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# Use of Information Technologies in Businesses

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## **Abstract**

The rapid development and increasing competition conditions in computer and communication technologies in the globalizing world make it necessary for businesses to use information technologies more intensively. Information Technology; It is used in many fields such as education, health, communication, transportation, trade, and entertainment. The use of information technologies offers many advantages for both individuals and businesses. Especially the fact that the internet is the most widely used information technology makes our lives easier and accelerates our work. Information technologies are important in acquiring, storing, and transmitting information and creating a safer environment for businesses to control and manage their processes more effectively and efficiently. At the same time, as a result of the use of information technologies, there is a significant decrease in the costs of the enterprises, and an increase in efficiency is observed. This research, it is aimed to examine the use of information technologies in Türkiye conceptually and observationally in the light of studies in the literature. For this purpose, first of all, the importance of Science, Information, and Information Technology concepts are explained and the characteristics of Information Technologies and their benefits in terms of business are explained. According to the data of the Turkish Statistical Institute (TURKSTAT) after the conceptual framework, the results of the Information Technologies usage research in Türkiye were used as observational in this study. In these observational results; The rates of 'enterprises' access to resources', 'businesses that make e-sales by economic activity group', and 'enterprises that experience breaches of information and communication technologies security' are mentioned.

**Keywords:** Information Technology, Science, Information

## **İşletmelerde Bilişim Teknolojilerinin Kullanımı**

### **Özet**

Küreselleşen dünyada bilgisayar ve iletişim teknolojilerindeki hızlı gelişme ve artan rekabet koşulları, işletmelerin bilişim teknolojilerini daha yoğun bir biçimde kullanmasını zorunlu hale getirmektedir. Bilişim teknolojisi; eğitim, sağlık, iletişim, ulaşım, ticaret, eğlence gibi birçok alanda kullanılmaktadır. Bilişim teknolojilerinin kullanılması hem bireysel hem de işletmeler açısından birçok avantaj sunmaktadır. Özellikle internet en yaygın kullanılmakta olan bilişim teknolojisi olması nedeniyle hayatımızı önemli bir biçimde kolaylaştırmakta ve işlerimizi yapmamız açısından hızlandırmaktadır. Bilişim teknolojileri bilginin elde edilmesi, depolanması ve iletilmesinde önemli bir unsur olup işletmelerin süreçlerini daha etkin ve verimli kontrol edilmesinde ve yönetilmesinde daha güvenli bir ortam oluşturmaktadır. Aynı zamanda bilişim teknolojilerinin kullanılması sonucunda önemli biçimde işletmelerin maliyetlerinde düşüş yaşanmakta olup verimlilik ise artış görülmektedir. Bu araştırmada literatürdeki çalışmalar ışığında Türkiye'deki Bilişim teknolojilerinin kullanımının kavramsal ve gözlemsel olarak incelenmesi amaçlanmıştır. Bu amaçla öncelikle Bilim, Bilgi, Bilişim Teknoloji kavramları çerçevesinde ele alınarak önemi açıklanmış olup Bilişim Teknolojilerinin özellikleri ve işletme açısından getirileri açıklanmaktadır. Kavramsal çerçeve sonrasında Türkiye İstatistik Kurumu (TÜİK) verilerine göre, Türkiye'de Bilişim Teknolojileri kullanım araştırması sonuçlarından bu çalışmada gözlemsel olarak yararlanılmıştır. Bu elde edilen gözlemsel sonuçlarda; 'işletmelerin kaynaklarına erişimi', 'ekonomik faaliyet grubuna göre e-satış yapan işletmeler' ve 'bilgi ve iletişim teknolojileri güvenliği ihlali yaşayan işletmelerin' oranlarına değinilmiştir.

**Anahtar Kelimeler:** Bilişim Teknolojisi, Bilim, Bilgi

### **Introduction**

The use of information technologies provides better management of time for both businesses and individuals. With fast and secure access to many resources of enterprises through Information Technologies, e-commerce, and so on. There is an expectation that it can continue its activities through many working platforms. The activities carried out on this digital platform, on the other hand, act as a bridge between the company and the customer and undertake an important purpose in communication. The main purpose of the research on the use of Information Technologies in Businesses is to enable businesses to use computers, the internet, and other information technologies more effectively and efficiently to continue their business process activities.

