Vitality of Internet of Things in E-Commerce Industry

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Abstract: Nowadays Electronic Commerce plays a mounting vital task in the digital delivery of services, information and other commercial activities in connection with internet. E-Commerce sector has enhanced the quality of product service and also increases the speed of delivery. The IoT is an emerging technology which helps to boost up the growth of E-Commerce Industry. This technology links billions of objects extremely beyond our mind's eye. Centralized IoT platforms hosted by E-Commerce firms are endlessly transforming the data into meaningful information, generating an enormous impact on E-Commerce. This technology is embodied in an extensive scope of networked products, systems, and sensors, which take benefit of advancements in computing power, electronics efficiency, and system interconnections to offer new capabilities not previously possible. In this paper we review the architecture, stages, applications, Pros and Cons of IoT in E-Commerce.

Index Terms: Internet of Things, Electronic Commerce, Sensors and Actuators, RFID, GPS

I.INTRODUCTION

E-Commerce has become the forthcoming of retail, with most of the augmentation in retail sector taking place in the digital space. The E-Commerce sector is undergoing a foremost technological interruption. As the life style of the consumers have changed their preference and buying behavior also has changed. They are more flexible with new technologies in the market. It is important for the key players of the industry to upgrade the technology to provide better service and consumer satisfaction. When it comes to technology IoT or Internet of Things is the latest advancement in the recent times. IoT facilitated gadgets exchange data with each other over the internet to assist retail and E-Commerce business to function effectively. So IoT with E-Commerce provides a connected platform.

II.ARCHITECTURE OF IoT

Architecture of IoT is a system of numerous elements. The elements are sensors, actuators, protocols, data center, internet gateways, cloud services and layers. There are four stages and three layers in the IoT architecture.
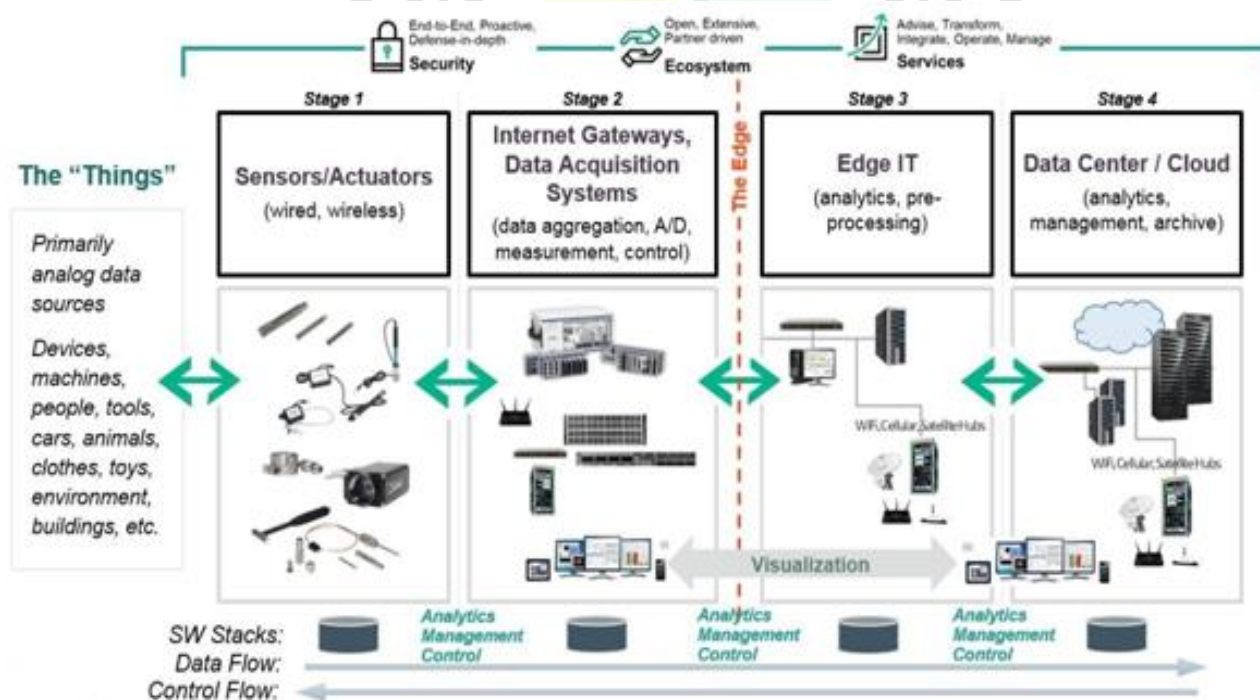
Stages of Internet of Things

The Layers are:
- IoT Device Layer
- IoT Gateway Layer
- IoT Platform Layer

Stages in the IoT Architecture are:
- Sensors and Actuators
- Internet Gateways and Data Acquisition System

- Edge IT
- Data Center and Cloud

2.1. Stage I: Sensors and Actuators

The sensors extract the information from the outer world and transform them into data for analysis. The actuators are devices which intrude the physical reality. They can adjust the functioning of the electronic appliances for e.g.

