© IIJP 2026 | Volume 2, Issue 3, pp. 2717-2723 | ISSN: 2636-4484

ASSESSMENT OF MODERN EQUIPMENT, AND LOCATIONAL FACTORS FOR INDIGENOUS AUTOMOBILE WORKSHOPS IN KANO STATE METROPOLIS

Suwidi Salisu[1], Ferdinand Felix[2] & Akpen Robert Reuben[3]
[1,2,3]Department of Science Education, College of Education, Federal University Dutsinma, Katsina State
[1]ssuwidi@fudutsinma.edu.ng, [2]felix@fudutsinma.edu.ng &
[3]akpenrobertreuben@fudutsinma.edu.ng.

ARTICLE INFO

Article No.: 0619

Accepted Date: 02/09/2026

Published Date: 30/09/2026

Type: Research

ABSTRACT

This study assessed modern equipment and locational factors in the establishment of standard automobile workshops by indigenous mechanics in Kano State Metropolis. Two research questions guided the study. Descriptive survey research design was adopted. The population of the study was 162 automobile stakeholders comprising API Staff 50, TATA Motors 15, PAN Company 50, Hamza Motors 20 and Roadside Automobile Mechanics 27. Purposive sampling technique was used to select 108 respondents who are indigenous workshop owners. The instrument for data collection was a structured questionnaire titled "Assessment of Modern Tools, Equipment and Locational Factors Questionnaire (AMTELFQ). The instrument was validated by three experts in Technical Education Deppartment from Bayero University Kano. Data collected were analyzed using mean and standard deviation with a decision mean of 2.50. Findings revealed that modern equipment such as diagnostic scanners, hydraulic lifts, and wheel aligners strongly influence the establishment of standard automobile workshops, and that locational factors such as accessibility, visibility, proximity to spare parts markets and security also influence standard automobile workshop establishment and patronage. The study recommended that NADDC should subsidize modern equipment for indigenous mechanics and enforce minimum locational standards for workshop approval in Kano State Metropolis.

Keywords: Modern Equipment, Locational Factors, Indigenous Mechanics, Standard Automobile Workshops, TVET, NADDC.

© IIJP 2026 | Volume 2, Issue 3, pp. 2717-2723 | ISSN: 2636-4484

Introduction

The automobile industry remains one of the most strategic sectors for economic development, employment generation, and technological transfer. Globally, the automotive after-sales service sector contributes over $800 billion annually and employs millions of technicians (OICA, 2023). In Nigeria, with over 12 million registered vehicles (NBS), automobile workshops provide critical services including preventive maintenance, corrective repairs, diagnostics, body works and sales of spare parts. These services sustain transportation, reduce accident rates and create jobs.

It is estimated that over 300,000 people are directly employed in automobile workshops across Nigeria, with Kano State accounting for one of the largest concentrations due to its commercial status in Northern Nigeria (NADDC), 2016)

The development of a standard automobile workshop requires more than technical skills. It demands integration of human capital through Technical and Vocational Education and Training (TVET), physical capital through modern tools and equipment, and environmental capital through strategic location.

The Federal Government through TVET and NADDC has made efforts to promote standard workshops by providing skills training and equipment support through the Automotive Skills Development Programme (ASDP). Despite this, many workshops in Kano Metropolis still operate with outdated tools and in poor locations such as mechanic villages with bad access roads, residential areas and flood-prone zones. This contradicts NADDC's standards and undermines TVET objectives.

Consequently, these workshops experience low productivity and inability to diagnose modern vehicles. While studies have examined workshops in Lagos and Abuja, there is limited empirical research on Kano Metropolis, which is unique as it has the largest concentration of indigenous mechanics in Northern Nigeria. Hence, this study.

Aim and Objectives of the Study

The aim of the study was to assess the influence of modern equipment and locational factors on the establishment of standard automobile workshops by indigenous mechanics in Kano State Metropolis. Specifically, the study sought to:

1. Assess the influence of modern tools and equipment on the establishment of standard automobile workshops in Kano State Metropolis.
2. Examine the influence of locational factors on the establishment of standard automobile workshops in Kano State Metropolis.

Research Questions

The following research questions guide the study

1. To what extent do modern tools and equipment influence the establishment of standard automobile workshops in Kano State Metropolis?
2. To what extent do locational factors influence the establishment of standard automobile workshops in Kano State Metropolis?

Literature Review and Theoretical Framework

TVET refers to all forms of education aimed at equipping individuals with practical skills, knowledge and attitudes for employment (UNESCO, 2016; FRN, 2014). Its objectives include providing trained manpower for industries and skills for self-employment (Okolocha & Ile, 2015). UNESCO noted that countries with strong TVET systems have lower youth unemployment.

In the automobile sector, TVET is critical for producing technicians who can handle modern vehicles. The shift to electronic and computerized vehicles requires training on diagnostic

scanners and mechatronics (Okonkwo & Musa, 2021). However, Musa and Bello reported that many technical colleges still teach obsolete systems while the industry has moved to electronic fuel injection and ECU systems (Adeyemi, 2020). Challenges of TVET include inadequate funding, poor infrastructure, shortage of qualified instructors and obsolete equipment (Okwelle & Allagoa, 2016), as well as poor societal perception (Abdullahi & Abubakar, 2018).

