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# UTILIZATION OF ARTIFICIAL INTELLIGENCE (AI) POWERED VEHICLES AND MACHINES IN IMO STATE: THEIR POTENCY AND CHALLENGES IN EXECUTING VARIOUS TASKS

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## ABSTRACT

***The study examined the extent of utilization of artificial intelligence (AI)-powered vehicles and machines in Imo State, assessing their potency and challenges in executing various tasks. Descriptive survey design was adopted to carry out this research. The targeted population for the study comprised all Auto-mobile workers and social scientists in Imo State. The stratified sampling technique was used to select 10 Auto-mobile workers and 30 workers and social scientists in 3 senatorial districts; this gave a sample size of 120 respondents, which was used to carry out this research. The instrument used for data collection was a structured questionnaire titled "Artificial Intelligence Powered Vehicles and Machines Questionnaire (AIPVMQ)". Face and content validation of the instrument was carried out by an expert in test, measurement, and evaluation in order to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.83, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques, such as descriptive analysis, which was used to answer the research questions. The result of the data analysis revealed that "Autonomous Driving (Task Execution in Navigation and Safety)" was the most prominent potency of AI-powered vehicles in executing various tasks, while "Manufacturing and Automation" was the most prominent potency of AI-powered machines in executing various tasks. The study concluded that by fostering innovation and responsible AI adoption, Imo State can leverage these technologies to drive sustainable development, improve service delivery, and enhance overall industrial efficiency. One of the recommendations made was that the government and private sector should prioritize the development of infrastructure, including stable power supply, high-speed internet, and improved road networks.***

**KEYWORDS: Artificial Intelligence, AI-Powered Vehicles, AI-Powered Machines and Imo State**

## INTRODUCTION

The utilization of Artificial Intelligence (AI)-powered vehicles and machines has revolutionized industries globally, offering enhanced efficiency, automation, and precision in executing various tasks. AI-driven systems, such as autonomous vehicles, smart industrial machines, and robotic systems, have been increasingly adopted in sectors like agriculture, transportation, and construction. These technologies promise to improve productivity, reduce human errors, and optimize operational costs. The potential of AI-powered vehicles and machines is gaining attention, particularly in addressing workforce shortages, boosting economic growth, and enhancing infrastructural development (Mhlanga, 2021; Shen & Zhang, 2024).

Despite their numerous advantages, the integration of AI-powered technologies in Imo State presents significant challenges. Infrastructure limitations, inadequate power supply, and poor digital connectivity hinder the full-scale deployment of AI-driven machines. Moreover, concerns related to job displacement, high implementation costs, and cybersecurity threats raise critical questions about the sustainability of these innovations in the local context (Alqudhaibi, Albarrak, Jagtap, Williams, and Salonitis, 2025). Understanding these challenges is essential for formulating strategies that will enhance the adoption and effectiveness of AI-powered solutions.

One key area where AI-powered vehicles and machines hold immense potential in Imo State is agriculture. Smart tractors, automated irrigation systems, and AI-powered drones for crop monitoring can significantly improve agricultural productivity. These innovations help in precision farming, reducing wastage, and maximizing yields. However, the high cost of acquiring and maintaining AI-driven agricultural equipment limits widespread adoption among local farmers, many of whom rely on traditional farming methods.

The transportation sector is another area where AI-powered vehicles can enhance efficiency. Autonomous buses, intelligent traffic management systems, and self-driving delivery vehicles can reduce congestion and improve road safety. However, Imo State faces challenges such as poor road infrastructure and limited technical expertise, which could hinder the successful implementation of AI-powered transportation systems. Addressing these limitations requires strategic investments in road networks and capacity building for AI technology management.

Security and industrial automation are also critical aspects of AI-powered machines in Imo State. AI-driven surveillance systems, robotic security patrols, and automated manufacturing equipment can enhance safety and improve industrial productivity. However, ethical concerns regarding data privacy, surveillance misuse, and loss of human oversight pose significant barriers to adoption (Sanchez, Brenman, and Ye, 2024). Ensuring responsible AI governance and regulatory frameworks will be essential in mitigating these risks.

