

MUSIAD

THE IMPACT OF DIGITAL TRANSFORMATION ON BUSINESS PROCESSES

**How ready are we for
digital transformation in Turkey?**

The New Normal and Digital Revolution
Technology Trends
The Economics of Artificial Intelligence
Digital Transformation In Industries
Digital Transformation And Branding

ags | global



THE IMPACT OF DIGITAL TRANSFORMATION ON BUSINESS PROCESSES

JULY 2020

MUSIAD Research Reports
The Impact of Digital Transformation on Your Business Processes

Publishing Director

Ibrahim CUKUR
MUSIAD Secretary-General

Prepared By

AGS GLOBAL Research & Consultancy

Report to Contributors

Fahrettin OYLUM
Head of MUSIAD Digital Transformation Committee

Abdulkadir SICAKYUZ
MUSIAD SME Development & Branding Committee Chairman

Erman KARACA
TUBISAD Chairman of the Board

Gönül KAMALI
President of YASAD

Assoc. Dr. Leyla TURKER SENER
Istanbul Medical Faculty Biophysics Department

Dr. Cihad TERZIOGLU
360 Energy General Manager

Kutay KALELI
President of GUNDER

Yasar ARVAS
General Manager of Dicle Electricity Distribution Inc.

Murat EMIRDAG
CEO, Hepsiburada

Assoc. Dr. Mustafa AYDIN
Istanbul Aydin University Chairman of the Board of Trustees

Omer M. WILSON
Founder of Anatolia Asia Consulting Group

Can OZTURK
Business Development Manager 5G / IOT - Telecom Company Seattle USA

Muzaffer GOLCU
General Mobile General Manager
Head of MUSIAD Artificial Intelligence and 5G Working Group

Proofreading / Design

MITO
MUSIAD Communication and Design Office

Printing and Binding

Blue Offset
Tel: +90 212 549 25 30 / www.mavioffset.com

JULY 2020

MUSIAD Independent Industrialists' and Businessmen's Association
Ataköy 7-8-9-10 Mah. E5 Yanyol Cad. No.4 Cobancesme, Bakirkoy / ISTANBUL
T: +90 212 395 00 00 - 444 0 893 F: + 90 212 395 00 01
www.musiad.org.tr

Copyright © All Rights Reserved.
It cannot be reproduced in any way without the prior consent of MUSIAD.
Can be quoted by showing the source

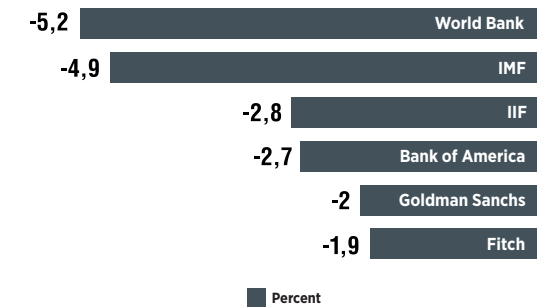
Contents

- **5** The Course on Pandemic and Global View
- **6** Message Of The President
- **12** Manager's Message
- **19** Sectoral Transformation
- **51** Technology Trends That Will Shape The World
- **65** THow Ready Are We As Turkey For Digital Transformation?
- **69** Introduction To Field Research
- **89** Actions

