



# Supply Chain Optimization through AIoT: Enhancing Logistics, Inventory Management, and Distribution in Manufacturing

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**Abstract :** The integration of Artificial Intelligence of Things (AIoT) into supply chain management presents transformative potential for manufacturing industries, offering unprecedented improvements in efficiency and responsiveness. This paper aims to critically analyze the role of AIoT in optimizing logistics, inventory management, and distribution processes within the manufacturing sector. Utilizing a mixed-methods research approach, the study combines quantitative data analysis with qualitative case studies and expert interviews to provide a comprehensive evaluation of AIoT applications. The research explores how AIoT technologies can automate complex supply chain tasks, enhance data-driven decision-making, and improve the overall agility of supply chains. Key findings suggest that AIoT significantly reduces operational costs, shortens lead times, and improves service levels across various stages of the supply chain. The paper concludes with strategic recommendations for practitioners looking to implement AIoT solutions, emphasizing the critical nature of integration and alignment with broader organizational goals. Through this analysis, the study demonstrates how AIoT stands as a cornerstone technology for future advancements in supply chain management.

**IndexTerms - AIoT, Supply Chain Management, Efficiency, Integration, Manufacturing Sector.**

## I. INTRODUCTION

### 1.1 Context and Background

Supply chain management carries immense value to both businesses and their customers. The capacity of the supply chain segment to address efficiency and capacity to meet customer demands. Over the recent years businesses have sought to adjust their supply chain segment to enhance and appeal to variety of options in achieving meaningful outcomes. The need to ensure critical handling of the supply chain segment has pushed companies to embrace the use of Artificial Intelligence of Things to ensure accuracy, flexibility and considerable adjustments to match the desired values [1]. Therefore, AIoT integration into the supply chain segment is among key technological advancements seeking to enhance functionality, address efficiency and ensure critical appeal to every desired selection of managing supply chain optimization [2].

Globalization has enhanced the demand for efficiency and accuracy in the supply chain to enable management and development of key instructions to ensure better outcome in business activities. The globalization creates meaningful appeal to designate, address and enable appropriate modelling of the businesses to operate on a global scale, dealing with different customer expectations at any given point [3]. Companies therefore seek to have interconnected supply chain systems to enable an appeal to every engagement they partake [4].

More to the point, customer expectations in modern times have changed, with the capacity to evaluate and look through several products at once, they have to get the right products and on time. Digitization and innovation of E-commerce have helped to chart course of delivering new ways that customers can get their products [5]. Companies, therefore, have to constantly work towards enabling their transformation to meet the customer demands. Hence, the capacity to ensure a critical appeal to customer expectations makes supply chain have an incredible role to play within the businesses, ensuring success and appeal across all dimensions and capacities of addressing their needs [6]. Thus, the right management of supply chain systems in the company helps to entice customers and address individual demands at all times.

### 1.2 Problem Statement

AIoT integration helps companies address supply chain challenges related to demand forecasting. Using AI assists to chart the demand of specific products given historic trends and customer changes in the real time. Real time management of the data helps to provide a mechanism for companies to handle their customer segment and achieve remarkable outcomes in addressing and ensuring sustainable ways to achieve the right appeal [7]. Hence, the use of real time AI predictive analytics, customer demand

forecasting helps the supply chain know what products they have to include and what changes have to be made [8]. Additionally, it helps to ensure that the supply chain management creates a visibility and traceability feature, helping to interact with every key point of the supply chain to achieve remarkable benefits as demanded [9]. These advances will ensure that the integration of AIoT will chart a direction for companies to take and achieve their demands as desired. AIoT thus seeks to build a robust, resilient and responsive feature for the businesses in managing and handling their supply chain demands [10].

### 1.3 Research Objectives

This study has the main objective of identifying the use of AIoT to optimize supply chain in the manufacturing sector to enable better inventory management, logistics and product distribution. The study will also look into identification of key implementation mechanisms of AIoT in companies to ensure an integral addition to companies.

### 1.4 Significance of the study

This study will be key to the manufacturing industry in addressing challenges related to supply chain management. By identifying the optimization mechanisms through AIoT, the manufacturing industry will have better steps to ensure operational efficiency, where they engage in better management of the production process and handling downtimes. The inventory management and quality control of the manufacturing industry will also improve since they will have better understanding of the customer segments to achieve suitable adjustment in whatever segments are needed [11]. AIoT will also bring about better approaches to dealing with agility and flexibility in the business segment. Working within the right classification will enable manufacturing companies to react swiftly to pertinent challenges, advance their needs through appropriate selection of solutions that suitably handle underlying difficulties within an organization [12]. Thus, these values stem from the capacity to ensure an increasingly beneficial way to deal with the AIoT value to the business segment.

