

Attainment of NADDC Training Objectives and Skill Development among Automobile Mechanics in the Formal Sector of Northern Nigeria

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ABSTRACT

This study evaluated the attainment of National Automotive Design and Development Council (NADDC) training objectives and skill development among automobile mechanics in the formal sector of Northern Nigeria. The study specifically determined the extent to which NADDC graduates attained the objectives of the training programme and examined the appropriateness of NADDC objectives for training automobile mechanics in the maintenance and repair of modern vehicles. A descriptive survey research design was adopted for the study. The study was conducted in Kaduna, Bauchi, Gombe, Nasarawa, and the Federal Capital Territory (FCT), Abuja. The population comprised 700 respondents consisting of NADDC graduates, trainers, and assessors across the three northern geopolitical zones of Nigeria. A sample size of 313 respondents was used, including 245 graduates selected using Taro Yamane's formula, while all 56 trainers and 12 assessors were selected through census sampling. Data were collected using a structured questionnaire titled "NADDC Training Program Evaluation Questionnaire (NTPEQ)" containing 106 items on a five-point rating scale. The instrument was validated by experts and yielded a Cronbach's Alpha reliability coefficient of 0.956. Mean and Standard Deviation were used to answer the research questions, while t-test statistics were used to test the hypotheses at 0.05 level of significance. The findings revealed that NADDC graduates largely attained the objectives of the training programme and demonstrated competencies in modern vehicle maintenance, diagnostics, and repairs. The study also found that NADDC objectives were appropriate and aligned with the training needs of the automobile industry. The study concluded that NADDC programmes significantly contribute to technical skill acquisition and workforce development in the formal automobile sector. It was recommended that NADDC should periodically review its training objectives, strengthen industry collaboration, and improve training facilities and feedback mechanisms.

Introduction

The automotive industry plays a vital role in economic growth, employment generation, and technological advancement across developing nations. In Nigeria, the sector has continued to expand with increasing demand for skilled automobile technicians capable of maintaining and repairing modern vehicles. To strengthen the industry and reduce dependence on imported expertise, the National Automotive Design and Development Council (NADDC) was established to promote automotive development through effective policies, technical support services, manpower development, and skills acquisition programmes (NADDC, 2023). One of the major priorities of the council is the training and retraining of automobile mechanics to meet the technological demands of modern vehicles. The NADDC has invested significantly in skills development within the automotive sector, training over 30,000 youths nationwide in essential automotive competencies aimed at closing the existing skill and knowledge gaps in the industry (NADDC, 2023). Automotive training centres were established in locations such as Kaduna, Jigawa, Kano, and Lokoja to facilitate practical and technical training for automobile technicians. The council also developed and launched curricula in automotive mechatronics for formal sector training and acquired diagnostic equipment and modern tools for training automobile technicians in contemporary vehicle maintenance and repair practices (Abutu et al., 2017).

Nigeria's automobile industry increasingly depends on competent mechanics who possess practical skills in engine management systems, auto-electricity, wheel balancing and alignment, suspension systems, fuel injection systems, and computerized vehicle diagnostics (Effiong et al., 2023). The increasing complexity of modern automobiles, characterized by integrated electronic systems and computerized operations, has made continuous training and retraining of technicians essential. Jalal (2015) noted that modern vehicles require automobile technicians to possess broad-based knowledge in electronic diagnostics and the use of computer-based technical reference materials. Similarly, Kumazhege et al. (2023) observed that modern diagnostic tools such as scanning devices and code readers have transformed automobile servicing from trial-and-error methods to technology-driven maintenance systems. Formal automobile mechanics training programmes in Nigeria are offered through polytechnics, technical colleges, and specialized automotive training centres that provide structured curricula, industry-recognized certification, and exposure to modern automotive technologies (Ahmed et al., 2022). These programmes are intended to bridge the gap between traditional apprenticeship systems and contemporary technological demands within the automotive industry. Technical and Vocational Education and Training (TVET) has therefore become essential for equipping individuals with practical skills, technical knowledge, and competencies necessary for effective participation in automobile technology and industrial development (Imogie, 2014; Okwelle & Ojotule, 2018). Given the increasing sophistication of vehicles and the need for skilled technicians, evaluating the attainment of NADDC training objectives among graduates has become necessary to determine the effectiveness of the programmes in preparing automobile mechanics for modern vehicle maintenance and repairs in Northern Nigeria.

Statement of the Problem

The automobile industry is undergoing rapid technological transformation due to the emergence of modern vehicle systems, electronic diagnostics, electric-powered vehicles, and computer-integrated operations. These developments have significantly altered the knowledge and competencies required of automobile technicians. In response to the growing demand for skilled

manpower, the National Automotive Design and Development Council (NADDC) introduced various training programmes aimed at producing competent automobile technicians capable of meeting the workforce needs of the automotive industry (Effiong et al., 2023). Despite these efforts, concerns persist regarding the extent to which graduates of the programmes have attained the intended training objectives and acquired the practical competencies necessary for modern automobile maintenance and repairs. The United Nations Industrial Development Organization (UNIDO), in its skills gap assessment report, observed that many educational and technical training institutions remain disconnected from prevailing industrial and socio-economic realities. This situation has contributed to deficiencies in curriculum relevance, instructional delivery, and institutional collaboration with industry. Within NADDC training programmes, trainees reportedly experience inadequate practical exposure and limited interaction with automotive industry stakeholders during training. These limitations reduce opportunities for hands-on learning and weaken workplace readiness among graduates. Consequently, a mismatch exists between the competencies acquired by graduates and the technical skills required in the contemporary automotive labour market. The persistence of this skills gap raises concerns about the effectiveness of NADDC training objectives in equipping trainees with relevant knowledge, diagnostic abilities, and technological competencies needed for servicing modern vehicles. Therefore, there is a need to evaluate the extent to which NADDC graduates have attained the objectives of the training programme and assess the effectiveness of the programme in developing skilled automobile mechanics in Northern Nigeria.

Purpose of the Study

The general purpose of this study was to evaluate the attainment of NADDC training objectives and skill development among automobile mechanics in the formal sector of Northern Nigeria. Specifically, the study sought to:

1. Determine if the NADDC graduates attained the objectives of the training programme for automobile mechanics centres in the formal sectors on maintenance and repairs of modern vehicles in Northern Nigeria.
2. Determine the extent to which the objectives of NADDC are appropriate in the training of formal sectors of automobile mechanics centres on maintenance and repairs of modern vehicles in Northern Nigeria.

Research Questions

Following the guidelines of the CIPP model concept, four research questions were formulated to guide the study

1. To what extents had the NADDC graduates attained the objectives of the training programme for automobile mechanics in the formal sector on maintenance and repairs of vehicles in Northern Nigeria?
2. To what extent are the objectives of NADDC appropriate in the training of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria?

Research Hypotheses

The following research hypotheses were tested at 0.05 level of significance.

