoT, AI and machine learning and robotics. It is predicted that these trends in the Auto Service sector will have a significant impact on the skill requirements for the sector. As ITI and Polytechnic graduates constitute a large proportion of the human resources in the sector, there is an urgent need for ITI and Polytechnic courses to be updated to reflect the changes in technology, auto manufacturing, repair processes and equipment used.

2.3 Demography and Economy of Anantapur District

Anantapur is one of the districts in the Rayalaseema region of Andhra Pradesh state; and the largest district in the state in terms geographical area. The total population of the district is 4,083,315 persons (2011, Census of India). The sex ratio is 977 females per 1,000 males. The literacy rate is 64.28%. Urban population in the district is 28.9%.

The district's economy is principally agrarian with a developing industrial sector. It is located in the rain shadow area of the Indian Peninsula; and the average annual rainfall is 381 millimetres - the second lowest in the country[12]. The main crops grown in the district include groundnut, sunflower, rice, cotton, maize, chillies, sesame, and sugarcane.

The district has a potential for industrial development due to its strategic location between Bangalore-Chennai and Bangalore-Hyderabad routes. It connects Hyderabad and Bangalore through National Highway 7. The major industrial activities existing in the district include mining of dolomite and iron ore minerals; solar thermal power plant; silk saris cluster in Dharmavaram; and Granite and Cement production in Tadipatri.[13] Starting of KIA motors at Penukonda gave further momentum to industrial activity in the district.

2.4 KIA's Operations in Anantapur District

South Korean automobile giant Kia Motors (located on the Hyderabad-Bengaluru Highway[14]) is set to transform the district industrially. One of the key reasons for the rapid growth of the Automobile segment in the district is the strong influence ofKIA Motors. It is

[12] In 2006 the Indian government named Anantapur one of the country's 250 most backward districts (out of a total of 640).

[13]Cement production unit Ultra Tech Cements (a unit of Larsen & Toubro) of Ultra Tech Cements (a unit of Larsen & Toubro).

[14]Located just 125 km from Bengaluru airport, the plant has come up with an investment of $1 billion dollars while an equal amount pumped in by ancillaries. It is billed as one of the biggest Foreign Direct Investments (FDI) in India in the automobile sector.

expected to have a transformative effect on the service sector and skill requirements. It is India's biggest FDI (2 Billion USD); and KIA Motors - the world's eighth-largest automaker, plans to manufacture 300,000 cars per year at this plant.

KIA Motors, which is a Manufacturing plant, requires many Automobile Products to Assemble and Manufacture a Car. For that 18 Vendor Companies (i.e., 16 South Korean and two local companies) have set up their plants around KIA Motors to manufacture car parts like Seat, Sheets, Modules, Tyres, Body parts, Doors, Bumpers, Headlights, Crash pad, Weather strips, Seat frame, Air Cleaners, Tubes, Door frames etc. KIA will become the single largest employer in the drought-prone region of Anantapur. It has already created 6,583 jobs – about 3,000 jobs directly and over 3,500 jobs indirectly through its ancillaries (Table 2.1). When it is fully commissioned, it can generate11,000 direct jobs. Added to this, the ancillaries are expected to generate an additional 7,000 jobs[15]. The Korean township and other supporting infrastructure also would generate further local employment.

Table 2.1: KIA Motors vendor companies' investments, Employment, Manufacturing Products[16]

Sl	Vendor company	Investment Million USD	No. of people currently employed	Product Manufactured
1.	Hyundai Mobis Company Limited	143.7	436	Modules
2.	Hyundai Dymos	148.0	812	Seat, Manual transmission
3.	Hyundai Steel Company	37.8	91	Sheets
4.	Hyundai Glovis Co Ltd	101.5	1,135	Consolidation centre, tyre wheel Assembly, vehicle processing centre
5.	Sung Woo Hitech Company Ltd	84.7	850	Body parts, Assembly
6.	Saehan Industries Ltd	95.0	520	Body parts, Assembly
7.	Seoyon E-HwaAutoMobiles	78.9	562	Door trim, Bumper
8.	NVH India Auto Parts Pvt. Ltd	48.0	503	Head lighting; Manufacture of others attachments to motor vehicles NEC.
9.	Hyundai Materials India Private Ltd.	8.3	127	Scrap
10.	Pharesiakorea Ltd	9.0	250	Crash pad
11.	S.L.A.P Pvt. Ltd.	30.0	345	Lighting
12.	Hwaseung R&A Company Ltd	16.4	225	Weather strips
13.	DeachangSeatCompany Ltd	9.7	255	Seat frame
14.	Inzi Controls Company Limited	6.0	84	Air cleaner
15.	Bhooguk Industries Company Ltd	4.8	213	Tube Assembly
16.	Vuong Company Ltd	15.2	175	Door frame
17.	DAEHA Plastic Compound IndiaPvt.Ltd	28.0	NA	Manufacture of plastic products
18.	United Industries Plastic Pvt.Ltd	NA	NA	NA
	Total	**749.3**	**6583**	

**NA- Information not available*

[15] Andhra Pradesh CM launches Kia Plant, assures government support: The New Indian Express, December 6, 2019

[16] **source:** **https://kiacarsindia.wordpress.com/ancillary-units-near-kia/; and** Impact of KIA Motors on Agriculture and Non-Agricultural Lands and Employment Opportunities in Penukonda, Andhra Pradesh:Available at: file:///C:/Users/user/Downloads/KIAMotors.pdf

SECTION 3: HUMAN RESOURCE REQUIREMENT IN AUTOMOBILE INDUSTRY OF ANANTAPUR DISTRICT

The Indian automotive industry is poised to become one of the largest job providers. The automotive industry comprises a divergent set of players from Original Equipment Manufacturers' (OEMs) to tier 'n' suppliers[17], with each playing a critical role in the value chain. This has led to heterogeneity in the type of ownership, operating structure, workplace model, scale of operations, demand for skills, supply of jobs and their availability[18].

The Automotive Industry, by its very nature, has considerable forward and backward linkages and thus employs a significant number of personnel. The Society of Indian Automobile Manufacturers (SIAM) has estimated that the Indian Automotive Industry provides direct and indirect employment to over 13 million people[19].

- Direct employment includes personnel working with automobile OEM's and auto component manufacturers (about 30% to 40%).
- Indirect employment includes personnel working in the enabling industries, such as vehicle finance and insurance industry, vehicle repair, vehicle service stations, vehicle maintenance, vehicle and component dealers, drivers, cleaners etc (about 60% to 70%).

3.1 Value Chain of Automotive Industry in Anantapur District

The key players in the value chain of automotive industry[20] with reference to passenger car segment and employment in Anantapur district is given in figure 3.1. It should be noted that ITI and Polytechnic graduates are primarily employed as semi-skilled workers in automobile sector. The study did not cover vehicle finance and insurance industry, as they don't employ ITI and polytechnic graduates.

[17]The Auto Components segment comprises of a host of products demanded by the Automobile segment. These products are classified into engine parts, transmission and steering parts, Suspension and braking parts, Equipment, Electricals and Others.
[18]Paul, G. B., Jaganth, G., Abhishek, M. J., and Rahul, S.. "What Makes Enterprises in Auto Component IndustryPerform? Emerging Role of Labour, Information Technology, and Knowledge Management." In *Globalisation ofTechnology* (2018): 253-283.
[19]*Automotive Industry.* Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, Government of India.
[20]The players in value chain were listed through interaction with the key stakeholders in the district.

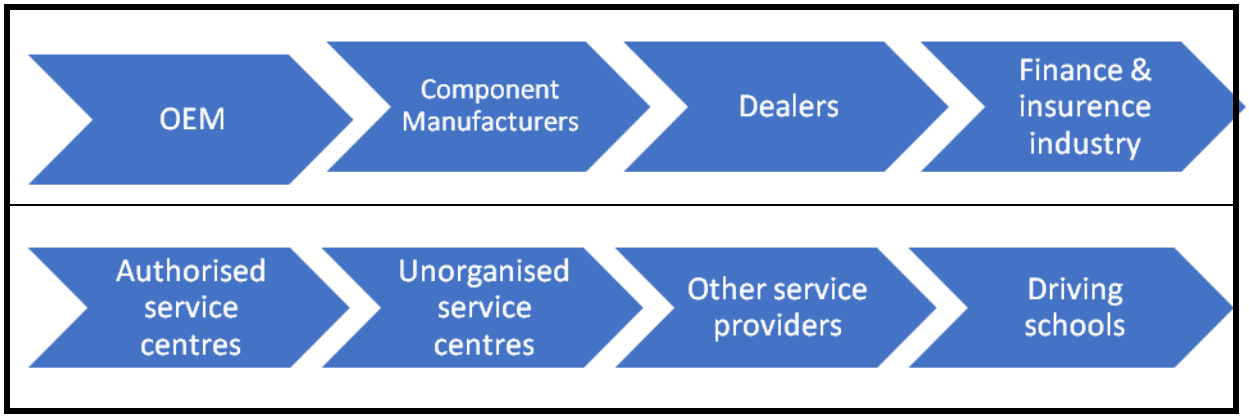

Figure 3.1: Players in the value chain

There is one assembling unitand18 ancillary units of KIA in the district. (KIA is the only OEM available in the state.) Other major players in the value chain are dealers, authorized service centers, unorganized service centers, other service providers and driving schools. It was reported by the key stakeholders that there is an increase in the number of dealers, service centers, etc. after KIA started its operations in the district (Table 3.3). KIA Motors is expected to trigger further growth in the value chain, in the coming years, within the district as well as in other parts of the country.

3.2 Availability of Human Resources

The Government has been investing in man-power development for the industry by setting-up technical institutes such as ITIs, Polytechnics, Engineering Colleges, etc. While this has helped in creating a pool of technically qualified human resources, it is found that the quality of training has not been up to the mark and that the institutes are unable to meet the changing needs of the industry. There is a need to respond to the changing skill requirements considering the growth of automobile industry in the district.

Anantapur district has 39 ITIs and 16 Polytechnic Colleges for imparting technical education to the youth[21]. The overall intake of all ITIs and Industrial Training Centres (ITCs)[22] is around 6,240 students per annum (Table 3.1). Out of these ITIs, only six are government and the rest are private. The ITIs impart training in various trades. The district also has 16 Polytechnic colleges with a total annual intake capacity of 3,240 students.

[21] There are also vocational colleges at intermediate level.
[22] Private institute running industrial training courses was used to be known as ITC in the past. Now, both private and government institutes are given same nomenclature i.e., ITI.

