World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 22, May 2023
ISSN: 2749-3628,

INTERNET OF THINGS: ITS EMERGENCE, CONCEPT AND SERVICES

Ravshanova Maktuba Ubaydullo kizi
Student of Tashkent Institute of Finance
Allayarov Sh.A
Academic supervisor, Tashkent Institute of Finance

Article history:

Received: 1st March 2023
Accepted: 30 March 2023
Published: 6th May 2023

Abstract:

In present days, one can observe the penetration of digital technologies in both business and everyday life. This trend opens up new opportunities for individual companies and entire industries. This digital transformation allows companies to more accurately predict changes in the market and make decisions based on collected, processed and analyzed information about the various components of entrepreneurial activity. One of the incarnations of digital transformation is the concept of the Internet of things. This article discusses the concept of IoT, factors that contributed to its emergence, its services and a well-defined architecture for its deployment.

Keywords: Internet of Things, technology, data, model, Internet, coding, applications

INTRODUCTION

Nowadays, there is already an integration of enterprises and digital platforms, the physical and virtual world, as well as businesses of various industries: mobile operators and banks, telecommunications and insurance companies. This process is associated with the need to process large volumes of data, expand data transmission channels, and effectively interconnect machines among themselves, which creates a synergy between the classical and digital economies. The Internet of Things is a new concept in which the Internet evolves from the union of computers and people to the union of (smart) objects / things [1]. IoT is an approach for connecting information received from various sources on any virtual platform or existing Internet infrastructure. The concept of the Internet of Things appeared in 1982, when a modified soda machine was connected to the Internet and was able to report the presence of drinks and their temperature. Later, in 1991, Mark Weiser was the first to give a modern assessment of the Internet of Things. One way or another, in 1999, Bill Joy gave a hint about the connection between devices in his Internet taxonomy. Following that, the term "Internet of things" (IoT) was proposed in 1999 by Kevin Ashton, who suggested that it is possible to connect several physical objects ("things") in production to exchange information and interact with each other and with the external environment [2]. In 2010, as a result of the proliferation of smartphones and tablet computers, the concept of the Internet of Things began to imply not only automation of processes in local production, but also a more global concept, when not only a computer or smartphone, but also other devices, starting with a coffee machine in an office and ending with a refrigerator at home, connected to the Internet.

DISCUSSIONS AND ANALYSIS

The main factors that contributed to the emergence of the concept of the Internet of things and its development in theoretical and practical plans [3]:

- ✓ increase in Internet bandwidth (allows exchange of an unlimited amount of required data in different formats);
- ✓ Internet access through differentiated communication channels and in various modes (provides users and devices access to the network from many places with a given quality of service);
- ✓ the growth in the number of devices with Internet access (forms an actively interacting environment of users and devices and contributes to the emergence of relevant needs);
- ✓ a variety of devices with Internet access (serves the development of technologies and protocols for user and device communications, as well as the implementation of a wide range of tasks using the network);

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 22, May 2023
ISSN: 2749-3628,

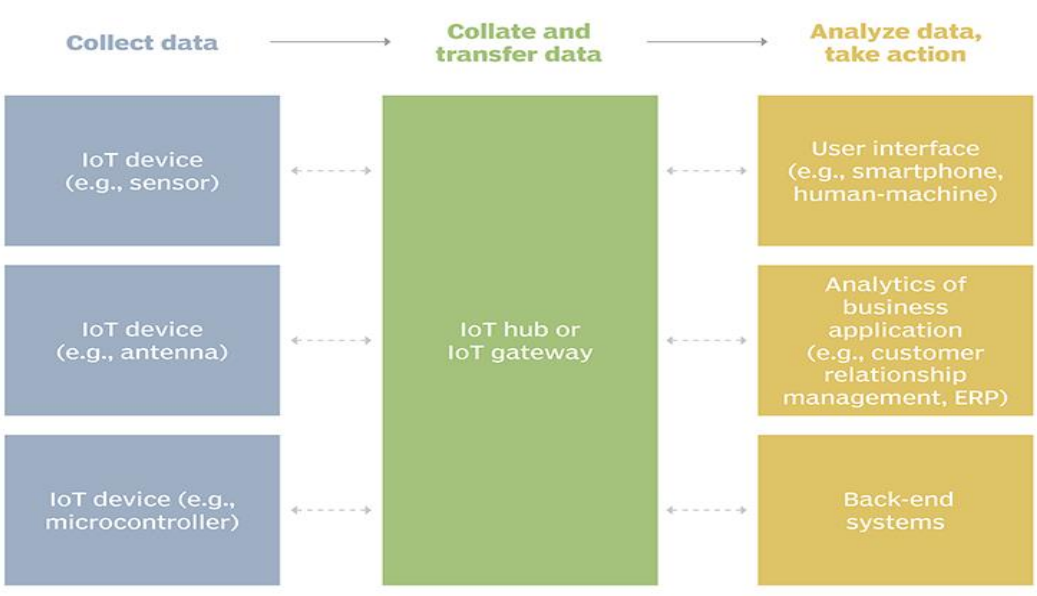
- ✓ the formation of the needs associated with the interaction of devices within the global information network (promotes interest in the problems of intensive communication between users and devices on the Internet of many commercial and public structures);
- ✓ expansion of business projects and connections within the Internet (forms the infrastructure, economic and financial models that support the development of the network);
- ✓ a variety of innovative ideas, projects and businesses within the framework of network communication between users and devices (actively develops the forms and formats of network communications in theory and practice);
- ✓ understanding the obvious benefits of networking (attracting resources, information, entrepreneurs and investments);
- ✓ development of the Internet of things infrastructure, including: network storage of data, certificates of identification and security, secure data chains, standards and rules of interaction (makes network development stable and irreversible).