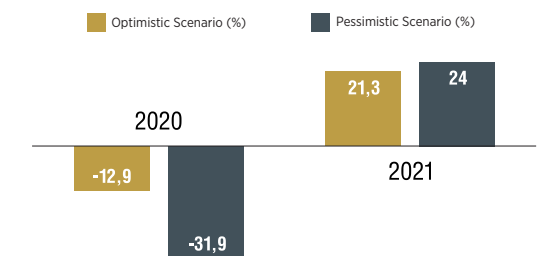
The Course of Pandemic and Global View

- ▶ Coronavirus (Covid-19), which started in Wuhan, China's Hubei province, in December and settled on the global agenda with unusual pneumonia cases, infected more than 4 million people in the world as of 10 May 2020, and caused approximately 280 thousand people to die.
- ▶ The covid-19 pandemic was declared by the World Health Organization (WHO) on March 11. On the same day in Turkey, the first cases appeared. On March 17, the first death from the epidemic was reported in Turkey.
- ▶ On April 10, the curfew was implemented to cover the weekends. The closed shopping mall and hairdressers opened as of May 11.
- ▶ Turkey has become one of the countries that best manage the epidemic process in the world. The number of cases in Turkey is more than 179 thousand, and the number of deaths is 4.825. A curfew was imposed on those 65 and over and those with chronic illnesses on March 22. The scope was expanded to include citizens aged 20 and under on April 3. Schools have been closed in 191 countries (91.3% of total students) around the world.
- ▶ Globally, 1.57 billion students have been suspended from education.
- ▶ With the measures taken against the epidemic's borders, activities in critical sectors such as tourism and aviation were stopped entirely. The process in which many vital industries, especially automotive, suspend production is not just a "health problem ."It has turned into an economic problem that minimizes the functioning of global supply chains.
- ▶ Oil prices dropped to the level of \$ 22. As of the end of May, unemployment claims amounted to 41 million in the USA.
- ▶ In the conjuncture where economic activities have stalled significantly, it has negatively reshaped the growth forecasts for 2020.
- ▶ Many institutions summarize the pandemic process as the most significant recession after the great depression.

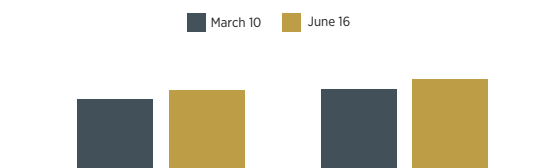
Latest Global Economic Growth Scenarios of Institutions with the Impact of Covid-19 (2020)



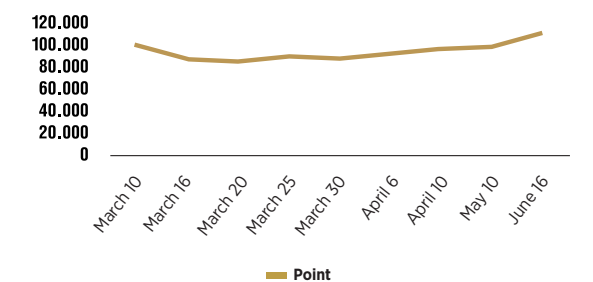
Global Trade Growth Scenario with the Impact of Covid-19 (2020-2021)



Outlook of Exchange Rates with the Effect of Covid-19



BIST 100 Index Development with the Effect of Covid-19





Abdurrahman KAAN
President of MUSIAD

Digital Transformation and Economy

From the first days of the pandemic process, we are expressing the opportunity to turn the crisis's adverse effects into opportunities in the medium and long term.

This process, which caused a significant fluctuation in the financial markets in addition to supply and demand shocks in the first half of the year; we anticipated that it would become relatively normal as of the second half of the year and that the possible recovery would occur only in the last quarter of the year.

In this context, periods of normalization steps are taken rapidly; we have analyzed that the Turkish economy grew by 4.5% in the first quarter of the year. In the same period, we see the negative growth of China, the USA, Germany, Italy, South Korea, Japan, and other G20 countries on a yearly or quarterly basis is essential for comparison.

Undoubtedly, the data for the second quarter when the harmful effects of the epidemic process peaked will follow a negative graphic. However, we anticipate that the support provided to the markets will become more evident in the upcoming period, with the normalization process that started on June 1, and the momentum in the Turkish economy will turn positive as of the last quarter of the year.

The latest data on the real sector also support this expectation. With the summer period, the capacity utilization rate of the manufacturing industry continued to recover and increased for the second month in a row.

In the light of all these developments, we believe that our performance in the current transition period will be a critical juncture that will determine what we can achieve in 2021 and beyond.

For this reason, it is necessary to make the qualities that we think will provide an advantage to us and our country more visible. But, on the other hand, to eliminate all kinds of situations that may create handicaps.

Once again, we believe that the epidemic shows the importance of nationalization in the industry. Because we see that economies that rely solely on the services sector have naturally suffered much more severe damage in this process, our country is positively differentiated from other countries with its current industrial capacity.

In this context; when our flexible production capacity and proximity to large markets are compared with the neighboring countries. We can say that Turkey is a candidate to become a significant production base. There were sectors of the pandemic process that differed both positively and negatively.

At first glance, we can say that it can provide significant advantages for medical supplies and services, food production and retail, information and communication technologies, and e-commerce sectors.

The sectors that will be most adversely affected by the epidemic process are; we can predict that there will be tourism and accommodation, all kinds of air-sea-land transport, fair organizing, entertainment, automotive, and construction sectors. However, in the following process, regardless of the sector, the importance and investments that businesses attach to tools that support virtual work and communication will also increase rapidly. As a result, it is estimated that the epidemic process will profoundly affect the global employment markets, and the unemployment rate will make a severe jump in almost all countries. The global economy's projections for the near future indicate that the unemployment rate will be up to 20% for many countries.

