

# Analysis of Recent Trends Resulting from the Digital Revolution in the Field of Commerce

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**Abstract:** *The advent of technological advancements is reshaping contemporary lifestyles, posing a formidable challenge for businesses to keep pace. The individuals responsible for overseeing the Data Innovation (IT) department, as well as those in more senior roles, should assess recent advancements and determine how they can contribute to the organization by creating new strategies and enhancing their level of commitment. The objective of this research is to present a series of mechanical advancements that target the latest computerized trends and modify historical patterns by generating updates or upgrades, specifically those that optimize business intelligence (BI) operations. This overview paper discusses the latest advancements in the Web of Things (IoT), including subjects such as 5G mobile connectivity, WiFi 6 advancements, the enhancement of the user's mechanical experience, and artificial intelligence (AI).*

**Keywords:** Digital, blockchain, high-speed, mobile communication, 5G Wi-Fi

## I. INTRODUCTION

The process of digital transformation has been extensively researched for over a decade due to its relevance to individuals and organizations alike. It entails the dispersal of a segment of the value chain due to technological advancements and the reinstatement of the consumer's genuine authority or sovereignty, which was relinquished in the past. This transition has been dominant in terms of altering customer behavior, business strategies, and the tools companies employ to reach consumers. The world has undergone significant transformations due to technological advancements such as the Internet of Things (IoT), blockchain, artificial intelligence (AI), cognitive intelligence, globalization of the economy, market development, telecommunications, wearable devices, e-commerce, the digital age, process innovation, and evolving business models. These concepts have evolved into realities that companies must adopt and leverage. In any competitive business environment, organizations must stay at the forefront and recognize the importance of exploring the multitude of advancements, theories, and processes that have emerged over time. By incorporating these into their operations, they can create a more competitive and organized market, demonstrating rapid growth and technological advancement, and ensuring their continued presence in the industry.

The Netflix story exemplifies a digital shift

Netflix was established as a company that distributed DVDs through the medium of email. Its primary advantage was in its ability to analyze data regarding the purchasing preferences of its users. Using this data, it acquired knowledge about the firm and its operations in the market for digital entertainment material. Currently, it independently creates and produces its own films and series, the majority of which have achieved significant popularity with viewers. Reed Hastings, the Chief Executive Officer of Netflix, made the strategic decision to reorient his own company in response to the growing technology advancements. Initially, he commenced by increasing the rates of DVDs dispatched over mail prior to establishing a distinct company. During the journey, he experienced a remarkably rapid decline of over 80% in the market capitalization. However, since then, he has managed to increase the value of the company by 100 times. Currently, Netflix's proprietary material is being digitally supplied to competitors.

Thanks to the technological improvements available to us, we can both enjoy ourselves and acquire knowledge about new subjects. Our mobile lifestyle is intertwined with everything, encompassing music, text, and image. While certain individuals seek the indication that allows them to engage in conversation, others are limited to using their mobile

devices solely when their battery is completely charged. The toy sector experienced significant decline during the surge in popularity of video games in the 1980s. It was expected that the Barbie houses, model cars, and dolls would all be destroyed. Nevertheless, the storm subsided, and the conventional ones were not overshadowed by the virtual ones. Nevertheless, a fresh peril has emerged: Toys are currently vying with tablets and mobile devices for amusement and diversion. Understanding the decision-making process, the construction of production processes, the collection of accounting data, the implementation of changes, the measurement of growth, strengths and weaknesses, and the collaboration between team members and production are all essential components of demonstrating that development is not solely dependent on the quality of materials or treatment, but also relies on the intervention of technology. These themes will be presented in terms of their contributions to interpersonal communication, job creation, global economic growth, and their impact on business decision-making. Information technologies have undergone transformative transformations that are currently emerging as a prevailing trend. The recent study on digital transformation trends described in this document provides a foundation for illustrating these competitive advantages.

### **5G Mobile Communication**

The latest generation of mobile communication gives greater benefits compared to the previous generation, leading to progress but also widening the divide between generations. Advanced communication at the 5G level has enabled us to demonstrate how intelligent cities have evolved through the exploitation of the Internet of Things (IoT), virtual reality, augmented reality, and other novel technologies. The practical implementation of 5G technology encompasses not only the next generation of wireless vehicles, but it will also serve as a crucial industrial component in the digital transformation of society and the economy in the most advanced nations over the next decade.

The digital transition will be facilitated by 5G, the Internet of Things, big data, robotics, virtual reality, and super definition. The capacity to distinguish services without the requirement of building separate physical networks enhances the potential for sector-specific services. 5G has the potential to significantly alter the strategies of network administrators in comparison to the current market. Currently, network administrators provide mostly standardized services and differentiation is limited to pricing options. The 5G Mobile Network is commonly referred to as the link of the future due to its ability to significantly enhance network speed. The reason for this is because it relies on the utilization of frequencies, which allows for a significantly large data transmission capacity and also minimizes the duration of latency during data transfer.