This study aims to assess the potency and challenges of AI-powered vehicles and machines in Imo State, examining their impact on key sectors such as agriculture, transportation, and security. By identifying practical solutions to existing challenges, this research will provide recommendations for policymakers, industry stakeholders, and investors on optimizing AI utilization for economic growth and technological advancement.

## STATEMENT OF THE PROBLEM

### Objectives of the Study

The following objectives guided this research:

i. To examine the potency of AI-powered vehicles in executing various tasks
ii. To find out the potency of AI-powered machines in executing various tasks

## RESEARCH QUESTIONS

i. What is the potency of AI-powered vehicles in executing various tasks?
ii. What is the potency of AI-powered machines in executing various tasks?

## CONCEPT OF ARTIFICIAL INTELLIGENCE

The term artificial intelligence (AI) describes computer programmes that are able to carry out sophisticated operations that were previously limited to human performance, such as problem-solving, thinking, and decision-making. According to Udo-Okon and Akpan (2024), artificial intelligence refers to the research and programming of computers to carry out intelligence tasks that require human intervention. Bassey and Owushi (2023) defined artificial intelligence as "the development of computer systems that can perform tasks that typically require human intelligence.

The capacity of a digital computer or computer-controlled robot to carry out actions often associated. With intelligent individuals is known as artificial intelligence (AI). Artificial intelligence (AI) is the intelligence of a machine or computer that enables it to imitate or mimic human capabilities. AI is the application of many technologies to give robots human-like intelligence in terms of perception, comprehension, planning, action, and learning. Computers and other devices may mimic human intellect and problem-solving abilities thanks to artificial intelligence (AI) technology. According to Copeland (2024), artificial intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.

Great Learning (2023) mentioned that artificial intelligence (AI) is currently one of the hottest buzzwords in tech, and with good reason. Over the past few years, a number of breakthroughs and technological developments that were previously limited to science fiction have begun to come true. Artificial intelligence is seen by experts as a factor in production that has the power to bring forth new growth opportunities and transform how work is done across industries. Artificial intelligence (AI), in its broadest sense, is intelligence exhibited by machines, particularly computer systems, as opposed to the natural intelligence of living beings.

## CONCEPT OF AI-POWERED VEHICLES

AI-powered vehicles, commonly referred to as autonomous or self-driving vehicles, are vehicles equipped with artificial intelligence technologies that enable them to navigate and operate without human intervention. These vehicles utilise a combination of sensors, machine learning algorithms, computer vision, and data processing systems to perceive their environment, make decisions, and perform tasks traditionally done by a human driver, such as steering, accelerating, and braking (Groot, Meijer & Schade, 2024).

At the core of AI-powered vehicles is the concept of autonomy levels, which range from Level 0 (no automation) to Level 5 (full automation). These vehicles rely heavily on machine learning and deep learning algorithms to process massive amounts of data from sensors, such as LiDAR, radar, cameras, and ultrasonic sensors. The AI system analyses this data to identify objects, road signs, obstacles, and pedestrians and make real-time decisions based on the vehicle's environment (Goodall, 2020).

Sensor fusion is another critical component in AI-powered vehicles, combining data from multiple sensors to create a unified view of the vehicle's surroundings. This ensures accuracy and reduces the risk of errors that could occur if only a single sensor type was used. AI systems also learn from past driving experiences and use simulation data to improve their decision-making processes and safety protocols over time (Xu, 2022).

## CONCEPT OF AI-POWERED MACHINES

AI-powered machines refer to devices or systems that incorporate artificial intelligence (AI) technologies to automate tasks, improve functionality, and adapt to changing conditions through learning and decision-making. These machines leverage algorithms, data processing, and machine learning (ML) techniques to replicate or enhance human capabilities in various domains such as manufacturing, healthcare, agriculture, and logistics. AI enables these machines to not only perform predefined tasks but also make independent decisions and adapt to new, dynamic environments.

