Impact of Covid-19 on IOT (Internet of Things)

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ABSTRACT

Internet of things is a the most influential mode of using our devices with the help of the giant network and technology connecting all our appliances and devices with the help of sensors which collects data securely and analyzing the data for our benefit.

IoT is doing wonders in post covid environment where the working is getting easier and quicker when everyone is bound to work from home and managing office as well as home from mostly a single place. It is redesigning our lifestyle and now our lives will be changed on the basis of how we use our technology and get linked with it making our lifestyle better. Our idea is to analyse the data pre-covid, in-covid and post-covid and how it is going to improve our overall life structure. The critical working of IoT in ensuring business continuity and working across the premises as well as remote working of employees. IoT will help us in detecting and helping people in following Covid protocols set by the govt and help us form controlling the spread of the virus as people can have a IoT connected device which will tell them who all came in contact in case of Virus attack. Also, IoT will support us in many other forms. We have to keep our mind open to the changes that comes with iot in order to experience complete usage of Internet Of Things . New and better ideas will be needed in future to help iot to grow..

Keywords: *IOT, Internet of Things, Covid, Pandemic, Technology, Market, Precautions.*

1.0 Introduction

The Internet of Things is revolutionizing the world clearing vision and creating new paths and industries for people to work on. The start of IoT identified in Smart watches, smart appliances which can be controlled remotely ultimately making our lives easier. These kind of projects got postponed and stopped because of the pandemic but now IoT got rise in health care by which health care sector is able to provide care in an effective manner. Now IoT is spreading its roots in all the other sectors per say smart watches and smart id cards having geofencing to follow the pandemic protocols.

IoT is also used in other safety devices which can be IoT active to keep us safe and secure in the times of pandemic which stresses that the pandemic isn't over yet and people are now forced to go out to avail all the emergency services. Its helpful in every way directly or indirectly, if the person is working remotely or physically IoT proved to be of huge help.

In upcoming years, as we have seen from where the IoT started and its growth is going to go way far. My hypothesis establishes the use IoT in ways we never imagined and its increasing growth rate as it is going to grow much faster in the future. It provides different industries, IoT in coming days will be seen in each and every possible industry one could think of. It will not just support human being but also will be powerful enough to help reduce the work pressure. Humans will now be majorly expected to see the initial functioning and its setup. More than half the world in upcoming years will be connected with IoT, 5G will be the fuel for the growth of IoT industries. There will be more of smart cities, smart cars and will prepare us for any challenge like Covid. With this the part of human handling technology comes in place, where we are majorly required to keep a check on the loops of tech and fraudulent activities

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IOT will also give rise to security and vigilance departments and will turn it into another career perspective.

IoT will definitely change the perspective of people regarding technology and its working. The times in which we grew is going to be majorly different from the times our future generation is going to see technology. They will become even more tech friendly and will know the boon and bane collectively.

2.0 Background or Literature Review

In 1982,modified coca cola vending machine at Carnegie mellon university became the first internet connected appliance,it reports the observer that the newly loaded drinks were cold or not.In 1994 reza raji described the concept of moving small packets of data to a large set of nodes to automate the systems. The field gets its start when bill joy envisioned device to device communication in 1999.

The term "Internet of things" quoted from Kevin Ashton of Procter & Gamble, later MIT's Auto-ID Center, in 1999, though he prefers the phrase "Internet for things". At that point, he viewed radio-frequency identification (RFID) as essential to the Internet of things, which would allow computers to manage all individual things.

When we define the term Internet of Things we can say that it is about internet being connected and making things works instead of people being connected. According to the Cisco System IoT was born somewhere between 2008 and 2009.

Iot gained popularity in 2010 when the information got leaked that Google street view device not only made 360 degree picture but also have data related to people's Wi-Fi and that time Chinese government announced to make IoT strategic priority in their 5years plan.

Then in 2012 theme of Europe's biggest Internet conference LeWeb was the "Internet of Things" and tech magazines started using IoT as their vocabulary to describe the phenomenon.

In October of 2013 IDC published a report that says IoT would be a $8.9 trillion market in 2020 and the term internet of things (IOT) reached the mass, marked awareness when in 2014 January Consumer Electronic Show in Las Vegas was held with iot as its theme.

Pre-covid iot was used in home to turn our air conditioners on and off with smart phone and in cars to provide shortest route and smart watches which track the daily activity. The iot provided the platform to collect and analyse the data and keep the important data and transform the use of technology.

