

## Impact of Metaverse and Advanced Technology on the Enterprises

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**ABSTRACT-** The current study sought to understand and explore the field of technological advancements in these modern times, especially after the covid surge, from the perspective of Business and Management. The development of science and technology will define a new meaning and application of the management and administration of the firm. Due to modernization in technology and automation of work in managerial work, the processes of businesses become easy to handle, maintain and control. Technologies have made different elements of business such as manufacturing, communication, purchase and sales, marketing, trading and advertising became easier than before. With the present technology, machines are able to process the functions and give the desired outputs after feeding the respective commands in that machine. Technology also aids the productivity of the employees, to work better, easier and with convenience. With the betterment of AI (Artificial Intelligence), businesses are able to provide satisfaction to the customer, giving response at time, reviewing, analyzing their issues, etc., which saves their overhead costs and expands the capabilities of the firms. With many upcoming advancements like MR (Mixed Reality), Metaverse, IOT (Internet of Things), Robotic Process Automation, Quantum Computing and many others, it will surely impact the management work in the work in both positive and negative ways. This study focuses to cover both the impacts and make the future even better, majorly comprising of the Metaverse and upcoming digitalization and technological evolutions and the rise of new tech-gen.

**Keywords:** Technology Management, Automation, Artificial Intelligence, Internet of Things, Metaverse, Robotic Process Automation, Modernization, Tech-gen, Quantum Computing.

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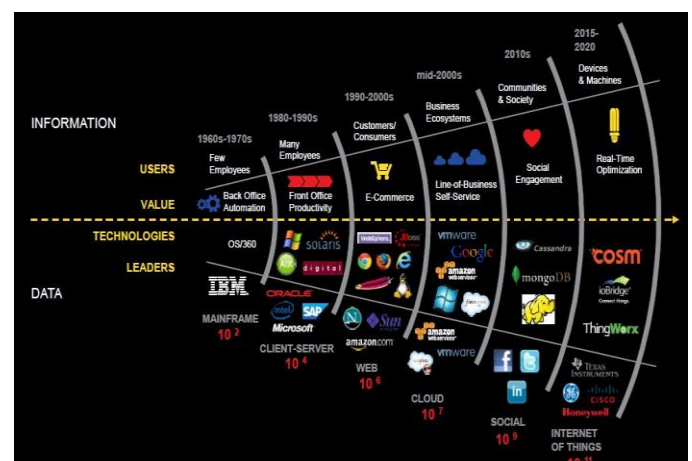


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## 1. INTRODUCTION

After the evolution of ARPANET in the late 1960s, people started to make digital gadgets and appliance which made people's lives easier and convenient. This was the beginning of the Technological Revolution from the 1990s, when people started working and creating new devices based of Internet Technology. Production of smartphones pumped to a very large extend as it was liked by everyone as a new piece of futuristic technological model. It was easy to use, carry, talk, handle and most importantly, it was smart than the other button-phones. The new smartphone can update us latest news, become an alarm, reminder, save things for long term, and click photos and record videos, and many things apart from just a normal phone which is just useful for talking to people. After that the first generation of Internet came along with the other features of connectivity like Bluetooth and tethering hotspot. The Internet was very helpful in telling glimpses of world news, maps, and search and discover anything in the search engine (web search).

and with the internet in hand, people can share and transfer information in an easier and broader way than the previous versions of connectivity and the best thing of the Internet is, it is wireless and hence there was no hassle to the people to bring large wires according to the size of their mobile port, connect it, check for wire faults and there were many problems. The Timeline of technological advancement is as follows:



The technology was all started from the Back-Office Automation to the Real time Optimization at present and we are expecting the Robot Process Automation soon in the upcoming years after the complete development of real time AI and MR development. We will see that how it will impact the businesses and their operations or functioning of today's and upcoming generations in broader way than ever.

This was all good but one thing was stuck in the minds of researchers and scientists, 'Can we make it even better?' and then they worked hard for some months and years and then, the second generation of Internet was invented successfully. It was speedy and worked smooth than the previous version. The Internet speed was quite good and it was hugely liked by the people. Many discoveries and inventions were made using this technology, many cures were developed against the diseases of which people feared to even hear that name, development of new medicines, better communication with people, improvement and updations in many gadgets were made using the 2G technology, which lead to the progression of 3G internet which was the fastest and best of that time. Many smartphones were compatible to the 3G internet and new companies were evolved. This led to the growth of economy and rising market (bullish) nature in the market, firms and businesses performed significantly, government gained and people also benefitted. This further led to the increasing standard of living and prosperity of the people. Enterprises were also able to scale up quickly, production costs were too low, E-Commerce industry was booming all over the time.