At the heart of AI-powered machines is machine learning, where machines learn from data and improve their performance over time without explicit programming. Machine learning models, especially deep learning algorithms, are widely used to process large datasets, recognise patterns, and optimise machine behaviour (Kumar, 2021). For instance, in industrial settings, AI-driven robots are equipped with sensors and cameras that allow them to learn the tasks they perform, such as assembly, inspection, or packaging, with minimal human supervision (Gonzalez, 2023).

A critical element of AI-powered machines is adaptability, which enables machines to improve performance based on experiences and interactions with their environment. For example, in smart agriculture, AI-powered machines like drones and tractors can collect data from the fields, analyse it, and optimise farming practices by making real-time decisions regarding irrigation, fertilisation, and crop health (Zhang, 2020). Similarly, in healthcare, AI machines such as diagnostic tools can learn to identify diseases from medical images, outperforming traditional methods in terms of speed and accuracy (Smith, 2022).

The integration of sensors and Internet of Things (IoT) technology plays a pivotal role in enhancing the functionality of AI-powered machines. These sensors allow machines to perceive their environment and adjust their actions accordingly. In autonomous machines, sensor data is fused and analysed using AI algorithms to navigate complex environments and perform tasks with precision (Li, 2024). For example, AI-powered machines in autonomous delivery systems can safely navigate urban areas by processing data from various sensors, such as LiDAR, GPS, and cameras, to avoid obstacles and follow routes.

## PROSPECTS OF AI-POWERED VEHICLES IN EXECUTING VARIOUS TASKS

Artificial Intelligence (AI) has significantly transformed the automotive industry by enabling vehicles to execute various tasks with increased efficiency, safety, and autonomy. The integration of AI in vehicles has brought numerous benefits, including enhanced navigation, intelligent automation, and improved decision-making. This paper explores the prospects of AI-powered vehicles in executing diverse tasks.

- **Autonomous Navigation and Decision-Making**

AI-powered vehicles leverage sophisticated algorithms and Internet of Things (IoT) devices to analyze their surroundings and make real-time decisions. According to Sharma et al. (2021), AI enables autonomous vehicles (AVs) to detect obstacles, recognize traffic signs, and optimize route planning, thereby improving road safety and reducing travel time. These capabilities help address issues such as poor road infrastructure, traffic congestion, and environmental pollution.

- **Intelligent Automation in Vehicles**

The integration of Intelligent Automation (IA), which combines robotic process automation and AI, allows for minimal human intervention in vehicle operations. Gupta et al. (2023) highlight that AI-driven automation enhances vehicle efficiency, enabling self-driving cars to adjust speed, avoid collisions, and communicate with other vehicles through Vehicle-to-Everything (V2X) technology. Additionally, Adebayo & Uchenna (2021) emphasize that the application of AI in intelligent transportation systems can significantly reduce human error and accident rates.

- **AI in Autonomous Vehicle Development**

AI has become a cornerstone in the development and deployment of autonomous vehicles. AI facilitates real-time data processing from multiple sensors, allowing vehicles to make split-second decisions based on dynamic traffic conditions. The increasing availability of big data, coupled with advancements in machine learning and deep learning, has accelerated the development of fully autonomous vehicles (Kumar & Singh, 2023).

- **AI-Driven Decision-Making in Transportation**

One of the key prospects of AI in transportation is its ability to analyze complex datasets and make optimal driving decisions. According to Adekunle et al. (2024), AI-driven decision-making reduces fuel consumption, optimizes traffic flow, and improves overall road efficiency. Self-learning AI systems enhance adaptive cruise control, lane-keeping assistance, and emergency braking, thus improving vehicle safety.

- **AI in Self-Driving Cars**

The application of AI in self-driving cars has revolutionized the automotive industry. Martinez and Lee (2020) note that AI-powered autonomous vehicles can perceive their environment through advanced computer vision techniques, allowing them to detect pedestrians, road signs, and other vehicles. Moreover, AI enhances the predictive capabilities of vehicles, enabling them to anticipate and respond to potential hazards more effectively (Oseni et al., 2022).