### 1.5 Theoretical Framework

In modern times, the use of smart devices have assisted companies to gather information across their different segments. The IoT devices have enabled better understanding of processes and application of steps to assist in addressing these needs. Notably, integration of AI in IoT devices helps with collection of data and analyzing them, and even programming to enable better management of the information. These key segments achieve the remarkable value of ensuring sustainable operations and appeals in addressing underlying values and variables in the organizational segment. More to the point, different theories apply in achieving the right integration framework for companies to achieve their desired goals at any point in time. The supply chain management theory seeks to optimize on cost savings and enhance quality of products to the consumers [13]. Additionally, using the sustainability theory offers an insight into variable and appropriate modelling the company to address social, environmental and economic elements of the business to achieve their desired value [14]. Hence, these theories enable an instructional understanding of organizational dynamics in relevance to the use of AIoT systems to achieve greater functionality and address customer demands as desired (see Figure 1).



Figure 1: Theoretical Framework

## 2.0 Literature Review

Nozari (2024) acknowledges that supply chain management aims at ensuring a reduction of the production cycle while enhancing the output to appeal to consumer demands at all times. The main approach to enable suitable supply chain management is using invaluable resources like technology to leverage and engage in remarkable advances seeking to establish the best output at all times. Technology avenues such as Internet of Things have been used in supply chain systems to ensure greater adjustments to processes and achievement of the best outcome in all essences. More to the point, including artificial intelligence on the IoT devices have enabled analytics and greater automation potential for the supply chain segment [15]. Hence, Nozari (2024) retains the main role of AIoT as engaging in analytics and learning capabilities of machines. These additions, when done to the supply chain segment, encourages considerable development, helping to structure and achieve a remarkable outcome in addressing customer demands at all times.

Aliahmadi et al. (2022) communicate on the importance of a resilient supply chain system. Resilience is achieved to enable lower costs, high quality, lower latency and better service within the supply chain segment of the company. Reportedly, companies have to engage in use of IoT and AI to enable the formulation of a resilient supply chain system, which, can considerably handle their demands and achieve remarkable outcomes at all times. Aliahmadi et al. (2022) depict the possibility of having integrated systems of IoT and AI as key to enabling and ensuring sustainable development of all approaches in managing the supply chain system. Notably, this author states that use of AIoT helps to revamp the supply chain management by enhancing decision making, more so

using the Fuzzy Decision-making model [16]. The decision modelling helps to establish inventory control and management in key ways that attract an even better step in achieving sustainable outcome for a company. Hence, the use of the AIoT mechanism provides a remarkable step to addressing and impacting sustainable value to supply chain resilience and optimization at all times. Matin et al. (2023) states instrumental development in the integration of AIoT to ensure a greater appeal to manufacturing needs. AIoT has enabled companies to have the chance to explore demands of Industry 4.0, remarking a suitable and appropriate model to challenge every value in providing process automation and optimization. AIoT helps the supply chain by empowering companies to have the capacity to identify challenges earlier on and work on them to achieve higher value of results [17]. The impactful engagement with AIoT measures up to the modelling and management of individual steps that require instructional appeals to help in sustainably handling the manufacturing function. To this end, AIoT aids the growth and generation of stronger appeals, each seeking to ensure critical appeals in ensuring better advances in the right segments. Matin et al. (2023) therefore maintain that AIoT has engaged the supply chain segment to become better, have greater distinctions in achieving rightful outcomes and have the most beneficial ways to maintain sustainable development to the required end. Therefore, using the technology has optimized processes and led to better production capacities for the required segments of the supply chain.