After some time, 4G internet came which gave good speed and command over the 3G. People started to switch from 3G to 4G. The latest tech was comparatively expensive than the 3G model but it was worth the benefits of 3G and provided more than just internet and connectivity. The 4G internet enhanced the maximum privacy with higher bit encryption than the other generations of internet. Currently, 4G is cornering the market as every internet provider has the maximum service providing of 4G tech than others. With good speed and compatibility, it lead to the development of A.I and M.L, improving the current virtual tech with many updates and fixes. Metaverse in hitting the headlines, the tech companies of all over the world, especially of the silicon valley is moving fast with the technology to bring more rapid advancements like Hot desking Tech, Virtual live meeting Conferences, Fully Fleged WFH (Work From Home) Arrangements, Improving Geo-Communications and Ed-Tech improvisation and many.

These advancements are currently under the testing conditions in many enterprise, to fully become legit and convenient so that anyone can use it freely without any hassle or complexities. Robotic technology has developed to good extent and they are able to fulfil the required commands feeded by the user or recipient. Currently, the Metaverse is in development in the scientific labs of the Tech Companies and the scientists and researchers are trying to make the technical world even better and advanced with better and compatible features available to the users so that they can use that conveniently. Now, we are going to see how it impacts the business operation of different firms.

## 2. LARGE SCALE ENTERPRISES

Large Scale Industries (LSI) are those industries which have the capital and investment requirement of at-least 10 crore and having huge infrastructure, machineries, raw materials, high manpower and labour requirements, large capital requirements, heavy risk endurance, and extensive market with advanced

technological equipment's and highly skilled labour to operate it. Some of the examples of Large Scale Industries can be Cement Industry, Iron and Steel Industry, Sugar Industry, Ship Building Industry, Petroleum and Natural Gas Industry, Silk and fertilizer Industry, etc. which requires heavy capital investments and other plants and machineries.

There are two types of production techniques through which an industry can run upon which are as follows: -

### 2.1 Labour Intensive Technique

The term Labour indicates the employees, casual and regular labourers in the organization, simply human manpower. This technique reflects the majority of human capital in the workplace rather than the machineries and technical assistance. This technique was prevalent before the Industrial Revolution on 18<sup>th</sup> Century. It refers to the process which requires huge manpower and labour assistance to manually work and produce things and complete the process of the product or service, wholly by the human workforce with less or no technical advancements.

The Labour-Intensive Technique was good in providing more opportunities to the manpower which lead to reduction in poverty and unemployment. People engaged to work themselves which enhanced them to learn self-management and development. It gave a good chance to the employees and labourers to manage the time and work putting their best efforts in making and offering the product or service to the public.

But, apart from the merits of Labour-Intensive technique, the manpower will cost more money and capital to make them work until the final product gained. The production work will be too delayed and slow without machines and basic working equipment's. Some products will not have better quality due to improper care and diligence. Efforts caused will be more and more. Errors and mishandlings can happen due to which the entire or a part of the product is wasted, causing huge loss of money to the firms and enterprises. In labour-intensive industries, the costs associated with securing the necessary personnel outweigh the capital costs with regard to importance and volume.

Due to these reasons and outweigh of the demerits over the merits, the Large-Scale Industries are working upon the Capital Intensified Techniques to lower the cost requirements and labour amalgamations too. But, some of the sectors like the Agriculture Sector in India still holds the majority of labour and human capital as the technological advancements hasn't been reached to the farmers of rural and backward areas due to lack of remote access and huge costs.

### 2.2 Capital Intensive Technique

Capital Intensive Technique indicates the use of capital of the business for the purchase and use of Machineries and access to technology. This makes the work easier, faster, compatible, flexible and cheaper. It incurs less costs to manufacture the products and offer the same to the public, due to which the use of machineries ensures better quality than manually done, as the quality checks are been revised and implemented multiple times

in the production lines to regulate good quality product and service deliverance to the respective consumers.