The study carried out by the TURKSTAT (2022) was analyzed in enterprises in Türkiye. According to the statistical classification of economic activities; “Manufacturing”, “Electricity, gas, steam and air conditioning production and distribution, water supply; sewage, waste management, and remediation activities”, “Construction”, “wholesale and retail trade; Repair of motor vehicles and motorcycles”, “Transport and storage”, “Accommodation and food service activities”, “Information and communication”, “Real estate activities”, “Professional, scientific and technical activities”, “Administrative center activities; administrative consultancy activities” and “Repair of computers and communication equipment”.

Businesses need to adopt information technologies faster than their competitors. As a result of the use of many emerging technologies such as information technologies computers, communication technologies, the internet, and electronic data exchange systems used in businesses, they make significant contributions to the performance of businesses. Therefore, it will be possible for businesses to renew themselves and adapt quickly to new methods and information technologies to survive in intense competition conditions.

### **Definition of Science and Knowledge**

“Science is the body of systematic knowledge that tries to find cause-effect relationships, analyzes events and phenomena based on methods, and tries to reach generalizations based on research findings” (Şimşek et al. 2019: 7). According to Kuhn, science is “an activity carried out by a community of scientists in a particular field” (Sarı 2017: 5). Science is defined by Einstein as “an effort to reconcile sense data (perceptions) devoid of any order and logically ordered thought” (Aslan 2018, 34).

“Plato, Socrates, Aristotle, Farabi, Descartes, and Hegel, who are the advocates of rationalism, accept that the source of knowledge is the reason” (Fidan 2013: 95). The concept of knowledge is generally described in the literature as a hierarchy of "data-information-knowledge" and the difference in the relationship between them is expressed. “Data is the foundation of knowledge. Data is expressed with numbers and symbols. Information emerges when the data obtained from various platforms is processed and integrated in a meaningful way. In the formation of knowledge after data and information; As a result of the interpretation of experience, paradigm, and worldview in the light of individual factors, the phenomenon called knowledge occurs. The use of information technologies in data, information, and information processes provides significant time savings and

benefits to the business (Üzüm 2022: 108). Therefore, knowledge, which is a product of processed information, is more permanent and has a higher structure. Information emerges as a result of the function of the brain of the individual and is in the mind of the person (Demiryurek 2001: 12).

Information is an important resource for businesses and it is important to protect it appropriately. Information is an important resource for businesses and individuals at this stage of the process, and it becomes more effective and efficient when it is integrated with technology (Onur 2021: 20).

### **The Concept of Technology and Importance**

It is formed by the combination of the words “tech” meaning expertise or mastery in ancient Greek and “logy” meaning knowledge. Technology is defined as the use of knowledge and experience in solving problems and meeting needs” (Akkoyun 2022: 486). Technology is the practical use of knowledge, especially in a particular field, and a way of performing a task, especially using a technical process, method, or knowledge. The use of technology includes not only machines (computer hardware) and tools but also structured relationships with other people, machines, and the environment (Ahmadi et al. 2018: 117).

Technology often makes an individual's life significantly easier. It is considered a power that significantly affects efficiency and productivity, especially in the process stages of doing work (Özata and Sevinç 2011: 21). Especially in the production of goods and services, enterprises have realized more rapid and high-quality products thanks to technology. As a result, the company increases its competitiveness, and customer satisfaction is ensured (Ağ 2018: 3).

### **Information Technology**

Today, Information technology is one of the most important factors affecting the development of our society. “Information technology emerges as a contemporary concept that expresses the combination of data and telecommunication technology (data, video, and voice networks) operating in an integrated manner with hardware and software” (Sebetci et al. 2018: 112-226). The concepts of information technology and information technology are generally used in the same sense in the literature. Turkish Language Institution information technology; “The collection, processing, and storage of information, its transmission to any place, access to this information from any place, electronic, etc. while defining information technology as "the whole of technologies that provide defines it as "the system formed by all the tools and equipment used in

informatics", that is, all kinds of tools used to access information constitute information technology (Esmeray 2018: 296). The use of information technologies in achieving certain goals makes the process stage of enterprises more effective and efficient. Therefore, information technology is a set of constructive activities consisting of a chain of processes. Information Technologies are an important factor for businesses to perform e-commerce or e-sales transactions. It is necessary to ensure security in communicating with customers online through the online platform (Olimov and Mamurova 2022: 17-18).

