

Internet technologies are a weapon of global institutions

Study indicators of digital technologies at the global level

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Abstract

Defence Advanced Research Project Agency (DARPA) of the United States initiated a research activity that eventually developed a system for global data communication service known as the Internet. It operates as a joint effort of many organizations. In this unit, you will learn the basic concepts related to the Internet and the various mechanisms and technologies involved in Internet deployment. Upon completing this unit, the readers shall be aware of the basic terms and terminologies, involved devices and mechanisms, and the applications of the Internet.

the importance of digital technology has been recognized in the entrepreneurship literature, we know little about how and to what extent it influences a nation's entrepreneurial activities. Drawing on the concept of the entrepreneurial ecosystem, this study developed a conceptual model to explain the impact of digital technology on national entrepreneurship and the interactions between digital technology and other ecosystem elements

Keywords: Internet technologies, indicators, digital technologies, the entrepreneurship literature,

1. INTRODUCTION

The Internet has become an undeniable force shaping our lives. Its impact is vast and ever growing, from communication and entertainment to education and business. It is also known as a global communication system that connects thousands of individual networks, sends, and receives information and media across various devices. This article will help you better understand all current facts and trends about the Internet in 2024 and 2023. So, let us delve into some key internet statistics to understand its current state and trajectory.

The digital landscape is continuously growing and evolving. There are many interesting facts about the internet, internet statistics, and ways to use the internet more than you can imagine.

1. Internet space

1.1. The Definition of the Internet:

The Internet is the decisive technology of the Information Age, as the electrical engine was the vector of the technological transformation of the Industrial Age. This global network of computer networks, primarily based nowadays on wireless communication platforms, provides a ubiquitous capacity of multimodal, interactive communication in the chosen time, transcending space. The Internet is not a new technology: its ancestor, the Arpanet, was first deployed in 1969, but it was in the 1990s, when it was privatized and released from the control of the United States Department of Commerce that it diffused around the world at extraordinary speed. In 1996, the first survey of Internet users counted about 40 million, in 2013, they over 2.5 billion, with China accounting for the biggest number of Internet users. Furthermore, for some time, the spread of the Internet was limited by the difficulty of laying out land-based telecommunications infrastructure in emerging countries. This has changed with the explosion of wireless communication in the early twenty-first century. Indeed, in 1991, there were about 16 million subscribers of wireless devices in the world. In 2013, they were close to 7 billion (on a planet of 7.7 billion human beings). Counting on the family and village uses of mobile phones and taking into consideration the limited use of these devices among children under five years of age, we can say that humankind is now almost entirely connected, albeit with high levels of inequality in the bandwidth as well as in the efficiency and price of the service.

When it comes to the workplace, traditional methods of operation have become obsolete in almost all disciplines. The time for smart factories has arrived. The

concept of automation has resulted in significant improvements in the design and manufacturing processes. Huge industries run on simple switches that operate automatically with truly little human participation. Fresh product types and equipment are introduced daily, proving the rapid pace of technological breakthroughs. The Internet of Things (IoT) is one of today's most popular and fascinating modern technology applications.

The Internet started in the 1960s as a way for government researchers to share information. Computers in the '60s were large and immobile, and to benefit from data stored in any one computer, one had to either travel to the site of the computer or have magnetic computer tapes sent through the conventional postal system.

The World Wide Web—usually called the Web for short—is a collection of websites you can access using the net. A website contains related text, images, and other resources. Websites can resemble other forms of media—like newspaper articles or television programs—or they can be uniquely interactive with computers.

1.2. The origins and development of the Internet:

In 1961, Leonard Kleinrock published the packet-switching theory from his post at MIT. It was based on the idea that all the information leaving a device was chopped into blocks to facilitate its transmission. He called these block packets. The following year, Paul Baran presented a communications system that, through computers connected to a decentralized network, was immune to external attacks. Thus, if one node was destroyed, the rest could continue without problems.

Later, in 1965, it was possible to connect two computers, one in Massachusetts and the other in California through a telephone line, although it was not very operational. The big breakthrough came in 1969 with Michael Elie, who succeeded in connecting a computer at the University of California with one at the Stanford Research Institute. Soon after, four more universities joined, and this interconnection was called the Arpanet.

It happened in 1983. The United States Department of Defence decided to incorporate the TCP/IP protocol into its network, which was renamed Arpanet Internet, and eventually, the term Internet alone remained.

Years later, in 1989, Tim Berners Lee incorporated three new resources: HTML, HTTP, and a program called Web Browser. They were the basis for making web pages. A year later, the Internet was born in closed form within CERN, the

European Centre for Nuclear Research based in Switzerland, and in 1991, it finally reached the public.

Sir Tim Berners-Lee, a British computer scientist, created the first website in 1991. The website was hosted on a NeXT computer at CERN (European Organization for Nuclear Research) in Switzerland. It was primarily used to share information about the World Wide Web project. The website was simple, text-based, and provided information about the project, including its goals, the technologies used, and how to use them.

The first website's URL (Uniform Resource Locator) was <http://info.cern.ch/hypertext/WWW/TheProject.html>, and it can still be viewed on the Wayback Machine, an Internet archive that allows users to view old versions of websites.

This website was considered the first step in creating the World Wide Web. It was the first website that could be accessed via the Internet, and it demonstrated the potential of the web as a tool for sharing and distributing information.

Web 1.0 is the first publicly accessible version of the World Wide Web during the 1990s. It was a static, read-only web version, where users could primarily view and read the content without interacting or contributing significantly.

Screenshot of an early Netscape web browser window with Intel website content
A few key features characterized web 1.0:

- It was primarily text-based, with limited use of images, videos, and other multimedia content.
- Web pages were often simple and plain in design, with limited use of colours, graphics, and animations.
- Navigation was based mainly on hyperlinks, and web pages were often organized in a hierarchical structure.
- Web 1.0 was mainly used to share information and access specific data types, such as encyclopaedias and research papers.
- The concept of e-commerce did not exist yet. Thus, there were limited opportunities for online shopping or financial transactions.
- Website creation was mainly the domain of experts, such as web developers and programmers, and organizations or institutions created most of the content.
- The introduction of web browsers, such as Mosaic and, later, Netscape, made it easy for users to navigate and access information on the internet.
- The Internet has also paved the way for a host of services. Companies like Yahoo! and Infoseek provide portals to the Internet and have attracted considerable attention from Wall Street investors. Other companies, like

Amazon.com and Barnes & Noble, have established online stores. Amazon had online sales of almost \$150 million for books in 1997.⁶ Electronic commerce; more broadly, is taking hold in many types of organizations, from PC manufacturers to retailers to travel agencies. Although estimates of the value of these services vary widely, they all reflect a growing sector of the economy that is wholly dependent on the Internet. Internet retailing could reach \$7 billion by 2000, and online travel services sales are expected to reach \$8 billion around the turn of the century. Forrester Research estimates businesses will buy and sell \$327 billion of goods over the Internet by 2002 (Blane, 1997).