Table 3.1: Manpower supply of ITI and Polytechnic collages in the district

	Particulars	Number
A.	**ITIs**	
1.	ITIs in the district	39
2.	Total intake capacity (number of students)	6,240
3.	Seats filled in 2019	4,371
4.	Students passing out all trades	3,715
5.	Students opting for lateral entry into Polytechnic Colleges	743
6.	Seats filled in the trades relevant to automobile industry in 2019	1,304
7.	Students passing out in trades relevant to automobile industry	1,108
8.	Students seeking jobs (for all trades)	2,972
9.	Students seeking jobs (for trades relevant to automobile industry)	886
B.	**Polytechnics**	
1.	Polytechnics in the district	16
2.	Total intake capacity (number of students)	3,240
3.	Seats filled in 2019	3,240
4.	Students passing out all Branches	2,754
5.	Students opting for lateral entry into Engineering Colleges (from all branches)	1,920
6.	Seats filled in the branches relevant to automobile industry in 2019	2,400
7.	Students passing out in branches relevant to automobile industry	2,203
8.	Students seeking jobs (for all branches)	551
9.	Students seeking jobs (for branches relevant to automobile industry)	404

Source: sbtetap.gov.in; dget.gov.in; and information obtained from Polytechnic and ITI colleges

The job seeking pattern among polytechnic and ITI graduates is an important determinant in relation to availability of manpower. According to faculty members (and the placement officers) in the Polytechnic Colleges and ITIs, the diploma holders would prefer academic advancement through lateral entry into engineering colleges. It was reported that 80% of the polytechnic students opt this pathway. The remaining 20% take up employment due to issues of affordability, family problems, etc. (The diploma holders look for employment mostly in the RTC and the Railways.)The trend in ITIs is quite opposite wherein 80% of the students look for employment, while 20% enter polytechnic using lateral entry option.

Box 3.1: Engineering through Lateral Entry

Mansoor works as an engineer in KIA assembling unit. He completed B.Tech in Mechanical Engineering through lateral entry. He applied for an Engineer post in KIA Motors through Naukri.com; and got selected a year back. He has over nine years of experience in the automobile sector before joining KIA motors: 'He worked in MRF and Mondo automobiles'. In KIA, he leads a team of 12 members in car assembling. He is responsible for training on the job training of his team members. He earns monthly salary of Rs. 62,000. He got training in Korea on quality check and approval of a new model car. Any models designed in Korea must be approved by the Indian engineers before starting manufacturing in India.

3.3 Current Employment in Automobile industry

The skill gap analysis report of NSDC had grouped human resources employed in the industry into skilled, semi-skilled and minimally skilled categories. This report had projected incremental manpower demand of 1672 and 1673 people respectively for 2012-17 and 2017-22in the auto and auto components sector (Table 3.2). And this includes the demand for the trade skill workers (i.e., Polytechnic and ITI graduates)[23] who form part of either skilled or semi-skilled workforce. It may be noted that these projections were made without taking KIA Motors into consideration.

Table 3.2: Incremental manpower demand[24] over the years till 2021-22

Particulars	2012-17	2017-2022
Skilled	836	836
Semi-Skilled	448	502
Minimally Skilled	388	335

Source: District-wise skill gap study for the state of Andhra Pradesh of NSDC

The manpower demand, however, has increased in many a fold with the establishment KIA motors in the district. KIA and its ancillary units would employ about 18,000 people at full capacity: 11,000jobs directly by KIA motors; and 7,000 jobs indirectly by its ancillary units. It may be noted that KIA Motors has already generated 3,000 direct jobs and 3,500 indirect jobs in their ancillary units.

Attrition rate of employees overall is over 29% percent. Among the value chain players, the highest attrition rate was reported in the case of Authorized Service centers. According to employees, the attrition of semi-skilled workers in KIA's assembling and ancillary units was mainly due to inability to withstand physical stress as work involves performing a given task for long hours by standing. They had also cited monotony of work and low salaries as other reasons for attrition[25]. Added to this, those recruited through manpower suppliers feel insecure due to non-issue of ID card and appointment letter, which increases the chances of leaving job. It is common among the diploma holders to leave the job after getting admission to Engineering colleges.

[23] The personnel employed in the industry belong to three major functional categories i.e., Management and Engineering professionals, and Trade skill workers.
[24]Estimated number of additional employment opportunities created in the district based on sector growth over a five-year period.
[25] It may be noted that workers are trained, as part of preparing for work place conditions, for a week in the Basic training course of KIA at its training centre. This training is expected to orient the students on basic skills required for the company.

Table 3.3: Distribution of polytechnic and ITI graduates in core and enabler segments of Automobile industry in Anantapur district

Player	Number of units		No. of people employed in 2019-20	Attrition (%)	Incremental Demand for 2020-25
	Past	Present			
KIA's OEM	0	1	2,160	30	1,187
Component Manufacturers	0	18	2,293	30	2,441
Dealers	14	17	377	30	401
Authorized Service centers	14	17	170	37	181
Unorganised service centers	98	118	590	25	628
Other service providers	49	66	483	25	514
Total	**175**	**237**	**6,073**	**29.4**	**5,352**

Source: *Various-Information collected from the manpower suppliers, KIA training center, HR of ancillary units, employees and other secondary sources)*

Employers in the unorganized service centers reported that ITI graduates have a tendency to leave jobs for various reasons within a few months of joining. The important reason for this tendency was their inability to adjust and cope with work due to lack practical exposure. (ITIs were also found uncomfortable to work with mechanics with low education.)

The employment growth is expectedly high due to KIA and its ancillaries. In the nearest future there will be a huge demand for polytechnic and ITI graduates because KIA Motors plans to upgrade the capacity of manufacturing up to 3 lakh cars per year. Compared to OEM, other value chain players would contribute in a limited way to manpower demand. The demand for polytechnic and ITI graduates in the next five years would be to the tune of 5,352 people.

3.4 Distribution of human resources by education levels

The baseline employment for each sub-sector (i.e., 2019-20) is estimated based on primary interactions with industry experts and employers. The calculation for additional requirements is done based on growth rate of 9.2% in OEM[26] and 15.6 in auto components as well other enabler segments.

Table 3.4 gives information on the distribution of ITI and diploma holders employed in core and enabler segments of automobile sector; and future demand for ITIs and diploma

[26]Source: Human resource and skill requirements in the Auto and Auto Components sector: Executive summary- available at https://www.msde.gov.in/Executive_Summary/Auto_Auto_Components.pdf

holders in near future. It may be noted that mainly ITI and a few diploma holders are employed as workmen. Table A-1 in the Appendix 3 gives details about the percentage of ITIs and Polytechnic graduates employed by different players in the value chain. For instance, the study shows that diploma holders constitute 12-15% of the total employees in OEM. The diploma holders with 3-5 years of experience are more likely to be employed as supervisors.

Table 3.4: Manpower demand by education level (i.e., diploma and ITI graduates)

Value chain	Education levels	No. of people employed in 2019-20	Demand for HR from 2020 to 2025
KIA's OEM	Diploma	420	229
	ITI	1,740	958
Component Manufacturers	Diploma	438	467
	ITI	1855	1974
Dealers	Diploma	100	106
	ITI	277	295
Authorized Service centers	Diploma	37	39
	ITI	133	142
Unorganized services Centre	Diploma	86	92
	ITI	504	536
Other service providers*	Diploma	54	57
	ITI	429	457
Overall	**Diploma**	**1135**	**991**
	ITI	**4938**	**4361**

**Note: Other services providers included are spare parts suppliers, repairing shops like A/C, seat covers, washing service centers*

3.5 Projected human resources requirement

Table 3.5 shows the demand and supply for diploma and ITI graduates. To arrive at human resource supply in a year, we have deducted the total students opting for lateral entry to join polytechnic or engineering from the total students passed out from the branches or trades relevant to automobile industry. (For 2019-20, supply of ITI and polytechnic graduates was calculated with an assumption that students passed out in the last two years have got greater chances for getting placement.) A significant gap exists for 2019-20 in the availability of the manpower (Figure 3.2.1).

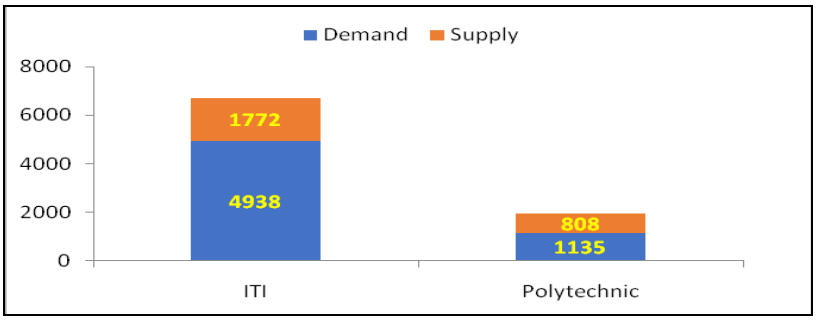

Figure 3.2.1: Demand and supply of ITI and polytechnic gradutes in 2019-20

This gap is addressed by recruiting ITI/diploma holders from all over the Rayalaseema region and other parts of AP. It may be noted that a large number skilled and semi-skilled workers were also recruited from other states, particularly from Tamilnadu and Karnataka[27]. It was also reported that students from intermediate vocational courses are also recruited to meet the current human resource demand.

Box 3.2: Employment through Manpower Supplier

Jilan Basha (Machine operator in Seoyon Vikas) is an ITI graduate from Prakasam district. After completion of ITI, he worked in an unauthorized service center for a year. He joined KIA's ancillary unit as operator through manpower supplier and has been working there for one year. He feels insecure, as he is not given ID card and letter of appointment either by the company or manpower supplier. (Company provided him with a bus pass, which he uses as ID proof to enter into the company.) He received on-the-job training for a month. In the process, he got familiar with tasks involved in his job. However, he continues to face problems in this job due to lack of basic understanding on automation and deficiency in soft skills. So, he wants to learn robotic technology as the unit is fully automated. His monthly income is Rs.12,000. (According to him, the manpower supplier will be paid Rs.5,000 out of his salary as service charge.) He finds it tiring to work for long hours in standing position. He would like to move out of the job if and when he gets a better opportunity.

During the next five years (2020-25), this gap in the supply of human resources would be addressed. And in fact, supply would surpass the demand by 2024 (Figure 3.2.2). However, quality of human resources may continue to be an important concern, which will be discussed in the next section.