Furthermore, the advancement of 5G mobile communication has led to significant growth in various areas. The latest generation of mobile communication offers more advantages compared to previous generations. This has been exemplified by the development of smart cities through the utilization of the Internet of Things (IoT), virtual reality, augmented reality, and other technological advancements at the 5G level. 5G technology, besides serving as the next wireless transport prototype, will play a crucial role in the digital transformation of society and the economy in the most sophisticated nations over the next decade. The digital transition will be facilitated by 5G, the Internet of Things, big data, robotics, virtual reality, and super definition.

The capacity to distinguish services without the requirement for separate physical networks increases the potential for sector-specific services. 5G has the potential to change network operators' business strategies compared to the existing market, where differentiation has been mostly limited to price plans and standardized services. The 5G Mobile Network, commonly referred to as the link of the future, is highly anticipated due to its potential to significantly enhance network speed. This is due to its utilization of frequencies, which enables efficient transportation of large amounts of data and minimizes data transmission time. All of these factors lead to the proliferation of emerging and prospective technologies.

Portable broadband offers fast and high-capacity internet connectivity, reaching speeds exceeding 100 MB and peaking at 1 GB. This enables the delivery of high-quality content and virtual reality experiences. The speed and capacity of smartphones contribute significantly to the advancement of technology in this new era. Highly dependable and interference-free communications, with a duration of around one millisecond, in contrast to the average 20-30 milliseconds of 4G networks.

This condition is particularly suitable for applications that have specific requirements in this domain, such as internet-connected or autonomous vehicles, telemedicine services, security systems and real-time control, and smart

manufacturing in industry 4.0. 5G technology may be controlled and influenced by different wireless connectors from any network type, and its ability to facilitate immediate communication can have a significant impact on saving lives. 4G technology currently offers high speeds of several hundred gigabytes in both upstream and downstream transmission. However, 5G technology significantly reduces latency to only one millisecond, a crucial requirement for autonomous driving. Moreover, one of the most remarkable characteristics of this type of invention is its application to the Internet of Things. Recent technological breakthroughs necessitate machine-to-machine (M2M) transmissions and huge transmissions. By increasing the capacity to handle a substantial number of concurrent connections, this will facilitate the broad implementation of sensors, the Internet of Things, and the proliferation of Big Data services. This expands the scope for clients, demonstrating that this type of technology is growing swiftly and effectively fulfilling users' requirements.

Wi-Fi is the latest standard for wireless technology and represents the sixth generation of WLANs. It functions within the frequency ranges of 2.4Ghz and 5Ghz. Wi-Fi 6 offers superior performance in crowded settings, faster speeds, and up to four times more energy economy compared to its predecessor, 802.11ac.

This Wi-Fi technology has exceptional speed and performance features when compared to earlier iterations of the IEEE 802.11 wireless standard. While OFDMA is primarily associated with cellular networks, it is a newly introduced word in the context of Wi-Fi. By quadrupling the duration of the OFDM symbols, the data channels are able to create subdivisions, allowing for several devices to connect to the network without experiencing collisions or saturation. Further attributes are elaborated upon in the following sections. With a maximum speed of 5 Gbps, this technology would significantly enhance the throughput and data transfer of present technologies. Increasingly, various WLAN technologies are adopting Wi-Fi 6 IEEE 802.11ax with modern cellular wireless technologies like LTE, LTE-A, and the impending 5G. This integration is also relevant to the Internet of Things.

Observers and industry surveys predict that the introduction of the next-generation wireless network will greatly affect businesses and users in the future. This will lead to a transformation in the user experience, allowing companies to utilize various channels and digital tools to attract and retain customers. Empowered consumers, who have unlimited access to information, will have a unique experience at every stage of their customer journey. This encompasses the extended duration of battery usage on smartphones as a result of intelligent management of device downtime.

E-business, or electronic commerce, is a nascent idea that involves the exchange of commodities, services, and information using computer networks connected to the Internet. The concept of digital transformation can be categorized into three primary domains: user interface, operational processes, and the strategic business plan. The leaders strategically leverage such regions to enhance their businesses, by improving the customer experience, operational processes, and business models. Associations have a significant impact on the resources and capabilities of third-party service providers and partners, particularly in specific aspects of their digital strategy. Given that digital transformation affects every sector of the firm, decision-makers seek suppliers that can function as long-term strategic partners rather than mere producers of innovative solutions.