## PROSPECTS OF AI-POWERED MACHINES IN EXECUTING VARIOUS TASKS

Artificial Intelligence (AI) has significantly revolutionized various industries by enabling machines to execute complex tasks with precision, efficiency, and minimal human intervention. AI-powered machines are being increasingly deployed in diverse sectors, including manufacturing, healthcare, agriculture, finance, and logistics, where they enhance productivity and optimize decision-making. This paper explores the prospects of AI-powered machines in executing various tasks, highlighting their impact on automation, decision-making, and efficiency.

- **AI in Industrial Automation**

AI has enhanced automation in industries by enabling machines to perform repetitive and complex tasks with greater accuracy and speed. According to Wang et al. (2022), AI-powered robots are revolutionizing manufacturing by improving production processes through predictive analytics and real-time monitoring. Similarly, AI-driven automation minimizes human errors, optimizes energy consumption, and enhances product quality in smart factories.

- **AI in Healthcare and Medical Diagnosis**

The application of AI in healthcare has improved medical diagnosis, patient monitoring, and drug discovery. Adekunle and Okonkwo (2024) report that AI-powered machines are being used in radiology to detect diseases such as cancer with high accuracy, reducing misdiagnoses. Moreover, Santos et al. (2022) discuss how AI-based robotic surgical systems enhance precision and reduce the risks associated with traditional surgical procedures.

- **AI in Agriculture and Precision Farming**

AI-powered machines are transforming agriculture by enabling precision farming and smart irrigation techniques. Chowdhury et al. (2024) emphasize that AI-driven drones and autonomous tractors optimize land use, monitor crop health, and reduce the excessive use of pesticides and

fertilizers. Furthermore, AI-powered sensors and IoT devices help farmers predict weather patterns and make data-driven decisions for improved crop yields.

- **AI in Financial Technology (FinTech) and Risk Management**

AI-powered machines play a crucial role in financial institutions by detecting fraudulent activities, automating transactions, and enhancing customer service. AI-driven chatbots and virtual assistants improve customer experiences by providing personalized financial recommendations. Additionally, AI algorithms help financial analysts predict market trends and mitigate risks in stock trading.

- **AI in Cybersecurity and Threat Detection**

The growing reliance on AI in cybersecurity has enhanced threat detection and data protection. AI-powered security systems use machine learning algorithms to detect cyber threats in real-time, preventing data breaches. Furthermore, Oluwaseun and Chukwuemeka (2023) highlight that AI-driven fraud detection tools analyze transaction patterns and identify suspicious activities in digital banking.

**Potency of AI-Powered Machine in Executing Various Task**

The potency of AI-powered machines in executing various tasks has gained significant attention in academic and industrial circles. AI machines have shown their ability to transform numerous fields such as manufacturing, healthcare, logistics, agriculture, and even creative industries. Below is an exploration of the potency of AI-powered machines in different sectors, along with journal references that provide further insight.

**AI in Manufacturing and Automation:** Kusiak (2020) stated that AI has revolutionized manufacturing by enabling machines to perform tasks with precision and efficiency, reducing human error, and optimizing production lines. AI-powered robots in factories perform repetitive tasks such as assembly, inspection, and material handling. These machines can operate autonomously, learning from data to improve their efficiency over time. Akhtar, (2024) mentioned that the synergy between AI and additive manufacturing is reshaping various facets of the manufacturing process, from design innovation to quality assurance and maintenance practices, ultimately leading to substantial improvements in efficiency and profitability.

**AI in Healthcare:** AI-powered machines in healthcare have become valuable tools in diagnosing diseases, conducting robotic surgeries, and assisting with personalized treatment plans. Esteva, et al, (2020) stated that AI is used to analyze medical images, such as X-rays, MRIs, and CT scans, to detect conditions like cancer, pneumonia, and neurological disorders. Additionally, AI systems in robotic surgery can assist surgeons in performing precise, minimally invasive operations. AI-powered tools have shown to reduce diagnosis errors and assist healthcare providers in making more informed decisions. David et., al. (2024) AI-driven robotics automate tasks and enhance care delivery, particularly in rehabilitation and surgery. Machine learning models can learn from vast amounts of patient data to provide accurate, personalized treatment.