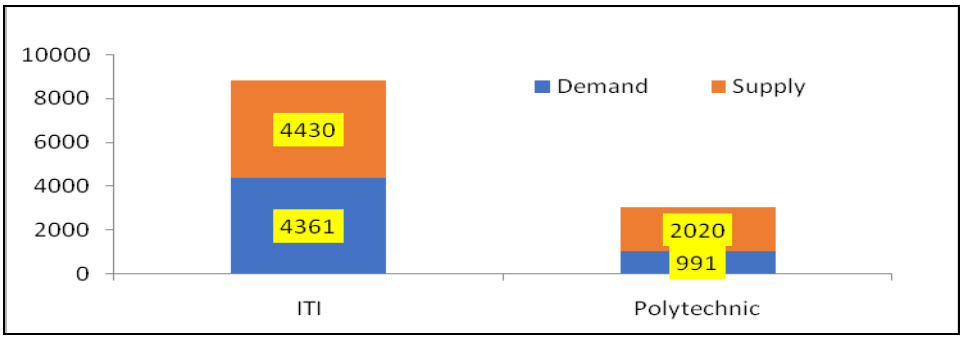

Figure 3.3.2: Demand and supply of ITI and polytechnic graduates from 2020-25

[27]Source: Interviews with employers and manpower suppliers.

SECTION 4: SKILL REQUIREMENTS AND SKILL GAPS IN ANANTAPUR DISTRICT

The Automobile sector has been undergoing transformation in many ways[28]. This will entail preparing the workforce for the industry. Thus, the need is to respond to the changing skill requirements considering the growth of automobile industry in the district; and to equip students with requisite skills and knowledge that have currency and application value for current and future job markets.Thus, availability of skilled manpower in sufficient numbers is critical for the automotive sector. In other words, the quality of manpower available is a major concern.

4.1 Critical skills required in automobile industry

As discussed in section 2, ITI and polytechnic graduates constitute a large proportion of human resources in the sector. And they get entry level jobs (i.e., a helper or technician-trainee) across the value chain. It emerged from the discussion with the employers and faculty members of technical colleges that the following trades or courses available in ITIs and Polytechnic Colleges of Anantapur district are relevant in the automobile industry:

- *ITI trades*: Motor Mechanic, Diesel Mechanic, Wireman, Fitter and Welder.
- *Polytechnic diploma courses*: Automobile Engineering, Mechanical Engineering, Electronics and Communication Engineering (ECE) and Electrical and Electronics Engineering (EEE).

Employers felt that ITI/polytechnic students need to have knowledge and skills on tools/equipment, basic principles, mechanics and operations, and overall trade for the entry level position. The critical skills required for automobile industry are given in box 4.1.1

[28] These include: increase the electronic content in the car in the form of Electronic Control Units (ECUs), various sensors such as lambda sensors and wheel speed sensor; plastics over the period of time have found more and more applications in Automobiles; and poised to replace even load-bearing functional or structure parts such as frames for Front End Modules, Plastic clutch systems, Brake pedals etc.

Box 4.1.1:Critical skills required for Trade skill workers (ITI and polytechnic graduates)[29]

- Mechanical, fabrication, electrical and automation.
- Operators: Manufacturing and engineering production operators and stationary plant operators.
- Engineering technicians: Electrical, mechanical, mechatronics, robotics and tool design
- Electronics trade workers: Electronics/electronic equipment's
- Fabrication engineering trade workers: Sheet metals, structural steel welding, metal fabricators; Vehicle body builders and trimmers; and Vehicle painters
- Mechanical engineering trade workers: Metal fitters/machine tool setters, millwright, mechatronics
- Artisan skills: Electricians, fitters and turners, millwrights, electronics, tool jig and die

Employers stressed the need for introducing the latest technical advances in the respective areas. These may include: automation; electrical drives and power electronic drives; artificial intelligence (machine learning); and sensors, sensing equipment and devices. It was suggested that these topics are to be introduced right from the first year. New contents (on advanced skills) may be introduced by replacing irrelevant (and outdated) course content[30]. In addition, there should be emphasis on soft skills, personality development and management skills, which are important to prepare students to the world of work.[31]In the long term, there is a need for updating the courses of ITIs and polytechnics to reflect the changes in technology, auto manufacturing, repair processes and equipment used.

4.2 Institutes' Ability in Responding to Skill Requirements in the Market

The study obtained perceptions of the faculty to find out extent to which ITIs and polytechnics are responding to changed skills requirements in the market. In this regard, the respondents were asked to indicate their perception on various components. In respect of each component, the perception was sought on a five-point scale, the cues being 1, 2, 3, 4 and 5 where '1' and '5'represent extreme levels on availability/adequacy continuum. The average score in respect of each component is computed taking into account the score obtained by the respondent in the range of 1-5.

[29]Source: Views obtained from faculty, students, employees and employers.
[30]It was suggested to minimise first year syllabus related to physics, chemistry and mathematics without undermining it, as these subjects lays foundation for different courses. Utilise this time for technical education; and start relevant subjects for each stream.
[31]Training on SAP would equip students from CMA, EEE, ECE on job roles in stores and materials management.

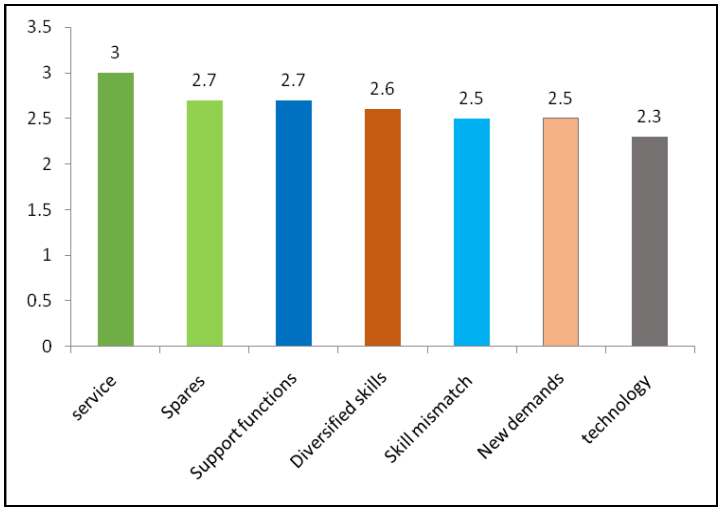

Figure 4.1: Faculty perceptions on the ability institutes to respond to skill demands

The faculty gave score of 2.5 on ITI and polytechnic graduates' skills mismatch in the entry level job. On the institute's ability to respond to skills required in the market, they assigned the highest score for the servicing segment and the least score for the changing technology landscape. A majority of aspects were given score of 2.5 to 2.7. This implies that faculty were not satisfied on the institutes' ability to equip the students with skills on various aspects. It was suggested by a faculty (B. Syamsundar) in the Government Polytechnic College, Anantapur that there is a need for greater improvements in all the aspects in order to reduce skill gap. In his opinion, faculty should be first equipped with the latest information and new developments. Although there are many job opportunities for students of automobile engineering, skill gaps are affecting their prospects of getting job. Outdated syllabus and age-old laboratories have limited students learning attainment levels. In recognition, he motivated students to do assignments suing online sources for learning skills beyond curricula.

4.3 Skills gap among ITI and Polytechnic Graduates

The narrative that emerged from the students regarding the skills possessed by them is as follows:

> They have basic theoretical understanding on the trade. Most of them were aware about the main course content of their respective trade or branch. They also had clarity on the number of theory and practical classes to be conducted in each semester. Further, they were having awareness about general as well as specialized skills required in the automobile industry.

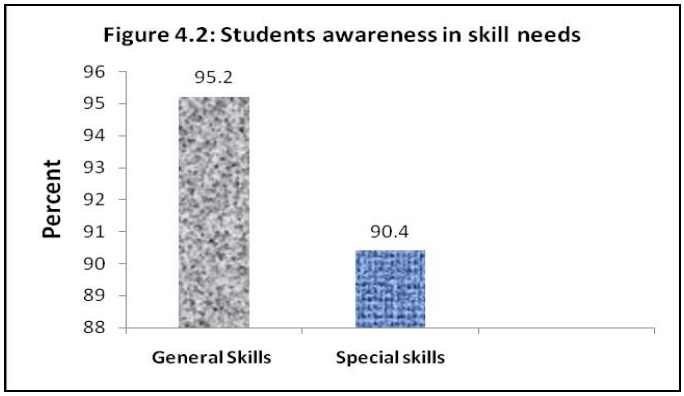

Figure 4.2.1: Students awareness in skill needs

Practical knowledge is important. But they have limited practical knowledge[32] due to lack of lab facilities, non-availability of latest equipment, inadequate staff, etc. Company specific knowledge is necessary for improving the chances of employability. As it is not possible to teach skills specific to each of the Industries or establishments as part of the regular course, support mechanisms are to be created to fill this gap.

Employers observed that there is a huge gap between the skills needed in the industry (which comprised both technical and non-technical skills and attributes) and the skills acquired by the graduates from ITIs and Polytechnics. Table 4.1 plots the major skills gaps among ITI and Polytechnic graduates, as perceived by employers, employees and faculty members. It shows that industry requires a divergent set of skills. In addition to technical skills, certain non-technical skills and competencies will assume increased significance. (See also Table A-9 in Appendix 3 on the findings of other studies on skill gaps.)

Table 4.1: Major skill gaps among ITI and polytechnic graduates by Stakeholder groups

Stakeholder	Skills gaps
Faculty	• Lack of comprehension ability, behaviour and attitude as required in workplace. • Gap between curriculum and industry requirement. • Lack of lab technicians, attenders and advanced equipment in labs to teach practical classes. • Limited visits to industry are affecting students' ability to acquire practical skills. • Faculty members get limited opportunities to update their knowledge and skills.

[32] There are many concerns related to lab. Students get limited time for practical learning due to shifts. A majority of polytechnics in the district have to get slot from government polytechnic to provide training to students; and the students get a maximum week period in a year. Other issues include shortage of technicians; outdated and dysfunctional equipment; no display on evolution of tools; teacher lacks practical knowledge and understanding in advanced technologies.

Stakeholder	Skills gaps
Employee	• Limited practical knowledge on latest developments related to engine (diesel and electrical) and battery mechanism; machine operation; sensors; AI; robotic technology; and quality control. • Not familiar with sophisticated machines • Limited understanding in controlling operation systems, trouble shooting, critical thinking and problem-solving • Huge lacunae in communication and soft skills, which will be a major bottleneck in adjusting to the industry's working conditions
Employer/ Manpower agencies	• Inadequate trade knowledge, lack of practical skills and poor application of the available trade knowledge • Not familiar with such sophisticated machines which are more prevalent at passenger car manufacturing units • No understanding on the big picture: Where the activity being performed (say, tightening a bolt) fits into overall process • Inadequate ability to discern minute distinctions in components leading to erroneous assembly –mixing of ordinary nuts with lock nuts • Insufficient ability to communicate problems faced during the daily routine • Inability to adjust to work place culture due to poor communication and soft skills; and lack of work place orientation and culture. • Insufficient understanding of discipline, industrial rules, work related procedures • Lack of basic understanding about automation and robotic technology; advanced electronic machine; and Artificial Intelligence. • Inadequate orientation towards final safety of the vehicle after servicing • Skill deficiency was found in terms of reading and comprehension of English; behaviour, attitude and interpersonal skills; and basic communication.