H01: There is no significant difference between the mean responses of NADDC trainers and assessors on the attainment of NADDC training objectives by graduates of formal sectors of automobile mechanics centres on maintenance and repairs of vehicles in Northern Nigeria.

H02: There is no significant difference between the mean responses of NADDC trainers and assessors on the appropriateness of the objectives of NADDC for training formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria.

2. Literature Review

Innovative Technical Skills for Self-reliance in Automobile Mechanics

Innovative technical skills for self-reliance in a variety of trade options in automobile mechanics occupations are essential. Innovation refers to a new way of doing things. Technological dynamism has brought innovations in the method of diagnosing, maintenance and repairs of modern motor vehicles thereby creating more job opportunities in the automobile mechanics occupation. Automobile mechanics occupation is a technical trade where automobile mechanics carry out a variety of automobile maintenance and repair tasks to earn a living and be self-reliant. Being self-reliant implies that an automobile mechanic possesses all the requisite technical knowledge and skills to successfully carry out the task of automobile mechanics to earn a living. The Industrial Training Fund (ITF) (2017) defined self-reliance as the social and economic ability of an individual, household or community to meet basic needs (including protection, food, water, shelter, personal safety, health and education) in a sustainable manner and with dignity. Self-reliance, as a programme approach among automobile mechanics, refers to developing and strengthening the livelihoods of automobile mechanics of concern and reducing their vulnerability and long-term reliance on humanitarian or external assistance. This should assist automobile mechanics in becoming self-reliant.

Idris, et al. (2020) revealed that, a wide variety of occupational trade areas or opportunities are available in the field of automobile technology. Idris, et al. stated that each of the major systems, sub-systems, units and accessories in a motor vehicle provides an occupational area where individuals can earn a living and be self-reliant economically. Isaac in Idris, et al. Idris, et al. (2020) pointed out that individuals can earn a living and be self-reliance by specializing in servicing and repairs of any of the following: braking system, transmission system, ignition system, suspension and steering system, air conditioning and refrigeration system, charging system and battery, fuel supply and injection system, automobile wiring and electrical supply system, among others. The National Automotive Design and Development Council (NADDC) (2017) stated that innovative occupational areas in the automobile trade include sensor maintenance and installation, fault diagnosis, vehicle costing and valuing, installation of vehicle anti-theft security gadgets, and Electronic control unit (ECU) servicing and repairs.

Other research works identified engine oil recycling business, sales of automobile spare parts and accessories, owning automobile repair shops, harvesting and sales of scrap metals from dead vehicles as options where individuals can specialise to earn a living and be self-reliant (Okolie in Idris, et al., 2020). In a survey of job opportunities in the automobile trade, (NADDC) (2017)

further highlighted automobile occupational areas including auto body mechanic, auto detailer (car wash), auto glass installer, auto maintenance technician, auto body paint technician, auto body repair technician (panel beater), automobile mechanic, automotive electrical systems repair technician (automotive Electrician), automotive service technician, battery and charging system technician, brake repair technician, car maintenance technician, car stereo and electronics systems, chassis fabrication technician, cooling system technician, diesel truck mechanics, electric car engineer, electric motor technician, engine machinist, hybrid car technician, tire servicing and repair technician, transmission repair technician as well as truck maintenance and repair technician.

The list of occupational areas in the field of automobile mechanics is inexhaustible due to continuous innovations in the automobile industry which invariably creates more occupational areas for self-reliance (Idris, et al. 2020). In this regard, Idris, et al., stated that automobile occupational areas also include: diesel fuel injection technicians, motorcycle mechanic, small engine mechanic, heavy duty diesel mechanic, vehicle trimmer among others. Despite the existence of these varieties of opportunities in automobile mechanics occupation, exploiting these trade areas demands acquisition of sound technical knowledge, entrepreneurial knowledge and skills. A sound entrepreneurial knowledge and skills is needed for self-reliance as it provides automobile entrepreneurs with the basic capacity and ability to appropriately choose a particular occupational trade area and manage such to earn a living thereby reducing economic hardship. To overcome the untold hardship occasioned by the global economic meltdown, many nations of the world have introduced one form of economic policy or the other in their training curriculum in formal and informal institutions to improve on their economic condition. In addition, various economies have employed different techniques and practices to successfully grow their economies.

Therefore, there is a need for youths to explore innovative technical skills required for self-reliance in automobile occupations in Nigeria to ensure self-reliance and poverty reduction in society through technical skills acquisition. The recipient should be able to acquire the essential knowledge and experiences needed to meet challenges in the automobile workplace. Technical skills acquisition for self-reliance encourages communal wealth creation and productive use of human resources, thus forestalling unemployment, and economic hardship and enhancing self-reliance.

Programme Evaluation

Evaluation has various interpretations. In the aspect of the curriculum, it means gathering information about students, evaluating teacher performance, and gathering interaction information in the classroom. The evaluation also means identifying the strengths and weaknesses of activity in a programme. Evaluation is a way of obtaining information and using it in decision making, gathering information to enable a decision to be made and the process of determining a decision on a particular matter, selecting appropriate information, and collecting and analyzing such information for decision-making purposes (Stufflebeam in Mukhter et al., 2022)

Programme evaluation is a systematic way to collect information about the characteristics, activities, and results of a programme in order to make decisions about the programme. Evaluating a programme helps to determine whether it is functioning as intended, or meeting its goals and objectives, and may help to identify areas for improvement (Mukhter et al., 2023).

Thus, educational programme evaluation uses information to decide the value or worth of an educational programme. More formally defined, the process of educational programme evaluation is the “systematic collection and analysis of information related to the design, implementation, and outcomes of a programme, for monitoring and improving the quality and effectiveness of the programme.” (Frye & Hemmer, 2012). As it is clear in this definition, programme evaluation is about understanding the programme through a routine, systematic, deliberate gathering of information to uncover and/or identify what contributes to the “success” of the programme and what actions need to be taken to address the findings of the evaluation process. In other words, programme evaluation tries to identify the sources of variation in programme outcomes both from within and outside the programme, while determining whether these sources of variation or even the outcome itself are desirable or undesirable. The model used to define the evaluation process shapes that work. Information necessary for programme evaluation is typically gathered through measurement processes. Choices of specific measurement tools, strategies, or assessments for programme evaluation processes are guided by many factors, including the specific evaluation questions that define the desired understanding of the programme’s success or shortcomings. “Assessments” are defined as measurements or the strategies chosen to gather information needed to make a judgment. Data from trainee assessments are important to the programme evaluation process. There are, however, many more assessments (measurements) that may be necessary for the evaluation process, and they may come from a variety of sources in addition to trainee performance data. Evaluation, as noted earlier, is about reviewing, analyzing, and judging the importance or value of the information gathered by all these assessments.

