Use of Internet of Things (IoT) in Logistics Industry

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Abstract: Internet of Things (IoT) has become famous in all businesses. Employments of IoT and its advantages have been eye-engaging in industry and business. Alongside numerous different areas of the economy, the progressive impact of IoT is intensely affecting strategic industry also. IoT application will present diverse promising idea and plan for advancement in production network and coordinations. The IoT in Logistics with more prominent precision of execution can be accomplished with insignificant endeavors and new potential jobs will be opened for coordinations administrators to produces the merchandise with less expense. The IoT will greatly affect different regions like functional productivity, well being and security, client experience, and new plans of action in coordinations. This paper basically centered around the point application and advantages of IoT on coordinations industry. Also, this paper will portray the application and effectiveness gains in the IoT applications. At long last, we will close this paper with subsequent stages and future turns out made arrangements for IoT to turn into a reality.
Keywords: IoT, Fleet Management, Warehouse Management, Asset Tracking

1. Introduction

The Internet of Things (IoT) is a network of objects equipped with radio frequency identification chips and similar technologies so that the objects could communicate and interact with each other. Internet of Things (IoT) has become popular in all industries. Uses of IoT and its benefits have been eye-appealing in industry and commerce. Many possibilities and innovations can be realized with the deep intelligence provided for the logistics industry and its customers. In the field of freight transportation and logistics, the real-time data access and visibility is a crucial component to achieving great productivity and efficiency of a company. Many companies have already recognized the importance of different technologies and back office off shoring solutions, but the processes and operations are still challenging due to the uncertain nature of the different costs and rates in the industry. The IoT give sufficient visibility to track your company's supply chain results in an operational efficiency which produces the products with fewer costs. IoT application will introduce different promising concept and design for innovation in logistics and commerce. Processes with greater accuracy of execution can be achieved with minimal efforts and new possible roles will be opened for logistics operators. These advancements are quickly making its way in the logistics, and it dramatically improves the different business operations.

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2. Application of IoT in Logistics

The IOT having revolutionary impact on logistic industry. The operations of logistic industry, their delivery and fulfillment are changing intensely, with combination of analytics, mobile computing, and cloud services, all of which are powered by the Internet of Things.

1. Real-Time Tracking:

The Internet of Things has a huge potential to keep almost everything connected (e.g., assets, trucks, etc.) using embedded sensors, it provides unparalleled visibility into personnel, operations, equipment, and transactions. With the right IoT solution in place, companies can connect all assets across a centralized cloud network, and capture critical data to make sure everything is in order. As it facilitates assets tracking and remote fleet management, companies can dramatically ensure compliance, improve performance and ability, and reduce risk.

2. Predictive Asset Maintenance:

The mobile technologies provide businesses line of sight into equipment, inventory and business processes. This asset intelligence allows organizations to increase their competence and capacity by providing them real-time data across their entire supply chain. Though these types of solutions the transportation and logistics businesses make improvements over the years, leveraging them with enabling technologies like the IoT can give even more asset intelligence, leading to more informed decisions.

3. Real-Time Fleet Management

Government and Industries that operate various numbers of vehicles are more often using fleet management solutions making the process more effective. These Solutions are GPS enabled along with added tracking technologies to collect real time data of their locations and operations of their vehicles. Fleet management solutions are able to connect and reaching millions of commercial vehicles resulting in tenfold increase in ten years. Companies are positioning these solutions in three ways:

Physical asset movement and delivery

This includes fleets of largely semi-trailer trucks that transport goods to fulfill business' and consumers' orders. These fleets can handle from origin point to long distance or last-mile delivery.

Consumer transportation

This includes businesses and governments vehicles that are used to transport people from one destination to another.

Field-service vehicles

Vehicles that are operated mostly by businesses to transport employees for their job functions. Deploying the unending potential that IoT can offer, various services in the vehicle fields.

