IMPACT OF INTERNET OF THINGS IN RETAIL INDUSTRY

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ABSTRACT

Today, we are living in smart homes to smart cities where connected cars, connected health. IoT (Internet of Things) has brought all innovative and life-changing experience to the world with such amazing applications. At last few years, IoT (Internet of Things) application growth has been constantly in demand by countless or extremely great in numbers of businesses to augment their business functionality and productivity by serving new-fangled experience to the customers. Since very nearly each production sector experiencing the power of IoT, no chances that retail sector will remain behind to exploit IoT Technology. With the merger of E-Commerce retail industry solutions and the Internet of Things, the retail industry has many opportunities to grow more and more, as this will aid to effectual bridge the gap between online and brick-and-mortar businesses.

Keywords: IoT, Application, Business, Customers, E-Commerce, Technology, Retail.

INTRODUCTION

The current era of interconnected physical objects which are often referred to as “Things” are the building block of future trend of everything accessible anywhere realizing the concept of ubiquitous computing. The innovation potential of IoT extending to new products, services and domains is endless and the range of domains it will affect will not only limited to smart cars, E-health, retail and smart logistics. The innovation in this field is the results of the value add support and collaborative efforts from industry experts, academia and informatics. This has also triggered software advancements in terms of storage and analytic aspects which can adhere to the data hierarchy related to the IoT. The retail industry has been evolving over time due to the impact of the Information Technology and this has led to adoption of various new business value propositions in terms of processes involved. The technology impact in Retail industry started with the introduction of E-Business proposition and this moved the overall model to look beyond adoption parameter to the deeper insights of actual discrepancies in scenarios involving business loss. Then the notion of the radio frequency identification (RFID) technology and the electronic product code (EPC) network arrived to the scene of mobile B2B E-Commerce and its integration into supply chain. Evidence of impact of IT involving information quality, new organization processes, organizational scalability and flexibility have been positive with the performance optimization that it has brought to the domain leading to competition with new players and more choices for the consumer. The field of IoT has been developing rapidly and has consumed the

concept of Ubiquitous computing leading to a new vision in terms of architecture and development layer model for IoT.

IoT AND RETAIL INDUSTRY

There are various new innovations that were introduced in the area of embedded systems leading to a new paradigm adoption in the vast array of the heterogeneous devices leading to computing and networking optimizations. This led to the formation of the concept of smart grid and the feature of integration became the most important focus in the area of new technology innovation. The innovations has bred web based service economy as the present focus of Internet of Things and platform enabling the service as a part of "Software As A Service" model enabling to bridge the gap between the representation of physical world in information systems and the physical world itself. The overall challenge in any IoT project will be the following:

a) Real-time information retrieval,

b) Process Optimization,

c) Responsiveness,

d) Scalability,

e) Network dependency.

Connected gadgets aren't just becoming different the way consumers live, work and play—they're dramatically reshaping whole industries. Adding mental capacities and more connectivity to the things that surround us—everything from profitable meters to home thermostats—will manufacture extent amounts of data that companies can leverage to make better their operations, present to someone customers better, and create entirely new ways of doing business. The IoT motion offers retailers opportunities in three critical areas:

- customer experience,
- the supply chain,
- new channels and
- revenue streams.

While the IoT may seem like science fiction, it is becoming actually exist faster than most of us can grasp mentally. Retailers that hesitate to grow and execute an IoT plan will open the door for competitors—old and new alike—to swoop in and capture early IoT mind share and market share.

Upgrading the customer experience

There are so many industries can already imitate customer togetherness—as seen in online ads that rapidly throw back your latest purchases— but the IoT assurances something much more

authentic and meaningful to the individual. What's happening now is that every observation is becoming a digital observation as ordinary "things" become intelligent gadgets. These observations are combining into what some are calling the "Internet of Me," which narrates an interconnected environment in which businesses are building products and services to be planed for, generated for, and specifically centered on the individual. Consumer assumption of IoT devices is expected to rise rapidly: The "State of the Internet of Things" study from Accenture Interactive that nearly two-thirds of consumers plan to obtain a connected home gadget by 2019, while ownership of wearable technology is supposed to double year over year in 2016.

Optimizing supply chain operations

The "Industrial Internet" has become known as a term to describe how companies are griping cloud, mobile, big data and other technologies to make better operational competencies and foster innovation by tightly integrating the digital and physical worlds. The combination of the Industrial Internet and IoT devices could add more than $14 trillion to the global economy by 2030.

Attached devices and products supply retailers with the opportunity to help optimize operations in the face of a more compound supply chain, increasingly main digital channels, and a more challenging customer. RFID technologies, for example, can make better the exactness of inventory tracking. Data visualization technologies make it uncomplicated for employees to track products across the supply chain. This service could even be increase to customers— allowing them to track.

Creating new channels and revenue streams

The true potential of the Internet of Things lies in the opportunities it presents to retailers to generate new revenue flows or, in some cases, build completely new channels. We're already seeing examples of incremental revenues retailers can help attain by increasing into new channels or generating new, high-margin product categories for the emerging "connected home." Comfort products, Household appliances, and home security, even health and wellness products are all becoming part of the Internet of Things ecosystem. It's necessary for retailers to consider taking steps now to lay a foundation for IoT support later. Specifically, they'll need to think about building new capacities in two key areas:

Organization

One of the most necessary bits of driving the IoT-authorized agenda is make sure that the right culture, organizational structure, governance and skill exist within the company. Business and IT headship must work jointly to identify opportunities to grip technology and make sure a strong partnership between IT and the business, empowered by executive headship, to rapidly bring new ideas and solutions to market.