➤ The Web has been likened to the world's biggest library—with the books piled in the middle of the floor. Search engines, which are programs that follow the Web's hypertext links and index the material they discover, have improved the organization somewhat but are difficult to use, frequently deluging the user with irrelevant information. Although developments in computing and networking over the last 40 years have realized some of the potential described by visionaries such as Licklider and Engelbart, the field continues to offer many opportunities for innovation.

1.3The Importance of the Internet in Life:

Gone are the days when the pen was the most important tool; times have changed, and now the internet rules the world. The Internet offers a collection of important services and resources that are essential to daily living.

The Internet has opened a new world for many people around the world. Many opportunities are available here. It is a manifestation of never-ending innovation and creativity. It knows no boundary but brings huge economic chances for people in every country. The Internet allows people to improve the quality of their lives. It opens access to the previously inaccessible things. With almost Ten billion users, the internet has been emerging as one of the most important tools of communication.

Given the internet's increasingly significant role as a communication tool, the United Nations has even recently proposed that access to internet services should be a part of human rights. The Internet has influenced almost every aspect of human life, not only private life but also public services. Right now, nobody can prevent other individuals from exposing their private lives to the public. More couples and families even post images or videos of their vacations in remote areas.

The Internet allows people more affordable and efficient access to basic amenities such as education, health care, public safety, and government services by:

- Affording people opportunities to participate in online learning and distance education
- Giving entrepreneurs and small- and home-based business owners opportunities to compete with large corporations
- Increasing the productivity and efficiency of businesses that use the Internet for their operations
- Connecting patients in remote areas to healthcare services
- Making government services more readily available to residents
- Saving companies and organizations money by letting employees telework
- Allowing friends and families to stay in touch with one another
- It powers education and the economy. It supports our health and well-being and connects us to our neighbours and to those we love. Americans without the Internet miss many of these benefits. Roughly, 1 in 5 American households are not connected to the Internet. That's a fifth of our country that is unable to fully participate in modern life.

2-Internet properties:

It is the wider network that allows computer networks across the globe run by companies, governments, universities, and other organizations to talk to one another. Therefore, we can say that the Internet is a global system of interconnected computers that uses standardized Internet Protocol for communication and sharing information.

2-1 general features

- It offers information 24 hours a day and it can be accessed as long as there is a connection.
- It is public by nature.
- It does not belong to any entity, and it is universal and decentralized, so there are no control points at the hierarchical level.
- It is collaborative, meaning everyone can share information on the Internet.
- Its growth is unlimited and collaborative, allowing new connections to the network in a shared way.

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➤ It creates a trace-based on each user's interaction, so personalized experiences tailored to their interests and preferences can be offered. However, it is an anonymous network that does not require users to identify themselves to use it.

➤ It can be accessed from any device immediately, and messages are transmitted instantly.

➤ Its uses can range from searching for information to research, social contacts, direct communication, education, and financial operations.

2-2-Special properties

Some additional points can be touched upon about the characteristics of the Internet:

➤ **ComplexNetwork:** The internet interconnects over 150 million computers, forming a complex "web of computers."

➤ **Disorganized:** Due to its dynamic nature, the internet is a complex network, making it confusing even for experienced users to navigate.

➤ **Extensive Usage:** Millions of individuals access the Internet regularly for various purposes.

➤ **Collection of Billions of Files:** The internet hosts vast amounts of information on every possible topic, stored in various file formats.

➤ **Exponential Growth:** The internet experiences exponential growth, doubling its size approximately every 18 months.

➤ **Dynamic:** Information is constantly shared on the internet, making it dynamic and ever changing. For example, a new network connects to the internet approximately every 30 minutes.

➤ **Worldwide Scope:** The internet is utilized by millions of people globally for activities such as file sharing, topic searching, emailing, etc.

In addition to some points of characteristics related to the Internet:

➤ **Interactivity:**

The interactive character of the Internet utterly changes the libel playing field. It is completely different from the Industrial Age paradigm where newspapers and television stations had dominant if not monopolistic relationships with readers and viewers.

➤ **Shifting the Balance of Power in the Offline World:**

In some situations, the Internet can change the balance of power that exists normally in the offline world. Any enterprise that has been the target of a concerted cyber-attack realizes that the terms of the debate are not what it is accustomed to, where, for example, it can gain favourable attention for its press releases. On the contrary, the attackers are the persons with the power. The ferocity, ubiquity, and tenacity of cyber libel attacks often stun their targets. The power of the Internet to cause instantaneous and irreparable damage was graphically described by the Ontario Court of Appeal in *Barrick Gold Corp.*

➤ **Anonymity:**

Internet users do not have to reveal their identity to email or post messages on bulletin boards. Users can communicate and make such postings anonymously or under assumed names. This feature, fused with the ability to access the Internet in the privacy of one's home or office and the interactive, responsive nature of communications on the Internet, has resulted in users being far less inhibited about the contents of their messages. This feature has spawned a body of law in Australia, Canada, the UK, and the US that discusses when plaintiffs are entitled to the names and addresses of anonymous defendants.

➤ **Re-publication:**

The Internet allows statements to be easily re-published on numerous occasions to an unlimited audience. The ease of re-publication raises questions of when the original publisher is liable for re-publication, when the original publisher can avoid a limit liability for re-publication, and when a subsequent person is liable for re-publication of a statement that did not originate from them.

➤ **Intermediaries:**

". . . Intermediaries are involved in every Internet publication."

➤ **Long-Term Impact — Permanent Archives**

Another distinctive feature of the Internet is that information can be stored in perpetuity, yet made accessible as though the events are contemporary through a few clicks of the mouse. Instead of the concept of "skeletons in the closet," the skeletons are now "on the doorstep." The danger of libel lurking in the background to emerge in the future has been an important factor in damage awards in libel actions that have been discussed.

3-The role of the Internet in business development:

The internet is so entwined into our lives that it is hard to believe it has not always been this way. Today, many types of business communication are performed in a completely different way than before the internet — everything from frictionless employee collaboration to an ever-growing array of communication channels to the ability to instantly connect with customers

around the globe. The change is so all encompassing that it is almost impossible for those born into the post-internet world to grasp life in pre-internet days fully — and more advances are on the way.

"Information technology and business are inextricably intertwined. I do not think anyone can talk meaningfully about one without talking about the other. Bill Gates." Companies that have already expanded their sophisticated internet network to their structures and developed specific content vital to their business needs are not said to have reached the peak of their business success. Nowadays the internet is the key technology that enables businesses -especially, small and medium enterprises (these enterprises in English are known by the abbreviation SMEs from the words Small and Medium-size Enterprises), to adopt it internationally to improve their performance². In this regard and all other respects, the Internet is a living system becoming bigger, better, and more insecure with each contribution of private individuals and or various organizations. This latest argument highlights the need for companies to consider more than just the adoption of modern technology, but also aspects that have a direct impact on the vital processes of their business.