**AI in Logistics and Supply Chain:** AI-powered machines are transforming logistics by enhancing route optimization, inventory management, and demand forecasting. AI-powered machines analyze real-time data to optimize delivery routes, forecast demand, and manage inventory. Autonomous vehicles, such as drones and self-driving trucks, are being used for delivery and cargo transport. It can also reduce delivery times and transportation costs, providing more accurate forecasting that helps businesses minimize stockouts and overstock situations (Goh & Yang, 2019).

**AI in Agriculture:** In agriculture, AI-powered machines are performing tasks like precision farming, crop monitoring, and soil health analysis. As mentioned by Liakos, et al. (2018). Drones and autonomous tractors equipped with AI technologies monitor crop conditions, detect pest infestations, and apply fertilizers in a targeted manner.AI-powered agriculture machines increase crop yield and reduce pesticide usage. They optimize resource allocation, leading to more sustainable farming practices.

**AI in Education:** AI-powered machines in education are used to automate administrative tasks, personalize learning, and assess student performance. AI-driven systems analyze student performance, recommend customized learning paths, and offer intelligent tutoring systems that can adapt to a student's learning style. Baker, (2019) AI can significantly improve the educational experience by providing real-time feedback and personalized learning plans, addressing the needs of students at different proficiency levels.

**AI in Finance:** AI-powered machines are increasingly being used in the financial sector for tasks such as fraud detection, risk management, and algorithmic trading. AI systems analyze large volumes of financial transactions to detect fraud, predict market trends, and automate trading decisions. Chen, et al. (2021) stated that the use of AI in finance has drastically reduced fraud by recognizing suspicious patterns and has also enabled more efficient trading, leading to improved returns for investors.

**AI in Creative Industries:** In the creative industries, AI-powered machines are being used for content generation, music composition, art creation, and video production. AI systems use generative algorithms to create original works of art, compose music, and write scripts. AI tools are also used for video editing, special effects, and even video game design. AI enables faster production and innovation in creative fields. It also allows artists to explore new styles, and for businesses, it reduces production time and costs.

## POTENCY OF AI-POWERED VEHICLES IN EXECUTING VARIOUS TASK

AI-powered vehicles (especially autonomous vehicles) have evolved significantly in their ability to perform a variety of tasks. These tasks are made possible through advancements in AI, machine learning, computer vision, and sensor technologies. Below are key aspects and research directions from recent years:

**Autonomous Driving (Task Execution in Navigation and Safety):** AI in autonomous vehicles (AVs) has revolutionized navigation systems and safety features. Self-driving cars use AI to process real-time data from sensors like LIDAR, radar, and cameras to make decisions, control acceleration, braking, and steering, and navigate roads with minimal human intervention.

**Vehicle Maintenance and Diagnostics:** AI-powered vehicles also help in predicting vehicle maintenance needs and executing diagnostics. Advanced machine learning algorithms can assess the condition of various vehicle components in real-time. This has greatly reduced unexpected failures and downtime by predicting mechanical issues before they occur. Using AI to predict when certain vehicle parts might fail and suggest proactive repairs (Tesla 2022).

**Advanced Driver Assistance Systems (ADAS):** The integration of AI in ADAS allows vehicles to execute tasks that enhance safety and driving comfort. AI is used in features such as automatic emergency braking, lane-keeping assistance, adaptive cruise control, and parking assistance. These systems rely heavily on data inputs from AI-powered sensors and cameras for situational awareness. AI enables vehicles to monitor road conditions, adjust speed, and take corrective actions based on driving scenarios, enhancing safety for both the vehicle occupants and pedestrians.

**Vehicle-to-Everything (V2X) Communication:** AI is central to the development of V2X communication, which allows vehicles to communicate with each other and with infrastructure such as traffic lights and road signs. V2X can improve road safety, reduce traffic congestion, and optimize traffic light sequences. Tasks like collision avoidance, optimal route selection, and adaptive traffic light control are enabled by AI-powered V2X systems, providing smoother and safer road conditions (Saviola, 2022).