Educators often have both internal and external reasons for evaluating their programmes. Primary external reasons are often found in requirements of education accreditation organizations (Frye & Hemmer, 2012), funding sources that support educational innovation, and other groups or persons to whom educators are accountable. A strong programme evaluation process supports accountability while allowing educators to gain useful knowledge about their programme and sustain ongoing programme development (Frye & Hemmer, 2012). Evaluation models have not always supported such a range of needs. For many years, evaluation experts focused on simply measuring programme outcomes. Many time-honoured evaluation models remain available for that limited but important purpose. Newer evaluation models support learning about the dynamic processes within the programmes, allowing an additional focus on programme improvement (Stufflebeam & Shinkfield in Frye & Hemmer, 2012).

The Training Programmes Offered by NADDC

The National Automotive Design and Development Council (NADDC) in Nigeria plays a pivotal role in enhancing the skills and competencies of automotive technicians through various training programmes. Here are more details about the training programmes offered by NADDC:

1. **Vocational Training Programmes:** These programmes are designed to equip trainees with practical skills in automotive repair and maintenance. They cover various areas, including engine repair, electrical systems, and vehicle diagnostics. The training is typically hands-on, with a strong emphasis on practical experience in workshops and laboratories.
2. **Technical Skills Development:** Provides specialized training on advanced automotive technologies and systems, including modern diagnostic tools and equipment. Courses include

training on hybrid and electric vehicle systems, advanced driver-assistance systems (ADAS), and engine management systems.

3. **Entrepreneurship Training:** This component aims to prepare trainees to start and manage their own automotive service businesses. Topics covered include business management, financial literacy, marketing strategies, and customer service skills.

4. **Collaboration with Technical Institutions:** NADDC collaborates with various technical colleges and polytechnics across Nigeria to enhance the quality of automotive training. They help in developing standardized curricula that align with industry needs, ensuring that graduates are equipped with relevant skills.

5. **Certification Programmes:** Provides certifications that validate the skills and competencies of automotive technicians. Certifications are recognized by industry stakeholders, enhancing the employability of graduates in the formal automobile mechanics sector.

6. **Workshops and Seminars:** NADDC organizes workshops and seminars to update automotive technicians on the latest trends, technologies, and best practices in the industry. These events often feature industry experts and practitioners who share insights and experiences with participants.

7. **Awareness Campaigns:** Promotes the importance of skilled training in the automotive sector. NADDC conducts awareness campaigns aimed at encouraging youth participation in automotive training programmes, highlighting career opportunities in the sector.

8. **Public-Private Partnerships:** NADDC engages in partnerships with private sector stakeholders to enhance training facilities, resources, and opportunities for hands-on experience. Involvement from automotive companies helps ensure that training is aligned with current industry standards and practices.

9. **Capacity Building Initiatives:** Ongoing capacity-building initiatives are designed to enhance the skills of existing technicians through refresher courses and advanced training. These initiatives include specialized training on emerging technologies and innovative automotive practices.

NADDC's training programmes are integral to developing a skilled workforce in Nigeria's automotive sector, addressing the skills gap, and fostering the growth of the industry. By focusing on practical skills, entrepreneurship, and collaboration with educational institutions and industry stakeholders, NADDC aims to enhance the overall quality and effectiveness of automotive training in the country.

The National Automotive Design and Development Council (NADDC) offers a range of courses aimed at enhancing the skills and knowledge of automotive technicians in Nigeria. While the specific courses vary over time and based on industry needs, here are some of the key courses typically offered by NADDC:

- i. **Automotive Engineering and Technology:** This course covers fundamental principles of automotive engineering, including vehicle design, manufacturing processes, and materials used in automotive construction, understanding of automotive systems, vehicle dynamics, and engineering design principles.

- ii. **Engine Repair and Maintenance:** Focuses on the diagnosis, repair, and maintenance of internal combustion engines, including both petrol and diesel engines, skills in techniques for engine disassembly, reassembly, tuning, and performance diagnostics.
- iii. **Automotive Electrical Systems:** Covers the fundamentals of automotive electrical systems, including wiring diagrams, battery maintenance, and troubleshooting electrical faults; proficiency in diagnosing and repairing electrical issues, understanding of modern electrical systems in vehicles.
- iv. **Vehicle Diagnostics and Troubleshooting:** Training on the use of diagnostic tools and equipment to identify and rectify vehicle faults; ability to perform comprehensive vehicle diagnostics, interpret error codes, and apply troubleshooting techniques.
- v. **Advanced Driver-Assistance Systems (ADAS):** Focuses on the technologies used in modern vehicles for safety and convenience, such as adaptive cruise control, lane departure warning, and parking assist systems, knowledge of ADAS components, calibration, and repair procedures.
- vi. **Hybrid and Electric Vehicle Technology:** Covers the principles of hybrid and electric vehicle operation, maintenance, and repair, skills understanding of battery management systems, electric drive systems, and the unique challenges associated with servicing electric vehicles.
- vii. **Automotive Body Repair and Painting:** Training in the techniques of bodywork repair, including dent removal, panel replacement, and painting processes; skills in using tools and materials for body repair and finishing, ensuring high-quality results.
- viii. **Entrepreneurship and Business Management in Automotive Services:** Focuses on the business aspects of running an automotive service shop, including marketing, customer management, and financial planning; skills to effectively manage an automotive business, understand market dynamics, and create business plans.
- ix. **Workplace Safety and Compliance:** Training on safety regulations and best practices in automotive workshops to ensure a safe working environment; awareness of safety protocols, hazard identification, and compliance with industry regulations.
- x. **Technical Communication Skills:** Focuses on improving communication skills relevant to the automotive industry, including customer relations and technical reporting, ability to effectively communicate technical information to customers and colleagues.

NADDC's courses are designed to provide comprehensive training that addresses both technical and soft skills essential for success in the automotive sector. By offering a diverse range of courses, NADDC aims to equip automotive technicians with the knowledge and skills needed to meet the demands of the industry and contribute to its growth in Nigeria.

Formal and Informal Automobile Mechanics Sectors in Nigeria

The informal automobile mechanics sector in Nigeria refers to the unorganized and unstructured industry that provides vehicle maintenance and repair services, often employing skilled technicians

and mechanics trained through informal apprenticeships and on-the-job experience. This sector operates outside of established workshops, garages, and dealerships, and does not adhere to industry standards and regulations (Ahmed et al., 2022).

In contrast, the formal automobile mechanics sector in Nigeria refers to the organized and structured industry that provides automotive repair and maintenance services, adhering to established standards and regulations. This sector encompasses formal workshops and dealerships, authorized service centres and workshops that employ trained and certified mechanics to work on vehicles (Agboneni et al., 2023). Formal workshops and dealerships in Nigeria's automotive industry are structured service centers that provide vehicle maintenance, repair, and sales services. According to Ahmed et al. (2022), these establishments play a crucial role in ensuring the roadworthiness and longevity of vehicles.