To address this, NADDC established ASDP to retrain master trainers and provide diagnostic equipment (NADDC). Between 2015 and 2023, NADDC trained over 2,000 technicians and donated equipment to 12 colleges (NADDC). Despite this, compliance with its workshop standards remains low due to lack of capital and enforcement.

A standard automobile workshop is characterized by adequate modern tools, skilled manpower and compliance with regulations (NADDC). Modern equipment includes diagnostic scanners, hydraulic lifts, wheel aligners, and computerized fault detection systems which reduce repair time and improve accuracy (Okonkwo & Musa, 2021). Adeyemi reported that over 70% of roadside mechanics still use manual tools, making diagnosis of modern vehicles impossible. The high cost, estimated at ₦2 million – ₦15 million per set (NADDC), is a major barrier.

Location refers to the physical siting of a workshop. Key factors include accessibility, visibility, and proximity to spare parts market, security, road network and parking space. A workshop along a major road with high traffic attracts more customers than one in a residential area. Ibrahim found that poorly located workshops suffer low patronage even with good equipment (Ibrahim, 2019).

Adeyemi, (2020) found that availability of modern tools improves productivity. Ibrahim, (2019) found higher patronage for workshops along major roads. Okonkwo and Musa (2021) reported that diagnostic machines reduced troubleshooting time by 60%. Most studies focused on Lagos and Abuja, leaving a gap for Kano Metropolis.

This study is anchored on Human Capital Theory by Becker (1964). The theory posits that investment in skills, tools and enabling environment increases productivity. TVET represents human capital, modern tools represent physical capital, and good location represents environmental capital.

Methodology

Descriptive survey design was adopted for the study. The area of the study was Kano State Metropolis, a major commercial hub with large concentration of automobile workshops. The population was 162 automobile stakeholders comprising: API Staff 50, TATA Motors 15, PAN Company 50, Hamza Motors 20, and Roadside Automobile Mechanics 27. Purposive sampling was used to select 108 respondents who are indigenous mechanics and workshop owners. This represents 66.7% of the population. A structured questionnaire titled AMTELFQ with two sections: Section A: Demographics characteristics of the respondents, Section B: 12 items on a 4-point Likert scale of SA=4, A=3, D=2, SD=1. The instrument was validated by 3 experts from Science and Technical Education Department Bayero University Kano. Research questions were answered using Mean and Standard Deviation. Decision rule: Mean of 2.50 and above was considered Agreed, below 2.50 Disagreed.

Results

Research Question One

To what extent does modern tools and equipment influence the establishment of standard automobile workshops by indigenous mechanics in Kano State Metropolis?

Table: 1 ***Influence of Modern Tools and Equipment on the Establishment of Standard Automobile Workshops by Indigenous Mechanics in Kano State Metropolis.***

S/N	Items	SA	A	D	SD	Mean	S.D
1.	The use of modern tools and equipment always makes task to be less hard.	37	55	7	9	3.11	0.86
2.	Use of outdated tools result in low standard automobile workshops.	48	42	10	8	3.20	0.89
3.	Using modern tools and equipment saves time and energy, thereby improving the efficiency of workers.	62	30	9	7	3.36	0.89
4.	Availability of modern tools and equipment used in the workshops attract customers.	53	39	7	9	3.26	0.91
5.	Provision of adequate modern tools and equipment increase the productivity in standard workshops.	49	41	8	10	3.19	0.93
6.	Properly located automobile workshops help to provide enough working and parking environments	49	41	8	10	3.19	0.93
7.	**Grand Mean and S.D**					3.22	0.91

SA = Strongly Agree; **A** = Agree; **D** = Disagree; **SD** = Strongly Disagree. **N** = 108. Data from field study, 2026.

Table 1 above shows that all 6 items had mean scores ranging from 3.11 to 3.36, which are above the criterion mean of 2.50. The grand mean of 3.22 indicates that respondents agreed that modern tools and equipment influence the establishment of standard automobile workshops. This implies that modern equipment makes tasks easier, saves time, and attracts customers.

© IIJP 2026 | Volume 2, Issue 3, pp. 2717-2723 | ISSN: 2636-4484

Research Question Two

To what extent does locational factors influence the establishment of standard automobile workshops by indigenous mechanics in Kano State Metropolis?