In this context, interest in digitalization has also increased to ensure continuity in the workforce. The digitalization process will bring along many advantages if it is evaluated well. In particular, if our SMEs' interest in digitalization increases, a severe increase in productivity will be achieved in production. E-export is a very profitable and high-volume business line in this context. Also, it has significant potential. Therefore; Thanks to our dynamic population and business skills, it is essential that we correctly read the requirements of this transformation.

As MUSIAD, within the scope of the "Refreshing Process," which we started last year, we built a project-oriented and fast action system and implemented it to our committees. In this context, the Digital Transformation Committee and the SME Development Branding Committee are two of our committees that support the digitalization breakthrough.

As a result of the additional supports offered and to be provided for the real sector and our consumers in the domestic market, and the excellent evaluation of the possible opportunities that will occur in the foreign market; as a country, we believe that we will close this process with the minor damage.

I hope that our research "The Effect of Digital Transformation on Business Processes," prepared in cooperation with MUSIAD and AGS Global Research, will shed light on the future and will be benefited all sectors, and I greet you with affection.



Fahrettin OYLUM

MUSIAD Digital Transformation Committee President

Digital Transformation and Turkish Economy

There is a concept called “reading the history” that we all use in daily life. In order to understand what happened in the past, we examine the history books, try to understand the right and wrong steps taken in the past, and analyze their results. In this way, we “have lessons from history” and have the chance to compare them with the decisions we make today.

When only the human mind competed in the decision-making process, analyzing the past and making decisions according to the events that took place in a short period enabled intelligent and practical reasons to come to the fore. Today, together with speed attained by technology, the concept of artificial intelligence appears as an eerie competitor against brilliant minds beyond just technology.

The Artificial Intelligence (AI) economy, which has gained momentum in the last decade, has created severe advantage areas for us right along with the threats it brings.

Instead of opposing the Artificial Intelligence (AI) economy that is advancing as a growing wave, businesses and entrepreneurs can harness the energy of this wave, just like a professional surfer. They will have the chance to say in the sectors they show. There may be those who think that we are late and can no longer fight competitors. Today we are witnessing the harsh struggles of America and China over AI. When Sergei Brin and Larry Page founded Google in 1998, the US population while 30 percent had internet access, this rate was only 0.2 percent in China, which is their biggest competitor today. However, in the intervening period, five companies that can be described as seven sisters (Apple, Google, Microsoft, Amazon, Facebook, Tencent, Alibaba) who dominate the AI economy are based in America, while two are companies based in China.

Therefore, continuing our work without focusing on the AI economy as Turkey may put us in a very different position in the next five years.

We will witness that the leadership of many sectors that exist today will be transferred to the companies that use AI technology in the best way in the upcoming periods. The main point to note here is that companies that create this destructive effect will emerge not from companies that prefer the traditional economic model but from start-ups with transformative ideas about that sector.

With this awareness, countries that have implemented their strategies for the last 20 years, especially China, have implemented the “mass entrepreneurship and mass innovation” model. In this way, with an army of AI entrepreneurs that will test disruptiveness for all sectors, They have taken a leading position in the race to gain leadership in all industries. While the revolution that started with mechanization in the early 19th century turned hundreds of millions of farmers into factory workers, the western countries that managed this transformation best took the leadership in the 21st century.

In this period, where we are going through a similar transformation, countries that can turn their engineers into disruptive technologies such as AI, 5G, IoT is resistant to competition and target the global entrepreneurs will be the economic and political leaders of the coming years. As Turkey, with the steps we will take in this period, we may achieve a fundamental transformation from manufacturing-based growth to an innovation-based growth model and may have taken a serious distance towards 2023 targets.

With the introduction of electricity into the industry, four main inputs were needed in the transformation for starting in the industry a century ago.

Fuel (energy); entrepreneurs with significant capital; engineers who will raise the factories established by these entrepreneurs; and a public authority with the will to advance the infrastructure investments of countries in this direction.



In today’s digital transformation process, the needed four entries have evolved. Scientists who will do scientific studies on AI; young entrepreneurs who are greedy for products in this field; funds and individual investors that will pave the way for the growth of entrepreneurs; unlimited big data collected and cleaned from every sector; and finally, a political environment that will coordinate all these.

Although Turkey has made significant progress regarding the requirements as mentioned above, we need to offer more holistic solutions, especially for entrepreneurs’ access to open data.