2.2. Stage II: Internet Gateways and Data Acquisition System

The Internet Gateways functions through the Wi-Fi or wired networks for advance processing. The Data Acquisition System connects to the sensor network to produce output. The huge information collected from the previous stage is optimized here for the further investigation.

2.3. Stage III: Edge IT

The data produced from the previous stages are transferred to the Edge IT systems to perform pre-processing and advanced analytics
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2.4. Stage IV: Data Center and Cloud

This stage does the in-depth processing like data analysis, data management and storage of data.

III. APPLICATIONS OF IoT IN E-COMMERCE

Any device which is connected to the internet can use IoT to communicate smartly. The IoT device market is increasing rapidly as millions of new gadgets are connected to the web. With the help of IoT devices the consumers can virtually feel the product before buying and they can reorder the products. IoT technology has changed the purchase behavior of the consumers. Following are some of the applications of IoT in E-Commerce.

3.1. Inventory Management

The IoT sensors and RFID (Radio Frequency Identification) tags are used to manage and control the inventory of a business. They involve in tracking and monitoring the stock items and also help in re-ordering the items. The information about the products like product id, product name, product quantity, product quality, and product cost, product price, etc... can be stored automatically. The sales details like quantity of products sold, selling price, sales return and defective goods can be tracked robotically.

3.2. Supply Chain Management

An undisturbed and effective supply chain management is important to maneuver the E-Commerce business effectively. IoT allows monitoring the movement of goods right from manufacturing phase to dispatch phase. The RFID and GPS technology assists in tracking the movement of goods by providing information such as speed, location, temperature, and so on.

3.3. Warehouse

The need for IoT in warehouse management system is very crucial as it is challenging to identify the products in a short span of time. The IoT Sensors can offer location centric utilization information in real time. It provides automatic planning of location usage and simplifies the complex order management process. Warehouse robots can be used for effectual packing, lifting and distribution of goods.

3.4. Consumer Experience

IoT enables the retailers to deliver an inclusive and innovative shopping experience to the consumers by giving them high level of satisfaction. It enhances customer service by notifying and rectifying the errors in a prompt way. It also addresses the grievances and gives appropriate solutions in a rapid manner.

IV. PROS OF IoT IN E-COMMERCE

The invention of IoT devices gathered a gradual shift in the E-Commerce world as the consumer behavior keeps changing and becoming more modified. The online shoppers witness the steady growth of E-Commerce. It is evident that E-Commerce is going to be the future of the retail industry. The retailers are eager to adapt IoT to improve the consumer experience all over the World. Some of the benefits through which E-Commerce gain from IoT are:

4.1. Enhanced Tracking and SCM

IoT enables the E-Commerce retailers to track the purchase order from the time when it is placed to till it reaches the hands of the consumer. Cloud Based Technologies like RFID (Radio Frequency Identification) and GPS (Global Positioning System) offer retailer's data like weather, location, personal identities and traffic status which makes Supply Chain Management more effective.

4.2. IoT centric E-Commerce Websites

The retailers can create interactive websites using IoT to get better consumer experience. The retailers can use the data that comes as input from various sources and devices.

4.3. IoT Data Collection to Personalize orders

The collected data from the IoT connected devices are used to analyze information about the life style habits of the consumer and to develop a focused marketing. E-Commerce retailer can lift the consumer relation to offer more personalized information and actions.

4.4. IoT in Big Data Management

The data about the consumer routine have to be stored for further analysis. So unified data platform is needed for that. The deep learning technology also shows a great prospective in deducing the data relationship as it is a part of the next advancement step in IoT.

V. CONS OF IoT IN E-COMMERCE

5.1. Security Breach

Every device that a person uses is connected by way of internet. It increases the risk of outflow of data from the gadgets. Private information might not be safe and it could be hacked easily by unauthorized people. While sharing personal data it can be stolen and misused.

5.2. Unemployment

When every task becomes automated human intervention is reduced. The IoT device replaces the job of unskilled labors like house maids, security guards, laundry services and so on. In future there will be a considerable turn down in recruiting personnel's.

5.3. Becoming Idle

The technological up gradation makes this generation non-brainy and lazy to do any sort of physical activities. The people find it difficult to complete their daily routine without the help of IoT devices. It may worsen the physical fitness of the next generation.

5.4. Connection Dependency

The IoT devices completely depend on internet for their successful functioning. In case of power failure or server crash devices connected naturally gets affected and the entire system goes down.

VI. CONCLUSION

As IoT penetrates into the world of E-Commerce by setting a huge impact, the industry can gain more and more of market. It is advantageous that these intellectual gadgets along with the presence of system stability, network security and data protection can much simplify the human lives. The businesses can gain incredible growth in operations, sales and higher consumer intelligence. It is obvious that the IoT can restructure the E-Commerce sector.

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