Table: 2 ***Influence of Locational Factors on the Establishment of Standard Automobile Workshops by Indigenous Mechanics in Kano State Metropolis.***

S/N	Items	SA	A	D	SD	Mean	S.D
1.	A well located automobile workshops allows for easy accessibility and visibility	44	46	10	8	3.17	0.88
2.	Most of the automobile workshop mechanics acquired their land through rent, and proper location assist in easy identification	39	50	9	10	3.09	0.90
3.	Improper location of automobile workshops hinders the establishment of standard workshops	36	56	11	5	3.14	0.78
4.	Proper location of automobile workshops makes it easy to get access to spare parts	34	50	13	11	2.99	0.92
5.	When automobile workshops are properly located, a conducive atmosphere for working is guaranteed	32	59	7	10	3.05	0.86
6.	Properly located automobile workshops help to provide enough working and parking environments	51	41	9	7	3.26	0.87
7.	**Grand Mean and S.D**					3.12	0.86

SA = Strongly Agree; **A** = Agree; **D** = Disagree; **SD** = Strongly Disagree. **N** = 108. Data from field study, 2026

Table 2 above shows that all 6 items had mean scores ranging from 2.99 to 3.26, all above the criterion mean of 2.50. The grand mean of 3.12 indicates that respondents agreed that locational factors influence the establishment of standard automobile workshops. Proper location improves accessibility, visibility, access to spare parts and provision of adequate parking space.

Discussion of Findings

The findings on modern tools and equipment revealed a grand mean of 3.22, indicating that respondents agreed that modern tools and equipment influence the establishment of standard automobile workshops. Specifically, Item 3 with mean 3.36 showed that modern tools save time and improve worker efficiency. This finding is consistent with Okonkwo and Musa (2021) who reported that diagnostic machines reduce troubleshooting time by 60%, and with Adeyemi (2020) who found that availability of modern tools and equipment improves productivity. The high mean for Item 4 (3.26) on attraction of customers also supports the Human Capital Theory by Becker (1964) that investment in physical capital increases output. The use of outdated tools leading to low standard workshops Item 2, mean (3.20)) corroborates with Musa and Bello (2019) who noted the gap between obsolete training and modern vehicles.

Findings on locational factors revealed a grand mean of 3.12, indicating agreement that location influences standard automobile workshop establishment. Item 6 with the highest mean of 3.26 showed that proper location provides enough working and parking space, while Item 1 (3.17) showed that good location ensures accessibility and visibility. This agrees with Ibrahim (2019)

© IIJP 2026 | Volume 2, Issue 3, pp. 2717-2723 | ISSN: 2636-4484

who found that workshops along major roads record higher patronage than those in residential areas. Item 4 with mean (2.99), though the lowest, still above (2.50), indicates that proximity to spare parts market is important. This validates NADDC (2016) standard which specifies minimum requirements for workshop size, ventilation and location.

Conclusion

Based on the findings, it is concluded that both modern tools/equipment and locational factors influence the establishment of standard automobile workshops by indigenous mechanics in Kano State Metropolis. Modern diagnostic scanners, hydraulic lifts and wheel aligners make tasks less hard, save time, and attract customers, while good location ensures accessibility, visibility and conducive working environment. Despite interventions by TVET and NADDC, many indigenous mechanics still lack modern equipment due to high cost and operate in unsuitable locations.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. NADDC should subsidize and provide modern diagnostic equipment to indigenous mechanics on hire-purchase basis to reduce the barrier of high cost of ₦2-15 million.
2. Kano State Government and KNARDA should enforce NADDC locational standards and redesign mechanic villages like Sharada, Bompai and Zoo Road with good access roads, drainage and adequate parking.
3. TVET institutions should update automobile curriculum from analogue systems to electronic fuel injection, ABS and ECU systems and partner with PAN, TATA and API for SIWES.
4. Indigenous mechanics should form cooperative societies to pool resources for acquiring modern tools and securing properly located lands rather than renting in flood-prone areas.

References

Abdullahi, S. & Abubakar, A. (2018). Challenges of TVET in Northern Nigeria. Journal of Technical Education, 4 (2), 15-23.

Adeyemi, O. (2020). Skill gap in Nigerian automobile workshops. African Journal of Vocational Studies, 8 (1), 45-56.

Becker, G. S. (1964). Human capital: A theoretical and empirical analysis. New York: Columbia University Press.

Federal Republic of Nigeria (FRN) (2014). National Policy on Education (6th ed.). Lagos: NERDC.

Ibrahim, M. (2019). Locational factors and performance of small-scale enterprises in Kano. Kano Journal of Management, 6 (1), 112-124.

Musa, J. & Bello, K. (2019). Curriculum mismatch in technical colleges. _Journal of Industrial Training, 5 (2), 88-97.

National Automotive Design and Development Council (NADDC) (2016). _Guidelines for standard automobile workshop. Abuja: NADDC.

NADDC (2023). Annual report on Automotive Skills Development Programme. Abuja.

National Bureau of Statistics (NBS) (2022). Road transport data report. Abuja.

OICA (2023). World automotive after-sales report.

Okolocha, C. C. & Ile, C. M. (2015). TVET and sustainable development. _Nigerian Vocational Journal, 12 (1), 33-42.

Okonkwo, P. & Musa, S. (2021). Adoption of modern diagnostic tools by mechanics in South-East Nigeria. Technology and Vocational Education Journal, 9 (1), 55-67.

Okwelle, P. C. & Allagoa, F. (2016). Funding TVET for economic growth. Journal of Technical and Vocational Education, 7 (3), 21-30.

UNESCO (2016). Strategy for TVET 2016-2021. Paris: UNESCO.