Information technology has historically played an important role in business productivity. Businesses make significant investments in technologies so that they can compete better with their competitors and increase the performance of the business. As a result, businesses can significantly increase their profit margins in the production of goods and services by focusing on low-cost innovations. Therefore, information technology emerges as a key element in the restructuring of business processes (Ngobe 2020: 103).

### **Features of Information Technologies**

The characteristics of information technologies are important for the individual to accept or refuse to use information technologies. The features that play the most important role in information technologies are stated as output quality and results. As a result of the use of information technologies, the quality of output should meet the expectations of individuals. Individuals who think that high-quality results will be obtained in the works done using information technologies have a high level of use of information technologies (Çivici and Kale 2007: 123-124).

Since information technologies contain hardware and software, the operation of the enterprise is more controlled and faster in the process phase. Of course, man cannot be thought of independently of technology. The individual has an important role in ensuring the development of technology that establishes information technology.

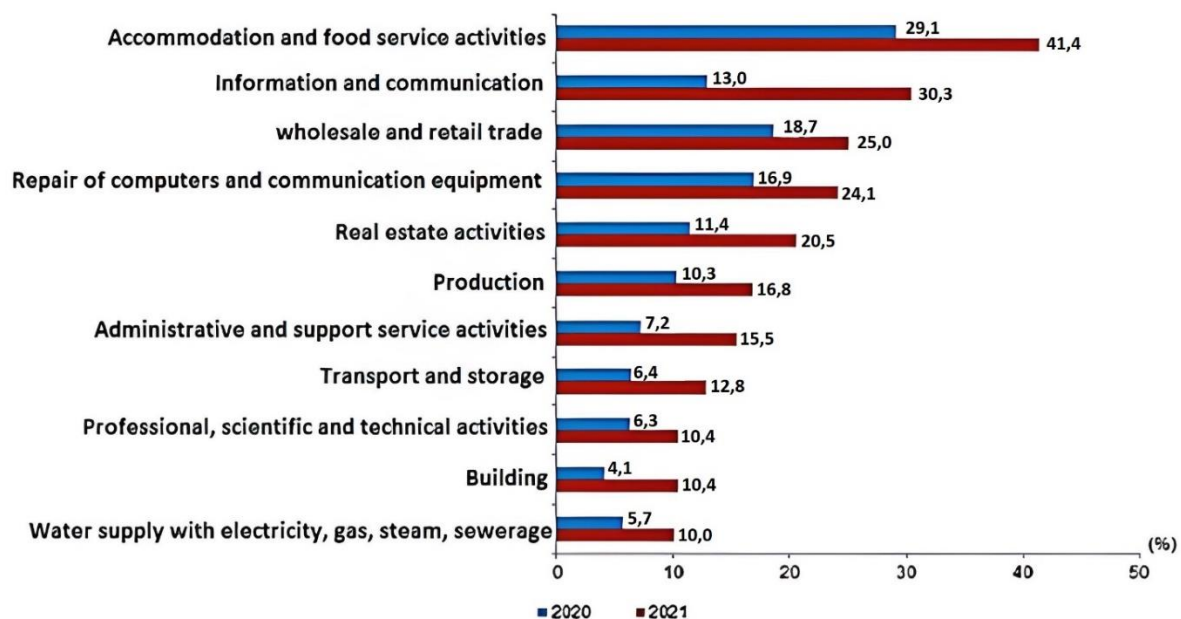
### **Benefits of Using Information Technologies for Businesses**

Today, technology is developing day by day and the advantages of information technologies are becoming almost immeasurable. Technology is an important element for individuals and businesses and offers significant advantages in communicating and exchanging ideas. Businesses can work 24/7 and access their resources remotely, even from the most remote locations.

Information technology can operate around millions of automated processes that require little or no human intervention. In addition, it eliminates the error losses and risks caused by the individual working in the enterprises (Adonis 2012: 3). Investments made for the use of information technologies in the survival of businesses are an important factor in terms of their success in both input and output processes. As a result, both company success and customer satisfaction are achieved.

