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DIGITALIZATION AND CAREER PROSPECTS -A SURVEY

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Abstract:

Digitalization is the use of digital technologies to change a business model and bring out a revolutionary change for faster revenue generation and better and ease of access to data and its components. Digitalization is sometimes misinterpreted as Digitization, but one should note Digitization is the process of transforming information from a physical format to digital version whereas "Digitalization" is the process of utilizing technology to enhance corporate technologies. Our paper reflects the various digitalization processes and its survey and in what way are they beneficial for future processes.

Key words: *Digitalization, Technology, Digital Services*

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Introduction:

Digitalization has enabled increased data quality, collect and structure all the data which can be applied for better use of software. The technology in Digitalization continues to evolve rapidly and it is a technology not an end. Digitalization started with the in-vent of the binary number system. Starting as early as 1670, there were pioneers in storing information in binary systems. It was crucial in early advancements, but not necessarily life changing. Compressing data and media into digital formats started becoming a norm to the common consumer. In the 1980s the World Wide Web was introduced to the public. One of the first transactions was a Pizza Hut pizza in 1994. That same year banner ads started to emerge as a new form of advertising. Such milestones would completely alter modern society. As the public got aware about the techniques of using the technologies, a greater number of users utilized them. But at the same time there were difficulties in processing data that is linking or centralizing the digital data, security issues, and requirement of strong network and so on and so forth. During that time a lot of paperwork was involved which required huge storage space and maintenance. Digitalization is of vital significance to data processing, storage, and transmission, because it allows information of all kinds in all formats to be carried with the same efficiency and intermingled". Unlike analog data, which typically suffers some loss of quality each time it is copied or transmitted, digital data can be transmitted with absolutely no deprivation. The Banking industry, Education industry, manufacturing industry and similar business processes involved huge amounts of paperwork to maintain records. So, the above industries decided to consider Digitalizing the business processes. Some of the advantages of digitalization:

Streamline Processes, Higher Productivity Less Human Error, Increased Transparency

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Literature Review:

Impact of Dizitalization in Industry:

The Banking Industry:

Blockchain Technology:

Fig 2.1 BlockChain Technology

Increased Use of Block-chain Technology, until last year Block-chain Technology was significantly related to Cryptocurrency but as per Deloitte Insights recent advances, it has now become an advanced and efficient way of tracking data, holding information and transactions.

B2B and B2C platforms make the most of digital banking.

Mobile Applications:

Fig 2.2 Mobile Application

Complete safety and transparency when dealing with accounts and transactions on the tip of your hand, with the help of user-friendly applications and quick access. The Senior citizens with disabilities who have trouble going to the bank regularly have benefitted the most from digitalization.

AI Automated Security:

Fig.2.3 Use of AI for Better security

Digital Banking platforms apply AI algorithms to keep a track of user data, common patterns, digital access and transactions.

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QR Codes:

Fig.2.4 QR Codes

The most popular banking digitalization trend of today is usage of QR codes. The world moved from Cash to cards in the last decade and in this decade, it has moved from Cards to QR codes. Be it a POP or POS transaction you no longer need a Credit card with you anymore, this has significantly contributed to the green revolution

Identification by Biometri:

2.5 Identification by Biometrics

From fingerprints to face Ids, digital banking apps are using various biometric ways to allow access and transactions. In this way biometric ways allow security, so even if a smartphone is lost your money remains secure

Streamlined Billing:

Fig 2.6 Streamlined Billing

Buying and selling through online platforms is one of recent trends, making payments through google pay, Paytm offer a secure mode of payment, so the billing process has now become streamlined due to digitalization

Voice Assistance for Banking:

Fig. 2.7 Voice Assistance for Banking

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Technology detects and understands your voice and whatever you say to it, voice recognition technology works by breaking down the voice command into individual bits of sounds that it can interpret easily. Each of these individual sounds is then analyzed using speech recognition algorithms (such as Artificial Neural Networks and Viterbi Search) to find the closest word fit in that language.

The Education Industry:

Digital Technology for education is defined as any process where the Teacher or learner uses digital equipment to improve learning experience for the Teachers as well as for the students. Usage of Digitalization in Covid -19 pandemic was the most due to safety and security. As the pandemic got

over, Institutions returned to their traditional mode of learning, however some Institutions still follow a blended approach. The following statistics shows the Depth Analysis of the Education Sector conducted by Cerebranium [4].

The Manufacturing and Distribution Industry:

These manufacturing and distribution units work on "Follow the Sun" Model which is basically, working on global workflow, remote support and in which the issues are handled by and passed between offices in different time zones to enhance flexibility and dedicated manpower for specific tasks.