4.4 Factors Determining Skill Gaps

Various factors are determining the skills gaps among ITI and Polytechnic graduates. The important ones include: infrastructure; Staff adequacy; functional lab facilities; curricula; Institute-Industry linkages[33]; training on new technologies; and additional skilling opportunities.

In this regard, the students were asked to indicate their perception on these factors. In respect of each component, the perception was sought on a five-point scale, the cues being 1, 2, 3, 4 and 5 where '1' and '5'represent extreme levels on availability and adequacy continuum. The average score in respect of each component is computed taking into account the score obtained by the respondent in the range of 1-5.

[33]For hands-on training and industrial attachment for the students

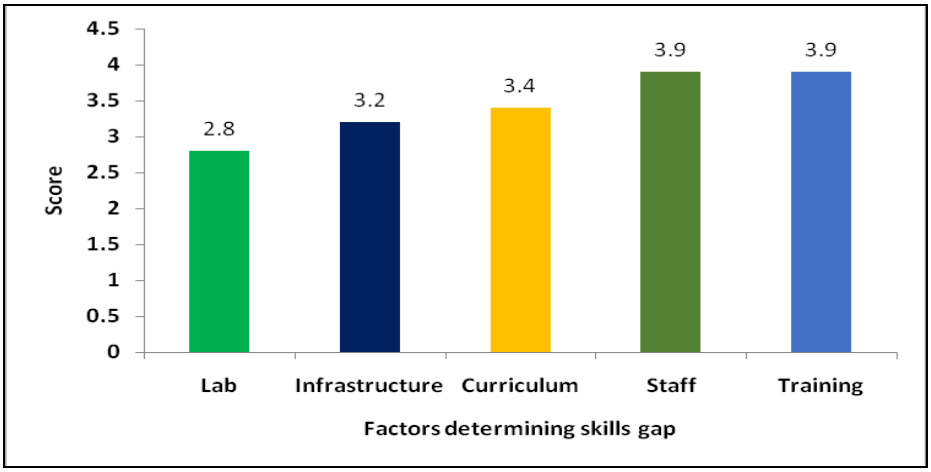

Figure 4.2.2: Score on students' perceptions on different components

Infrastructure facilities: The students gave score of 3.2 on the status of infrastructure in the sample ITIs and polytechnic colleges (Figure 4.2). The best-case scenario was observed in Government and Private Polytechnic College in Anantapur. Government ITI-Hindupur represents the worst-case scenario on this aspect (Box 4.2).

Box 4.1.2: A case of Government ITI-Hindupur

Government ITI college, Hindupur is presently located nearby Lepakshi town[34]: the premises of a non-functional BC welfare hostel for Boys located 1.5 kms away from the town. It was shifted to the present location at the start of the academic year 2018-19. The institute does not haven hostel facility; and enough class rooms. And the available class rooms are fully occupied with lab equipment, thus leaving very less space for students. Basic facilities such as drinking water and functional toilets were also absent. Added to this, class rooms are crowded; and lab facilities are non-functional. The premises have single phase connection, thus limiting use of lab equipment. While the institute is functioning with various limitations from the present premises, BC welfare department has asked it to vacate the premises. This matter was taken to the notice of the Regional Deputy Director of ITIs.

The students studying in this institute come from different places; and they travel distance of 5 to 55 kilometres to reach Lepakshi town. After reaching Lepakshi by bus, they must walk

[34] Government ITI college, Hindupur does not have own building. It used to function from a rented building in Hindupur. The institute had shifted to premises of a BC welfare hostel in 2018 (as per the directives of the Regional Deputy Director) after owner increased the rent abnormally. *Government has allocated land at Potnur at the outskirts of Hindupur for construction of own building; and construction is pending due to non-allocation of budget.*

about 1.5 kilometres to reach the college; and another 1.5 Kms to return to Lepakshi town to catch a bus in the evening. In the absence of transport facility from Lepakshi to college, the students are forced to walk 3 kms daily. In view of the above, the students wanted the institute to be shifted to a central location with required space and basic amenities.

Staff Adequacy: The score of 3.9 was given by students in relation to the availability staff in adequate numbers. It indicates that students were mostly satisfied with the availability of trainers/faculty. The data collected from the sample institutes show that proportion of contract/guest faculty is higher than regular staff. For instance, the students from ITI-Hindupur have shared that all the faculty members, except the Principal, in the institute were contract staff. And a single faculty member is expected to deal with different subjects of a trade. (In the absence of lab attendants and technicians, faculty were also burdened with conducting practical classes without any support.) The students perceived inadequate and inexperienced staff would affect quality of training and their learning outcomes[35].

Labs Facilities: The students rated low about the availability of lab facilities in the institutes. Lack of lab facilities is affecting students from acquiring the required practical knowledge. The main barriers faced by students in accessing the lab facilities were: Outdated machinery; lack of proper maintenance; non-supply of raw material required for demonstrations and experiments[36]; lack of trained lab technicians/faculty; and non-installation new equipments supplied. Among the sample institutes, ITI-Hindupur presented an extreme situation (Box 4.1.3).

Box 4.1.3: Non-functional Labs

Government ITI-Hindupur has outdated tools and equipment. It lacks support facilities and maintenance system. Labs were used only for identification of tools and machinery; and there was no possibility for demonstrations and experiments. Newly procured equipment could not be put into use in the absence of three-phase electric connection. Although it is mandatory for the institute to train a student in four-wheeler driving, the ITI does not have a Jeep. As a consequence, none of the students were given training in driving.

[35]It is generally perceived, teaching and learning process gets affected in the case of institutes relying heavily on contract staff.

[36]For instance, the principal of PVKK polytechnic college explained on different labs required for conducting practical classes to students pursuing course in Automobile branch: The department must have different labs such as Material & Metallurgy Lab; Auto Engine Lab; CAD Lab; Chassis, Body, Transmission Lab; Manufacturing Technology Lab; and Mechanics of Vehicles Lab. And all the labs must be equipped with modern machines and apparatus.

While non-availability of lab facilities is major concerns. The institutes not having the lab facilities had relied on other colleges with better land facilities. Three scenarios were observed in this regard:

- All the government polytechnic colleges without any lab facilities have been availing the facilities in the Government Polytechnic College of Anantapur;
- the Government Polytechnic College in Hindupur and an Engineering College in nearby locality have been mutually sharing each other facilities; and
- the Private Polytechnic College and its parent Engineering College had common lab facilities.

Curricula: The students have assigned a score of 3.4 on the need for upgrading curriculum. Further, employees with their experience of working in the industry felt a gap between curriculum and industrial requirement. Most of the students would want periodic review curriculum to ameliorate the perennial problem of courses becoming outdated. Responding on this, the faculty members informed that a mechanism already exists for upgrading of curricular in periodic manner both in polytechnics and ITIs (see for detailed discussion on this in section 5). To meet industrial standards, they said it is necessary to equip labs with advanced tools and technology along with updating curricula. In their opinion, the mismatch between course curriculum and industry requirements would continue, as the periodicity for upgrading curricula is once 4-5 years. And hence, curricula upgrading should accompany with various other measures keeping in view the pace of change in the industry (e.g., robotic technology and AI).

Institute and Industry linkages: ITIs have reported that industries were reluctant to have tie-ups with them. Thus, there is a need for strengthening the linkages between ITI and the industries. Industries' support is required for addressing critical gaps in the functioning ITIs and Polytechnics. The support is required for industrial visits, equipping labs with advanced technology and extending technical support (and knowledge partnership) in preparing students for local industry jobs. The study found some successful experiences of MOUs between institutes and industries. These are:

- **Maruthi Suzuki** has established an automobile Lab in the Government ITI, Anantapur. (The company has provided a new car for the automobile lab.) This is mainly aimed at making students industry ready; and for hands-on guidance.

- **The Polytechnic College for Women in Hindupur** has an arrangement with CISCO wherein CISCO had trained the faculty members of the Electronics branch on the advanced technologies related to networking and communication. The trained faculty have been guiding the students, since then, to carry out a six-month industrial training within the campus. This college also has an arrangement with BIT Institute of Technology, Hindupur for utilising lab facilities, as per need, for specific period of time during each semester. In addition, Save the Children and KIA Motors have supplied them with sports materials, books and dual desks.

The Latest Technologies: The students have assigned the high score of 3.9 on the need for training in advanced technologies. (Understandably, employees gave a score of 2.7, thus indicating comparatively lesser need for such training.) Further discussion with the students revealed that they didn't receive practical training on evolution of technologies, update on new knowledge and technologies. And they got limited opportunities to acquire soft skills, language proficiency and orientation on working conditions in industry. As a consequence, they lack understanding on several theoretical aspects of the trade. Attention is also required for improving the access to information on the latest technologies.

However, we found examples of faculty members taking interest in sharing information about the latest technologies. A case of teacher creating opportunities for learning new technologies is illustrated below: A faculty from the Automobile Engineering branch, in the Government Polytechnic of Anantapur, gave an assignment to the students on the latest developments in automobile industry. He categorized these developments into different topics and each student was assigned with a separate topic. Students were asked to use online information and prepare a PPT for sharing in the class. This approach helped the students in gaining knowledge on a range of topics. For example, a student (Mr. Eswarnaidu) studying in the Automobile branch of this college said that in this process he gained understanding on new technologies such as adaptive lighting system, 360^{o} camera technology, etc.

Additional Skilling Opportunities: The stakeholders expressed the need for additional skilling opportunities (in addition to knowledge and skills acquired in college) for improved learning outcomes of the students and their better employability. The aspects like creativity, critical thinking, problem-solving ability, innovation, team work, communication skills and life skills should get attention in this regard. These skills are currently being addressed in a

sporadic manner by private training institutes or KIA Basic training program. It is yet to find its way into the ITIs and Polytechnics. This aspect needs greater attention.

Over 81% of the employees studied had received induction training from the employer. They have stated that induction training had helped them in acquiring knowledge and skills required to role performed in the industry. The employees scored 2.7on the need for advanced trainings. They continue to face problems at work place due to lack of soft skills. According to them, soft skills will play a larger part in adjusting to the world of work. As part of preparing them from campus to corporate, basic knowledge about the trade, exposure to practical skills and soft skills are for equipping to industry.

SECTION 5: INITIATIVES FOR STRENGTHENING THE TECHNICAL INSTITUTES AND UPGRADING STUDENTS' SKILLS

A number of initiatives are already being implemented towards improving institutes' infrastructure development, upgrading curricula and skill development for students. These are critical for reducing skill gaps. Since huge amounts are spent on these initiatives, their outreach and efficiency should be improved. This section enlists all such initiatives.