The Internet has revolutionized the way companies do business. With its help, the global marketplace is more accessible, connected, inclusive, and diverse. The Internet provides many benefits for business development, communication, and collaboration.

In pre-internet days, a business would open a storefront, put ads in the local paper, join a local networking organization, and hope local customers needed what they had to offer, all that changed with the inception of the internet. A business no longer depends on its regional customer base for its survival; it now has a worldwide audience for its goods and services. The internet has changed not only a business's customer base but also how it communicates with its employees and finds and manages its competition.

The Internet as a sophisticated structure, the basis of information flow within and outside companies has a two-way impact on businesses: 1) it increases the dependence between companies and the Internet itself, and 2) it increases the interconnection between businesses. In other words, the more companies develop and disseminate information technology in their business and use this structure for it, the better you communicate with your partners and the more their dependence on the Internet increases on the one hand and partners on the other. Ignoring other issues, here I will focus on only one important problem of interconnection between the Internet and Internet companies and companies, which is security. Security is the most obvious risk for companies operating online. The business and information that make up the business base of these

companies are secured but open to the whole world, which has any internet access. We are witnesses in the case of the company SONY and many others where it has reached the sensitive information of the company without its permission by third parties with only a few can. This is an example of internet security problems, which in many discussions raises the question of whether the virtual world is again moving towards a "dot com bubble". For this, Business Roundtable (2007), the association of chief executive officers (CEOs) of US companies estimates that companies should assess their dependence on the Internet from the perspective of their business to ensure that they are in be able to have life-saving operations in place as soon as possible after a major internet disruption", as this action is critical to minimizing potential hostile attacks, as well as to minimizing the negative impact on the economy and overall security. Of the country, Business Roundtable (2007) concludes, "business cannot treat significant Internet disruptions wisely.

With the internet, small business owners have been able to manage their business from anywhere. For example, an owner on a business trip can stay in real-time contact with their office through a live chat, messaging apps, or a video meeting, sharing important documents with anyone from anywhere in the world. Let us take a closer look at how the Internet has changed business.

Ability to communicate. A business's ability to communicate with its employees, customers, vendors, and associates changed dramatically when the Internet yielded new communication tools. Emails, instant messaging—, and now messaging apps like WhatsApp and Messenger — have changed the face of business communications.

3-1-Uses of the Internet in business organizations

➤ **Remote and hybrid work.** Driven largely by COVID-19, many businesses are now offering the option for their employees to work from home online, often using office equipment provided by the company, either full-time or part of the week. This process allows a business to cut its overhead costs by needing less office space and using fewer utilities for daily operations.

➤ **Marketing to a wider area.** With the advent of Internet marketing, businesses have had to stay abreast of the needs of their customers. Competition is no longer localized; Businesses now have competition worldwide. It is imperative that a business knows what its customers want and delivers it. Surveys, questionnaires, feedback forms, and comments on a website can be used to monitor a business' customers' needs.

➤ **Online marketing has transformed the business world.** It has created new opportunities for businesses of all sizes to reach a global audience. Moreover, it enabled companies to target their advertising more precisely than

ever before. The result is that businesses can generate more leads and sales with less effort and expense.

Wenowsee businesses hire responsive web development services to build and maintain interactive websites. However, online marketing is not just about creating a website and putting up some banner ads. To be successful, businesses need to have a comprehensive online marketing strategy that includes search engine optimization (SEO), social media marketing, email marketing, and content marketing.

By using all these channels, businesses can create a well-rounded marketing campaign that reaches their target audience wherever they may be. Online marketing is no longer an option; it is a necessity. Ignoring it is not an option if you want your business to succeed.

➤ **Using digital advertising.** Including digital in a business' advertising budget has extended the ability to attract customers from anywhere — in the company's backyard or all four corners of the globe. Websites, online demand generation tactics like pay-per-click advertising, display ads, content syndication, search engine optimization (SEO), and more have allowed businesses to build a presence on the web and reach millions of potential customers.

➤ **Collaborating with other businesses.** The Internet has simplified working with other enterprises and professionals. Internet-based events like webinars make sharing knowledge or collaborating on projects with people globally as easy as logging onto a website.

➤ **Increased Connectivity.** In recent years, the business world has undergone a dramatic transformation. Thanks to increased connectivity, businesses can now operate on a global scale. With the click of a mouse, companies can instantly communicate with customers and suppliers worldwide. This increased connectivity has had a profound impact on the way businesses operate.

In the past, companies were limited by geography. Today, businesses can quickly expand their reach to new markets. This has made it easier for small businesses to compete with larger firms. In addition, increased connectivity has led to a more complex business landscape.

With so many companies operating globally, the talent competition is fierce. As a result, businesses must work harder than ever to attract and retain top talent. Increased connectivity has also led to other changes in the business world. For example, there is now a greater emphasis on collaboration and teamwork. Companies are also increasingly relying on technology to improve efficiency and optimize operations. Overall, it is evident that increased connectivity has significantly affected the business world.

➤ **More Data Available.** The business world has changed drastically in recent years, thanks to the vast amount of data that is now available. With powerful tools like big data and data analytics, businesses could gain previously unattainable insights. As a result, they have made more informed decisions, optimized their operations, and better served their customers.

Data has also levelled the playing field for many businesses. In the past, large corporations had a significant advantage over smaller firms regarding accessing information.

Now, thanks to the internet and social media, smaller businesses have just as much data as their larger counterparts. This has allowed them to compete more effectively and carve out a niche in the market.

Data will continue to play an essential role in the business world, and those who can harness its power will be well positioned for success.

➤ **Increased Competition.** Business is no longer what it used to be. In the past, companies could operate without the worry of much competition. They knew their target market and stuck to selling their product or service. Now, things are different.

The advent of the internet and social media has made it easy for customers to find alternatives to what you are offering. If they don't like what you're offering, they can quickly and easily share that with their friends and followers.

As a result, businesses have had to adapt their strategies to remain competitive. They can no longer rely on selling a single product or service; they must now offer a comprehensive solution that meets the needs of their customers. In addition, businesses must be able to adapt to changes in the market to remain relevant quickly.

The days of doing business the same way year after year are gone; now, companies must be agile and ready to change immediately. The business world has changed dramatically in recent years, and those who have not changed have been left behind.

Overall, the Internet has had a significant impact on the business world. It has changed the way we communicate, collaborate, and compete. If you want to

succeed in business, you need to ensure you are keeping up with the latest trends.