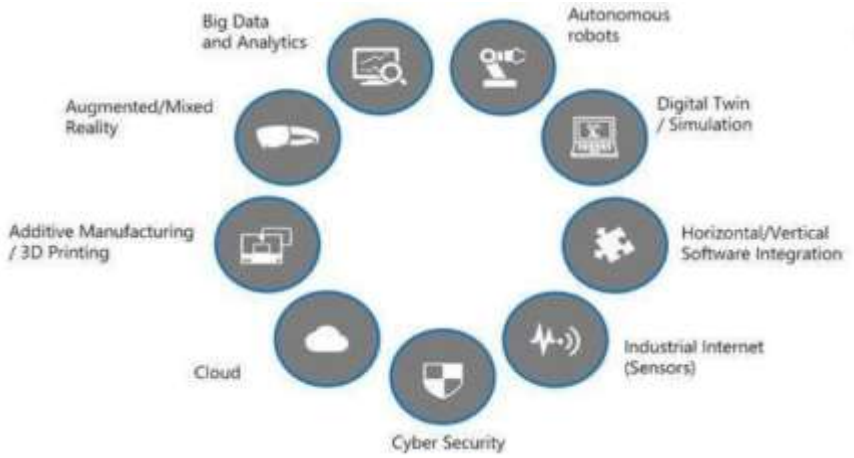

Fig 2.8 Pillars of Industry 4.0

Fig 2.9 Automation Pyramid

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Fig 2.8 are 9 Pillars of 4.0 Industry and fig 2.9 shows an Automation Pyramid where an enterprise, focus and build work centers ,which in turn have workstations where actual modeling process takes place, by using control devices such as 3D modeling or CNC milling machines they are computer controlled to manufacture a field component, which can later be used to construct a complete device[7]. In the Robots a fixed stepwise process is fed to process the orders. Another set of Robots known as the Kiva system can directly deliver the parts to the assembly teams for installation. So, in this Kitting
and dispatching are outsourced to the computers, robots, and Direct Digital Manufacturing (DDM).
Although these technologies are unique, there are still limitations related to production throughput, reliability of parts, material range and costs. [5][6]

The Transport Industry:

With the rise of the internet, a significant number of commercial transactions occur in electronic marketplaces, which creates opportunities for new types of consumer experiences and business models and influences the dynamics of market competition. [8] As per STAN database (OECD 2020) the digital intensity of transport did not change and remained the same over the last two decades.[8]

As per the table 2.10 Data figures D45 to D50 were affected the most and generated profits. The digitalization impacted more on Wholesale and retail, motor vehicles and trailers and semi-trailers.

Table 1. Digital intensity of transport industries.

Transport industries	Digital intensity
D49: Land transport and transport via pipelines	Low
D50: Water transport	Low
D51: Air transport	Low
D52: Warehousing and support activities for transportation	Low
D53: Postal and courier activities	Low
D45: Wholesale and retail trade and repair of motor vehicles and motorcycles	Medium-high
D29: Motor vehicles, trailers and semi-trailers	High
D30: Other transport equipment	High

Fig 2.10 Digital Intensity of Transport industry [8]

This is macroeconomic overview, if we really want to know the major impact, emphasis needs to be given on microeconomic view. [8] As these digital technologies have proven to be a major profit puller but at the same time employment opportunities have become scarce. [8]

The Food and Beverage Industry:

The Covid-19 pandemic has significantly accelerated the trend to digitalization in almost all areas of life, including in the food and beverage industry. In the current scenario the company's Competitiveness depends on sustainable factors.

The objectives of digitalization in food sector are:

1) Automate Data Collection and reduce paperwork. (Technology Used -IOT) [9]
2) Ensure efficient operator guidance (Technology of Using Hologram -AR, VR (VR -Virtual Reality application which produces 3D representation of objects under test. [9]
3) (AR- Augmented Reality Projection of layers of Digital content to the real world) [9]

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4) Improve production performance and share best practices (Demonstrating High Level of proficiency using Big Data analytics) [9]

The Healthcare Industry:

Fig 2.11 Trends in Digital Health care

The digital health transformation includes advancements like cloud, IoT, AI, network availability, and others it offers the most potential fitting medicines. [9]

IOT in Healthcare: Specialists not just speak with their patients over video message but also track their important bodily functions without regular emergency clinical visits. [9]

Big Data Analytics: Gathering and assessing health information through big data tools.

Virtual Reality: VR permits youngsters to be diverted and watch or play something while doctors go about their business. [9] Artificial Intelligence: It is computer-based intelligence which robotizes reasonable calculations that can be customized a lot quicker and more definitively than a human. Are some of the technologies used in the healthcare industry? [9]

At the same time there are a few challenges which need to be met which are Data security, Cost Factor, Resistance to change, Complying with HIPAA (Health Insurance Portability and Accountability Act) regulation.