It also refers to the company's progress in the field of science and technology development, and due to the setup of the production line ups in the manufacturing and production plants, efforts are reduced, bringing down the labour as well as the production costs to produce the product too, as said, 'Money Saved is Money Earned.' Hence, the company can use the saved cost for various purpose like increase in profits and owner's Equity (Reinvesting the saved money and profits again into the business) which in-turn can be used to create more production lines, purchase machineries, supply to the increasing demand, after sale services to the customers, other benefits, etc. which impacts the business to gain consumers and build goodwill.

Hence, the Capital-Intensive Technique is comparatively better than the Labour Intensive but the method of Capital Intensive reduces the manpower requirement, less employment generation, increased pollution due to the machineries, acidic rains, climatic changes, increased carbon footprints, etc.

With the adoption of more and better technical advancements and assistance, scientists and researchers are focusing and creating a virtual computer-generated environment due to which the issues of the firm can be dealt in a matter of minutes, removes deviations, matches the standards of organization as planned, reduces time and power generation of firm, and cost control. Easy meetings can be done using the Hot Desking Tech and high end room conferences, cost of the firms will be divided using the Co-Working Space between two or more entities so that less infrastructural and maintenance costs will incur, which will be distributed among the firms. With the implementation of virtual and Digital cybernetic technology, the building costs will be eliminated with the regular functioning of only industrial, factorial and production layouts only. Less labour will be required, with the help of Metaverse, the quality, endurance, information, specifications can be measured through online easily.

The use of Metaverse and allied technologies will help the large enterprises in the following ways:

- (1) Reduce the Costs of Manufacturing and Production
- (2) Removes unnecessary labour
- (3) Improves Quality of the Product
- (4) Brings down Production Costs
- (5) Development of the Organization
- (6) Quick Achievement of Objectives
- (7) Better Consumer Interaction and Personal Touch
- (8) Increases Profit Margin
- (9) Diversification and Growth of the Enterprise
- (10) Better Management using Technology

Hence, with the help of the Metaverse and the bounded technologies, the Large-Scale Industries can grow and develop with the help of computerization and automation process. It not only helps the firm in a profitable way, but it will impact the society's thoughts on the company positively, building good relation with the public, goodwill and reputation, enhancing fast, easy and secured digital connectivity within minutes,

access to the global trade and public servicing, best usage of raw materials and least wastage, efficiency in transportation and logistics, socialization, access to better food and healthcare, and increased employee productivity. These factors can turn the fate of the Organizational Management in a better way to sustain and survive the intensified competition.

### 3. DATA AND METHODOLOGY

The Micro, Small and Medium Industries earlier were two different and separate units, one was medium and another was small, now with the addition of micro enterprises, the government collectively formed the three different segments of the market into a combined one to differentiate and relate easily.

The Micro, Small and Medium Enterprises are also known as the MSMEs, for which the investment of each is as follow: -

#### 3.1 Micro Enterprise

The Micro Enterprise is the smallest segment of the MSMEs, which consists the plant and machinery investments of not more than 1 crore and the annual turnover within 5 crores. Micro Enterprises generally consists of Camphor and Incentive Sticks producing to a larger extent than the cottage industries. It represents the 'Make in India' campaigns to use local products more as possible to encourage new units to grow and export, as well as to reduce imports from the other countries.

Generally, the Micro Enterprise is considered as the first phase of succession and growth of the organization from being completing the promotion and incorporation stage. The Micro Enterprise needs to set its foot into the competition and structure it endures into and try its best and maximum to adapt to the dynamically changing environment. It is very difficult for a firm who has recently started to change itself within the months of incorporation, but it is mandatory to sustain the competition from the existing market players.

At this stage, some businesses combine to eliminate competition, costs, and resources and distribute each's specialization to one another for better growth and development of the collective industries at the same time like the co-operatives.

In simple and easy words, it is good to say that Micro Enterprise are the small businesses which sells goods and/or services to a local area and a local market. It is geographically restricted due to its size of employees, investment coverage and risk bearing ability. With lesser capital, it can't go to higher competitive areas and expanding geographical areas with its product which will cause the company to take more and more loans to just increase its reach to higher market areas, but still the people will buy the products of the existing competitors because they have trust, loyalty and goodwill of that existing player. Since, it is new, and no one knows and gets aware, the competition remains the same, leading the Micro Enterprise to mount on debts and suffer huge losses.

Hence, a business needs to make niche and awareness of their product or service offering to the people with attractive campaigns, offers, perks and discounts, within their capital

capability and limit of their investments. Hence, technology plays key role in managerial decision and makes work easier for micro-organizations.