5.1 Upgrading technical education institutes

For the Polytechnics and ITIs to become more relevant, they need to respond to the dynamic changes that are taking place in the industry. Towards this end, these institutions must pro-actively engage in building growing partnerships with industry for improving lab facilities, training the faculty to abreast with new technologies and co-curricular activities for preparing students from campus to corporate. Further, there is also need for tap and effectively use various government schemes/initiatives (Table 5.1) in strengthening and upgrading ITIs and Polytechnic colleges to equip and responding to skill requirements in the industry.

Table 5.1: Government Schemes and initiatives for strengthening ITIs and Polytechnics

ITI	Polytechnic
• Three major schemes were introduced during the Eleventh Five Year Plan or EFYP (2007–2012). These are: ❖ Upgradation of Government ITIs into Centres of Excellence ❖ Vocational Training Improvement Project ❖ Upgradation of ITIs through Public Private Partnerships (PPPs) • In 2014, started scheme for developing Model ITI in each state with a view to improve employability of ITI trained students and reduce skills mismatch. The scheme plans promote best practices in each state: ❖ closer industry-ITI partnership; ❖ updated equipment, updated courses and curriculum; ❖ well-trained teachers with latest industrial knowledge; ❖ introduction of soft skills in curriculum; and ❖ Better placement services.	• **Modernisation and removal of obsolescence (MODROB)** scheme provides Rs. 20 lakhs grant to institutions for upgrading infrastructural facilities, laboratories, workshops, and computing facilities. The project duration is 2 years. • **Mentoring to institutes by a well performing institute (margdarshan):** Under this scheme, a reputed institute has to guide and disperse knowledge to 10 technical institutes for three years. The scheme provides a grant of Rs. 50 lakhs. • **Unnatbharatabhiyan:**To connect institutes of higher education with local communities to address the development challenges of rural India through participatory processes and appropriate technologies for accelerating sustainable growth. • **Skill and personality development programme centre for SC/ ST students:** Providing SC and ST students with special skill trainings (i.e., communication, personality development and proficiency in English language) apart from regular study.

5.2 Current approach to revision of curricula

A sustainable solution for addressing skill gap could be enriching the curricula (on theory, practice and soft skills) in polytechnics and ITIs in order to respond to the changing needs of industry. (There is a need for responding to changing technological landscape, which is resulting in many disruptive changes.)

There is an existing mechanism for updating curricula, periodically, both in Polytechnic and ITIs. For polytechnic collages, NITTTR in coordination with SBTET will design the course curricula. The revision of curricula will take place once in five years[37]. Inputs from the industry and faculty will be obtained to map the changed needs. Senior faculty in different positions (i.e., lecturers, senior lecturers and head of the departments) will be involved in reviewing the syllabus. After initial round of revision, it will be sent back to all the colleges for further inputs from the head of the departments of respective branches.

Currently, ITIs adhere to NVEQF; and ITIs courses are from level 3 to 5. It may be noted that short duration and one-year courses offered at ITI are at level 3-4; and two-year courses are recently upgraded to level 5. Table 5.2 gives details of the syllabus revision process.

Table 5.2: Existing system for updating syllabus and possible interventions

Particulars	ITI	Polytechnic
Institutes responsible	Ministry of Skill Development and Entrepreneurship (MSDE) National Council for Vocational Training (NCVT), an advisory body that functions under MSDE CSTARI[38] is responsible for the revision of syllabus NIMI, Chennai will publish text books and materials as per changed syllabus	All India Council for Technical Education (AICTE) National institute of technical Teachers Training and Research (NITTTR) State Board of technical Education and Training (SBET)
Periodicity	3-5 years (periodicity varies depending industrial demand)	Once in five years
Stakeholders consulted	A committee will be constituted at the national level by CSTARI There is no provision for involvement of ITIs and its faculty	Selected industries and sector specialists Senior faculty (i.e., lecturers and Heads of departments from each branch)

[37]The revised syllabus will be implemented for 4-5 years. C-16 has been implemented between 2016-17 and 2019-20. From 2020-21 onwards, C-20 will come into force.
[38]It was established in1968 by the Ministry of labour and employment DGE&T in collaboration with the Federal Republic of Germany.

Process followed	A committee is constituted at the national level with members drawn from higher education, board of technical education, IIT professors and industry representatives. CSTARI revises syllabus (as per global standards) in compliance with NVEQF since 2018. NVEQF has been followed since 2018. NVEQF's levels applied for ITIs are 3 to 5. GOI decides levels for each of the trade. Short duration and one-year course courses are at level 3-4 All two-year courses are upgraded to level 5.	NITTR in coordination with SBET will design the curricula. Inputs from industry and faculty will obtained on the changes required Once syllabus is revised, before finalisation, it is again shared with the heads of the respective departments for further feedback. Faculty are trained through quality improvement programme and Faculty development programme after revision of the curricula
Key observations	ITIs all over the India should follow the same syllabus as set by CSTARI. Hence, the syllabus is rigid. The system does not allow for any changes to be incorporated in the curriculum as suggested by the local industries on a continuous basis.	Five years for revision of syllabus is too long given the pace of change in industry SBET engagement is very minimal in updating syllabus. Despite updating syllabus, lack of laboratory facilities affecting students from acquiring practical skills[39].

5.3 Skill Upgrading Courses

A holistic approach to skills development is essential[40]. This approach necessitates promoting a demand-led approach to skills development in order to improve alignment between the qualification and skills produced by education and training systems and labour market demand (Petersen et al 2016). Intarakumnerd P and Chaoroenporn P in their paper have stressed the need for better understanding the roles of public and private intermediaries in skills development to improve alignment between skills demand-side and supply-side actors. The demand led skills development requires linkages and coordination between industries, education and training institutes (i.e., ITIs and polytechnic colleges).

Significant investments are made, over the past decades, for reducing the skill gap, especially after starting Skill India mission. The specialised skills development institutions[41] have been set up in a bid to stimulate skill development that will satisfy current and future skills

[39] Many polytechnics in the district don't have laboratory facilities. It was informed that all such colleges provide limited practical classes as per slots given by the polytechnic college in the district headquarters. Each college gets a maximum of one week per year for this.

40 It is not enough just limit our efforts to updating curricula and infrastructure development.

41 These are promoted as part of specialised skill development initiatives.

demands. (These institutions were established through partnership between government, industry and other key stakeholders.) For instance, TSDI, SDC, IOE were promoted to facilitate additional and advanced skills to students. Through these measures, the wide gap that existed between industry and post secondary educational institutes can be significantly reduced.

The study found that there are several skill development interventions in the district. The Government Polytechnic College in Anantapur town has initiatives namely TSDI[42], SDC and KIA training centre; and these are discussed in more detail below. (These initiatives have provided opportunity to students for further skilling.)

- ***SEIMENS Centre of Excellence***: In the case of Anantapur district, a COE is available in JNTU Engineering College. The facility is expected to contain all the relevant training equipment to support specialised training programs relevant to OEMs, automotive component manufacturers, after sales support centres, dealerships and vehicle maintenance. The centre will train engineering and diploma students and faculty on world class SIEMENS equipments and software covering mechanical, Electrical and Electronics domain. Students can also utilise CoE laboratories for academic projects in various domains like CAD, CAE, CNC machines, Automation, etc. CoE will provide FDP for faculty of Mechanical, EE, ECE, instrumentation and automobile engineering. Courses offered as part of FDP are Basic NX design and simulation, Digital manufacturing and industrial robotics, CNC programming and Machining, Industrial automation and Electrical and Energy studies. They will also be provided with Summer Internship program (SIP) to upgrade skills through industrial oriented training.

- ***Technical Skill Development Institute (TSDI)***: The objective of SIEMENS project is to bridge the gap between institution and industry through industry oriented training[43]. The SIEMENS t-SDI will train ITI, Diploma students, unemployed youth and school dropouts on world class SIEMENS equipments and software's. It

42 TSDI is PPP initiative of APSSDC and SIEMENS. It helps in strengthening weak education system (i.e., outdated engineering concepts, no vocational education or interaction, outdated tools in labs and faculty not equipped with industry trends and practices) and overcoming challenges faced by industry (i.e., large investments in time, effort and money to train students;,6-18 months before recruits become productive; and affects competitiveness of companies). There are two TSDIs in the district; and 36 in the state.

43 It enables institutes to improve quality of education through training students in industry skills or industry oriented training; and by providing the state-of-art tools to match industry standards.

provides training by SIEMENS certified training partners. Participants will acquire industry best practices as they trained on the same equipment/software used by industry.

- ***KIA's training centre***: It is a joint initiative of APSSDC and KIA. Five-day basic training course is provided in this centre based on a KIA's module developed in Georgia. The centre has a replica of actually vehicle assembly process. A trainee learns different tools and basic operations related to assembly shop. (Fist one and half days, the trainee will be trained on theory; and practice in 20 work stations[44] for three and half days @ 90 minutes per work station.)
- ***Skill Development Centre (SDC)***: SDC[45] offers 16 courses primarily focusing on communication, aptitude and soft skills. The polytechnic students can attend these courses while pursuing diploma course. It appears that SDCs are not functioning as visualised; and need a lot of efforts to strengthen them.

Notwithstanding, opportunities are to be explored for more co-funded projects which are directed toward localising skill development. There is also need to strengthen co-curricular and extra-Curricular activities[46]. Students must be encouraged to learn technology through YouTube and online sources. As part of the learner management system, the training centres should start the art of simulation for welding and spraying and a vehicle assembly which will be replica of actually vehicle assembly process. The training programmes should follow blended learning approaches class rooms, specialised workshops, online real time hands-on training and digital skills that promote active and independent learning.

[44] Trainee gets the specific area of competency in each work station.
[45]SDCs were established under Rajiv yuvakiranalu in 2004 to catering to the polytechnic students. The centres are available in all the polytechnic in AP.
[46] Efforts should be made towards strengthening apprenticeship program, practical Training in industry for six months, assignments on advanced technologies, Industrial/ exposure visits.

SECTION 6: SUMMARYAND CONCLUSIONS

6.1 Summary of Findings

SANKALP, an initiative of the Save the Children and KIA Motors, aims to promote vocational education for better employability of youth. This initiative has greater relevance in the context of employment opportunities created by KIA motors in the district. Its focus is on ITI and polytechnic graduates, who constitute a significant part of the total manpower in automobile sector.