➤ **Customer Engagement and Support:** The internet has transformed customer engagement and support, creating new avenues for interaction. Social media platforms and online communities provide spaces where customers can connect with businesses, ask questions, provide feedback, and share their experiences. This direct engagement enhances customer satisfaction, fosters loyalty, and enables companies to address issues promptly. Additionally, businesses can leverage customer data to offer personalized recommendations and tailored experiences.

In conclusion, the Internet has influenced business and commerce profoundly. It has shattered geographical boundaries, enabled global reach, and created new business models. The rise of e-commerce, digital marketing, and direct-to-con.

3-2. Advantages of using the Internet for business

Beyond easier collaboration, work flexibility, and other benefits discussed earlier, the Internet has offered several other business advantages:

➤ **Speed.** High-speed Internet, and the increased capacity that comes with it, added several capabilities for businesses. For example, a real estate agent can load and deliver virtual tours. An artist can load large graphic files, and larger media files can be transmitted between users. A sales rep can create digital presentations and deliver them online. The high-speed internet model started with DSL — digital subscriber lines for high-speed access over a phone line — and then speeds increased again with fibre-optic lines.

➤ **Mobile internet access.** Thanks to the internet, business users can reach potential customers via the mobile devices they have on hand nearly 24/7. Businesses can access their audiences, make their brick-and-mortar locations easy to find, if needed, and garner positive reviews through a high level of performance.

➤ **Access to information.** The internet made just about every fact and piece of information that a business could need immediately available. Are you forming an LLC, a corporation, or a new business? Search and you will find the information, paperwork, and services you need. You can even find services that will file the paperwork on your behalf.

➤ **Business automation.** A major internet-driven trend in the business world, automating tasks that traditionally require a workforce ultimately saves money and makes operations simpler and more efficient. Everything from basic accounting practices to customer service offers automation possibilities depending on the business model and requirements.

➤ **Web-based applications.** The Internet has facilitated the development of concepts like cloud computing, cloud call centres, software as a service (SaaS), and more that have enabled the processing and storing of data in large proportions; the result is reduced infrastructure costs for companies.

4- Types of online communication:

➤ **Internet communication enables you to communicate with people over the web.** The communication process occurs in any form, such as messages, voice, and video calls. The biggest reason people are shifting towards this technology for communication is cost savings.

You will find several applications over the web that allow app-to-app, click-to-call, and app-to-phone call services without imposing any calling charge for web interaction facility.

➤ **WhatsApp, Skype, Google Meet, and Messenger** are some of the most popular applications that facilitate users' access to communication services.

Internet communication services not only benefit users but also help businesses to communicate with overseas customers at the most cost-efficient price. Corporations have agreed that they depend on the Internet for smoother functioning of their services.

The Internet has a vast number of options for seamless two-way communication. Let us check some prominent worldwide modes for quick and hassle-free electronic mail communication.

The Internet offers many advanced options that allow users to have seamless two-way communication. Using the internet in communication enables users to connect and interact with others without difficulties.

It has become a significant mode of connectivity nowadays that benefits users and businesses in many ways.

1. Statistics on technologies and the Internet around 2020

The Internet's transformative journey, from its origins as a research project to its current global ubiquity, has revolutionized communication, information access,

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commerce, and entertainment. Enabling instant connectivity, online shopping, streaming, remote work, and social interaction, the Internet has reshaped societal dynamics. However, it represents privacy issues, cybersecurity threats, and digital disparities.

As technology advances, including mobile Internet, IoT, and AI, the future of Internet usage holds exciting possibilities and complex considerations, making it a crucial focal point in today's interconnected world.

There are more than 4.5 billion Internet users worldwide (59% of people), of whom more than 3.8 billion people (49% of people) use social media.

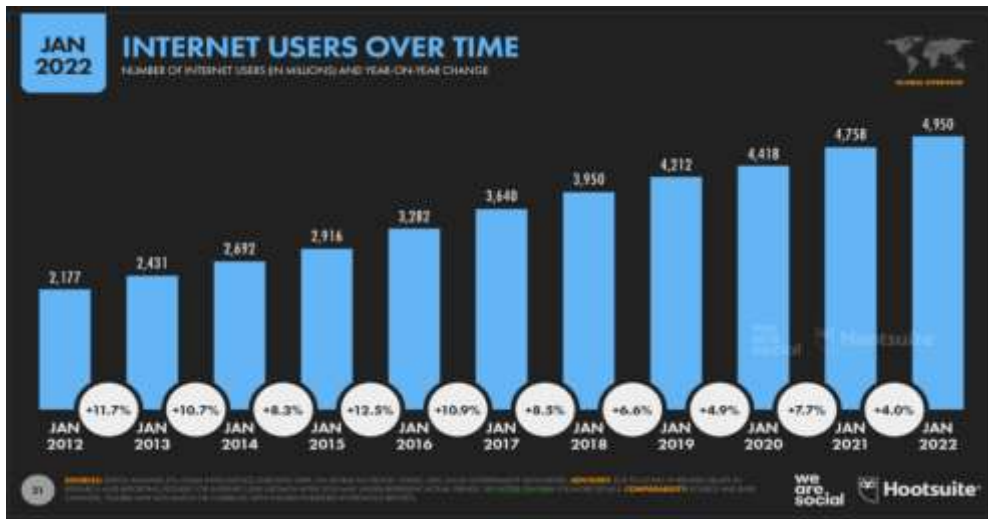
ESSENTIAL DIGITAL HEADLINES



The latest data indicates that internet users have grown by 192 million over the past 12 months, resulting in annual growth of just 4.0 percent in 2021.

However, we strongly suspect that this low growth figure is more likely a result of challenges associated with data collection and reporting during the COVID-19 pandemic and that these numbers do not reflect the actual growth of Internet users over the past year.

INTERNET USERS OVER TIME



What is the rate of Internet penetration in the Arab world?

The number of Internet users has increased in the Arab world due to the increased ease of access to the Internet and the decrease in the prices of electronic devices. Kuwait, Qatar, the Emirates, and Bahrain are at the forefront of countries in the world after Iceland in terms of the spread of Internet use, as 99% of people in these countries use the Internet, and in general:

The number of Internet users in Egypt jumped in 2021 to reach about 54.7 million people (54% of Egyptians), a massive increase of 22% compared to 2020 (about 9.8 million new users), and the number of social media users in Egypt reached 42 million.

In Saudi Arabia, the number of Internet users reached 32.2 million (93% of Saudis), an increase of 15% over 2020, while the number of social media users reached 25 million.

In Iraq, the number of Internet users reached 29.8 million people (75% of Iraqis), a massive increase of 55% over 2020 (more than 10.6 million new users), while the number of social media users reached 21 million.