Gaikwad et al. (2024) remarks the potential of AIoT in supply chain efficiency. With the advancing nature of AIoT in modern organizations, smart logistics have enabled companies to bridge the gap between production and getting the products to the consumers. Using these smart devices have enabled companies to have better supply chain operations, leading to critical advances and management models in achieving sustainable outcomes. Relevance and approaches in managing the AIoT in companies stem from the need to ensure an appeal to both consumers and process owners in ways that enable sustainable modelling and management of both considerations to the company [18]. Gaikwad et al. (2024) therefore details that AIoT has helped companies to have better logistic address, reiterating the value of bringing up better approaches and appeals that manage to engage the relevant processes needed to ensure an instrumental appeal. Therefore, working with AIoT has helped to bring about a critical measure of addressing critical challenges that formerly affected the scope and capacity of enabling distinctive outcomes in handling supply chain needs in the companies. Therefore, the use of AIoT has been key to delivering and enabling sustainable ways to cater for the growing needs in the modern fast-technology community.

## 2.1 Gaps in Literature

While modern research papers focus on the value of using AIoT in the supply chain framework, they lack in addressing and managing the influence on global markets. AIoT has to structure and administer the capacity to engage an institution in growth beyond national and regional borders. Therefore, research studies therefore have to focus and concentrate on delivering an appropriate insight into the management of supply chain in global contexts, because of the interconnected nature of AIoT and the fast globalized economy witnessed today.

## 2.2 Applications of AIoT in Supply Chain Management

### 2.2.1 Integration of AI and IoT

Both AI and IoT are transformative technologies with a great appeal to the supply chain system. While IoT systems help to provide an automation of service to the supply chain processes and activities, AI brings in key additions to the functionalities, seeking to enhance and appeal to various demands. AI helps IoT with the capacity and demand to collect, process and analyze data without human interference. This indicates that IoT devices within various supply chain points grow to have the capacity of addressing information development and management in different instances [19]. The use of AI in IoT is therefore key to ensuring that systems all through the company can collect information, provide insights and mark the depiction of an even better engagement to assist in creating sustainable value to the companies [19].

Data from IoT sensors in various points of the company can be used with the additional input from AI to enhance functionalities. AI reads data from IoT devices, helping to predict maintenance for the machines and provide a remarkable framework to achieve greater address of duties for the company [20]. The use of this approach enables sustainable and key steps to ensure that data is used for the right engagement of procedures of the company. Data from sensors in other sectors like the warehouse and transport vehicles is also used to enable better process management through automated handling of the IoT information channel [21]. Hence, the use of AI in IoT devices helps to tabulate more information and provide remarkable ways to cater for the growing attention needed from each segment of the manufacturing company.

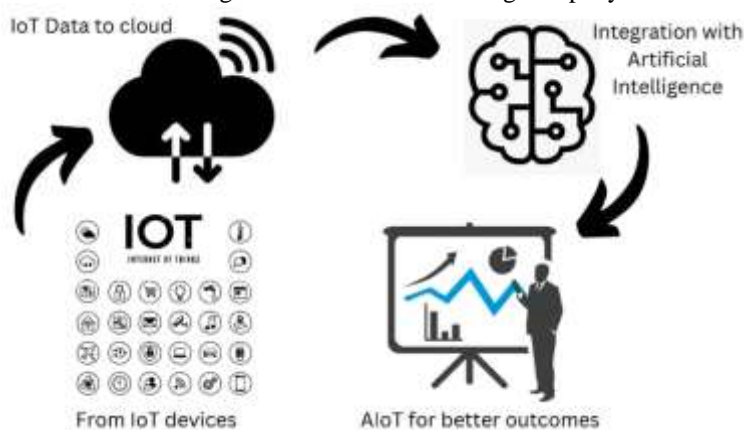


Figure 2: IoT and AI integration

### 2.2.2 Logistics Optimization

AIoT provides several options that help in ensuring logistic optimization for companies. In the first instance, routing optimization can be conducted through real time traffic monitoring, offering solutions and insights on the best routes to follow [22]. Notably, dynamic route planning and multi-modal transport also facilitate logistics to ensure an appropriate management of the transportation needs in attending to and enabling critical adjustment to whatever degree possible.

Logistics are also improved through shipment tracking to ensure a beneficial handling for the customers. AIoT provides a great timeline for understanding the provision of a timeline for shipments to arrive and a greater distinction that enables alerts whenever the shipment goes in an unwanted route [23]. Using Geofencing and alerts, logistic management of shipments mark a critical advancement where key traits and values are depicted in a better manner of their engagement and functionality for the company. Thus, using the right structure to address and understand major implications of the desired values.

Furthermore, use of AIoT has provided a great step to enable better functionality and appeal at the right needs, with a beneficial last mile optimization, where deliveries are efficiently provided for the customer [24]. These elements ensure the supply chain management can be well defined and addresses core demands in determining even greater approaches to manage the development as required.