The initiative recognised that there is demand-supply gap in human resource and skill requirements. For better understanding these aspects and to guide the project's strategy, a labour market study was carried out in the district. The key findings that emerge from the study are:

1. The key players in the value chain of automotive industry who are providing employment in Anantapur district include KIA's OEM and 18 component manufacturers, dealers, authorized service centers, unorganized service centers, other service providers.
2. The share of direct employment in automobile industry of the district is 81%. This was largely triggered by KIA motors.
3. From the manpower supply point of view, the district has 39 ITIs and 16 polytechnic colleges with intake capacity of 6,240 and 3,240 students per annum respectively.
4. There was supply gap of 1,966 and 584 ITI and polytechnic graduates in the district during 2019-20.
5. There would be demand for 990 more diploma holders in the next five years as against the supply of 2,024 graduates. The demand for ITI graduates during the same period is 4,361 as against supply of 4,430.
6. The problem in the next five years, may be not so much in terms of availability of human resources; but the quality of manpower available is a major concern.
7. Skills required in the industry include basic knowledge on tools and equipment, basic principles, mechanics and operations, etc. Awareness on mechanical, fabrication, electrical and automation would be added advantage. Employability chances of students are affected due to their inadequate trade knowledge, lack of practical skills

and poor application of the available trade knowledge. They are also not familiar with such sophisticated machines. There appears to be a majorproblem in communication and soft skills.

8. The important factors determining skills gap were lack of infrastructure, inadequate staff, lack of functional lab facilities, outdated curricula, problems in institute-Industry linkages, lack additional skilling opportunities, etc. Some initiatives have already been implemented for improving addressing these factors. It is necessary to make effective use of them.

6.2 Guidance Framework for Evolving Project's Strategies

To sum up, the project's strategies should be designed taking the following factors into consideration: Technical education institutes can only provide basic knowledge of particular trade. It is impossible to train students according to varied industrial requirements, as different industries have different requirements. While there is a need for strengthening the existing mechanisms for up-gradation of syllabus in ITIs and polytechnic, other mechanisms are also required for preparing students for smooth transition from campus to industry.

The overall framework that should guide the project's strategy and interventions of other stakeholders involved in the industry is the up-gradation of ITIs and polytechnics in order to improve the quality human resources supplied in the district.The important measures proposed are:

- While ITIs have the responsibility in equipping students on theory and practice of the trade, the industry should take responsibility of preparing them to industry specific requirements.
- Promotion of closer Industry-Institute partnership; updated equipment, updated courses and curriculum.
- Well-trained teachers with the latest industrial knowledge and introduction of soft skills in curriculum.
- Strengthening the existing curricula revision process is an important area to work with. Pilots may be taken up in initiating trades relevant to local industries and revision of curriculum. Model institutes should play greater role in this activity.
- Students are to be provided with additional skilling opportunities such as SDI in polytechnic colleges; and existing initiatives must be strengthened and effectively

used. Opportunities for further expanding such activities should be explored in partnership/collaboration with industries.

- It is also necessary to establish industry specific training centres in ITIs/Polytechnic Colleges.
- There is also a need toencourage students to participate in the courses offered by different institutes (e.g., CSRs) and various government schemes (e.g., PMKVY and DDU-GKY). For example, Indian Tobacco Company (ITC) Limited has been conducting a certificate course on Car mechanics for ITI students.

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Appendix 1: Field Work Schedule of the study team in Anantapur District

Date	Program Schedule	People Interacted With
06-12-2019	Preparatory meeting at the Save the children office, Anantapur Shared inception report and work plan; and Obtained feedback on study methodology and tools	Mr. Vinod (P.O) and other team members of Sankalp
	Field testing study tools at Govt. polytechnic college, Anantapur	HODs, faculty members and students
	FGD with faculty of Govt.Polytechnic college, ATP	Dr.Chandrashekar Reddy, Principal of the college Faculty members: Mr.Shyamsundar and Mr. Sudhakar Reddy Mr.Sunil, APSSDC
	Interaction with APSSDC in-charge of KIA training centre at govt. polytechnic, Anantapur	Mr. Sunil,APSSDC
07-12-2019	Finalisation of study tools after incorporating feedback from field testing	
	Visit to KIA Training centre at Govt. polytechnic college	Mr. Sunil, APSSDC
	Data collection from HoDs and Placement officer at government polytechnic college at Anantapur	Faculty members: Mr.Sudhakar Reddy, M.Suresh babu, Mr. David (In-charge principal) and C.Rajendra Prasad
08-12-2019	Training to field investigators	PLF core team and local investigators
	Interaction with KIA's staff who has indirect association with its CSR	KIA's Employee
09-12-2019	Data collection from HoDs, faculty of polytechnic and Students of Government polytechnic college	All HoDs, faculty members, Mr.David- In-charge principal; and students
	Data collection from government ITI, Anantapur	ITI principal, Placement officer, faculty members and students
	Discussion with TSDI and SDC staff in the Government polytechnic college	Mr.Suresh Babu (In-charge of TSDI) Mr.Lakshmi Narayana (In-charge of SDC)
10-12-2019	Data collection at PVKK polytechnic college at Anantapur	Mr. Abhinav Principal, HoDs, faculty members, Placement officer and students from four different branches
	Visit to JNTU, Anantapur	Prof. Chandrasekhar Reddy, HOD, department of mechanical Engineering The SIEMENS Centre of Excellence(COE) at JNTU (i.e., Mr. Rizwan, In-charge SIEMENS)
11-12-2019	Interaction with MAHINDRA showroom HR, Anantapur	Mr.Rammohan (HR)

Date	Program Schedule	People Interacted With
	Interaction with Maruthi showroom HR / Maruthi Driving school manager	Mr.Vinod, HR Manager, Maruthi showroom Mr.Anilkumar Reddy, Manager of Maruthi driving school
	Interact with RTO of Anantapur district	Mr.Shivaprasad Rao
	DRDA, Anantapur	Mr. Suryanarayana, JDM. DRDA, Anantapur.
	APSSDC, Anantapur	Mr. Srikanth Reddy, District Skill Development Officer Mr. Teja, Placement officer
12-12-2019	Data collection o at government women polytechnic, Hindupur	Dr.G. Sathyanarayana, principal, HoDs, placement officer(over phone), other faculty members and students
	Data collection at government ITI college, Hindupur	In-charge principal, HoDs, placement officer, other faculty members and students
	Interaction with Sri Durga MARUTHI showroom at Hindupur.	Chief mechanic and Customer relation officer
	Data collection of employees of automobile industry at Somandaypalli village	Mr. Sreenath (Employee in KIAs ancillary unit)
13-12-2019	Interaction with KIA's HR Manager(over phone)	Mr.Umashankar (HR Manager)
	Interaction with KIA's training centre	Mr. Sachin and two other members
	Interaction with SLAP ancillary unit (HR)	Mr.Rushender Reddy (HR manager) Mr.Shankar Narayana (Asst.HR manager)
14-12-2019	Interaction with Manpower suppliers of KIA and its ancillary units	Mr.M.Haresh, Manager of GAN engineer Mr.Asok, Manager of Shine facility Service
	Interaction with State ITI colleges secretary, Anantapur	Mr.B.Sudhakar, Principal, ITI (Penukonda); and General Secretary of the state Private ITI colleges federation
	Interaction with accountant, KIA motors	Mr. Naveen, accountant
15-12-2019	Interaction with employees of Hyundai Steel and other KIAs ancillary units	Mr.Govind (Hyundai steel employee) Mr.Mansoor (Engineer in KIA main plant /assemble unit)

Appendix 2: Study tools

LABOUR MARKET STUDY FOR AUTOMOBILE INDUSTRY: PROJECT SANKALP, ANANTAPUR DISTRICT, ANDHRA PRADESH

I: QUESTIONNAIRE FOR MAJOR EMPLOYERS

1. Identification/location details		
1.1	Name of the establishment	
1.2	Mandal located (1-Anantapur, 2-Penukonda, 3-Hindupur)	
1.3	Address	
1.4	Name of the respondent	
1.5	Designation of the respondent	
1.6	Contact number of the respondent	

2. Basic information about the establishment		
2.1	Established Year	
2.2	Scale (1-large, 2-medium, 3-small, 4-micro)	
2.3	Type (1-multinational, 2-Public sector, 3-private limited, 4-partnership firm, 5-Sole proprietor)	
2.4	Major products/Services	
2.5	Installed capacity (units per month by product type)	
2.6	Actual production (units per month by product type)	
2.7	Major expectation from the workers (1-knowlede and Skills, 2-Learning and development, 3-Career growth, 4-productivity and efficiency, 5-Loality)	

3. Staff employed in different departments/divisions/sections

Sl #	Category	designation	Section	Skill level (a)	Nature of Work	Time of establishment		Current Strength		Required Strength	
						M	F	M	F	M	F

Code: (a)1-Senior Management, 2-Middle level Management, 3-Admin&accounts, 4-Support staff, 5-full time workers, 6-contract workers
(b)1-Skilled, 2- Minimally skilled, 3-Semi skilled

4. Staff Attrition

Sl#	Category /designation	Recruitment (a)	% of attrition (b)	Reasons for attrition

Code: (a) 1-Employment Exchange, 2-From other industries, 3-VT Institutions, 4-Contractors, 5-Through current workers, 6-online, 7-Other Sources (pl. specify)
(b) 1-retirement, 2-better opportunities outside, 3-layoffs, 4-downsizing, 5-technology upgradation, 6-any other reason (specify)

5. Available Vacancies Information

Sl	Category	Designation	Monthly wage	No. of vacancies	Educational Qualification	Skill Level required	Gender

6. Skill requirement and availability						
Sl	Category/ Designation	Technical knowledge Required	Rating (a)	Skills Required	Rating (a)	Narration
(a) 1-Outstanding, 2-Proficient, 3-Satisfactory, 4-Improvement needed						

7. Skill availability		
Available Freely	Trained In-house	Skills Required in future

8. Mapping main knowledge and skills gaps			
Sl	Particulars	Knowledge/skills	Attitudes/soft skills
1	Job profiles which need training		
2	Skill gap themes		
3	Major skills gaps faced by industry		
4	Reason for skill gaps		
5	Skill gaps that need immediate response		

9. Suggestions for reducing skill gaps

II: Questionnaire for Vocational Training Institutes

1. Details of Respondent		
1.1 Name	1.2 Designation	1.3 Phone Number

2. Basic Information about VTI	
2.1 Name of VTI	
2.2 Name of the Principal/ director	
2.3 Location	
2.4 Address with contact number, Email id & Website (if any)	
2.5 Type of Institution (Code: 1-ITI (Private), 2-ITI (Govt), 3-polytechnic, 4-other VTIs	

3. Facilities provided by VTI (1-yes, 2-No)	
Own building	
Power supply	
Piped water supply	
Furnished class rooms	
Fully equipped laboratories	
Hostel facility for girls	
Hostel facility for boys	
Separate washrooms for men and women	
Travel facility for trainees (i.e., bus pass)	