In Morocco, the number of Internet users reached 25.3 million (69% of Moroccans), an increase of 13% compared to 2020, while those who use social media reached 18 million.

In general, globally, women are less active on the Internet. In 2020, 48% of women in the world used the Internet, compared to 58% of men in the world used the Internet.

According to the International Telecommunication Union 2020 report, the Internet penetration rate among men and women in the Arab world is 58.5% of men and 44.2% of women connected to the Internet.

2. Number of internet users worldwide from 2005 to 2023

As of 2023, the estimated number of internet users worldwide was 5.4 billion, up from 5.3 billion in the previous year. This share presents 67 percent of the global population.

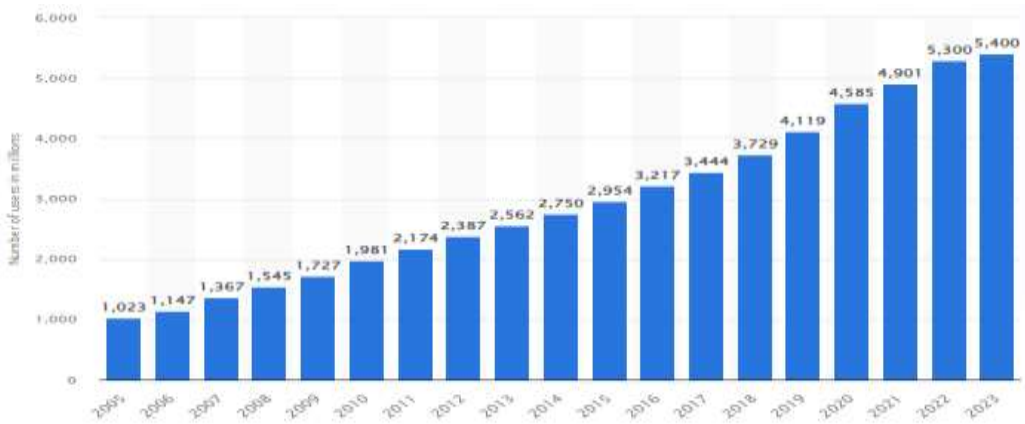
➤ **Internet access around the world**

Easier access to computers, the modernization of countries worldwide, and increased utilization of smartphones have allowed people to use the internet more frequently and conveniently. However, internet penetration often pertains to the current state of development regarding communications networks. As of January 2023, there were approximately 1.05 billion Internet users in China and 692 million in the United States.

➤ **Online activities**

Social networking is one of the most popular online activities worldwide, and Facebook is the most popular online network based on active usage. As of the fourth quarter of 2023, there were over 3.07 billion monthly active Facebook users, accounting for more than half of the internet users worldwide. Connecting with family and friends, expressing opinions, entertainment, and online shopping are among the most popular reasons for internet usage.

Number of internet users worldwide from 2005 to 2023



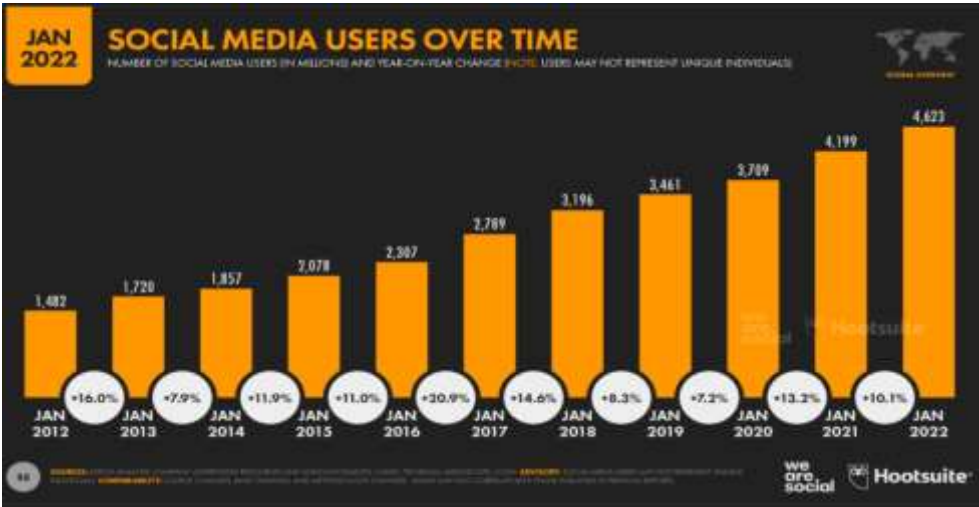
The global number of internet users was forecasted to continuously increase between 2024 and 2029, with a total of 1.1 billion users (+16.92 percent). After the fifteenth consecutive increasing year, the number of users is estimated to reach 7.3 billion. Therefore, a new peak in 2029. Notably, the number of internet users was continuously increasing over the past years.

Depicted is the estimated number of individuals in the country or region at hand that use the internet. As the data source clarifies, connection quality and usage frequency are distinct aspects not considered. The shown data are an excerpt from Statista's Key Market Indicators (KMI). The KMI is a collection of primary and secondary indicators on the macroeconomic, demographic, and technological environment in up to 150 countries and regions worldwide. All indicators are sourced from international and national statistical offices, trade associations, and the trade press and they are processed to generate comparable data sets (see supplementary notes under details for more information).

➤ **Statistics of the development and growth of social media platforms**

Social media users have continued to grow at a double-digit 10.1 percent rate over the past 12 months as well, but I admit I am surprised that the growth rate between 2021 and 2022 has remained above pre-pandemic levels. In this context, the latest data indicates that 424 million users began their journey on social media during the past year, which equates to an average of more than one million new users per day, or approximately 13 new users every second.

SOCIAL MEDIA USERS OVER TIME



Anyone reluctant to join social media before the pandemic hit was more likely to do so during the early days of lockdown in 2020, so I am hesitant to attribute any meaningful share of the growth over the last 12 months to some sort of 'effect "COVID."

Furthermore, with social media users now equalling 58.4 percent of the world population, we should expect to see growth rates start to slow over the next few years, and this may be the last time we report double-digit annual growth in social media users.