### **Use of Information Technologies in Businesses**

**Figure 1. Businesses Making E-Sales by Economic Activity Group**



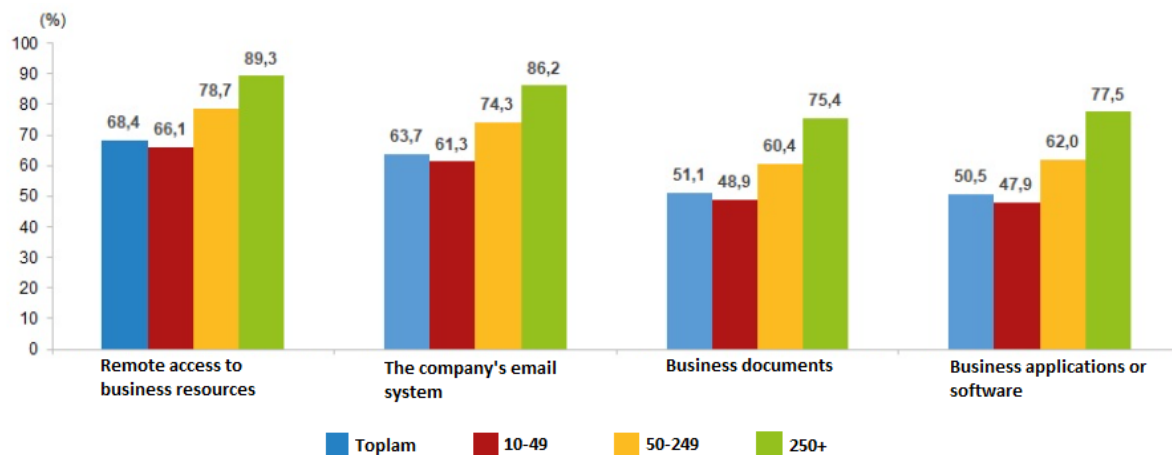
**Source:** (TÜİK, 2022). <https://data.tuik.gov.tr/Bulten/Index?p=Girisimlerde-Bilisim-Teknolojileri-Kullanim-Arastirmasi-2022-45585>. (15.02.2023).

TURKSTAT E-Sales businesses between 2020 and 2021 are evaluated according to their economic activities and shown in the chart with their ratios. Businesses can deliver their products to all parts of the world with the increase in the use of the Internet and the electronic environment of commerce. E-Sales represents sales through the online platform, and businesses gain significant advantages in terms of both cost and time by making sales through the online platform. Thanks to the use of Information Technology, businesses can perform sales transactions with their customers 24 hours a day, 7 days a week. Thanks to Information Technologies, customers can rate and

evaluate the products they have purchased, and even access the product easily thanks to the filtering feature. Of course, the most important element in this process is the use of Information Technologies by integrating it into the process stages of the business.

When the rate of making e-sales is analyzed by the economic activity group, it is seen that the highest rate of e-sales in 2021 is 41.4% in businesses that carry out "accommodation and food service" activities. This is followed by "information and communication" with 30.3% and "wholesale and retail trade" with 25.0%. In 2020, it is followed by "accommodation and food service" with 29.1%, "wholesale and retail trade" with 18.7%, and "Repair of computers and communication tools and equipment" with 16.9%. Within the framework of this information, the rate of e-sales is mostly seen in "accommodation and food service activities" businesses.

**Figure 2. Providing Remote Access Opportunities to Their Employees in the Operations of the Businesses**



**Source:** (TÜİK, 2022). <https://data.tuik.gov.tr/Bulten/Index?p=Girisimlerde-Bilisim-Teknolojileri-Kullanim-Arastirmasi-2022-45585>. (15.02.2023).

According to the results of the 2022 analysis of the TURKSTAT, the rates of accessing the resources of the enterprises by providing remote access are shown in the chart. Access rates to 'resources', 'e-mail systems', 'documents', and 'business applications or software' of enterprises with "10-49" employees, "50-249" employees, and "250 and more" employees by providing remote access are shown. Thanks to Information Technologies, businesses can access their resources and continue their transactions in a faster and safer way by providing remote access during the process

stages. Businesses can access the information they want whenever they want and store, update, delete, etc. on the system. can perform transactions online. One of the most important issues in information technologies is the security of the system. Businesses need to protect their information against external attacks by using the necessary security software.