**Data-Driven Personalization:** As vehicles become smarter, AI also plays a role in personalizing the in-car experience. These systems learn the driver's preferences for things like seat adjustment, climate control, and entertainment. AI analyzes driver behavior and automatically adjusts the vehicle settings to suit their preferences. This allows for a seamless driving experience and more comfort (James, 2023).

**Challenges of AI-powered machines in executing various task**

The following are the challenges of AI-Powered machines in executing tasks:

**Ethical Issues:** Ethics in AI is one of the most critical issues that needs to be addressed. Ethics in AI involves discussions about various issues, including privacy violations, perpetuation of bias, and social impact. The process of developing and deploying an AI raises questions about the ethical implications of its decisions and actions. For instance, the surveillance systems that AI powers are a privacy concern.

**Data Privacy and Security:** AI systems rely on vast amounts of data, which could be crucial for maintaining data privacy and security in the long run, as it could expose sensitive data. One must ensure data security, availability, and integrity to avoid leaks, breaches, and misuse. Also, to ensure data privacy and security are maintained, it is essential to implement robust encryption methods, anonymize data, and adhere to stringent data protection regulations. This would also ensure that there is no loss of trust and breach of data. After all, data ethics is the need of the hour.

**Bias:** Bias in artificial intelligence can be defined as machine learning algorithms' potential to duplicate and magnify pre-existing biases in the training dataset. To put it in simpler words, AI systems learn from data, and if the data provided is biased, then that would be inherited by the AI. The bias in AI could lead to unfair treatment and discrimination, which could be a concern in critical areas like law enforcement, hiring procedures, loan approvals, etc. It is important to learn about how to use AI in hiring and other such procedures to mitigate biases.

**Transparency:** AI transparency is essential to maintaining trust and accountability. It is crucial that users and stakeholders are well aware of AI's decision-making process. Transparency is defined as an element of how AI models work and what they do, including inputs, outputs, and the underlying logic. Techniques like explainable AI (XAI) are directed at providing understandable insights into complex AI systems, making them easily comprehensible.

**CHALLENGES OF AI-POWERED VEHICLES IN EXECUTING VARIOUS TASK**

The following are some of the challenges of artificial intelligence in executing various tasks:

**Limited Accuracy in Unpredictable Environments:** These vehicles need to not only understand their driver, but also be able to predict human behavior, which as we know can be relatively unpredictable. Guo, & Liang, (2021). AI-powered vehicles face difficulties in navigating unpredictable or complex environments, such as construction zones, crowded urban areas, or adverse weather conditions. These conditions can affect the sensors and algorithms used by autonomous vehicles, limiting their ability to make accurate decisions in real-time.

**Lack of Regulatory Frameworks:** One of the key challenges in the development of artificial intelligence is the lack of clear legal regulation and standardization. Different countries are developing their own approaches to legislation, which creates difficulties for companies operating in the international market. The absence of standardized global regulations for AI-powered vehicles impedes their widespread adoption and efficient operation. Countries are still in the process of establishing frameworks that address safety, ethical considerations, and data privacy related to autonomous driving.

## METHODOLOGY

Descriptive survey design was adopted to carry out this research. The targeted population for the study comprised all Auto-mobile workers and social scientists in Imo State. Stratified sampling technique was used to select 10 Auto-mobile workers and 30 Worker and Social scientist in 3 Sectorial districts, this gave a sample size of 120 respondents which was used to carry out this research. The instrument used for data collection was a structured questionnaire titled "Artificial Intelligence Powered Vehicles and Machines Questionnaire (AIPVMQ)". Face and content validation of the instrument was carried out by an expert in test, measurement, and evaluation in order to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.83, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical technique such as descriptive analysis which was used to answer the research questions.

**Research Question 1**

The research question sought to find out the potency of AI-powered vehicles in executing various tasks. To answer the research question, a percentage analysis was performed on the data, (see table 1).