Authorized service centres are authorized by vehicle manufacturers to perform warranty repairs and maintenance (Agboneni et al., 2023). Specialized repair shops are workshops that specialize in specific areas, like engine overhauls, transmission repairs, or electrical system diagnostics (Idris & Abutu, 2019). Vehicle showrooms are authorized dealerships that sell new vehicles, such as Innoson Vehicle Manufacturing (IVM) or Peugeot Automobile Nigeria Limited (PAN) (Amaechi, 2020).

Certified pre-owned vehicle dealers are dealerships that sell certified pre-owned vehicles, often with warranties and guarantees. Some notable examples of formal workshops and dealerships in Nigeria include Toyota Nigeria Plc., which is an authorized dealership with service centers across the country. Peugeot Automobile Nigeria Limited (PAN) is a dealership that sells new Peugeot vehicles and provides after-sales services. Innoson Vehicle Manufacturing (IVM) is a Nigerian company that manufactures and sells vehicles, with authorized dealerships and service centers. These formal workshops and dealerships often have trained technicians, access to genuine parts, and provide warranty and support services, ensuring quality and reliability (Ahmed et al., 2022).

Certified mechanics in Nigeria are professionals who have received formal training and certification in automotive technology, enabling them to diagnose and repair complex vehicle systems. According to Idris and Abutu (2019), certified mechanics possess the necessary skills and knowledge to work on modern vehicles. National Automotive Design and Development Council (NADDC) is of the bodies that offers training and certification programmes for automobile mechanics in Nigeria (Ahmed et al., 2022) while National Business and Technical Examinations Board (NABTEB) conducts examinations and issues certificates to students who complete technical programmes in automobile mechanics.

Certified mechanics possess practical skills in areas such as engine repair, transmission maintenance, and electrical system diagnostics (Idris & Abutu, 2019). They have knowledge of industry standards, safety protocols, and best practices in vehicle maintenance and repair (Agboneni et al., 2023). Certified mechanics provide high-quality services, ensuring the roadworthiness and longevity of vehicles (Amaechi, 2020). Certified mechanics ensure vehicle owners in Nigeria have their vehicles properly maintained and repaired, reducing the risk of accidents and prolonging the lifespan of their vehicles. Certification enhances customer trust and confidence in the mechanic's abilities (Ahmed et al., 2022).

According to Amaechi (2020), adherence to industry standards and best practices in vehicle maintenance and repair ensured safety and quality. Standardized practices in Nigeria's automotive industry refer to the established procedures and guidelines that ensure consistency and quality in vehicle maintenance and repair. According to Agboneni et al. (2023), standardized practices are essential for ensuring safety. Standardized practices help prevent accidents and ensure the safety of vehicle owners and users. Standardized practices ensure that vehicle maintenance and repair services meet industry standards, reducing the risk of defects and malfunctions. Standardized practices streamline processes, reducing time and costs associated with vehicle maintenance and repair. Some examples of standardized practices in Nigeria's automotive industry include adherence to manufacturer's specifications. Mechanics and technicians follow the manufacturer's specifications and guidelines for vehicle maintenance and repair (Idris & Abutu, 2019). Workshops and dealerships use standardized tools and equipment, ensuring consistency and accuracy in vehicle maintenance and repair (Amaechi, 2020). Mechanics and technicians obtain industry-recognized certification, demonstrating their competence and adherence to standardized practices (Ahmed et al., 2022). Standardized practices in Nigeria's automotive industry improves the quality and safety of vehicle maintenance and repair services, enhancing customer satisfaction and trust.

Vehicle maintenance and repairs are essential services to ensure the roadworthiness and longevity of vehicles. According to Agboneni et al. (2023), regular vehicle maintenance and repairs prevent accidents, identify and address potential issues before they become major problems, reducing the risk of accidents. Regular maintenance helps prevent costly repairs and reduces the overall cost of vehicle ownership. Well-maintained vehicles perform better, providing a smoother and more efficient driving experience. Some common vehicle maintenance and repair services in Nigeria include routine maintenance services such as oil changes, tire rotations, and brake pad replacements (Idris & Abutu, 2019); repairs to engine components, such as pistons, cylinders, and crankshafts (Amaechi, 2020); repairs to electrical systems, including batteries, starters, and alternators (Ahmed et al., 2022); and repairs to vehicle bodies, including denting, painting, and welding. Despite the importance of vehicle maintenance and repairs, Nigeria's automotive industry faces challenges, such as limited access to modern tools and equipment (Agboneni et al., 2023), shortage of skilled technicians with expertise in modern vehicle technologies (Idris & Abutu, 2019). By addressing these challenges and promoting regular vehicle maintenance and repairs, Nigeria can improve road safety, reduce costs, and enhance the overall performance of vehicles.

Skilled mechanics in Nigeria have various employment opportunities in the automotive industry. One of the key areas include automobile mechanic which deals with diagnoses and repairs of vehicle mechanical issues. For example, a mechanic at Perfection Motor Company Limited or Elizade JAC autoland limited works on vehicle maintenance and repairs. Technical advisor provides technical support and guidance on vehicle repairs and maintenance. Technical advisors at companies like Dangote Group offer expertise on vehicle systems and repair techniques. Workshop manager oversees the daily operations of the workshop, ensuring efficient service delivery and quality control. Workshop managers at companies like Redline Automobile Service or Motomi repairs manage teams of mechanics and technicians (Opeyemi, & Mary, 2024). Mechanical engineer designs, develops, and maintains mechanical systems and equipment. Mechanical engineers at companies like Blakskill Limited or Lafarge Cement work on designing and improving vehicle systems (Jewel, 2015). Other employment opportunities for skilled

mechanics in Nigeria include service technicians who work on vehicle maintenance and repairs, ensuring that vehicles meet safety and performance standards. Parts specialists manage inventory and sales of vehicle parts, ensuring that customers have access to the parts they need (Naples, 2024). Automotive Technicians diagnose and repair complex problems with modern vehicles, including electrical and computerized systems (Aliyu, et al. 2024). Some notable companies with job openings for skilled mechanics in Nigeria include Perfection Motor Company Limited is a subsidiary of the Lee Group of Companies, working with FAW China (Brautigam, 2016). Dangote Group is a conglomerate with interests in various sectors, including automotive (Itaman & Wolf, 2021).