### 2.2.3 Inventory Management

AIoT enables real-time inventory tracking, leading to a greater accuracy for the systems. The tracking through IoT sensors such as RFID tags ensure the date and location are visible, making it much easier to design the statuses, locations and inventory levels. More to the point, AIoT makes it simpler to identify inventory data automatically, managing the progressive modelling of their accuracy to bring out distinctive elements of the manufacturing warehouses [25]. Using the technology, inventory accuracy is achieved through reconciliations that can be automatically conducted.

AIoT also provides a modest step towards enabling forecasting accuracy. Demand forecasting enables an analysis of consumer data and product demand. Thus, predictive analytics provides the platform to encourage visibility of whatever forecasts have to be established and the right steps to be taken to ensure a remarkable progression of all needs of the company [27]. Therefore, the predictive analytics feature makes forecasting more accurate and manageable in every considered advancement.

AIoT helps with inventory management by reducing the holding costs. Having the best approach to handling inventories through Lean Inventory Practices like just-in-time model, leads to replenishment and demand-driven supply chain strategies that encompass progressive handling of the inventories as desired. The optimized inventory levels also minimize inventory costs as they have the right amount of a product as desired by the market segments [288]. Continued handling and management of these elements depict an increasingly effective platform to carry out progressive management of various inventory needs for companies.

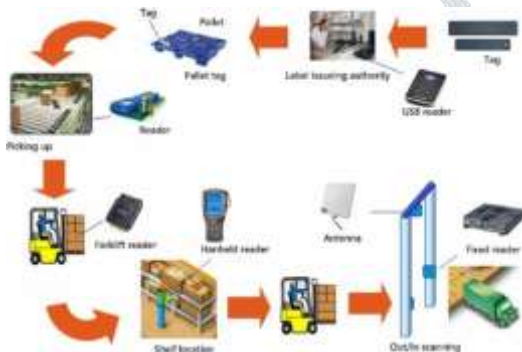


Figure 3: Inventory Management using IoT

### 2.2.4 Distribution Process

AIoT streamlines the distribution channels by providing a remarkable advancement in handling the steps towards managing real time visibility. The visibility through real time tracking maintains a better and more streamlined appeal in targeting and handling needs of the company. Aspects such as optimization of the routes to reduce delays mark the chance to reduce bottlenecks which might affect transportation of goods to their designated locations [29]. Predictive maintenance also offers the chance to understand individual actions and steps to empower and ensure appropriate handling of the processes to achieve the most remarkable outcome in all needs [30]. Hence, AIoT provides the chance to learn more about remarkable adjustment of distribution channels with continuous adjustment of conflict resolution to mark an even greater appeal to the demanded need of fulfilling critical elements of the supply chain model.

## 3.0 Methodology

### 3.1 Research Design

This study applied the element of mixed-research model to understand and address various elements of dealing with underlying elements of marking progressive handling of the study needs. The mixed approach makes an instrumental management of the research to understand information from warehouses and expert models that engage and ensure a refined handling to address underlying needs. The mixed approach facilitated an instrumental understanding and engagement of the study to addressing remarkable elements that facilitate critical modelling and achievement in handling the research demands. Thus, the use of this

approach enabled the research to have a reliable depiction and handling of information relating to development of AIoT in the supply chain segment.

### 3.2 Data Collection

The mixed method research applied various elements to understand information pertaining to the critical modelling of the research. Using the best advancement in handling the research, the mixed method first collected information by conducting surveys on different machines for use in manufacturing companies. Collection of information from ERP systems and RFID chips on the company devices helped to provide a meaningful understanding of IoT and its integration with AI to help front a sustainable and remarkable way to handle the company attention for the most meaningful influence.

Additionally, information was collected from reviewing primary research articles which contain data obtained from interviews and focus group interviews. Focus groups composed of employees who are in direction engagement with the machines, ensuring they can understand and relate every aspect to the demanded element of the research. The approach offered a great step and scope of dealing with needed adjustments in the machine engagement and attendance to organizational needs. More to the point, expert interviews came from technology experts who understood and remarkably worked towards ascertaining the right level of achieving consistent management of the relevant demands in attracting even better responses in dealing with growing attention to AI in supply chain management.