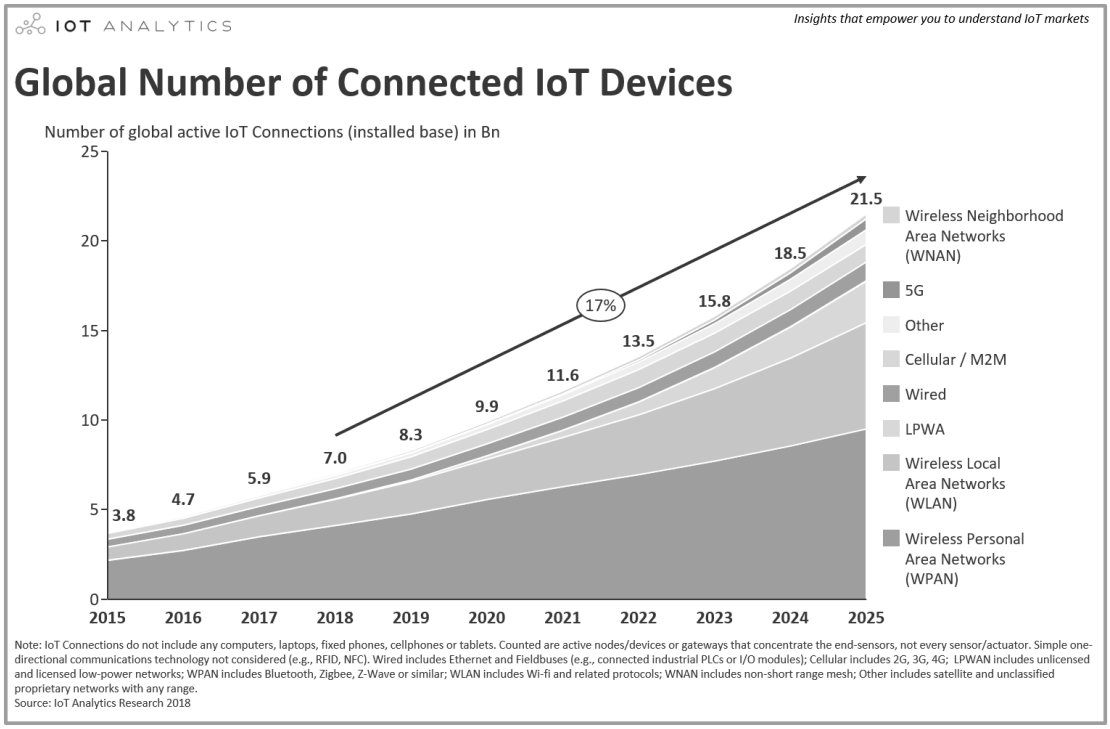
At present, iot is used in hybrid with health care devices, it is the potential life saving technology in the health care industry. It can easily collect data from all the bedside devices and can be using all this to diagnose the problem in real time. This also improves the experience of the patients. This eliminates the chance of mistakes committed during the care taking. Internet of things save time and quickly monitors the devices which helps care takers to monitor and manage patients health saving precious time. Without even actually visiting the patient physically the expert is diagnosing the patient and studying the reports remotely and managing the health care environment efficiently.

3.0 Methods and Materials

The method section of study talks about the data taken of the impact of the Covid- 19 pandemic on the current market and the comparing the market what it was before getting hit by the Covid - 19. After reading a lot of different articles and following news for the longest of times, living with a pandemic in the absence of vaccine. The way people were reacting to it and trying to adjust in whatever ways they could lead to not just the growth in technology but maintenance of safety

protocols. Everybody started prioritizing their visit outside the home and took conscious steps to save them from the prevailing infection. The news related to the impact of covid19 as there is no vaccine and the anticipated vaccine to be expensive so taking precaution is any day a better option and in this time how iot came to help and the things became easier. The material is given on how covid impacts the iot market with regard to the material taken from Gilad David, a technology writer who worked with over 150 tech based giants and produces tech related content and also establishes a thought leadership in content market. Also, picking the sources from IoT Analytics and marketandmarkets Analysis, the data was studied.