The formal automobile mechanic sector contributes to the country's economy through the provision of services and creation of value (Yunusa et al., 2023). Skilled mechanics in Nigeria make significant economic contributions to the country. One of the key ways they contribute includes Job Creation. Skilled mechanics create employment opportunities for themselves and others in the automotive industry (Olaitan & Ikeh, 2015). The automotive industry, which includes skilled mechanics, contributes to Nigeria's GDP. According to a report, the mechanic workshop business contributes to the country's GDP and provides employment opportunities for skilled and unskilled workers (Yunusa et al., 2023). Skilled mechanics contribute to local economic growth by providing essential services, generating income, and supporting other industries like spare parts dealers and car wash services. Through repairing and maintaining vehicles, skilled mechanics help reduce the need for imported vehicles and spare parts, which can save foreign exchange and support the local economy (Olaitan, 2024). Examples of economic contributions of skilled mechanics in Nigeria include automotive repair and maintenance services. Skilled mechanics provide repair and maintenance services for vehicles, generating income and creating employment opportunities (Olaitan, 2024). Skilled mechanics also contribute to local manufacturing of vehicles and auto parts, creating jobs and stimulating economic growth. Skilled mechanics start their own businesses, creating employment opportunities and contributing to the local economy. The formal automobile mechanics sector in Nigeria encompasses various aspects of vehicle maintenance, repair, and manufacturing, involving trained professionals who work in structured environments, such as dealerships, service centers, and automotive workshops.

2.2 Theoretical Framework: The CIPP Model

CIPP is an acronym for context evaluation, input evaluation, process evaluation and product evaluation. This model was developed by Guba and Stufflebeam in 1970 as a result of appalling conditions of Chicago inner-city schools. According to the CIPP model, evaluation is the systematic investigation of the value of a programme or other related variables (Stufflebeam in Owo & Isaac 2022). The CIPP model considers, the end users of the evaluation results, how will they use them and to what aspects of the system are they applicable.

In essence, the CIPP model is aimed at helping educational planners to make better decisions about their educational programmes and products. Based on the idea that evaluative information is an essential component of good decision-making, the management-oriented approach adopted in CIPP strives to provide pertinent information for those requiring legitimate, unbiased evaluative information in order to reach a compelling judgment concerning the current state of a psychomotor programme (Fitzpartrick et al in Owo & Isaac, 2022). This approach emphasized the need to meet the informational requirements of those in managerial positions who are responsible for the

implementation of the programme (Stufflebeam in Owo & Isaac, 2022). Focusing on these value-oriented approaches, Stufflebeam in Owo and Isaac (2022) further defined operational evaluation for this model as a process of delineating, obtaining, reporting and applying descriptive and judgmental information about the merit, worth, probity and significance of an object. He noted that an effective evaluation requires identifying and continually guiding a decision, providing accountability information and advocating effective programme methodologies. The CIPP model for instance, considered the study objectives which spelt out what NADDC training programme in Nigeria was established to achieve, of which is primarily the production of skilled manpower for the nation's industrial advancement.

The context evaluation in CIPP evaluates to ascertain if the NADDC programmes meet their main objectives in terms of the training given to engineering technology students to acquire relevant work skills which are demanded in the industries for the technological advancement and industrial development of the nation. The input in CIPP model refers to the NADDC resources required to run effective NADDC training programme in Northern Nigeria (that is, how appropriate and available are these NADDC training resources for the smooth operation of the system). In a nutshell, this talks about the teaching staff (teachers and technical staff); the administrative staff, the messengers, typists, computer operators, secretaries, among others.

The process in CIPP model is concerned with the appropriateness of NADDC training resources to achieve the stated objectives. That is, the process considers how the management of the NADDC training programmes in hierarchical order is able to appropriate the available human and material resources for the achievement of the overall objectives of NADDC training programmes in Nigeria. The product in CIPP model described the quality (worth) of the end products (graduates) of NADDC training upon graduation. Often times, product evaluation is ascertained as soon as the NADDC graduates started working in the industries after their training programme.

Stufflebeam designed the CIPP evaluation model to address four different classes of decision making which are planning (specific objectives), structuring (designing a project around specific objectives), implementing (operating and executing a project), and recycling (judgment and feedback). All these directly correlate with the evaluation methods of this model. An operational knowledge of the four evaluative methods in CIPP model categorically stated what each evaluation method or procedure entails. Although each method was designed to address specific aspects of programme evaluation particularly important to decision-makers; this model is neither linear nor systematic (Fitzpartrick et al in Owo & Isaac, 2022). However, this model can be modified to cater for specific information required by those in decision-making positions (Stufflebeam in Owo & Isaac 2022). CIPP model is very popular especially in the evaluation of educational objectives in the psychomotor domain (skill areas). The model provides a means for assessing programmes and identifying lacking areas for improvement.

Product Evaluation

The product evaluation is used to compare the actual results with the standards that have been accepted whether to continue, discontinue, modify or refocus activities and gather information regarding the programme conducted. In terms of products, the researcher would like to see the level of implementation of automotive teachers to evaluate the effectiveness of the teaching and learning process carried out from the aspect of output. From here, the decision is made whether to

make improvements to the strengths and skills that need to be mastered by automotive teachers and identify suggestions to improve the effectiveness of the implementation of the NADDC programme.

Product evaluation which is the last constituent in the CIPP evaluation model refers to the ultimate decision associated with the fate of the programme (Fitzpartrick et al in Owo & Isaac, 2022). This decision determines the continuation, termination, modification or refocusing of the programme under review by appropriate bodies (Stufflebeam in Owo & Isaac 2022). In this context, the National Board for Technical Education (NBTE) has the capacity to decide on the worth of the NADDC training programmes in Nigeria. The result is a product of collections of descriptions and many archived judgments about the objectives, merits and worth of the programme. Thus, Asuru (2015) viewed product evaluation as an attempt to measure and interpret the attainments yielded by the programme not only on its conclusion but as often as possible during the operation of the programme. Thus, formative and summative evaluations are very necessary in carrying out product evaluation.

However, for decision makers to reach logical conclusion, the evaluator must collect both quantitative and qualitative information from all personnel and stakeholders concerned (i.e. teachers, students, industry-based supervisors, administrators and parents). Sometimes, product evaluation can be categorized into impact, effectiveness, sustainability and transportability sub-categories as the need arises so as to obtain more accurate information about the long-term effects of the programmes. Consequently, product evaluation helps to determine the suitability of the graduates for effective engagement in the world of work based on the training received in engineering and technology fields with the available educational resources in Nigerian institutions.

Socio-Demographic Factors

The National Automotive Design and Development Council (NADDC) in Nigeria focuses on enhancing the skills and knowledge of individuals in the automobile mechanics sector through various training programmes. The socio-demographic factors influencing these training programmes include:

1. Age Distribution:

The age of participants significantly affects the learning process. Younger individuals may be more familiar with modern technologies and learning methods, while older participants may have practical experience but require different teaching approaches. Tailoring training programmes to cater to various age groups ensures that all participants can engage effectively and benefit from the training.

2. Educational Background:

Participants come from diverse educational backgrounds, ranging from those with basic secondary education to those with higher levels of education. Understanding this diversity allows NADDC to design programmes that accommodate different knowledge levels, possibly offering foundational courses for those with less formal education while providing advanced training for more educated individuals.

3. Geographic Location:

The location of training centers influences accessibility. Urban areas may have better access to training facilities and resources, leading to higher enrollment rates compared to rural areas. NADDC need to consider mobile training units or partnerships with local institutions to reach underserved populations in remote areas.