### 3.3 Data Analysis

This study uses descriptive and thematic analysis to understand and address varying components of the use of AIoT in manufacturing sector. The descriptive analysis helps in summarizing and describing trends and links related past and historical information. More to the point, thematic analysis helps to merge the key information pertaining to the research and provides sustainable input on core aspects of managing the data inferences. Thus, the data analysis caters for all data sources, helping to account for the input and administer valuable engagement as desired.

## 4.0 Case Study

Different companies have applied the use of AIoT to help them in addressing their supply chain needs at different levels. In an increasingly competitive global market, companies seek innovative solutions to streamline their supply chain operations. Toyota, a multinational automotive company, uses the element of innovation to enhance its performance in different key segments. One of the main segments where the company has addressed use of AIoT is supply chain management, ensuring it provides the best platform for advancement and critical modelling of the functionalities needed to achieve the right outcomes. Hence, Toyota's use of AIoT in the supply chain segment marks a reliable step in addressing organizational efficiency.

### 4.1 Implementation

Toyota began the use of AIoT through integrating AI algorithms and IoT elements in different segments of its operations. The company worked with remarkable ideals to help in prioritizing and enabling the identification of key areas of improvement in its supply chain segment. Notably, Toyota uses IoT sensors throughout its manufacturing entities, reliably enabling the management of different key functions in the company [31]. The IoT sensors are provided for in the distribution centers, manufacturing facilities and warehouses of the company. Each sensor is equipped with the capacity to collect information on machine uptime, humidity, vibration and temperature within the areas where they have been placed.

To enable a full management of these centers, Toyota used AI algorithms that had the capacity to identify data, analyze and predict patterns based on the collected information. Scaling the scope of machine learning techniques on the company's platform indicate a reliable step in understanding and marking a progressive element of handling the company need to address various factors of management. Toyota's advancement in attending to key entities and variables in this case provide the best channel of ensuring that IoT devices in its locations can relay data and help with tabulation, prediction and maintenance of different needs within the company.

### 4.2 Challenges

Toyota encountered several challenges in providing a reliable system that will understand and contend to the various developments in using AIoT in achieving organizational needs at all times. Primarily, data integration from all of the warehouses and sources of data in the company proved to become a difficult aspect, since the company had to come in with key tools and processes to enable harmonization of data all through the global supply chain system of the company [32]. AIoT demanded the use of key strategies that help to address the organizational needs at all times, hence the need to have every data source well placed and defined in the company was a major step to advance the organizational activities.

Change management and scalability of the operations was another complex issue the company had to dwell on to ensure critical advancement to a designated level. Change management in the right approach of detailing and creating the best platform for handling new devices and data needs among employees influenced the nature and scope of addressing IoT device functionalities. Nonetheless, these operations had to be scaled on a global level, influencing the insight and capacity to address various needs in identifying and creating sustainable data needs.

A final challenge that Toyota had to work with is handling cybersecurity demands at all times. The cybersecurity issue coming with IoT devices that have minimal protection recording and relaying data was a key aspect of dealing with the technological advancement. Therefore, the company had to invest in data security initiative such as encryption and authentication to prevent any potential damages to its databases.

#### 4.3 Outcome

Toyota experienced several outcomes from their investment in AIoT and engagement to ensure progressive management of the right order in accounting for and ensuring sustainability in achieving every value provided for by these systems. AIoT enabled the company to experience a higher chance at efficiency of their production segments. The higher capacity of production led the company to ensure they have lesser downtime from machines, had a better maintenance schedule and improved asset utilization, helping them to remarkably handle every operational need in the company. This advancement made the company create a reliable step in addressing their manufacturing demands and needs at all times.

Toyota experienced an enhanced visibility of their inventory and logistical needs. The company could understand the supply chain by looking into the key needs and market dynamics that retain an instrumental appeal at handling and working on the relevant needs of the company. Using these appeals, the company experienced an increasingly beneficial way to capture better engagement in handling their inventory levels and customer needs (See figure 4).

AI implementation led Toyota to experience cost savings in predictive analytics, inventory optimization and logistical routing that demanded an even better scope to achieve the right handling of the organizational demands [33]. The use of AIoT made it much easier to identify problems before they happen, schedule maintenance and even predict future trends within the customer segment that would ensure an even better performance for every categorization of the company.