Investments in the products to be created by our entrepreneurs in the related fields, and the investments to be made by the investors operating in that sector who will have easier access to the data we will obtain and anonymize from enterprises operating in different sectors, public institutions, NGOs. It will create a serious catalyst effect on the digital transformation process of our businesses.

The fact that a technology company like Xiaomi, whose name had not been heard until 2-3 years ago, invested in 220 startups operating in the fields of interest instead of expanding their internal teams and turning into a clumsy structure. It is a crucial factor in the success that has been achieved today. Moreover, the strategy of being involved in the digital transformation process the world is going through with a more quick and effective method, has carried Xiaomi to a strong point against its competitors like Apple, the world giant in its field.

As MUSIAD, we shared with the public our pioneering role in the digital economy as well as in the traditional economy by bringing together all this transformation process and the actors of this process under the title of Digital Future in our Visionary event we held in November 2019. Thanks to this report we prepared, we tried to compile our recommendations by understanding the perspective of the sector representatives on the digital transformation process and their competencies in management. I would like to take this opportunity to thank all our stakeholders who contributed to the preparation of this report.



Abdülkadir SİCAKYUZ

AGS GLOBAL Founding Partner
MUSIAD SME Development &
Branding Committee Chairman

It is possible to talk about a wide range of business transformations, from digitalization and production and service processes to access to new markets and branding. With digital transformation, our businesses will be able to increase their competitive power and achieve further gains in many areas.

With this report that we have prepared in cooperation with MUSIAD and AGS GLOBAL, we have created a guiding content for our companies in many areas, including New Normal and Digital Revolution, Technological Trends, Artificial Intelligence Economy, Digital Transformation in Sectors, Digital Transformation and Branding.

In particular, while addressing the issue of Digital Transformation in Sectors, the veteran names of the sectors provided valuable contributions to our report with their opinions. Again, the views of 340 business representatives from 25 different sectors, who contributed to our report's shaping, and our businesses' perspectives on Digital Transformation were discussed comprehensively.

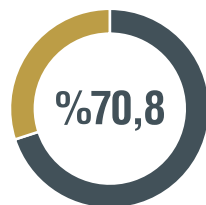
Once again, we will see those who filter from the report, encouraging digitalization for a more robust economic model, necessary support, and incentive systems. It is required to reconsider, act with a perspective based on increasing digital competencies at all stages of education, and provide more support to digital infrastructures that will strengthen domestic and national products and services.

On behalf of AGS GLOBAL Research and MUSIAD SME Development & Branding Committee, I sincerely thank all our stakeholders who believe in digital transformation and have contributed to our work on this occasion for their contribution to creating this report. I hope that the information shared in this report will contribute and guide the Digital Transformation of Turkey, and I hope you relish reading it.

Executive Summary

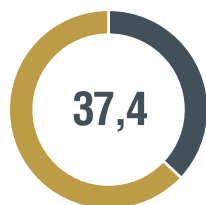
We are going through a period in which digitalization, which has been on the world's agenda for a long time, has been placed at the top of the schedule due to the Covid-19 pandemic and has wide-ranging transformative effects on the business world as well as daily life. "Digital transformation" has emerged as an inevitable category to manage business processes in a conjuncture where billions of people are locked in their homes, the wheels of many industries stop, and retail stores cannot meet with consumers on the streets of global metropolises. It seems that in the short term, many more businesses will start to benefit from technological transformation instruments such as artificial intelligence, the internet of things, assistant robots, cloud technologies, and 5G. However, "challenging scenarios" will be on the agenda for many companies that fail to achieve this transformation.

In the light of this intensive agenda, as MUSIAD Digital Transformation and SME Development and Branding committees, in collaboration with AGS Global Research, with the participation of 340 MUSIAD member companies from 52 different cities and 25 different sectors, with the involvement of 340 MUSIAD member companies, between 31 May and 11 June, we aimed to analyze the attitudes and behaviors of our businesses towards digital transformation.



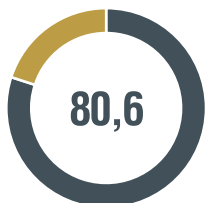
70.8% of companies expect a digital transformation wave that will affect their business processes in the near future.

This expectation is much higher, especially in the service sector.



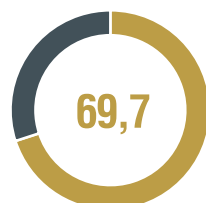
It started such a digital transformation process before Covid-19, and 37.4% of companies stated that they would accelerate.