4. Economic Status:

The socioeconomic background of participants affects their ability to pay for training and access resources. Individuals from lower economic backgrounds may struggle with tuition fees or transportation costs. Offering scholarships, financial aid, or flexible payment plans will help increase participation among economically disadvantaged individuals.

3. Methodology

This study adopted a descriptive survey research design to evaluate the attainment of NADDC training objectives and skill development among automobile mechanics in the formal sector of Northern Nigeria. The design was considered appropriate because it enabled the collection of detailed information from respondents regarding the effectiveness of the training programmes in equipping graduates with competencies required for modern vehicle maintenance and repairs. The study was conducted in selected states within Northern Nigeria, namely Kaduna, Bauchi, Gombe, Nasarawa, and the Federal Capital Territory (FCT), Abuja, where NADDC-accredited automobile training centres are actively operational. The population of the study comprised 700 respondents, including NADDC graduates, trainers, and assessors drawn from the three northern geopolitical zones of Nigeria. A sample size of 313 respondents was used for the study, consisting of 245 NADDC graduates selected using Taro Yamane's sample size determination formula, while all 56 trainers and 12 assessors were selected through census sampling because of their manageable number. Tracer study techniques were also employed to identify and locate graduates of NADDC programmes between 2016 and 2024 for participation in the study.

Data for the study were collected using a structured questionnaire titled "NADDC Training Program Evaluation Questionnaire (NTPEQ)" developed by the researcher based on the objectives and related literature of the study. The instrument contained 106 items structured on a five-point rating scale to obtain responses on the appropriateness of NADDC objectives and the extent to which graduates attained the intended training outcomes. The questionnaire was validated by experts in technology education and measurement and evaluation, while a pilot study conducted at the NADDC training centre in Adamawa State established the reliability of the instrument, yielding an overall Cronbach's Alpha coefficient of 0.956, indicating high internal consistency. Data collection was carried out through face-to-face administration of questionnaires with the assistance of trained research assistants across the selected study areas. The collected data were analyzed using Mean and Standard Deviation to answer the research questions, while t-test statistics were used to test the hypotheses at a 0.05 level of significance. Decision on the research questions was based on a criterion mean of 2.50, where mean scores equal to or above 2.50 were regarded as attained or appropriate, while mean scores below 2.50 were considered not attained or not appropriate.

4. Results and Discussion

Research Questions 1: To what extents have the NADDC graduates attained the objectives of the training programme for automobile mechanics in the formal sector on maintenance and repairs of vehicles in Northern Nigeria?

Table 1: Mean Responses on the Attainment of NADDC Graduates' Programme Objectives for the Training of Automobile Mechanics in the Formal Sector

| S/No. | Statements | $n_A = 12$ | | $n_T = 56$ | | $n = 68$ | Rmk |
|-------|---|-------------|-------------|-------------|-------------|-------------|----------|
| | | \bar{x}_A | SD_A | \bar{x}_T | SD_T | \bar{x}_G | |
| 1. | Health, safety and environment operation. | 4.42 | 0.51 | 4.48 | 0.50 | 4.47 | A |
| 2. | Basic computer skills. | 4.58 | 0.51 | 4.55 | 0.50 | 4.56 | A |
| 3. | Motor vehicle electrical/electronic system installation operation. | 4.58 | 0.51 | 4.52 | 0.50 | 4.53 | A |
| 4. | Power train/rolling chassis diagnosis operation | 4.50 | 0.52 | 4.50 | 0.50 | 4.50 | A |
| 5. | Electrical/electronic system rectification. | 4.50 | 0.52 | 4.52 | 0.50 | 4.51 | A |
| 6. | Motor vehicle air conditioning system maintenance and repairs operation | 4.25 | 0.45 | 4.45 | 0.50 | 4.41 | A |
| 7. | Motor vehicle maintenance/repairs | 4.67 | 0.49 | 4.57 | 0.50 | 4.59 | A |
| 8. | Motor vehicle wiring system | 4.58 | 0.51 | 4.52 | 0.50 | 4.53 | A |
| 9. | Reading and interpreting trouble codes. | 4.75 | 0.45 | 4.50 | 0.50 | 4.54 | A |
| 10. | Wheel alignment operation | 4.75 | 0.45 | 4.39 | 0.49 | 4.46 | A |
| 11. | Wheel balancing operation | 4.50 | 0.52 | 4.54 | 0.50 | 4.53 | A |
| 12. | Braking system maintenance and repair. | 4.42 | 0.51 | 4.68 | 0.47 | 4.63 | A |
| 13. | Suspension system maintenance and repairs. | 4.42 | 0.51 | 4.41 | 0.50 | 4.41 | A |
| 14. | Petrol engine overhauling. | 4.50 | 0.52 | 4.55 | 0.50 | 4.54 | A |
| 15. | Petrol engine injection maintenance and repairs. | 4.42 | 0.51 | 4.38 | 0.49 | 4.38 | A |
| | Average | 4.52 | 0.50 | 4.50 | 0.50 | 4.51 | A |

Source: Field Work (2025)

NOTE : n_A = Number of Assessors, n_T = Number of Trainers, n = Number of Respondents, A = Attained, n = Number of Respondents, \bar{x}_A = Mean Response of Assessors, SD_A = Standard Déviation of Assessors, \bar{x}_T = Mean Response of Trainers, SD_T = Standard Deviation of Trainers, \bar{x}_G = Grand Mean of Responses.

Table 1 presents the analysis of responses on the extent to which NADDC graduates have attained the objectives of the training programme for automobile mechanics in the formal sector on maintenance and repairs of vehicles in Northern Nigeria. The results reveal that all sixteen items were rated as “Attained”, with mean values ranging from 4.38 to 4.63 and standard deviations between 0.45 and 0.52. The assessors recorded an average mean score of 4.52 with a standard

deviation of 0.50, while the trainers had a mean of 4.50 and a similar standard deviation, giving a grand mean of 4.51. These results indicate that the graduates of NADDC training programmes have achieved a high level of competence in various aspects of automobile mechanics. Specifically, they demonstrated strong attainment in motor vehicle maintenance and repair, braking system maintenance and repair, reading and interpreting trouble codes, and basic computer skills. This suggests that the programme effectively equips trainees with both technical and digital competencies relevant to modern vehicle technology. Furthermore, the high mean ratings across competencies such as electrical/electronic system rectification, air conditioning system maintenance, wheel alignment and balancing, and engine overhauling imply that graduates are adequately prepared to handle practical automotive tasks in the formal sector. The consistency in the standard deviations also reflects a strong consensus among respondents on the effectiveness of the training outcomes.

Research Questions 2: To what extent are the objectives of NADDC appropriate in the training of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria?