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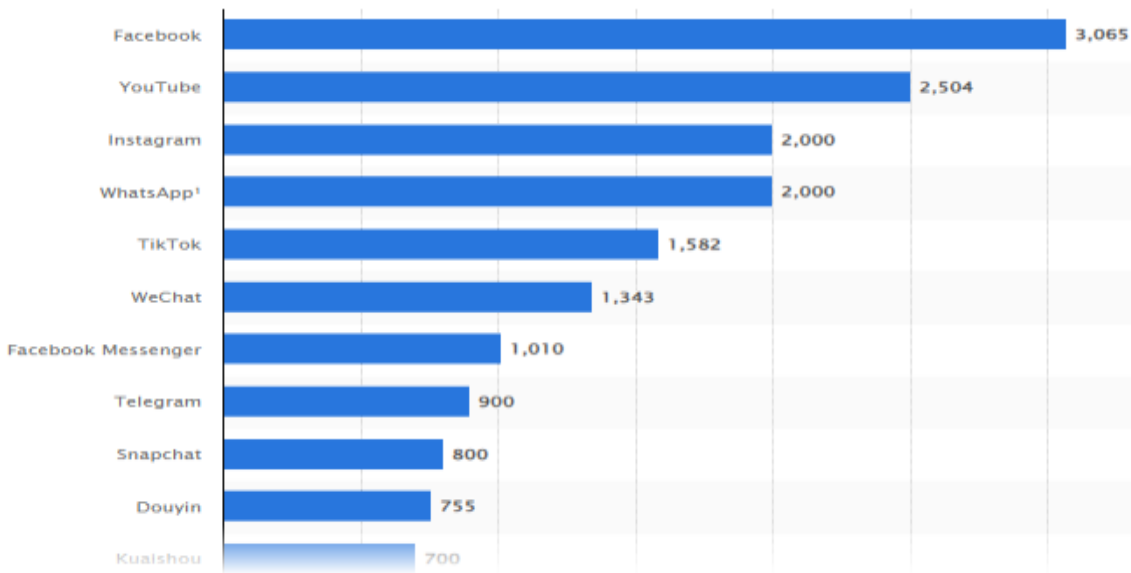
The good news is that we should see social media users reach the equivalent of 60 percent of the global population at some point in 2022, so even if growth rates decline, the overall reach potential of social media still offers a lot to be excited about.

Market leader Facebook was the first social network to surpass one billion registered accounts and currently sits at more than three billion monthly active users. Meta Platforms owns four of the biggest social media platforms, all with more than one billion monthly active users each: Facebook (core platform), WhatsApp, Facebook, Messenger, and Instagram. In the third quarter of 2023, Facebook reported around four billion monthly core Family product users. The United States and China account for the most high-profile social platforms. Most top-ranked social networks with more than 100 million users originated in the United States, but services like Chinese social networks WeChat, QQ, or video sharing app Douyin have also garnered mainstream appeal in their respective regions due to local context and content. Douyin's popularity has led to the platform releasing an international version of its network: a little app called TikTok.

How many people use social media?

The leading social networks are usually available in multiple languages and connect users with friends or people across geographical, political, or economic borders. In 2022, Social networking sites are estimated to reach 3.96 billion users. These figures are still expected to grow as mobile device usage and social networks increasingly gain traction in previously underserved markets.

Most popular social networks worldwide as of April 2024 ranked by number of monthly active users.



➤ **Artificial intelligence (AI) investment**

In 2022, the global total corporate investment in artificial intelligence (AI) reached almost 92 billion U.S. dollars, a slight decrease from the previous year. In 2018, the yearly investment in AI saw a slight downturn, but it was only temporary. Private investments account for a bulk of total AI corporate investment. AI investment has increased more than six fold since 2016, a staggering growth in any market. It is a testament to the importance of the development of AI around the world.

➤ **What is Artificial Intelligence (AI)?**

Artificial intelligence, once the subject of people's imaginations and the main plot of science fiction movies for decades, is no longer a piece of fiction but rather a commonplace in people's daily lives whether they realize it or not. AI refers to a computer or machine able to imitate the capacities of the human brain, which often learns from previous experiences to understand and respond to language, decisions, and problems. These AI capabilities, such as computer vision and conversational interfaces, have become embedded throughout various industries' standard business processes.

➤ **AI investment and start-ups**

The global AI market, valued at 142.3 billion U.S. dollars as of 2023, continues to grow driven by the influx of investments it receives. A rapidly growing market looking to expand from billions to trillions of U.S. dollars in market size in the coming years. From 2020 to 2022, investment in start-ups globally,

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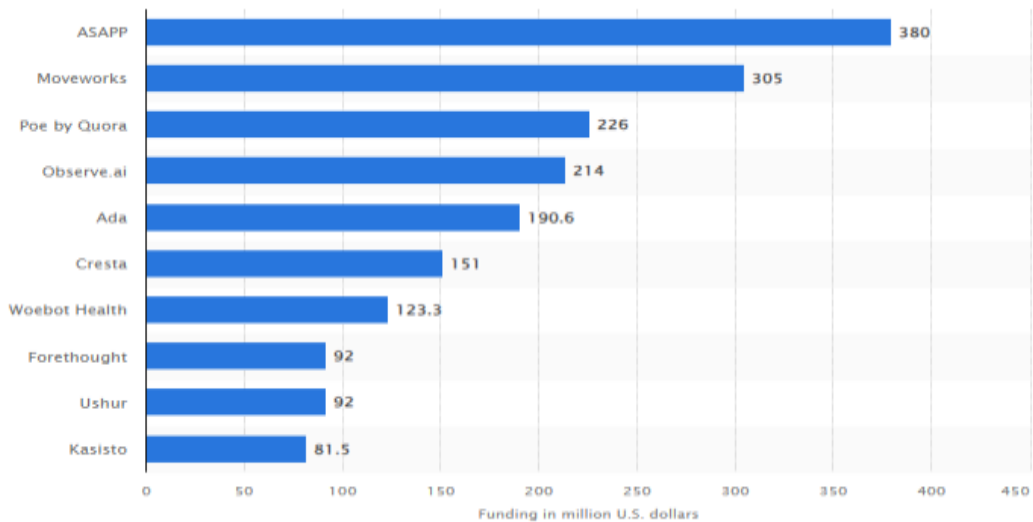
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particularly AI start-ups, increased by five billion U.S. dollars, nearly double its previous investments, with much of it coming from private capital from U.S. companies. The most recent top-funded AI businesses are all machine learning and chatbot companies, focusing on human interface with machines.

Leading chatbot/conversational AI start-ups worldwide in 2023

The generative AI market is expected to grow consistently between 10 and 20 percent through the decade until 2030, slowing as the decade draws close, following a staggering 100 percent growth from 2021 through 2023.

Leading chatbot/conversational AI start-ups worldwide in 2023



As of December 2023, the company ASAPP was the most funded chatbot/conversational AI worldwide, with around 380 million U.S. dollars. By contrast, the next company operating in the same field had over 300 million U.S. dollars.