Fig 1: Number of connected IoT devices



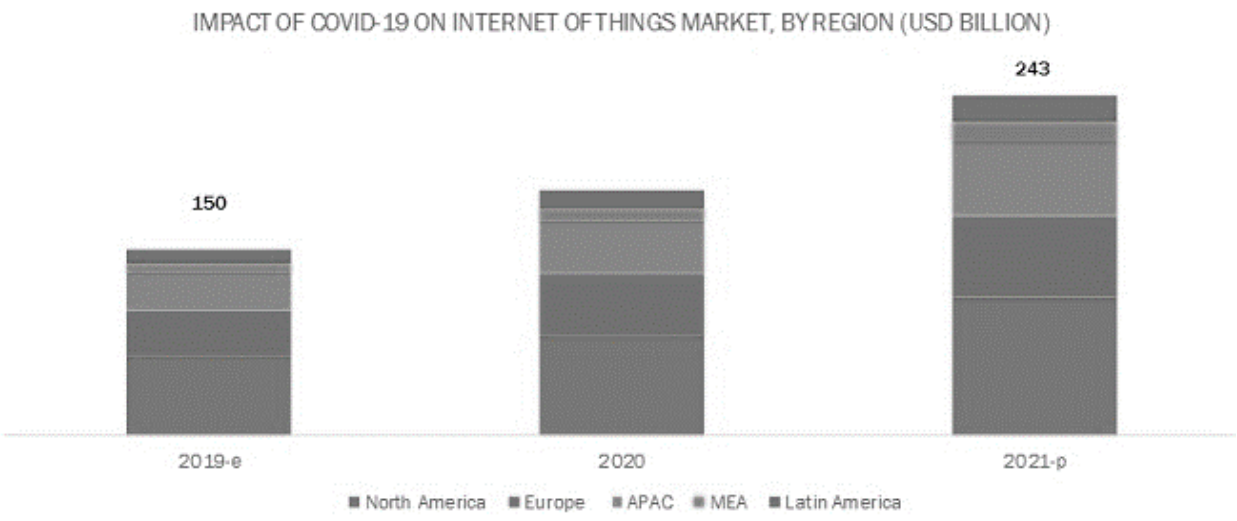
Using the material data present online on how many IoT devices were installed worldwide. In 2018, there were 7 billion IoT devices installed which reached to 26.6 billion in 2019. Which marked the substantial growth of the IoT in just a year, this speaks nothing less than how many devices were getting installed worldwide every second (the precise count is 127). After an unexpected manifold growth, the expert anticipation rolled out an estimate of installation of almost 31 billion devices and by 2021 it will reach up to 35 billion IoT installations worldwide. By the end of 2025, more than 75 billion devices will be connected by the web and related softwares.

With regard to the revenue for the IoT market, in 2016 the global spending in numbers for the IoT market was $737 billion. In 2018 the revue generated by North American Market was $83.9 billion. Whereas, coming to 2020 the global spending reach should be $1.29 trillion. The data for 2021 to 2026 anticipates the global growth, experts estimates that the IoT device market will reach $1.1 trillion. According to the study, the IoT technology will be adopted by 93% of enterprises. 80% of industrial manufacturing companies will adopt IoT technology. An expert analysis says that 90% of cars will be connected to the web through IoT technology. 3.5 billion cellular IoT connections will be installed.

The global impact of pandemic lead to increasing demand for the IoT in Asia pacific countries with high population. The use of IoT predicted to showcase a huge base for the growth of

technology amongst the hit of Covid - 19. Countries like, China and India will keep up the demand for major vertical of IoT. The use of IoT in health-care and utilities is a game changer. Since 2018 the increase in our futuristic thinking lead us to remote monitoring and making infrastructure accessibility during the times of pandemic less.

Fig 2: impact of covid 19 on IoT



Source: MarketsandMarkets Analysis

4.0 Data and Results

In the initial days of 2020 the impact of Covid -19 was then starting to roll out. The impact of Covid - 19 on Internet of Things was expected to be huge and the market was expected to grow from USD 150billion in 2019 to grow to USD 243 billion by 2021. The compound annual growth according to the forecast was expected to be somewhere around 13%.

The growth of market after the effects of Covid rolling out completely focuses on the factors like remote working, the increased dependency on work from home initiative, attending all the meetings from the different locations, use of smart payment option to work on minimizing the sections of human presence and thus eliminating the human involvement. The Internet of Things proved to be the best way out to carry on the demand and service structure even when the world was hit by a pandemic and nearly everyone was expected to stay indoors and carry on with their lives.