Table 2: Mean Responses on the Appropriateness of the Objectives/Mandate of NADDC in Training of Automotive Mechanics in the Formal Sector

| S/N | Statements | $n_A = 12$ | | $n_T = 56$ | | $n = 68$ | Rmk |
|----------------|---|-------------|-------------|-------------|-------------|-------------|----------|
| | | \bar{x}_A | SD_A | \bar{x}_T | SD_T | \bar{x}_G | |
| 1 | Initiating training programmes for automobile mechanics in the formal sector | 4.50 | 0.52 | 4.54 | 0.50 | 4.53 | A |
| 2 | Developing skills competency standards in the automobile | 4.58 | 0.51 | 4.55 | 0.50 | 4.56 | A |
| 3 | Coordinating an employer led organization that will involve all stake holders in Nigeria. | 4.58 | 0.51 | 4.50 | 0.50 | 4.51 | A |
| 4 | Developing sector skills development plan | 4.50 | 0.52 | 4.57 | 0.50 | 4.56 | A |
| 5 | Establishing process of coordinating | 4.67 | 0.49 | 4.59 | 0.50 | 4.60 | A |
| 6 | emerging trend in skills development in Nigeria | 4.50 | 0.52 | 4.46 | 0.50 | 4.47 | A |
| 7 | Conducting regular skills gap survey of automobile mechanics in Nigeria. | 4.83 | 0.39 | 4.39 | 0.49 | 4.47 | A |
| 8 | Assessing skills and competencies acquired on the job at home in a training institution. | 4.58 | 0.51 | 4.43 | 0.50 | 4.46 | A |
| 9 | Developing a training curriculum for training technicians in the informal sector. | 4.67 | 0.49 | 4.50 | 0.50 | 4.53 | A |
| 10 | Participating in accreditation of training centers. | 4.33 | 0.49 | 4.41 | 0.50 | 4.40 | A |
| 11 | Coordinating/regulate of training centers. | 4.67 | 0.49 | 4.54 | 0.50 | 4.56 | A |
| 12 | Conducting a standard assessment of automobile mechanics during and after training | 4.67 | 0.49 | 4.41 | 0.50 | 4.46 | A |
| 13 | Conducting regular inspection of facilities in all training centers. | 4.58 | 0.51 | 4.55 | 0.50 | 4.56 | A |
| 14 | Training automobile mechanics. | 4.58 | 0.51 | 4.32 | 0.47 | 4.37 | A |
| 15 | Empowering automobile mechanics. | 4.67 | 0.49 | 4.43 | 0.50 | 4.47 | A |
| 16 | Supervising automobile mechanics | 4.42 | 0.51 | 4.46 | 0.50 | 4.46 | A |
| 17 | Providing the enabling environment for entrepreneurs in automobile. | 4.42 | 0.51 | 4.34 | 0.48 | 4.35 | |
| Average | | 4.57 | 0.50 | 4.47 | 0.50 | 4.49 | A |

Source: Field Work (2025)

NOTE : n_A = Number of Assessors, n_T = Number of Trainers, A = Appropriate, n = Number of Respondents, \bar{x}_A = Mean Response of Assessors, SD_A = Standard Déviation of Assessors, \bar{x}_T = Mean Response of Trainers, SD_T = Standard Deviation of Trainers, \bar{x}_G = Grand Mean of Responses

Table 2 shows the extent to which the objectives of NADDC are appropriate in the training of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria. The results indicate that all the 17 items were rated “Appropriate”, with mean values ranging from 4.35 to 4.60 and corresponding standard deviations between 0.47 and 0.52. The assessors had an average mean of 4.57 and a standard deviation of 0.50, while the trainers had an average mean of 4.47 and a standard deviation of 0.50, resulting in a grand mean of 4.49. These findings suggest that both assessors and trainers agreed that the NADDC objectives such as initiating training programmes, developing skills competency standards, coordinating stakeholder involvement, and establishing sector skills development plans are well-suited to improving the quality of training for automobile mechanics in the formal sector.

Hypothesis 1: There is no significant difference between the mean responses of NADDC trainers and assessors on the attainment of NADDC training objectives by graduates of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria.

Table 3: t-test Analysis of Responses of NADDC Trainers and Assessors on the Attainment of NADDC Training Objectives by Graduates

| Group | N | Mean | SD | df | T | p-value | Remark |
|-----------|----|------|------|----|-------|---------|----------|
| Assessors | 12 | 4.52 | 0.11 | 66 | | | |
| | | | | | 0.494 | 0.623 | Accepted |
| Trainers | 56 | 4.50 | 0.11 | | | | |

Source: Field Work (2025)

Table 3 presents the t-test analysis of the responses of NADDC trainers and assessors on the attainment of NADDC training objectives by graduates of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria. The results show that assessors recorded a mean score of 4.52 with a standard deviation of 0.11, while trainers recorded a mean score of 4.50 with a standard deviation of 0.11. The computed t-value of 0.494 with a corresponding p-value of 0.623, which is greater than the 0.05 level of significance, indicates that there is no statistically significant difference between the mean responses of the two groups. Consequently, the null hypothesis is accepted, implying that both trainers and assessors share a similar perception regarding the extent to which NADDC graduates have attained the objectives of the training programme. This suggests a strong consensus that the training effectively equips graduates with relevant competencies in vehicle maintenance, repair, and modern automotive technologies required for the formal sector in Northern Nigeria.

Hypothesis 2: There is no significant difference between the mean responses of NADDC trainers and assessors on the appropriateness of the objectives of NADDC for training formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria.

Table 4: t-test Analysis of Responses of NADDC Trainers and Assessors on the Appropriateness of the Objectives of NADDC for Training Formal Sector

| Group | N | Mean | SD | df | t | p-value | Remark |
|-----------|----|------|------|----|-------|---------|----------|
| Assessors | 12 | 4.57 | 0.12 | 66 | 2.739 | 0.008 | Rejected |
| Trainers | 56 | 4.47 | 0.11 | | | | |

Source: Field Work (2025)

Table 4 presents the t-test analysis comparing the mean responses of NADDC trainers and assessors on the appropriateness of the objectives of NADDC for training formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria. The results show that the assessors had a slightly higher mean score ($\bar{x} = 4.57$, $SD = 0.12$) than the trainers ($\bar{x} = 4.47$, $SD = 0.11$). The computed t-value of 2.739 with a corresponding p-value of 0.008 is less than the 0.05 level of significance. Therefore, the null hypothesis is rejected, indicating that there is a significant difference between the mean responses of trainers and assessors regarding the appropriateness of the NADDC objectives. This finding suggests that while both groups generally agree that the objectives are appropriate, assessors perceive them as slightly more suitable for achieving effective training outcomes than the trainers do.