Technology

A starting point of technical abilities is unfavorable to enable the IoT agenda. IT teams will require building off of existing investments in key areas such as large data/analytics, in-store technology infrastructures and internal and customer-facing applications to take benefit of the wealth of data created by IoT devices, while ensuring that the bonafide connectivity and security foundations are in place to support IoT-authorized initiatives.

LITERATURE REVIEW

S.No	Author	Year	Research Subjects, Results & Findings
1.	Kevin Ashton	1999	Coined the term Internet of Things
2.	Neil Gershenfeld	1999	Book titied-"When Things Start to Think"
3.	Kevin Ashton, David Brock and Sanjay Sarma	1999	Originally founded- MIT Auto-ID Lab, They helped to develop the Electronic Product Code 2000: LG announced its first Internet of refrigerator plans.
4.	David Rose	2002	Created the "Ambient Orb", in a spin-off from the MIT Media Lab is released into wild with NY Times Magazine naming it as one of the Ideas of Year. (2003-2004): RFID is deployed on a massive scale by the US Department of Defense in their Savi program and Wal-Mart in the commercial world. 2005: The UN's International Telecommunications Union (ITU) published its first report on the Internet of Things topic. 2008: A group of companies launched the IPSO Alliance to promote the use of IP in networks of "Smart Objects" and to enable the Internet of Things. 2008: The FCC voted 5-0 to approve opening the use of the 'white space' spectrum. (2008-2009): The IoT was born according to Cisco's Business Solutions Group. 2008: US National Intelligence Council listed the IoT as one of the 6 "Disruptive Civil Technologies" with potential impacts on US interests out to 2025.
5.	Wen Jiabao	2010	Calls the IoT a key industry for China and has plans to make major investments in Internet of Things. 2011: IPv6 public launch-The new protocol allows for 340, 282, 366, 920, 938, 463, 463, 374, 607, 431,768, 211, 456 (2128) addresses.

STATEMENT OF PROBLEM

Would this research reveal the current technological awareness among the retailers? How the technological acquiring, operating and upgrading capabilities influence the development of the retailers?

OBJECTIVES

- To understand the strong historical connection with producing, warehousing, consumer goods and retail.
- To analysis the starbucks plans to use Internet of things to increase business efficiency.
- To determine that how the Internet of things will Impact the retail sector.

RESEARCH METHODOLOGY

The research methodology adopted for my research is fully based on secondary data which is collected from concerned books, magazines, journals & websites. The research method is fully deductive in nature and character.

THE INTERNET OF THINGS: ENABLING EXPERIENCED BASED TECHNOLOGIES

Online and Social Technologies

The trend retail presence on the internet through E-Commerce has been the first proceed towards multi-channel platforms with the advent of social networks, these E-Commerce platforms are linked to the brand's presence of social networks such as Facebook and Linkedin. There are also societal E-Commerce platforms such as Magento and shop building platforms.

Mobile Technologies

At the present time, smartphones and tablets are the key interface between online and mobile consumers and trend brands and retailers. This interaction has to be provided through mobile applications, and these should also become the bridge with the in-store experience. Ideally, consumers should be able to interact with the in-store technologies through their mobile devices.

IoT CHALLENGES FOR RETAILERS- AND THE FUTURE JOURNEY

In business overall, the biggest provocation with the Internet of Things is the quick growth of the scope and variety of the technologies that can be used in joined ecosystems, says Mitchell, considering that it can be rigid to "future-proof" investments when change is ongoing.

In retail precisely, the biggest instant obstacle for companies to overcome is how to manage, analyze and act on the reams of data pouring in from all of the connected gadgets. "Simply catching the data is a challenge all by itself," he says. "But the retailer then has to purify and transform the data into usable information."

To fastly and exactly understand shopper behaviors, for example, high-performance analytics must be applied to the data to unrelated noise from meaningful signals. "Those insights require to then be joint to a decision management engine to orchestrate action – whether that means individualizing an in-store display or repositioning inventory in a warehouse," Mitchell says.

The retail industry is at the inception of the IoT journey, says Nayyar. And the necessary thing for merchants to acknowledge at this point is that the IoT isn't just about sensors and connectivity — it's really about business outcomes, such as generating new customer experiences, revenue streams and business models.

"The accurate transformation will come when you look outside the four walls of a retail store," Nayyar says, "and build an end-to-end networked IoT plan with your network of customers, suppliers, assets and enlarged ecosystem."

CONCLUSION

IoT has been moderately bringing a sea of technological changes in our daily lives, which in rotate helps to making our life simpler and more comfortable, though diverse technologies and applications. There is countless usefulness of IoT applications into all the domains comprising medical, manufacturing, industrial, transportation, education, governance, mining, habitat etc. Though IoT has plentiful advantages, there are some flaws in the IoT governance and implementation level. The key observations in the literature are that -

(1) There is no quality definition in worldwide.

(2) Universal standardizations are needed in architectural level.

(3) Technologies are changing from vendor-vendor, so requires to be interoperable.

(4) For finer global governance, we require to build quality protocols. Let us hope future finer IoT.

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