**Table 1**
**Percentage analysis of the potency of AI-Powered vehicles in executing various tasks**

| POTENCY | FREQUENCY | PERCENTAGE |
|---|---|---|
| Autonomous Driving (Task Execution in Navigation and Safety) | 44 | 36.67 ** |
| Vehicle Maintenance and Diagnostics | 24 | 20 |
| Advanced Driver Assistance Systems (ADAS) | 21 | 17.5 |
| Vehicle-to-Everything (V2X) Communication | 17 | 14.17 |
| Data-Driven Personalization | 14 | 11.67* |
| TOTAL | 120 | 100% |

** The highest percentage frequency
* The least percentage frequency
**SOURCE: Field survey**

The above table 1 presents the percentage analysis of the potency of AI-Powered vehicles in executing various tasks. From the result of the data analysis, it was observed that Autonomous Driving (Task Execution in Navigation and Safety) 44 (36.67) is the highest potency of AI-Powered vehicles in executing various tasks, while Data-Driven Personalization 14 (11.67) is the least potency of AI-Powered vehicles in executing various tasks. The result therefore is in agreement with the research findings of James (2023), who noted that AI in autonomous vehicles (AVs) has revolutionized navigation systems and safety features.

**Research Question 2**

The research question sought to find out the potency of AI-powered machines in executing various tasks. To answer the research percentage analysis was performed on the data, (see table 2).

**Table 2: Percentage analysis of the potency of AI-powered machines in executing various tasks**

| POTENCY | FREQUENCY | PERCENTAGE |
|---|---|---|
| AI in Manufacturing and Automation | 39 | 32.5 ** |
| AI in Healthcare | 19 | 15.83 |
| AI in Logistics and Supply Chain | 17 | 14.17 |
| AI in Agriculture | 14 | 11.67 |
| AI in Education | 9 | 7.5 |
| AI in Finance | 12 | 10 |

| | | |
|---|---|---|
| AI in Creative Industries | 6 | 5 |
| Enhancement of Social and Political Stability | 4 | 3.33* |
| **TOTAL** | **120** | **100%** |

** The highest percentage frequency
* The least percentage frequency
SOURCE: Field survey

The above table 2 presents the percentage analysis of the potency of AI-powered machines in executing various tasks. From the result of the data analysis, it was observed that AI in Manufacturing and Automation 39 (32.5) is the highest potency of AI-powered machines in executing various tasks, while Enhancement of Social and Political Stability 4 (33.3) is the least potency of AI-powered machines in executing various tasks. The result, therefore, is in agreement with the research findings of Kusiak, (2020), who stated that AI has revolutionized manufacturing by enabling machines to perform tasks with precision and efficiency, reducing human error, and optimizing production lines.

## CONCLUSION

AI-powered vehicles and machines offer significant potential in enhancing productivity, automation, and efficiency across various sectors in Imo State. Their application in agriculture, transportation, and security presents opportunities for economic growth and infrastructural development. The result of the data analysis revealed that "Autonomous Driving (Task Execution in Navigation and Safety)" was the most prominent potency of AI-Powered vehicles in executing various tasks while "Manufacturing and Automation" was the most prominent potency of AI-Powered machines in executing Various Tasks. However, challenges such as poor infrastructure, high costs, and ethical concerns hinder their full implementation. Addressing these challenges through strategic investments, regulatory frameworks, and capacity building is essential for maximizing AI's benefits. By fostering innovation and responsible AI adoption, Imo State can leverage these technologies to drive sustainable development, improve service delivery, and enhance overall industrial efficiency.

## RECOMMENDATIONS

- The government and private sector should prioritize the development of infrastructure, including stable power supply, high-speed internet, and improved road networks. These foundational elements are crucial for the seamless integration of AI-powered vehicles and machines, ensuring their efficiency and reliability in executing various tasks.
- Training programs should be established to equip local engineers, technicians, and industry professionals with AI-related skills. Collaborations between educational institutions and technology firms can facilitate knowledge transfer, fostering a workforce capable of managing and maintaining AI-powered systems.
- The government should implement clear policies and regulations to govern the use of AI technologies. This includes setting safety standards, addressing ethical concerns such as job displacement and data privacy, and ensuring AI applications align with societal needs while minimizing risks.

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