At the moment, the structure of the Internet of things consists of loosely interconnected disparate networks, each of which has been deployed to solve its specific problems. But as the Internet develops, these and many other networks will connect to each other and use more and more widespread security, analytics and management tools. As a result, the Internet of things will provide even more opportunities to open up new, vast prospects for humanity, as well as offering an opportunity to increase production potential and reduce costs. An analysis of the past few years has shown that innovative developments in the IT sector have a positive effect on the life of society as a whole [4].

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices - for instance, to set them up, give them instructions or access the data.

The connectivity, networking and communication protocols used with these web-enabled devices largely depend on the specific IoT applications deployed.

IoT can also make use of artificial intelligence (AI) and machine learning to aid in making data collecting processes easier and more dynamic.



World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 22, May 2023
ISSN: 2749-3628,

An example of how an IoT system works from collecting data to taking action [5]

The internet of things helps people live and work smarter, as well as gain complete control over their lives. In addition to offering smart devices to automate homes, IoT is essential to business. IoT provides businesses with a real-time look into how their systems really work, delivering insights into everything from the performance of machines to supply chain and logistics operations.

IoT enables companies to automate processes and reduce labor costs. It also cuts down on waste and improves service delivery, making it less expensive to manufacture and deliver goods, as well as offering transparency into customer transactions.

As such, IoT is one of the most important technologies of everyday life, and it will continue to pick up steam as more businesses realize the potential of connected devices to keep them competitive.

IoT has made it possible for the physical world to meet the digital world and cooperate with each other. It offers numerous benefits to organizations by enabling them to automate and simplify their daily tasks.

As IoT grows exponentially year on year, companies are leveraging the tremendous business values it can offer. Here are some of the most important benefits of IoT:

- To generate new business models and revenue streams
- To improve business decisions through data-driven insights from IoT data
- To increase productivity and efficiency of business operations
- To enhance customer experience

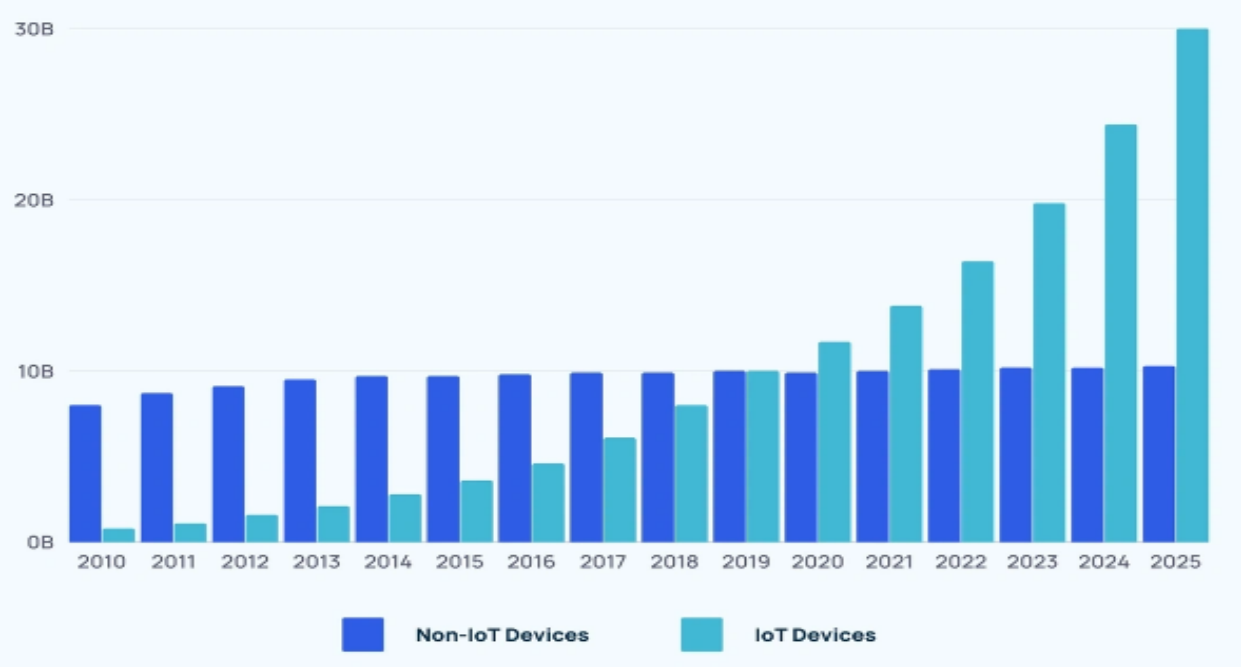
Although the worldwide spending on IoT has been significantly impacted by the economic effects of the COVID-19 pandemic, a study by IDC shows that it will achieve a CAGR of 11.3 percent over the 2020-2024 forecast period.[6]