### 3.2 Small Enterprises

Small Enterprises are those which are between Micro and the Medium Scale Industries. The Industries are classified as per their capital investments on machineries and plants, production lines, customer reach and market tendency, etc. which is 10 crore in the case of Small Industries and the Annual Turnover is within 50 crores. The small Enterprises are comparatively larger and cover more area and reach to the customers than the Micro organizations do.

Small Enterprises are the second stage after the proper niche and enough goodwill and reputation, expanding the valuation of the business, capital investments in plants and machineries, technology development, etc. They spread and cover more area, geographically and physically than the Micro Enterprises engulf.

Generally, the Small Industries manufactures, offers different services, and produces the goods with minimum labour (manpower and human capital) and fewer machines, that is they offer small scale services to the public. The successful small scale businesses are the key drivers and primary engine for the overall economic development of a nation.

The small-scale industries helps in money circulation in the economy, raise the income gains, employment generation, reduction in poverty and unemployment and it also upgrades the rural and backward areas and uplifts them. It helps the people economically, socially as well as technically too with the upgradation of technology and development in the firms. Hence, the small-scale Industries plays a pivotal role in the enhancement of the nation's economy and social benefits too.

3) Medium Scale Enterprises: - Medium Scale Enterprises are those organizations which have the capital investments on plant and machineries or any other production and manufacturing units of 50 crores and the annual turnover within 250 crores. It is the biggest unit of enterprise from the segmentation of the MSMEs. After the expansion of economic, financial and production distribution in the small-scale enterprise, the firm expands its size to the Medium Scale level which has comparatively larger scale of competition than the smaller one. The Medium Scale Enterprises are at the core of the Indian Industrial Market Segment because it has good capital margin, heavy productions and distributions, higher market tendency, more use of manpower and machineries, adoption of newer technologies, etc.

The Medium Scale Enterprises can have the technological benefits from the adoption of Metaverse and allied technologies like the use of cryptocurrency for payments and transactions, blockchain to store information of different file bases and transactions, proofs, legal evidences, company secret and confidential information, historical data, etc. as in the system of block chain, no one can hack, change or process the data or the information stored in it, which is enabled only to those who have the access to edit and view the information.

This helps the enterprise to maintain secrecy of their recipe/ingredient or anything related to their product or service specialities against their rivals and competitors. Metaverse enables the firms to connect easily, deal and trade with domestic as well as global players, form a good bond of understanding, form business combinations, enable the advantage of co working space, share ideas and knowledge, etc. and many more

Hence, the Metaverse and other technologies helps different Enterprises in various ways due to the change in size, decentralization of the firm, expansions, financial capacity, capital investments and margins, market tendency, etc. and many more factors.

Some of the examples of the Medium Scale Enterprises can be a workplace or an office there are 50 to 250 employees to work (the total human manpower), a paper bag manufacturing company, LED and LCD lights manufacturing companies, Leather products manufacturing units, Talcum powder product producing companies, etc. and many more.

As we have seen in the above that how technologies helps the firms of different sizes and scales in different ways. Now we're going to see how it impacts the organization and their functioning with the consideration of Metaverse and other technical advancements.

Impacts of Metaverse in the Enterprises' functioning and day to day operations:

### 3.3 Positive Impacts

Due to the advancement in science and technology and constant evolutions in the field, Metaverse has been discovered recently as a great opportunity to the platform of digital immersing technology, which can attract many people and businesses;

- Virtual Business meets which saves lots of time and efforts of the Enterprises
- Quick dealings and trade
- Global reach and increased market tendency
- Promotion of the product/service
- Rapid setup and assembling
- Co working space and Hot desking tech
- High end Virtual conferences and meetings
- Quick decisions with accuracy and better forecasts
- Easy and secrecy of transaction and proper storage of data
- Information cannot be hacked or changed by anyone and can only be viewed.