4. Mobilization and Targeting	
Process of mobilizing trainees	
Area/locations from where students mostly come from	
Challenges faced in mobilization	
Special efforts made to mobilize trainees for courses related to automobile industry	

5. Courses offered during 2019-2019 by VTI (relevant to automobile industry)		
Course Title	**Type of trainer (a)**	**Selection of courses (b)**

Code: (a) 1-Regular, 2- Guest, 3- Contract
(b) 1-demand from trainee, 2- demand from industry, 3-mandated by the board/university, 4-availability of faculty, 7-availability of facilities and equipment, 8-other reasons (specify)

6. Trainees enrolment in the last 3 years for courses relevant to automobile industry

Year		Trade 1		Trade 2		Trade 3		Trade4		Trade 4	
		Men	*women*	*Men*	*women*	*Men*	*women*	*Men*	*women*	*Men*	*women*
2018/19	Sanctioned										
	Admitted										
	Dropout										
2019/20	Sanctioned										
	Admitted										
	Dropout										

Reasons for low enrolment:

Reasons for drop-out:

7. Curricula taught and Placement Services provided	
No .of theory sessions with details	

7. Curricula taught and Placement Services provided	
No. of practical classes with details	
Do you train students in soft skills? (1-yes, 2-No)	
Give details of soft skills provided	
Do you train students for appearing interviews?(1-yes, 2-No)	
Do you facilitate placement of students? (1-yes, 2-No)	
process followed in providing placement ***(a)***	
Trainees placed from last batch	
No. trainees placed in KIA	
Average starting monthly pay	
Have you observed any skill mismatch after placement?	
Number of students who dropped out after placement	
Code: (a) 1-campus recruitment, 2-industry, 3-employment exchange, 4-old students, 5-Manpower supplier, 6-others	

8. Are you aware of current and future skills required?

9. What extent VTI is responding to changed skills requirement in the market?

10. What process is followed in introducing new courses and/or revising course content?

11. Your understanding and suggestions on Skills for new era		
Item	**Score (1-5)**	**Suggestions**
Responding to new demands		
Taking into changing technology landscape		
Diversified skill requirement in the sector		
Effective service delivery		
Spares Management		
Support functions		

12. What support is needed for VTIs and faculty to respond to changed needs?

Investigator's Observations (Give narrative description)

III: QUESTIONNAIRE FOR TRAINEE

1. Basic information about young women	
1.1 Name of the respondent	
1.2 Contact number of the respondent	
1.3 Caste (1-SC, 2-ST, 3-BC, 4-OC, 5-Minority)	
1.4 Age in years	
1.5 Education Qualification (1-5-9th class, 2-10th pass, 3-12th pass, 4.Diploma, 5-degree/PG)	
1.6 Are you BPL card holder?	
1.6 Category of respondent (Code: 1-Trainee, 2-employee, 3- self-employed, unemployed)	

2. Common questions for category of respondents	
2.1 What are you currently engaged in?	
2.2 Preferred trade for skill training	
2.3 Reasons for preference	
2.4 Are you aware of VTIs offering a course you preferred?	
2.5 Preferred location of (self) employment	
2.6 How much you aspire to earn?	
2.7 Are you aware of courses related to automobile industry?	
2.8How do you come to know about them? (1-friends/relatives, 2-old students, 3-VTI staff, 4-officials, 5-media, 6-others)	
2.9 Is there a need for more information on VTIs and courses?	
2.10 Assessment of overall skill level (1-10)	

3. Information to be collected from Trainees	
3.1VTI name& Location	
3.2Title of Course being pursued	
3.3 course duration	
3.4 Why did you choose course? specify reasons	
3.5 How did you come to know about the course? (1-Newspaper, 2- Social Networks, 3-Enrolment Drives, 4- Any others)	
3.6Did you examine other options before choosing this course? (1-Yes, 2-No)	
3.7Did you receive counselling from VTI before joining course? (1-yes, 2-No)	
3.8Difficultiesfaced in joining the course? 1-yes, 2-no	
3.9If yes, what were they? (1-No information on VTIs, 2- Not aware of the various courses available, 3- No counselling support, 4- no support from family, 5-others)	
3.10 General trade skills taught	
3.11Specalised skills for automobile industry taught	
3.14 Skills required for new era in automobile industry (IT, automation, etc)	
3.15 soft/Life skills taught	
3.16Are you aware of job prospects in automobile industry?	

4. General perceptions – rating by participants in the scale of 1-5 (both trainee and employed)			
Sl#	Parameter	Rating	NA

4.1	Assessment of overall skill level		
4.2	Utility of vocational training received (1-5)		
4.3	Satisfaction with VTIs in providing skills		
4.4	Access to VTIs		
4.5	Capability of VTIs – Faculty teaching skills		
4.6	Availability latest technology and equipment with VT		
4.7	Satisfaction with monitory benefits received		
4.8	Need for further advanced training		

5. Observations of field investigators

IV: QUESTIONNAIRE FOR EMPLOYEE

1. Basic information about young women	
1.1 Name of the respondent	
1.2 Contact number of the respondent	
1.3 Caste (1-SC, 2-ST, 3-BC, 4-OC, 5-Minority)	
1.4 Age in years	
1.5 Education Qualification (1-5-9th class, 2-10th pass, 3-12th pass, 4.Diploma, 5-degree/PG)	
1.6 Are you BPL card holder?	
1.6 Category of respondent (Code: 1-Trainee, 2-employee, 3- self-employed, unemployed)	

2. Common questions for category of respondents	
2.1 What are you currently engaged in?	
2.2 Preferred trade for skill training	
2.3 Reasons for preference	
2.4 Are you aware of VTIs offering a course you preferred?	
2.5 Preferred location of (self) employment	
2.6 How much you aspire to earn?	
2.7 Are you aware of courses related to automobile industry?	
2.8 How do you come to know about them? (1-friends/relatives, 2-old students, 3-VTI staff, 4-officials, 5-media, 6-others)	
2.9 Is there a need for more information on VTIs and courses?	
2.10 Assessment of overall skill level (1-10)	

3. Information to be collected from employed	
3.1 Name of establishment	
3.2 Years of employment with current employer	
3.3 Previous work experience, if any	
3.4 Current Job role/ Designation	
3.5 Nature of work (and responsibilities)	
3.6 Critical skills required	
3.7 Did you face any skill mismatch in current job?	
3.8 If yes, give details	
3.9 Did you undergo vocational training prior to joining the job?	
3.10 if yes, which institute?	
3.11 Did you receive in-house training after joining course?	
3.12 do you get refresher trainings?	
3.13 If yes, frequency of refresher courses	
3.14 did you work in Bangalore at point of time	
3.15 Are you interested to migrate Bangalore or other places for better job opportunities	
3.16How do you rate your knowledge (scale: 1-5)	
Generalized	
Specialized	
3.17 How do you rate your skills (scale: 1-5)	
Generalized	
Specialized	
3.18 Approximate monthly income	

4. General perceptions – rating by participants in the scale of 1-5 (both trainee and employed)			
Sl#	Parameter	Rating	NA
4.1	Assessment of overall skill level		
4.2	Utility of vocational training received (1-5)		
4.3	Satisfaction with VTIs in providing skills		
4.4	Access to VTIs		
4.5	Capability of VTIs – Faculty teaching skills		
4.6	Availability latest technology and equipment with VT		
4.7	Satisfaction with monitory benefits received		
4.8	Need for further advanced training		

5. Investigator's observation

V: QUESTIONNAIRE FOR YOUTH

1. Basic information about young women	
1.1 Name of the respondent	
1.2 Contact number of the respondent	
1.3 Caste (1-SC, 2-ST, 3-BC, 4-OC, 5-Minority)	
1.4 Age in years	
1.5 Education Qualification (1-5-9th class, 2-10th pass, 3-12th pass, 4.Diploma, 5-degree/PG)	
1.6 Are you BPL card holder?	
1.6 Category of respondent (Code: 1-Trainee, 2-employee, 3- self-employed, unemployed)	

2. Common questions for category of respondents	
2.1 What are you currently engaged in?	
2.2 Preferred trade for skill training	
2.3 Reasons for preference	
2.4 Are you aware of VTIs offering a course you preferred?	
2.5 Preferred location of (self) employment	
2.6 How much you aspire to earn?	
2.7 Are you aware of courses related to automobile industry?	
2.8How do you come to know about them? (1-friends/relatives, 2-old students, 3-VTI staff, 4-officials, 5-media, 6-others)	
2.9 Is there a need for more information on VTIs and courses?	
2.10 Assessment of overall skill level (1-10)	

3. information to be collected from self-employed	
3.1 Years of self-employment	
3.2 reasons for choosing self-employment	
3.3 Type of activity	
3.4 How did you acquire skills for the activity (1-worked as an employee, 2-attended VT, 3-others)	
3.5 Approximate monthly income	
3.6 willingness to learn skills for advancing activity	
3.7 If yes to3.6, give reasons	
3.8 Willingness to be employed	
If yes, give reasons	

4. **Information to be collected from unemployed youth**	
4.1 Years of unemployment	
4.2 Reasons for unemployment	
4.3 Are aware of vocational training? 1-yes, 2-No	
4.4 Did you receive training in any trade? 1-yes, 2-No	
4.5 if yes, specify trade	
4.6 Preferred trade for training	
4.7 Reasons for preference	

5. Self-employed/unemployed youth interest s for other trainings	
5.1 Are interested in training in garment industry related courses (1-yes, 2-No)	
5.2 Are interested in four wheeler driving course (1-yes, 2-No)	

6. Investigator's observations

Appendix 3: AdditionalTables for Sections 3 and 4

Table A-1: Estimates on the proportion of ITI and diploma holders to the total manpower across the value chain

Establishment	IMACS		Primary survey	
	Diploma	ITI	Diploma	ITI
OEMS Assembly production	8 – 10	50 -55	12-15	60
Ancillary Large	15 – 20	40- 45	15	52-55
Ancillary small	4 -5	10- 12		
Dealership	10 – 15	10-15	10	25
Authorized Service centers	10 -15	65 -70	5-7	50-60
Unorganized service centers	NA	NA	6	35
Other service providers	NA	NA	7	35
Driving schools	NA	NA	5	25

Source: IMACS study report, 2017.

Table A-2: No. of ITI institutes and number of students passing out

Trade	Relevance toto automobile industry	No. of it is having course		Number of students				Proportion	
		Govt	*Private*	*Admitted*	*Drop out*	*Appeared exams*	*Pass out (%)*	*Jobseekers*	*Lateral entry*
Motor Mechanic	Direct	3	1	80	20	60	54	43	11
Diesel Mechanic	Direct	5	3	176	25	151	136	109	27
Wireman	Indirect	1	0	22	3	19	17	13.5	3.5
Fitter	Indirect	6	20	572	45	527	474	379	95
Welder	Indirect	4	0	60	10	50	45	36	9
							726	580.5	145.5
Note: There are 6 government ITIs and 33 private ITIs in the district.									