68.4% of businesses declared that in 2022, their employees have remote access to their e-mail system or documents and business applications/software. The rate of providing remote access to the resources of enterprises according to the number of employees size group is 66.1% in enterprises with 10-49 employees, 78.7% in enterprises with 50-249 employees, and 89.3% in enterprises with 250 or more employees.

**Table 1. Businesses Experiencing Information and Communication Technologies Security Violation Incident**

<b>Information and communication technologies security breach incident</b>	<b>%</b>
At least one security breach	<b>28,5</b>
Inability to access information and communication technology services due to hardware or software failures	18,1
Inability to access information and communication technology services due to external attacks	6,5
Data loss or corruption due to hardware or software failures	8,8
Loss or corruption of data due to malware or unauthorized access	6,5
Violation of data privacy due to intrusions, fraud, deliberate actions of business employees	3,9
Disclosure of confidential data due to unconscious/unintentional actions of employees	3,3

**Source:** (TÜİK, 2022). <https://data.tuik.gov.tr/Bulten/Index?p=Girisimlerde-Bilisim-Teknolojileri-Kullanım-Arastirmasi-2022-45585>. (15.02.2023).

According to the results of the 2022 analysis of the TURKSTAT, the analysis of the enterprises that have experienced a security breach according to the Information and Communication Technologies security breach events is shown in the table. Hardware (Hardware) and/or software (Software) problems may cause security problems. Thanks to information technologies, businesses

can make serious investments in both hardware and software. It is important to store and update the data obtained by the enterprises, and the instant emergence of a hardware or software problem in the system may cause some problems. It is an important issue in terms of security for businesses to detect problems that may arise in information technologies in advance.

It is seen that 28.5% of enterprises experienced at least one of the information and communication technologies security breach incidents in 2021. When the enterprises that have declared that they have experienced at least one of the information and communication technologies security incidents are analyzed according to the size group of the number of employees; It is seen that 27.8% of enterprises with 10-49 employees, 32.0% of enterprises with 50-249 employees and 34.1% of enterprises with 250 or more employees have experienced at least one security breach.

### **Conclusion**

Today, many technologies such as artificial intelligence, the internet of things, and digital twin, which are developing and changing, are part of science. Science is inferential knowledge and is not the same as technology, but there is naturally a cyclical relationship between it. Organizing information is important for science. Not only computers and digital platforms are technologies, but the wheel, which is still used today, also represents a part of science. With the development of technology, many operations such as acquiring, storing, and updating information become easier with the use of hardware devices and software together. The formation of knowledge first begins with data. Thanks to information technologies, much data can be processed and shaped more quickly as information. Knowledge, on the other hand, represents the step after the data-information process and emerges by being interpreted within the framework of individual factors.

Technology is in a constant state of development and changes with the development of human society and the diversification of its needs. As people and societies develop, the variety of tools they produce also develops at the same rate. It should not be forgotten that technology does not only consist of electronic devices and the internet, but also a technology that has survived until today and is still being used. By adapting to technology, businesses can present their processes to consumers faster and less costly. As a result, the customer can access the product and/or service more cheaply. Technology has two sides, just as there are two sides to the coin. If technology is used for good purposes, it offers many advantages for the benefit of humanity, and if it is used for

bad purposes, many disadvantages can be encountered. Technology is like the fuel of science. Therefore, we cannot talk about technology without science and science without technology.

With the use of Information Technologies in enterprises, obtaining, storing, updating, and transmitting information can be carried out more quickly in terms of time. Therefore, as a result of the fast and practical processing of information with information technologies, it is ensured that the enterprise can access the information it needs at any time. In addition, by filtering the information, the desired information can be accessed promptly. The fact that the Internet accelerates day by day and integrates with information technologies has made it easier for businesses to access their resources remotely. Information technologies provide significant facilities in managing the management processes of enterprises and increasing production capacity.

The use of information technologies creates many advantages in enabling businesses to access their resources, e-mail, and documents more securely remotely, and to market products to customers via online platforms. For this reason, businesses can have the opportunity to continue their activities more effectively and efficiently in a safe environment by investing in information technologies. The most important resource of the business is human and it has an important role in the management of technology. Investments made by enterprises in information technologies are effective in providing more effective and efficient management in the operational processes of the enterprise. In particular, the use of information technologies provides efficiency in document management and narrows the use of physical space required by paper use. As a result, there will be a significant increase in the financial and growth performance of the enterprise.

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