4. Warehouse Management

Distribution centers, warehouses and yards form are the most critical units of the supply chain ecosystem. If a company manages to increase the performance of these units, it is converted into an increase in efficiency of the company's functioning. As IoT becomes an essential part of the logistics industry, warehouses will track the equipment's, inventory and vehicles via the cloud. This is enabled by thousands of machines connected to one another through RFID-tags. At a local level, the parcels and pallets would communicate with one another while at a global level, a company-based server will track their movements and progress of their journey regularly.

5. Route Optimization

An efficient route optimization scheme for the carriers can result in the elimination of 175grams of carbon emission produced by every extra mile traveled by it. The impact of IoT enabled route optimization system which can save thousands of miles to be traveled by the carrier. IoT enabled route optimization further enhances the process by collaborating with all the units of the fleet which are dispersed over a large geography. These connected vehicles can communicate the crucial information in real time about the statistics which changes dynamically from region to region. Traffic congestion, weather conditions, and open routes can impact the time and distance traveled by the carriers in a great way and real-time information for the same can help the drivers to go for the most viable route for completion of the trip.

3. Benefits of IoT in Logistics

1. The Existing Processes Can Be Improved

IoT in Logistics can transform how logistics work and also the operations of businesses. Better technical assistance in analytics will improve warehousing, thus reducing the existence of low stock and out of stock situations. IoT can be useful in better planning of production and optimizing the warehouse space. It will lead to improved assets utilization and better process efficiency.

2. Merging of Physical and Digital Aspects of the Supply Chain

The rise of IoT in Logistics can drive the convergence of digital and physical processes of the supply chain. It will lead to better information collection at various stages of logistics management. Also, faster traveling of information will reduce the chances of asset loss as the information will reach the authorities in time.

3. High Visibility

The goods go through innumerable transfers between manufacturers, suppliers, the centers of distribution, retailer and finally the customer. IoT in Logistics and Supply Chain will bring more visibility in the process through GPS and other such technologies that will provide adequate and accurate information about goods identity, locations and a several other essential tracking information. Due to IoT in Logistics

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and Supply Chain, traffic conditions and other issues related to the route can be monitored also. It will lead to better planning and more efficient & productive processes.

4.   Success Factors for IoT in Logistics

✓ To successfully implement IoT in logistics will require strong collaboration, along with high levels of participation between different players and competitors within the supply chain. The shared end goal will be to create a thriving IoT ecosystem.

✓ Seamless interoperability for exchanging sensor information in heterogeneous environments.

✓ Establishment of trust and ownership of data and overcoming privacy issues in the IoT-powered supply chain.

✓ Clear focus on reference architecture for the IoT.

✓ Change in business mindset to embrace the full potential of the Internet of Things.

5. Future of IoTin Logistics

The Internet of Things (IoT) has brought with it a whole load of changes in logistics industry. The capacity for more and more physical objects to connect to the internet and share data without human help has transformed the way the world works. In 2014, Gartner predicted a thirty-fold increase in the IoT-connected devices by about 2020 and consequently one will see radical impact on the functioning of our supply chain. The IoT regulates the logistics industry - both from a business and a consumer perspective. A report by IDC and SAP predicts that IoT will lead to a 15% productivity increase in delivery and supply chain performance, and many logistics experts are using these IoT resources to improve systems and supply networks, reduce costs, and look for opportunities to develop more revenue too.

6. Conclusion

The IoT promises protracted payoffs for logistics operators and their business customers and end consumers. These benefits develop across the entire logistics value chain, including warehousing operations, freight transportation, and last-mile delivery. The IoT have great impact in the areas such as operational efficiency, safety and security, customer experience, and new business models. To successfully implement IoT in logistics will require strong collaboration, along with high levels of participation between different players and competitors within the supply chain, and a common willingness to invest. The shared end goal will be to create a thriving IoT ecosystem. But the advancements in the logistics will always depend on the ability of innovation of the logistics' minds and operators.

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