There are almost as many connected IoT devices as there are people worldwide. The volume of connected IoT devices has grown recently. And is expected to grow year-over-year for the foreseeable future. According to the latest available data, there are approximately 13.15 billion connected IoT devices.

According Finance online website, there will be 25 billion+ IoT devices within the next 7 years. The number of current IoT devices (7 billion) may seem staggering. But thanks 5G and other technologies, this figure is expected to grow by over 3x to 25.44 billion total IoT devices by 2030. The number of IoT platforms has increased year-over-year.In 2015, there were 260 publicly known IoT platforms. This figure jumped to 360 in 2016. And increased by a further 90 to 450 the following year. By 2019 there were 620 publicly known IoT platforms - 426 of which were still active in 2021 including global names like Microsoft and Amazon.

There has been a notable shift from non-IoT devices to IoT devices over the last decade. In fact, by 2030, 75% of all devices are forecast to be IoT.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 22, May 2023
ISSN: 2749-3628,



Non-IoT and IoT active devices from 2010 to 2025 [7]

There are several pros and cons sides of Internet of Things technologies. Firstly let's start discussing some of the advantages of IoT. They includes the following:

- ability to access information from anywhere at any time on any device;
- improved communication between connected electronic devices;
- transferring data packets over a connected network saving time and money; and
- automating tasks helping to improve the quality of a business's services and reducing the need for human intervention.

Some disadvantages of IoT include the following:

- As the number of connected devices increases and more information is shared between devices, the potential that a hacker could steal confidential information also increases.
- Enterprises may eventually have to deal with massive numbers -- maybe even millions -- of IoT devices, and collecting and managing the data from all those devices will be challenging.
- If there's a bug in the system, it's likely that every connected device will become corrupted.
- Since there's no international standard of compatibility for IoT, it's difficult for devices from different manufacturers to communicate with each other.

CONCLUSION

The rapid spread of emerging IoT technology, the concept of the Internet of Things will be scaled up. The paradigm of networks will affect every part of our lives - from automated homes to smart healthcare and environmental monitoring, building intelligence in all the objects around us. Discussed are applications using the Internet of Things technology designed to make our lives better. Finally, the Internet of things is a new stage in the evolutionary development of the Internet. Since the progress of human society is largely dependent on the transformation of raw data into useful information and knowledge, the Internet of things can bring a lot of new and positive to life.The idea of the Internet of things can dramatically affect the development of the modern world, as it will allow many production processes to take place without human intervention. This system will help to solve a number of global problems of modern production. In the near future, the Internet of things will significantly transform the business and even entire industries.

REFERENCES:

1. V.A. Dovgal, D.V. Dovgal. ManagementofresourcesofInternetofthings//Distance learningtechnologies: materials II материалы II All-Russian Scientific and Practical Conference, 2017. –p. 168–173.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 22, May 2023
ISSN: 2749-3628,

2. Kevin Ashton. That "Internet of Things" Thing //RFID Journal. 2009. 22 June. URL:http://www.rfidjournal.com/articles/pdf?4986
3. V.A. Tyurin. Internet of things:new opportunities– Network. Factors, 2016*E-resource //Megamozg.ru.– https://megamozg.ru/post/25334/
4. A.A. Shorina, N.A. Stefanova.Innovations Changing the Future// Actual problems of the humanities and natural sciences. — № 9-1, 2015.– p. 78-80
5. Retrieved from https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT
6. Retrieved from https://www.simplilearn.com/iot-devices-article
7. Retrieved from https://explodingtopics.com/blog/number-of-iot-devices