A remarkable digital revolution is occurring in infrastructure, solutions, services, and user domains due to the rapid advancement of technology in recent years and its implementation in the economic sector. The specific utilization of Big Data, cloud computing, and automated customer service and guidance, along with the subsequent adoption of blockchain technology applications (Blockchain). While the user interface is important, it must be well coordinated with the user experience in order to have a meaningful impact. Furthermore, it is unattainable to ensure a favorable encounter without taking into account the user's prerequisites. If a person encounters difficulty in utilizing a technology or experiences confusion over its usage, they may experience frustration and ultimately abandon their efforts. Similarly, consumers tend to favor brands that align with their values and convey clear statements and brand promises that allow them to differentiate. In a society where trust in public institutions and politics is declining, some argue that private enterprises should also be accountable and take responsibility for Corporate Social Responsibility.

Modern clients are seeking digital services that enhance their experiences in a straightforward manner, without the need for downloads, contracts, or intricate software. Companies have employed Big Data and Artificial Intelligence (AI) to customize user experiences in order to stay competitive.

### **Machine Learning and Data Analysis**

Intelligence refers to the ability to use knowledge obtained by analyzing one's environment, complex opinions, and personal experience to intuitively reason and forecast in order to solve a problem. When this threshold is implemented on a machine, which is backed by data to achieve a result that is as close to accurate as possible, and also makes necessary adjustments to improve stated processes, then artificial intelligence becomes the subject of discussion. This indicates its desire to develop machines capable of emulating intelligent behavior. Machine learning, a subset of artificial intelligence, use its machine learning algorithms to enable robots to learn by extrapolating knowledge from a set of experiences. The ability to collect and utilize information to make decisions based on long-term and short-term predictions is crucial. The growth of both population and technology has resulted in a significant increase in data, and the process of defining or analyzing this data can be extremely time-consuming. However, these processes have been revolutionized by the development of AI or machine learning. This technique aims to improve through the use of algorithms that can learn and analyze data from test inputs, known as the Dataset, to make predictions and share knowledge.

Every day, fake specialists are becoming more intelligent, independent, and socially engaged. They are able to interact in a more sophisticated and refined manner, and are replacing human labor in various industries and organizations through the use of programming and business intelligence tools. Machine learning and deep learning are two prominent methodologies utilized in artificial intelligence, as they are integral to the bulk of activities. In the conventional domain, we may highlight a handful of instances, such as supermarkets' examination of forecasting the most popular products and the items that clients desire to purchase, with the aim of aiding them in augmenting their product manufacturing. Another technique is using machine learning to predict the value of a house by analyzing new relevant pricing data. This model can make predictions about future home purchases, provide recommendations on pricing, and detect instances of fraud. These two instances have a commonality: they can both be outcomes of machine learning algorithms employed to make determinations on a product or service that is either sold or manufactured. While the tasks may alter, the approach remains consistent.

The machine learning implementation method consists of seven parts, which are organized based on the required qualities and commence with defining the objectives. The initial stage entails the acquisition of data or the process of datafication. In the second phase, the data is prepared, standardized, deduplicated, checked, and pre-processed. The third phase involves the selection of the suitable model. The selected model must align with the business objective as there exist various models that can be employed for distinct purposes. The fundamental part of machine learning is the process of training the model, which is the objective of the fourth phase. The model's predictions are enhanced incrementally by utilizing training data. In the fifth stage, machine learning is applied to unused control data to assess its performance. Following the evaluation of the model in the sixth stage, the initial parameters are tested to enhance the artificial intelligence. During the seventh stage, once all preceding phases have been finished, it is necessary to provide answers to inquiries that are grounded in prognostications.

## **II. CONCLUSION**

Emerging technologies and operating systems are specifically developed to enhance human lifestyle and well-being. They have a significant influence on individuals and the environments they occupy, transforming their lifestyles and interpersonal connections. Furthermore, these advancements are poised to further augment the capabilities of businesses. The primary trends present substantial chances for businesses to compete in the business world and are gradually developing as a crucial and strategic component for businesses. Businesses face challenges in embracing a digital mindset. However, technology companies are increasingly aligning themselves with businesses and their CEOs by adopting the latest trends more regularly to improve their business processes and resources. 5G technology has the capability to decrease latency to just one millisecond, which is crucial for autonomous driving due to the need for instant communication. It may be controlled and operated by different wireless connectors from any type of network and has the potential to save several lives. Moreover, the utilization of this technology in the context of the internet of things is one of its most remarkable attributes.

The Wi-Fi wireless standard offers substantial enhancements in transmission speeds, effectively mitigates network collisions and saturations, and is currently being rapidly deployed worldwide, all of which present potential future

advantages. Intelligence refers to the ability to intuitively perceive, logically analyze, and accurately forecast events, as well as the ability to effectively address challenges by utilizing information obtained from our surroundings, intricate perspectives, and individual encounters. Currently, machine learning is being utilized in various domains such as medicine, marketing, finance, computer games, and advertising, among others. It is considered one of the most popular subfields of technology due to its ability to enable precise decision-making and optimize processes to the maximum extent.

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