This structure of living never happened, not in 100 years anyone witnessed any such thing which can bring the entire world to a halt and damage the working industry in ways unknown. Our being developed and already existing friendliness with the technology over the years helped us remain afloat and also grow through the pandemic sticking to the protocols of the pandemic.

It was major acceptance that the movement is limited for humans but the work will be done remotely. The companies tried moving a step ahead in transportation of essentials and reducing unnecessary movements.

Every possible way to put technology to an apt use and with this reducing cross infection.

Internet of Things has till this time already entered the market as we never imagined earlier. The Internet of Things entered the major sections like health care, medicine, monitoring, apps, health related all the portal were brought online in direct or indirect ways to re target the working in an

improved manner.

The Internet of Things has a major entry in the market related to health care sector at first so that a lot of supportive softwares were developed, trackers were developed in order to help people through this uncertain situations, helping people to stay protected in their comfort zone and work effortlessly.

No better time to experience the use of technology and see the wonders Internet of

Things was doing in an underlined manner already. The absence of vaccine took it a step ahead in making people realize how technology can be a good friend and help things make easier for us.

Analyzing the data and material present I found out the minute places where IoT secretly kept helping us and we never realized. It took the entire world to turn upside down to put technology to a good use and realize the friend existing in it. The little things which are now even smooth and actions done effortlessly are all a boon due to existence of technology in our lives.

5.0 Discussion

My idea related to iot is that it going to accelerate in upcoming years as there are more upcoming ideas and use In iot like many companies are using proximity sensors for their employees in work places to keep check on the employee following covid protocols even these help people if in case someone get infected with the virus it can be back traced from were it all started and how we can take more precautions. The data collected from iot will help machines to schedule the day. This will also help us to plan the way out of the virus and saving from the spread of covid and we can also stay ahead of it.

Different sectors keeping in mind,

The telemedicine will be able to get help in this as the company will have the past health record of their employee and if they get infected or any other emergency happens then the data can be shared with the hospital by iot.

If we see a work place there will be many devices but to distinguish the person we can use the biometric scanner, for example the person can scan their finger print in any of the device and it will be registered with his name for the day and the server will collect all the data under his name and can provide it later on. If in case the person forgets his device at home then he/she can scan their finger print and data will not get amalgamated or become a mess. This system can raise an alarm if anybody is in close proximity of the infected person.

Lets come back to home from work we know our place is sanitize but you just dropped some of your colleague and you don't know about the sanitization of your automobile so we can set up some UV lamps which kills bacteria and harmful viruses so our device will work in such a way the on installation it will tell how to set up and there are no blind spot which are kept from virus to stay at par.

When it get installed then we can check that there are no person in the vehicle through IoT so nobody gets harmed due to the adverse effects of the radiation and it can do its work properly to keep us safe. After the radiation sanitization, there will be a fail safe as the device is harmful so in any malfunction we cant take any chance it to go off on us so after completing its job its cover will be deployed and can only be removed only when we give it the command to do so.

In our homes we can install such devices and sensors to see and track the quality of air and when it goes high and get dangerous for us then the air purifier gets activated and when we reach home and wanna relax we can set up the sanitizer and air purifier system to turn off before we reach our home and in hospital also we can set up the UV devices to scan and clean the place before the

patient or any other person goes in.

With iot the infected person who is in self isolation we can track his place of visit and maintain his record. If he/she need something to his location we can send drones to him without any risk of cross contamination which keeps us safe and help the person also. There are many more ways on how IoT can grow and make our life much more convenient.

The Internet of Thing and the boom can be used right now and also in the upcoming years in an excellent and smooth manner. The uses of Internet of Things is done in places which are not even noticed by a layman at first.

6.0 Conclusion

In the current scenario of pandemic, there are many IoT projects which got canceled. Later we realized the use of making things automated in order to feel safe and making a risk free environment. It also provides us with the clarity in vision with the working of IoT. This is a future in which we are trying to replace machines with people making things contactless to stop the spread. As we move forward we have seen recession, economic drop and financial problems but IoT created new ways of income by creating new industries and introduced new verticals which gave rise to fresh idea accommodating technology as a great Athenian philosopher said 'Necessity is the mother of all inventions". This pandemic changed our perspective to see the world and give a boost to IoT sector and its technology to up rise and bring change in the world. AI and machine learning with IoT will be the new normal for the futuristic us

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