A STUDY ON IMPACT OF INTERNET OF THINGS ON BUSINESS

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Abstract: The world is moving forward at a fast pace, and the credit goes to ever growing technology. One such concept is IOT (Internet of things) with which automation is no longer a virtual reality. Internet of things (IoT) - the new paradigm has a great impact on different areas of business and its main aim is to make our life easier and more comfortable. The Internet of Things is a key part of the Future Internet. The Internet of Things, also known as ambient Technologies or Embedded Systems, is a global system of IP-connected computer networks, sensors, actuators, machines, and devices, merging this physical world with the virtual world of the Internet. Many new opportunities can be foreseen for businesses. IoT technologies will make it possible for business leaders to understand what is happening in the world more deeply. By infusing intelligence into systems and processes, businesses will be able to not only do things more efficiently, but to improve customer satisfaction, to discover new business opportunities, and to anticipate risks and threats so they can better deal with them. The article aims to present its main applications in different spheres of our life, the main advantages, development trends, problems and challenges that need to be addressed.

Keywords: Internet of Things, applications, opportunities, business.

1. INTRODUCTION TO INTERNET OF THINGS:

Internet of Things (IoT) is predicted to be one of the main raising megatrends in technology. Increased connectivity and hardware developments such as sensor technology and distributed computing are leading to dramatic changes in society. The aim of this transformation is to enable connected objects to be sensed and controlled remotely over a network, as doing so will provide users with further functionalities and services. Everyday objects such as cameras, cars and dishwashers are increasingly becoming connected, leading to a network of devices called the Internet of Things (IoT). ''Internet of Things" semantically means ''a world-wide network of interconnected objects uniquely addressable, based on standard communication protocols". The dynamic development has a huge impact on our daily routine, work, way of living and thinking. These kind of new technologies help the managers understand what is actually going on and what the actual needs from the customers are. Just a few years ago, all these "smart" and "talking" devices were part of the science fiction movies, but today they are part of our everyday life. The technologies make life easier, create a variety of conveniences, speed up the access to different services and management automation. Household appliances could be controlled through our smart phones and could exchange data using build-in sensors, cars could choose the best route to avoid traffic and automatically order a new part to replace the broken one in the nearest workshop.). Like any other immersing technology Internet of Things has a lot of advantages that gives new opportunities and creates variety of applications for businesses and customers. On the other hand there is a threat of creating dependency on these new technologies and "smart" devices, so users need to be taught how to use them properly.

2. ADVANTAGES OF INTERNET OF THINGS:

The major advantages of Internet of Things that have impact on business are:

● **Communication:** Internet of Things provides a permanent connection and data exchange between connected devices and users. The built-in sensors and the different   technologies ensure communication among objects.

● **Control and automation:** All Internet of Things consumers (users and   businesses) through applications installed on their mobile devices such as phones, tablets, etc can remotely control smart devices, adjust different metrics, and choose specific options. In many cases, systems send automatic messages and warnings or take actions. For example, the fridge can order food from the supermarket if some of the products are down, the car can send a request for the spoiled part that needs to be replaced, and the user can adjust the temperature at their homes while they are away.

● **Cost savings (time, resources, and money):** The connectivity and fast   communication among devices reduces response time and human labour, thus increase productivity and efficiency. Many of the appliances that make our homes "smart" save electricity, resources and money. Nowadays a lot of investments are made for predictive maintenance that will help to predict and avoid failures in IoT ecosystems.

● **Citizen Experiences:** The idea of Internet of Things and the connectivity of objects tend to improve the quality of life and facilitate citizens. The use of smart devices and systems that have elements of interactivity and make users more active and make them feel part of this ecosystem, creating a better experience for them.

● Greater **revenue opportunities:** The widespread penetration of the Internet of Things phenomenon in all spheres of   life enables manufacturers to offer smarter devices, expanding to new markets and developing new products that will generate great revenues.

3. CHALLENGES OF INTERNET OF THINGS:

Behind every success story is a hidden chain of problems. Same is the case of IOT. It experiences three major challenges:

- Technological challenges
- Business challenges
- Societal problems

- **Technological challenges**
  - ✓ **Security:** IoT has happened to cause major security issues that have grabbed the attention of various public and private sector companies of the world. Adding such a massive number of new hubs to the systems and the web will provide attackers with a larger platform to invade the system, particularly as many experience the ill effects of security holes.