➤ **What are AI chatbots?**

A chatbot, or a conversational bot, is an AI software that simulates human conversation via audio or text on the internet. They are designed to answer basic questions, recommend products, and provide customer support so organizations and companies can save human resources, money, and time. Recent developments have produced more advanced chatbots that utilize deep learning algorithms to find answers to complex problems and questions. Different chatbot types exist, such as menu-based, keyword-based, social messaging, and voice

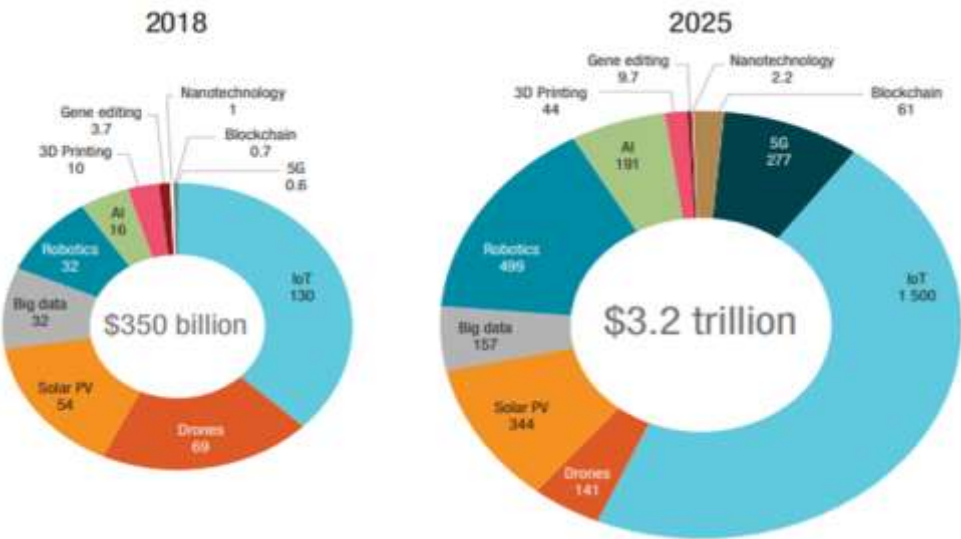
bots. Popular chatbots are Netomi, atSpoke, and the new ChatGPT, launched in November 2022.

3. RAPID GROWTH OF FRONTIER TECHNOLOGIES

According to some estimates, frontier technologies already represent a \$350-billion market and one that by 2025 could grow to over \$3.2 trillion. To put this into perspective, the current global laptop market is \$102 billion, and \$522 billion for smartphones. Some estimates for frontier technologies may be over-hyped, and there may be considerable double counting, for example, in IoT, which is also based on AI and big data, but market analysts have high expectations.

Among the frontier technologies, the largest by market revenue is IoT. In 2018, sales totalled \$130 billion, and in the next five years, could grow to \$1.5 trillion – around half of frontier technology revenues.¹¹ this is because IoT covers such a vast range of devices: in 2017, there were already more IoT devices in use than people on Earth – 8.4 billion. Another area of the future Expansion is the industrial internet of things (IIoT), which uses multiple interconnected devices for various forms of manufacture, for the Airbus and Boeing factories of the future, for example, Amazon's warehousing, or for agriculture for self-driving tractors.

Market size estimates of frontier technologies, \$billions



➤ **Duration of biotech companies' response to COVID-19**

Biotech companies started clinical trials on potential treatments for COVID-19 just three months after the genetic sequence of the virus was made public. In

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comparison, companies entered clinical trials 20 months after the viral genome of the SARS coronavirus was sequenced.

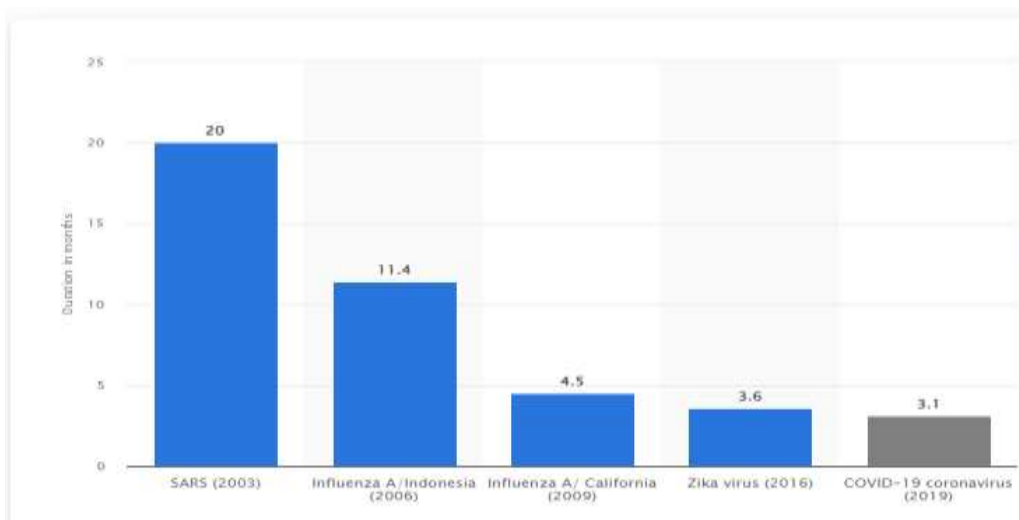
➤ A cure could take several more months.

Chinese authorities shared the genetic sequence for the SARS-CoV-2 virus in early January, allowing research groups to analyse how the virus infects human cells and makes people sick. Treatments are now in development; several have entered early clinical trials. Assuming all tests go well, a cure for COVID-19 could still take up to 18 months before being approved for public use. New vaccines typically take years, and there is enormous pressure to make them safe and effective for all members of the diverse population.