Table A-3: No. of Diploma institutes and number of students passing out

Trade	Relevance to automobile industry	No. of Polytechnic having course		Number of students				Proportion	
		Govt	*Private*	*Admitted*	*Drop out*	*Appeared exams*	*Pass out (%)*	*Jobseekers*	*Lateral entry*
Automobile engineering	Direct	2	0	180	20	160	128	26	102
Mechanical engineering	Direct	3	4	480	58	422	338	68	270
Electronics and communication engineering	Indirect	5	3	540	64	474	381	76	308
Electrical and electronics engineering	Indirect	5	3	540	64	474	381	76	308
				1740	206	1530	1228	246	988
Note: there are 10 government polytechnics and 6 private polytechnics in the district									

Table A-4: Incremental Workforce Demand & Supply Gap in Anantapur District

Particulars	2019-20			2020-2025		
	ITI	Diploma	Total	ITI	Diploma	Total
Demand	4938	1135	6073	4361	991	5352
Supply[47]	1772*	808	2580	4430	2020	6450
Gap	-3166	-327	-3493	69	1029	1098

***The figures were calculated with an assumption that students passed in the last two years have greater chances for getting placement.**

Table A-5: Perceptions of the faculty on the extent to which institutes responding to changed skills requirements

Sl	Aspects	Score
1	Skill mismatch after placement	2.5
2	Respond to new demands	2.5
3	Changing technology landscape	2.3
4	Diversified skill requirement	2.6
5	Effective service delivery	3.0
6	Spares management	2.7
7	Support functions	2.7

Table A-6: Facilities in the sample institutes

Sl#	College	Infrastructure	Classroom facilities	Lab facilities	Narration
1	Govt. ITI, Hindupur	Poor	Poor	Poor	Operating from BC hostel (which is in dilapidated conditions) in Lepakshi Recently asked to vacate as BC welfare department wanted to restart its hostel Located 1.5 from Lepakshi; and students have to walk as there is no public transport from Lepakshi
2	Sri Venkata sai ITI, Penukonda	Moderate	Moderate	Good	It is started very recently in response to KIA. It has well equipped Labs.
3	Govt. ITI, (Boys) Anantapur	Moderate	Moderate	Poor	There are no toilets in the college. Lab facilities are in a poor state. Students reported that they are allowed to use the new car given by Maruthi.
4	Govt. Polytechnic, Anantapur	Good	Good	Moderate	It has various other training facilities such as TSDI, SDC and KIA training centre Students from other polytechnic colleges without lab facilities in the district will come here, as per slots given, for practical classes. There is shift system to accommodate more students in the college. As a consequence, there is a pressure on Lab facilities.

[47]The figures are arrived by deducting students opting lateral entry in academics from the total students passed out in year.

Sl#	College	Infrastructure	Classroom facilities	Lab facilities	Narration
5	Govt. Polytechnic, (Girls) Hindupur	Poor	Poor	Poor to Moderate	Major concerns faced include: inadequate classrooms, lack of drinking water; and safety and security of women as hostels building are very old and lack of proper compound wall
6	PVKK polytechnic, Anantapur	Good	Good	Good	Polytechnic and engineering college are located in the same campus; and have common lab facilities..

Table A-7: Students and employees' views on their Skills and Knowledge

Sl	Particulars	Number/rating	Percentage
1	Students with awareness on general skills	20	95.2
2	Students with awareness on specialized skills	19	90.4
3	Score assigned by the students on the need for training in advanced technologies	3.8	N/A
4	Employees that received induction training	13	81.2

*N/A= Not Applicable

Table A-8: Scores on the students' perception on different components

Parameter	Score	
	Students	Employee
Status of the Infrastructure facilities	3.2	3.4
Adequacy of staff	3.9	3.5
Lab facilities (including availability of latest equipment)	2.8	2.8
Upgrade of curriculum	3.4	3.1
Need for training in advanced/latest technology	3.9	2.7

Table A-9: Skill requirements and skill gaps common to Automobile industry

Function Level	Skills required	Skill gaps
OEM		
Supervisor	Understanding of latest production techniques such as lean manufacturing Ability to ensure that daily production line targets are met Good knowledge of automobiles, their subsystems and functions of important parts such as suspension, exhaust, fuel system, coolant circuit, etc. Ability to understand differences in product lines and platforms and the corresponding ability to direct workmen accordingly Ability to manage the available resources – workmen, raw materials, consumables, etc. Knowledge of electrical and electronics systems, which are finding increased application in machineries and equipments Knowledge of concepts such as Six Sigma, JIT, TQM, Kaizen, 5-S is important Ability to allocate suitable work to workmen based on the skill levels of workmen working with them Ability to resolve conflicts that may arise among workmen / operators Ability to ensure productivity by employing efficient	Inadequate interpersonal skills, leading to inadequate ability to resolve conflicts that may arise between workmen – this causes disruption in smooth production and leads to loss of time, increased cost and inadequate quality Inadequate understanding of end-to-end processes – supervisors generally tend to know the details only of the production line they are handling Inadequate business knowledge / understanding of the commercial implication of wastage Availability of experienced personnel in this cadre is a concern Inadequate understanding of

Function Level	Skills required	Skill gaps
	processes and maintaining coordination on line Ability to ensure quality by following inspection procedures, use of proper inspection gauges, etc. Ability to understand concerns expressed by workmen, if any, and the ability to help resolve the issues without escalation, and escalate issues if getting out of hand Orientation towards wastage minimization, cost reduction and quality workmanship Ability to ensure minimum shop downtime Strong problem solving, logical and analytical skills Ability to plan and schedule activities Ability to ensure safety and environmental compliance Man management skills, conflict management, scheduling ability	quality concepts such as Six Sigma, JIT, TQM, Kaizen, 5-S Inadequate ability to work with and give instructions to workmen who are older/ have more number of years of experience Inadequate knowledge of product and processes
Operator/Workman	Should have basic literacy, analytical ability and the ability to understand and follow shop floor instructions Should have relevant knowledge of working of car systems, such as working of a fuel circuit, functioning of the cooling circuit, etc. Ability to operate and / or maintain both general and special machines such as wheel nut tightening machine, fuel and coolant filling machines, flexible manufacturing systems, AGVs, etc. Ability to adhere to Standard Operating Procedures (SOP) for all variants / versions on a single platform / across platforms Ability to carry out basic trouble shooting of machines in case of breakdown Ability to perform operations requiring multiple skills – for example, a fitter should be able to perform the job of an auto electrician Ability to minimize wastage of raw materials and consumables, maximize production and understand the corresponding impact on cost, quality and time Ability to highlight aberrations in daily production processes Adherence to required quality levels of production Ability to understand and follow instructions from supervisors, shop heads, plant head etc. Ability to understand and conform to basic shop floor safety practices such as wearing gloves when handling cast parts, being aware of dangers of trade is generic) interfering with machine /equipment, etc. Knowledge of assembly line operations, quality management techniques, fabrication techniques, welding techniques, cutting, machining, etc Understanding of drawings, knowledge of usage of instruments, measurement techniques and maintaining tolerances Knowledge of principles of manufacturing such as lean manufacturing, managing safety at work Overall Equipment Efficiency (OEE), etc Have complete knowledge of/ be adept in a particular trade (e.g. painting, fitting, welding, etc.) Ability to conform to work schedules and complete the assigned work on time Ability to maintain discipline at the shop floor, punctuality and regular attendance at workplace	Tendency to consider only the current activity (say, tightening a bolt) being performed, no understanding of where the activity fits into the big picture Inadequate trade knowledge and poor application of the available trade knowledge – this can be attributed to the fact that institutions such as ITIs do not teach skills specific to the Automotive Industry (for example, the 'fitter' in generic) Inadequate desire for learning new skills /working on new machines – this also stems from the weak understanding and lack of comfort with latest machines Availability of drivers, painters and operators for high-tech machines (such as super-finishing grinding machines and other CNC controlled machines) is a concern Insufficient ability to communicate problems faced during the daily routine – this in turn affects quality and can lead to time and cost overruns Insufficient understanding of discipline, industrial rules, work related procedures Absenteeism is a concern in this cadre Lack of skill standardization across educational institutes, leading to lack of standardization in the people available in this cadre is a concern

Function Level	Skills required	Skill gaps
Manufacturing		
Supervisor	Ability to ensure greater level of fits and finish in the final vehicle and guide workmen/ operator accordingly Ability to run more number of vehicle tests and more advanced vehicle tests on the final rolled out vehicle	Inadequate ability to understand and appreciate the need for stringent tests in passenger car units
Operator/Workman	Ability to work on more sophisticated machines as compared to commercial vehicles / two wheelers / three wheeler manufacturing setups	ITI educational institutes are currently not in a position to teach on / about sophisticated machines and thus workmen joining this cadre are not familiar with such sophisticated machines which are more prevalent at passenger car manufacturing units
Service centres		
Supervisors	Allocate work to mechanics Ensure timely completion of repair / service work Ability to maximise the number of vehicles serviced by his team	Inadequate ability to get work done on a timely basis from mechanics
Mechanics	In-depth understanding of vehicle assemblies In-depth understanding of criticality of parts – e.g. ability to carefully remove the piston without damaging the cylinder which is one of the most expensive components in the engine Understanding of critical assembly specifications – e.g. what torque needs to be applied to tighten the wheel nut Ability to follow instructions in the job card	Inadequate ability to discern minute distinctions in components leading to erroneous assembly –mixing of ordinary nuts with lock nuts Inadequate orientation towards final safety of the vehicle after servicing – e.g. being careless about fixing the split pin on the castle nut on the wheel of a two wheeler Tendency to rely on judgements than on specific instruments / tools – e.g. tendency to avoid usage of pressure gauge while filling air in tyres
Used car dealership		
Sales executive	Ability to portray the product above its actual value or below its actual value in selling / purchase transactions respectively Ability to judge the customers' expectation in terms of price when the customer has come to sell the car to the used car dealer	Since the market is highly scattered, personnel have limited ability to determine the expectation of the customer who wishes to sell a vehicle
Testing, inspection and valuation	Ability to follow standard set of tests that need to be performed when buying a vehicle Ability to give a judgment on the condition of individual systems and take decisions related to replacement / repair of parts Ability to judge the actual value of the vehicle – component by component and system by system Ability to determine the up-side potential while buying a vehicle across various vehicles	Inadequate understanding of the re-manufactured components market and the value that a replaced component from a used car will fetch