  - ✓ **Connectivity:** The most significant challenges of the future of IoT would be to connect several devices, this communication will end up resisting the currently existing structure and the technologies associated with it. This model is appropriate only for the current situation and is not scalable to cater future needs where billions of devices will be part of a single network. This scenario will transform the current centralized system into a bottleneck.

  - ✓ **Compatibility and Longevity:** IoT is developing in a widespread manner. It is incorporating many technologies and will soon advance into a convention. This will pose serious challenges and will demand setting up of additional software and hardware in order to establish communication amongst the devices.

- **Business challenges**

The main issue is a major inspiration for beginning, putting resources into, and managing any venture, without a full proof plan of action for IoT we will have another bubble, this model should fulfil every one of the prerequisites for all kinds of e-commerce; vertical markets, horizontal markets, and consumer markets.

- **Societal problems**
  - ✓ Customer requests and requirements change regularly.
  - ✓ New uses for devices—and also new devices—grow and develop dangerously fast.
  - ✓ Inventing and reintegrating have features and capabilities that are costly and require significant investment and assets.
  - ✓ The uses for an IoT technology are growing and changing—regularly in uncharted waters.
  - ✓ Consumer Confidence: Each of these issues could put a dent in buyers' want to buy associated items, which would keep the IoT from satisfying its real potential.

IOT data is a very sensitive data which if leaked can give the control of the system in the attack's hands. Hence we have to have the strong and reliable technology to secure how IOT data is being used. Business policies and procedures pose some social challenges to IOT and government laws, and rules pose legal challenges to its use.

4. APPLICATIONS OF INTERNET OF THINGS:

- **Manufacturing**

IoT not only creates a new paradigm on the shop floor, but it also would encourage the development of new devices in the automation industry that offer embedded web services. Currently, there is a large number of "dumb" devices. But in the future, the intelligence and behavior are designed and each application will be programmed individually. Thus, the factory can be the robotically factory.

- **Personal and Home**

Home can be a smart environment due to IoT. It can be easy and comfortable because of the intelligent objects. The heating systems can be adapted to our preferences and to the weather. The lights can be changed and adjusted according to the daytime and nighttime. With the appropriate monitoring and alarm systems, the incidents and burglaries can be decreased or avoided. Energy costs can be lowered by automatically switching off the electrical equipment when they are not being used.

- **Health**

In health care domain, IoT has made huge improvements. Remote patient medical monitoring and advanced medical diagnosis is possible using IoT. Tracking the staff, patients and objects is under control. Identification and authentication of people, automatic data collection and sensing is carried out for remote monitoring of patients from diverse geographical locations. The Internet of Things will be essential in realizing the vision of ambient assisted living.

- **Automation**

As we can see, sensors and embedded systems already play a role in the automotive industry. According to the related researchers, they predict that these will become more important when they are integrated into the Internet of Things. It can also be called "Internet of Vehicles". Every car will be linked to the internet and will be inserted the sensor inside. When detecting the hazards, these "Internet of Vehicles" can deliver and generate the accurate and correct messages containing a description to the car owners, insurance companies and people who need these data. Despite the safety use from this new technology, it can also be used in the business scenario. Cars may consume services, such as, remote diagnosis in case of break-downs, software version management and others.

- **Transportation and logistics**

By the technology of Internet of Things, it is possible to track the location and the status of an object throughout the full product life-cycle and throughout the supply chain. First of all, sensors can be used to make sure that the products were never exposed to damaging environment. For example, the products are in the right temperature places. And the hazardous products won't be transported through polluted or sensitive environment. On the other side, the green transportation can also be realized. IoT technologies will be able to record all the emissions which were generated during the transportation. And this can avoid some legal issues in this area. The companies can track all the processes and checking the records.

5. CONCLUSION:

Undoubtedly, the rapid developments of new technologies impact all areas of everyday life. Whether we want it or not, we are part of this technological revolution and the most important thing is to learn how to use it properly and wisely. Therefore the efforts of all players in the world of Internet should be united to ensure a secure and safety environment for communication and exchange of personal data. Internet of Things' integration should follow a certain vision and idea, identify opportunities for using technology, attract business institutions and government, and build a culture of using the Internet of Things.

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