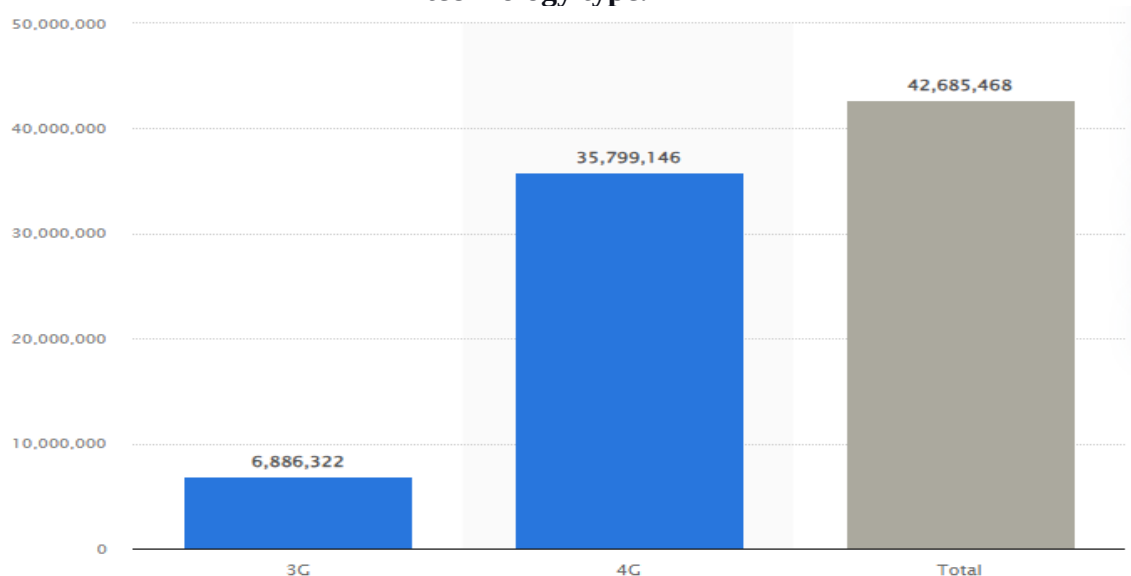
➤ Parallels with the SARS epidemic

The SARS coronavirus was responsible for the outbreak of severe acute respiratory syndrome (SARS) that first affected humans in the Guangdong province of China in 2002. The official name for the coronavirus is SARS-CoV, which is very similar to the SARS-CoV-2 name chosen for the coronavirus that causes COVID-19 disease. While genetically related and believed to spread similarly, the two viruses are different. There were more than 8,000 reported cases of SARS before it was brought under control in 2003.

Duration of biotech companies' response to COVID-19 pandemic compared to other health threats between 2003 and 2019



Mobile internet subscriptions in Algeria in 2022 according to technology type.



Based on statistics provided by "Statista," in the first quarter of 2022, there were approximately 42.7 million mobile internet subscriptions in Algeria, with the vast majority being 4G connections, totaling around 36 million subscribers. On the other hand, the number of 3G mobile phone connections in the African country reached about 9.3 million in the same year. The penetration rate of mobile internet in Algeria has significantly increased since 2010, and further growth is expected in the coming years.

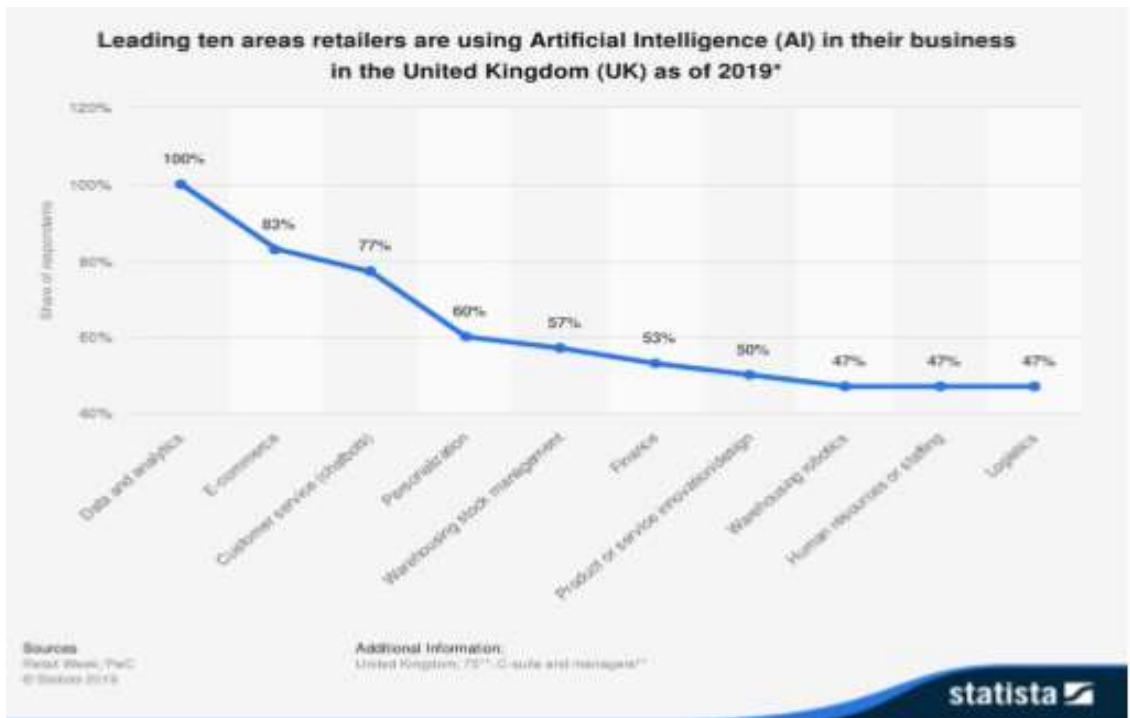
➤ **Artificial Intelligence (AI) technologies:**

Retailers have utilized advanced AI in their operations, particularly in data analysis and business strategies. According to statistical reliance, 83% of businesses have adopted AI, with 77% of AI adopters deploying AI technology in consumer-facing applications to enhance automated responses. Additionally, 57% have benefited from AI in supply chain management, optimizing inventory and warehouse operations.

Retailers' statistics for AI usage in 2019.

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➤ The Mobile Phone:

The Kuwaiti newspaper Al-Qabas reported that in 2023, there was a significant increase in mobile phone sales compared to previous years, attributed to the advancement of applications available on mobile phones. Additionally, a study conducted by Forrester indicated that 58% of retail sales in the United States were influenced by digital industries by 2023. This suggests that digital technology affects not only online retail sales but also in-store sales, as reported by Business of Apps.

Forrester also projected that the average retail sales for the previous year reached 3.7 trillion dollars, with more than a third (36%) influenced by digital technologies, including mobile internet applications and internet advertising. The company further anticipated that retail sales through mobile devices amounted to 118 billion dollars in 2018, highlighting the growing role of mobile devices in the United States. Brands and retailers have begun evaluating measurement tools and advertising options concerning mobile phones.

4. CONCLUSION

The Internet and digital marketing have transformed the way businesses operate, communicate, and connect with their customers. Over the past few decades, the rapid advancement of online platforms, social media, and e-commerce has reshaped traditional marketing models, offering businesses of all sizes unparalleled opportunities to reach global audiences. Digital marketing is no longer an optional strategy but a critical component for any organization striving to thrive in today's fast-paced and competitive environment. As we explored throughout this book, the Internet has introduced new tools and methodologies that empower marketers to engage with consumers in more personalized, direct, and effective ways. From SEO optimization and content marketing to social media campaigns and email marketing, businesses now have the means to create highly targeted strategies that yield measurable results. In addition, the rise of big data and analytics has made it possible to monitor and adjust campaigns in real-time, allowing companies to make informed decisions that maximize their return on investment. Moreover, the Internet has democratized marketing, giving small businesses and startups the same level of access to consumers as large corporations. The cost-efficiency of digital marketing channels, such as social media, search engines, and influencer collaborations, provides a significant advantage to companies that are able to think creatively and leverage their resources effectively. However, with great opportunities come great challenges. The digital landscape is constantly evolving, and marketers must stay vigilant and adaptable to remain competitive. .

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