The Telecom Industry:

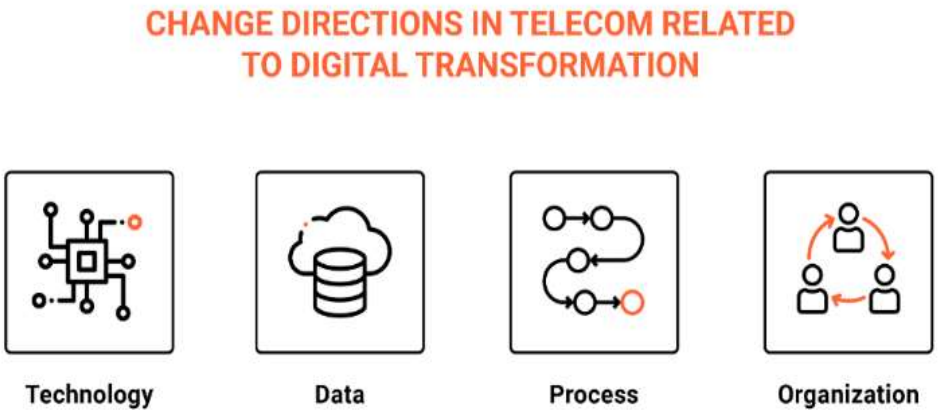

Fig.2.12. Telecom Industry to Digital Transformation [10]

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Digital Transformation in the Telecom Industry refers to renewal of infrastructure systems and business processes. The much-talked-about 5G network infrastructure requires NFV/SDN (network functions virtualization and software-defined networking) to deliver digital services. Greater amounts of mobile data consumption, especially high-resolution video content, necessitate the digital transformation for telcos to enable fast data transmission with new communication standards. [10]

Current trends of digitalization in telecom industry are:

Experts state that 5G, the Internet of Things, and Big Data analysis, shift to the cloud, and an as-a- service model will be the foundation of the digital economy, with the leading software driving force being Artificial Intelligence. A demand for more bandwidth has been snowballing when the whole world became using videoconferencing, telemedicine, to learn online, buy online driving a 22% up global retail sales growth ($4.28 trillion).

5G:

5G is rightly described as a foundation of the digital economy. This promising technology won the hearts of investors with its opportunities as a new technological revolution and attractive dividends expected to be. Its network speed is up to 100 times higher than 4G, which is its mere basic capability, while the integration of computing and storage is considered the main feature. [10]

Internet of Things:

Trending solutions such as the Internet of Things, the AI and ML pair, are now coming to the fore as never before. Smart homes and cities, the Internet of Things, and other technologies of mass consumption will reach a qualitatively new level.[10]

Cognitive Computing :

Fig. 2.13 OTT Offering provided by Telcos [10]

Users have already tried the digital lifestyle and felt that many issues could be solved online, the patterns of human behavior have changed. Therefore, market players should continue to adhere to the digital course set in 2022. The topic is quite extensive, so transformation initiatives essential for your business in adaptation to the high rate of market changes and the new requirements of the digital consumer needs to be carefully studied and implemented for higher revenue generation.

It will transform Telcos Advanced data analytics that do not give places to others, having a special focus on the Internet of Behaviors (IoB) there which goes next to the real-time analysis of consumer actions interpreting

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personal device usage, online payments, mobile internet surfing, etc. Gartner predicts that IoB programs will touch over half of the population by 2025, where telecom will have a big part.[10]

Objective:

The main objective of this paper is to review or survey various working sectors and the usage of Digitalization in those sectors, such as the benefits and drawbacks of digitalization

Scope:

This paper is a survey of previously published research. It gives an overview of current thinking about digitalization in various major sectors and this paper does not present any new experimental results and it is just a survey to provide critical evaluation of the data available from existing studies.As per the survey, Digitalization (AI, IOT etc.) is proving to be a boon to various sectors across but at the same time it can be cause of unemployment too, what will happen if a robots do the 90% jobs of human beings, it is the topic of careful study, as per survey conducted by a robotic blog [11] we can consider the following:

What robots Excel at	What humans Excel at
Highly Repetitive tasks	Highly Varied tasks
Tasks that require little to no decision making	Cognitively interesting tasks with frequent new decisions.
Predictable work with clear actions	Unpredictable work that keeps us on our toes.
Requires no knowledge of the task	Makes extensive use of our domain knowledge and experience.
Tasks can be physically strenuous	Uses our body that does not abuse it.

Research Methodology:

The paper presents a mixed method survey, the only objective of this survey is to create awareness and also to know the extent of Digitalization in various sectors. In this paper we have collected and reviewed useful data from previously published research papers to arrive at a certain conclusion, the tools used are IEEE, ResearchGate, various blogs and review or survey papers. This paper will provide an insight in to various digital technologies in the current decade.

Conclusion:

The main objective of surveying the various digital services used across sectors we can finally conclude that Digital **transformation** can create a work environment where employees can **improve productivity** in their daily work lives. Enterprise collaboration tools are great examples of this. Tools and online platforms like Microsoft Teams, Zoom, Google Meet can reduce waste and increase productivity in large organizations. The time-savings and productivity improvements are almost unquantifiable.

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