Toyota's adoption of AIoT enhanced the company's reputation as an innovation leader. Handling their supply chain with the platform encouraged the company to have a differentiation in the automotive industry and created a competitive advantage that placed it on the right path towards handling incremental demands from the customer. The innovative adjustment in the company created an even better platform and chance at enabling customer satisfaction to address and assist in catering for the progressive needs of the company. Thus, the advancement created a rightful channel and approach of managing Toyota's progressive nature and demand to entice customer engagement to a greater level.

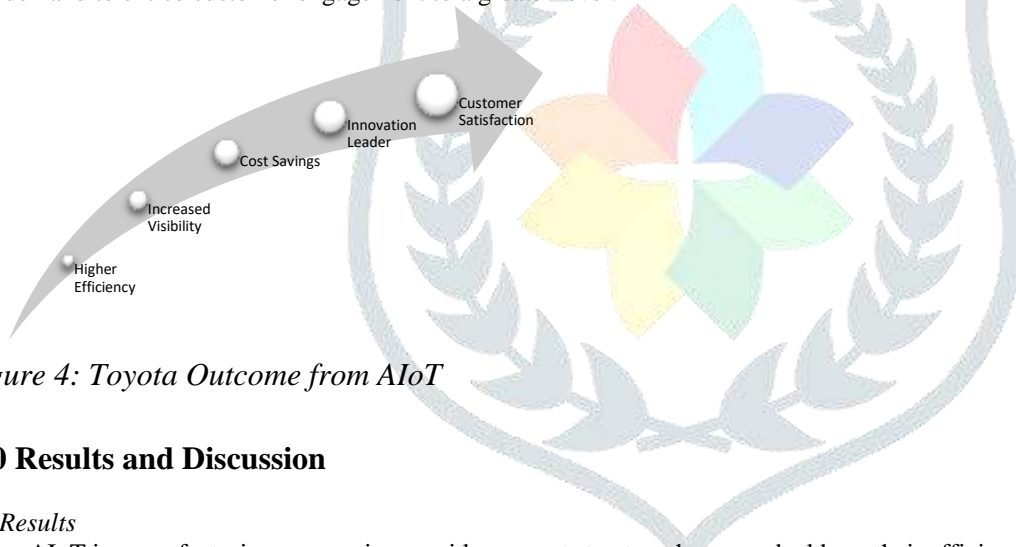


Figure 4: Toyota Outcome from AIoT

## 5. 0 Results and Discussion

### 5.1 Results

Using AIoT in manufacturing companies provides a great step to enhance and address their efficiency. Improved efficiency is a key factor in ensuring suitable address to major challenges in the supply chain platform. The use of AIoT provides the companies with a chance to enable a greater prediction of maintenance from IoT devices and can schedule the maintenance to help them in addressing functionalities at different levels [34]. More to the point, IoT enhances efficiency by addressing the distribution channels and creating a chance to optimize the inventory management, schedule deliveries and provide a logistic routing that caters for the demands of creating a suitable and better scope of addressing the company engagement mechanisms.

Additionally, AIoT provides companies with the chance to enhance the visibility of their inventory levels. The additional visibility on their operations and demand needs has helped companies to ensure that they can monitor their production progress and identify disruptions to their activities before they take place [35]. Managing these disruptions and marking the adjustment of the operations in the company bring out instrumental ways to achieve and enable sustainable provision of value to the supply chain at all times. Data-drive insights also ensure visibility since companies have a greater understanding of their activities, related impacts and development of ways to create sustainable value additions at all times. These advances create the best selection of addressing and adhering to a better scope of displaying and managing the growing attention for major additions in the companies. Predictive analytics helps to provide visibility of targeted needs and addresses a better identification of major activities that could be conducted to assist with generation of the relevant and rightful needs of the company at all times.

Use of AIoT in the companies help to save on costs because of the generated information. Marking a progressive handling of the AIoT need of the company helps to ensure that inventories are provided for based on the demand forecast and predictive analytics to whatever needs have to be achieved in the company. Working and mitigating every factor in the company helps to create a distinctive appeal in catering for and ensuring sufficient modelling of the company to address values as they are required in every provision [36]. The inventory optimization also helps to understand lead time sand mechanisms that create suitable handling of carrying costs and advances that will achieve the right handling at every step of the organizational advancement needs. Costs are also saved through logistical efficiency to make the company achieve their demands in an easier timeline, seeking to address and enable sustainable management of their demands at every incremental need. These approaches, as developed by the use of AIoT assists the company to achieve and enable critical adjustment in addressing and marking progressive elements of managing an even greater application to supporting and managing their adjustment needs [37].