Findings of the Study

Based on the results of the analysis of the research questions, the following finding emerged:

1. NADDC graduates have largely attained the objectives of the training programme with graduates demonstrating competencies in key areas such as motor vehicle maintenance, diagnostic operations, braking systems, and engine repairs, reflecting the effectiveness of the NADDC training in improving their technical skills and employability in the formal automobile sector.
2. The objectives of the National Automotive Design and Development Council (NADDC) are appropriate for the training of formal sector automobile mechanics on vehicle maintenance and repairs in Northern Nigeria indicating that objectives such as skill development, curriculum design, accreditation, and coordination are effectively aligned with the training needs of the automobile industry.
3. There is no significant difference between the mean responses of NADDC trainers and assessors on the attainment of NADDC training objectives by graduates of formal sectors of automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria.
4. There is a significant difference between the mean responses of NADDC trainers and assessors on the appropriateness of the objectives of NADDC for training formal sectors of automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria.

Discussion of findings

The findings of the study revealed that NADDC graduates have largely attained the objectives of

the training programme with graduates demonstrating competencies in key areas such as motor vehicle maintenance, diagnostic operations, braking systems, and engine repairs, reflecting the effectiveness of the NADDC training in improving their technical skills and employability in the formal automobile sector. The hypothesis revealed that there is no significant difference between the mean responses of NADDC trainers and assessors on the attainment of NADDC training objectives by graduates of formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria. This outcome agrees with Saidu et al. (2021), who reported that Nigerian automotive graduates routinely master routine servicing tasks but struggle with advanced diagnostics because curricula allocate insufficient hours to fuel-system electronics. This finding is consistent with the report of the National Board for Technical Education (2014), which emphasized that competency-based vocational education contributes significantly to employability and technical performance among graduates. Supporting this result, Owo and Deebom (2020) found that graduates of practice-based vocational training programmes often possess improved workplace competencies and stronger adaptability to modern industrial technologies. Benard (2024) observed that practical assessments in suspension work are often hampered by limited live-vehicle access, resulting in under-preparation that mirrors the low attainment scores documented here. Auta et al. (2020) linked poor engine-overhauling competence to inadequate tool calibration and intermittent power supply, factors that directly resonate with the deficits identified in the current study. Ezeama, Obe and Ede (2016) further demonstrated that graduates perform best on tasks for which centres possess modern rigs and consistent consumables, thereby corroborating the superior attainment in air-conditioning and braking relative to complex engine operations. Taken together, these four studies underscore the systemic constraints underlying the moderate attainment profile revealed in the present investigation.

The findings of the study revealed that the objectives of the National Automotive Design and Development Council (NADDC) are appropriate for the training of formal sector automobile mechanics on vehicle maintenance and repairs in Northern Nigeria indicating that objectives such as skill development, curriculum design, accreditation, and coordination are effectively aligned with the training needs of the automobile industry. The supporting hypothesis revealed that There is a significant difference between the mean responses of NADDC trainers and assessors on the appropriateness of the objectives of NADDC for training formal sector automobile mechanics on maintenance and repairs of vehicles in Northern Nigeria. This pattern agrees with Kumazhege, et al. (2023), who noted that Nigerian skill-agencies score highest on entrepreneurship-oriented mandates because stakeholders perceive them as directly linked to graduate employability and enterprise creation. Ahmed et al. (2022) further observed that inspection-related objectives enjoy elevated approval because they translate into tangible infrastructure upgrades and safety compliance benefits that are immediately visible to trainers and trainees alike. The finding agrees with the National Automotive Design and Development Council (2021), which emphasized that automotive training programmes in Nigeria are designed to promote technological advancement, manpower development, and practical skills acquisition in the automotive sector. The finding is also consistent with the study of Idris et al. (2020), who found that clearly defined objectives in technical and vocational education improve the quality of skills acquisition and workforce preparedness among trainees. Similarly, Amaechi and Thomas (2020) reported that competency-based training objectives enhance learners' practical performance and increase the relevance of vocational programmes to industrial demands. Muhammad (2023) reinforced these insights by demonstrating that when objectives are couched in measurable short-term outcomes, approval

levels rise significantly, whereas those framed as long-range developmental blueprints evoke cautious endorsement. Thus, the hierarchical pattern of approval documented here aligns with a growing body of evidence on how Nigerian TVET stakeholders prioritise immediacy of impact over strategic breadth. This finding agrees with the National Automotive Design and Development Council (2021), which emphasized that automotive technical training programmes are designed to produce competent manpower capable of meeting the technological demands of modern vehicle maintenance and repair systems. The finding is also consistent with the study of Idris et al. (2020), who found that competency-based technical education objectives improve trainees' practical performance and workplace readiness. Similarly, Amaechi and Thomas (2020) reported that properly structured vocational education objectives enhance skill acquisition and industry relevance.

5. Conclusion and Recommendations

This study evaluated the attainment of NADDC training objectives and skill development among automobile mechanics in the formal sector of Northern Nigeria. The findings revealed that the National Automotive Design and Development Council (NADDC) training programmes have substantially contributed to the development of relevant technical competencies among graduates in the areas of motor vehicle maintenance, engine repairs, diagnostic operations, braking systems, and modern vehicle servicing. The study established that graduates of the programme have largely attained the objectives of the training, indicating that the programme has been effective in improving the employability and technical capacity of automobile mechanics within the formal automotive sector. The study further showed that the objectives of NADDC are appropriate and adequately aligned with the manpower and technological needs of the Nigerian automobile industry. Objectives relating to skills acquisition, curriculum development, accreditation, technical coordination, and workforce development were found to be relevant to the maintenance and repair requirements of modern vehicles in Northern Nigeria. This suggests that the council's training programmes are contributing positively toward bridging the skills gap within the automotive sector. In addition, the findings indicated that there was no significant difference between the responses of trainers and assessors regarding the attainment of training objectives by graduates, suggesting a shared perception that the programme outcomes are generally satisfactory. However, the significant difference observed in their opinions on the appropriateness of NADDC objectives implies the need for continuous review and harmonization of programme goals to ensure greater alignment with emerging automotive technologies and industry expectations. Hence, the study concludes that NADDC training programmes remain an important mechanism for promoting technical skill acquisition, workforce development, and sustainable growth in Nigeria's formal automobile mechanics sector.

Hence, based on the findings of the study, the following recommendations are proposed:

1. Given that NADDC graduates have effectively attained the objectives of the training programme, efforts should be made to track their career progression and workplace performance through tracer studies. This will provide valuable feedback for refining training curricula and enhancing employability outcomes.

2. The National Automotive Design and Development Council (NADDC) should sustain and periodically review its training objectives to ensure continuous alignment with emerging technologies, innovations, and global trends in the automobile industry. This will keep the training relevant and responsive to industry dynamics
3. NADDC should strengthen collaboration with automobile manufacturers and service centers to continually upgrade training facilities and equipment. Regular investment in advanced diagnostic tools and simulation technologies will further improve the practical skills of trainees.
4. To strengthen instructional delivery, NADDC should institutionalize a structured feedback mechanism where trainees, trainers, and assessors regularly share insights on training processes. This participatory approach will help identify and address weaknesses early.

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