### 3.4 Negative Impacts

Like the same coin has two different and opposing sides, there are some Negative and critical factors apart from the positive Impacts of the Metaverse which are as follows:

- No personal touch with the consumers
- Affects mental and overall health of the person
- High technical knowledge and expertise needed
- Mishandling can cause severe effects on the Enterprise
- Lack of socialization and connectivity

- Existence of real person and bots
- Huge maintenance and service costs

Hence, due to the above factors, an enterprise can't adopt fully functioning Meta Universe in its day to day operations and development. But the Metaverse can impact the working environment and performance of a company which we're going to see next:

- Increased growth of the company's year on year progressions
- Productivity of the employee increases
- Outputs are generated more than the inputs
- Increasing efficiency and effectiveness in an organization
- Rapid growth and good relationships with other companies
- Requirements of highly skilled and technical labour to handle the technology properly
- High charges to maintain devices and gadgets
- Other factors like financial capacity and interest of technological development etc.

Hence an enterprise cannot able to operate the best without the good technical support and knowledge of the technological development but the scientists are working on the current update of the Metaverse to make it easier and convenient to operate with better features and privacy with enabled security and higher encryption to the organizations and its users so that the company can use the technology with the current labour and cheaper costs too.

#### 4. STARTUPS AND UPCOMING COMPANIES

Since the pandemic Covid 19 surge began, people, businesses, institutions, banks, and even the governments are facing severe problems to ensure proper management and allocation of necessary and essential equipment and things to the people at the right time. People suffered too hard moving from one place to another, transportation and tourism industries were making huge losses, pharma industries peaked the list. People weren't allowed to migrate or transport (especially during the peak and second wave surge of the Covid 19) from their homes and things were done online.

After one year of the covid, people thought creative and out of the box, with different ideas in their minds, some weird, some difficult to explain to the people, some genuine, some required and helpful, etc. They approached different investors but they were unhappy with their ideas, then came shark tanks in different countries streaming on the television and other OTTs. It motivated and encouraged people to start something new and unique, recognize the problems of the society, people, government, group or of an institution and work upon it. Some created artificial problems and crisis and started to bring its solution to the people and scaled their business and earned large.

There are many sources to learn and self-educate entrepreneurial management and development and hence start a

new firm 'Startups' and people are keen to learn the problems of the society and work upon it. Some companies are in plans to start and launch their products/services to the public soon.

The Metaverse can impact these startups and upcoming companies hugely, like the increased reach and promotion to the consumers, live and online meetings with the investors to pitch their ideas and get some capital from them in return to start or expand their businesses, good and proper time management with many digital applications, research easily by searching the internet and viewing reviews of the related product, learn about competitors and their pricing hence the preparation to enter the market is done in advance.

With the help of Metaverse, a business can forecast short- and long-term goals and objectives and can work upon it, ensure proper flow of work, authority and responsibility, hierarchical development of the firm, better principles, survive the intensified competition and at the same time increase the profit margins and increasing goodwill and reputation of the organization in the vision of public at large.

#### 5. CONCLUSION

Metaverse is a computer-generated environment and virtual immersive platform where people can engage, meet, interact, work, plan, compute, visit remote locations, offer their products/services/expertise, gain skills and experience, educate themselves, open a new business, etc. and many things can be done. In simple meaning, Metaverse is the replica of the physical world but of a digital version where people of one place can meet another easily, secretly without knowing others. There are some allied technologies along with the Metaverse like the Block chain technology, De-fi, Web 3.0, Smart Contracts, Cryptocurrency, etc. and many where a business can grow, enable hi-touch relations with the consumers, other businesses, suppliers, users, investors, government, etc. without any hassle. It is recently developed scientific evolution of a new world and a concept of online, digital, 3 Dimensional (3D) and tenacious environment. One can think it as the future iteration of the Internet and the world too. It will really be helpful for the businesses if they use it rightfully, like the easy swapping of currency to the fiat currency to cryptocurrency, easy and secure payments, smart contracts between the contractors and entities or the people, digital economization, and it provides reliable and transparent government systems and operations.

Due to the advancement of science and technological influence, the Metaverse acts as the connections between the financial, virtual and physical worlds, and linking them. The main aspect of Metaverse was to provide a good and enhanced satisfaction to the video game players so that they can play more and enjoy the experience of the mix of virtual and physical world, but it is also helpful in general and substantial management of the firm to take better decisions, not only on the basis of historical analogies or the companies reports but by also technological and scientific calculations, keeping in mind different factors affecting the business in positive or negative way. It enhances the digital way of ownership, leadership and management of the firm, digital collectivity, transfer of value and change in

financial position reports, good governance and do multiple projects quickly. Hence, in these ways, the Metaverse can help the firms and enterprises to grow, develop and diversify itself.

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