Moreover, customer satisfaction is key response from handling the AIoT devices. The use of these devices ensures that there are products which consumers demand at all times. The progressive management of the consumers through having information pertaining to their demands and needs encourage a suitable handling and management of instructional needs to achieve sustainable

development in the course of company management of their different needs. The use of the right address to product availability, on time delivery and order fulfillment makes the use of AIoT incremental to companies since there are even greater steps taken to achieve the right code of value in addressing and ensuring critical advances in managing their development to achieve reliable output in every core addition for the company [38].

### 5.2 Discussion

Implementation of AIoT in supply chain management enhances the transformation of the companies to address and achieve various industry demands. AIoT includes the integration of IoT sensors with capabilities from AI algorithms and different manufacturing companies use the approach to enable the functionality of their different segments to enhance, address and appeal to varying demands in achieving the remarkable value of adjusting and managing their progressive significance at all times. Therefore, the use of AIoT in companies is becoming an increasingly beneficial way to addressing growing demands within the industry.

Implementation of AIoT comes with a key challenge to addressing integration and cybersecurity needs within the company. Addressing these challenges demand the companies to understand the integrative technologies that they have to use to ensure the appropriate functionalities of AIoT and increased advances towards managing and working within these features to achieve better actions of the AIoT channels [39]. These challenges prompt companies to have a critical way to address the potential inclusions and values that must be used to enable sustainable development to the right element of achieving attainable value across all implementation points. The implementation is core to administering and advancing AIoT to achieve suitable development in the company with regards to understanding the entire supply chain segment.

More to the point, advancing the needs of the AIoT make it critical and much better to achieve efficiency in the supply chain process. Visibility is a key factor that enhances the functionality and scope of address for various demands within the AIoT platforms. Addressing each of these demands ensure an accurate and modest application charted with the development of a critical step to achieve better and more valuable needs of the company [40]. The use of AIoT in companies is therefore key to leveraging predictive analytics to understand demand forecast, address logistic bottlenecks and ensure scheduled maintenance in major approaches that depict an increased sustainability of the organizational functions at all times.

## 6.0 Implications and Future Research

### 6.1 Practical Implications

Companies and practitioners have to invest in the integration of AI and IoT to ensure a remarkable advancement in valuable modelling of their needs to achieve the best remarks at all times. The use of an integration schedule makes it much simpler to ensure a beneficial management of the right needs to address data storage, data collection and data use to engage the best progression in the company. The practical implication creates the chance to work with data integration tools that secure and provide a reliable step in addressing valuable progressions at all levels.

### 6.2 Theoretical Implications

This research works to address the growing level of innovation diffusion in the society. The research addresses the innovative development of AIoT integration and the diffusion of this technology within the manufacturing industry. Using this framework, it becomes much simpler to enable and selectively address the creation of better platforms to help instruct an achievement basing on the development and management of the AI platforms within different industrial segments. Therefore, the study addresses the innovation diffusion theory with key concentration on the handling of the AIoT elements in supply chain management optimization.

### 6.3 Future Research

Future research should be conducted in relevance to the adoption of AIoT in multinational scales. Addressing this developmental element will help to cater for the changing timelines, engaging different cultures and systems to help in leveraging the role of IT in sustaining and handling various requirements within the company. These approaches are thus key to designing and enabling suitable management of the AIoT structures in modern companies.

## 7.0 Conclusion

### 7.1 Summary of Findings

AIoT offers incremental benefits to the handling and management of various needs in addressing organizational development in key selections. The use of AIoT in the supply chain enhances visibility of the supply chain by offering real time information on the inventory, logistics and operations. This approach ensures that the AI elements address and create suitable steps to encourage the best platform of handling and achieving even better outcomes for the right selection. In this case, the use of AIoT provides the chance and capacity to continually work with meaningful development of information-backed systems that enhance the supply chain management ideals within the company, creating sustainable and beneficial ways to achieve even greater value demands.

### 7.2 Conclusion

AIoT is a transformative technology that offers incremental value in the supply chain management activities. Companies have to use AIoT after considering the integration channels and approaches that will help to craft beneficial advances in attaining value for the company. Using AIoT creates the chance to learn, encourage and advance to a more meaningful level of creation that supports and generates the best appeals as demanded. Therefore, AIoT implementation leads to optimized supply chain processes but demands greater appeal to integration and cross border appeals that encourage better functionality across all channels of the company's activities.

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