The rate of companies pointing out a need in this direction is 36.8%. So, according to the companies, what were the reasons that created the need for such a transformation? Responding quickly to customer demands (68.2%), increasing operational efficiency (62.4%), and accessing new markets/customers (54.4%) were seen as the most critical factors.



80.6 of the companies are clustered in low and medium technology.

While 58.5% stated that they are partially ready for such a digital transformation, 19.4% stated that they are fully prepared. It was seen that the most prepared companies were "large-scale" companies have 101 or more employees.



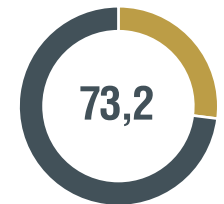
It was determined that 69.7% of the participating companies use digital infrastructure at various levels.

The most used technologies were CRM (42.2%), smart devices and machines (38.8%), and cloud technologies (37.1%). On the other hand, it was seen that 60.2% of the 30.8% of the companies that do not have a digital infrastructure are considering switching to digital infrastructure. Therefore, it has been found that while especially companies with 1-50 employees tend in this direction, encountered that 54.8% of the plans will be implemented in the medium term.

Executive Summary

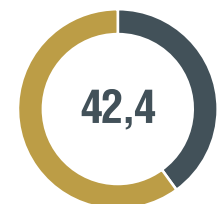
Digital transformation processes are carried out by company partners/ owners (73.2%) and general managers (32.1%).

Within the scope of the research, while the companies were divided on the issue that digital transformation will require less human resources, 57.4% of them said that artificial intelligence 67.3% of them state that they are positive and will make life easier. In comparison, 67.3% of the state are warm to the idea of remote management of production with the help of 5G and artificial intelligence at various levels.



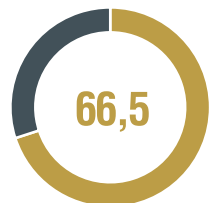
When asked about the factors that slow down the digital transformation process, the lack of budget in the first place.

Lack of human resources (40%), not knowing which technologies are needed (23.8%), and lack of a specific strategic roadmap (23.8%) are other important topics.

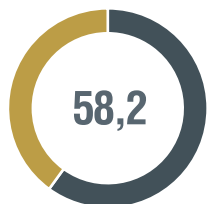


E-commerce investments come first among the changes that companies expect in digital transformation in the short and medium-term after Covid-19.

The expectation for an increase in digital marketing activities (57.1%), automation (33.8%), and artificial intelligence (31.2%) investments include vital clues about the upcoming period.



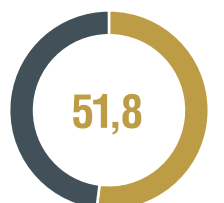
58.2% of the participating companies believe that branding will not be possible without digitalization investment.



Within the scope of the digital transformation roadmap, 51.8% of the companies especially emphasize that they will use the products and services of domestic technology companies.

The rate of those who will carry out the digital transformation process with consultancy support from experts in their fields is 48.5%; the rate of those who stated that they would implement a "digital transformation team" within the company was found to be 31.4%.

On the other hand, the fact that local names and brands come to mind regarding technology and digitalization is an important indicator that the sensitivity in this direction will increase in the coming period.



The New Normal and the Digital Revolution

The “digital revolution”, which we have been hearing for a long time, seems to have been delayed due to the Covid-19 pandemic, which spread from the city of Wuhan in China on December to the whole world and caused more than 6 million people to become ill and more than 360 thousand people to die as of the end of May.

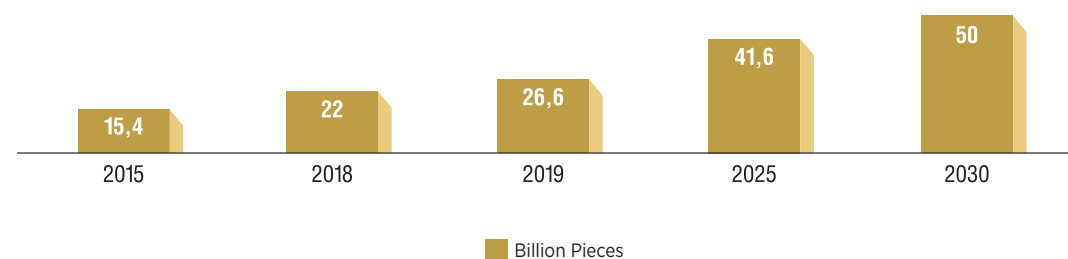
In other words, we are talking about a plane where “the future now comes.” “Digital revolution” is one of the most important topics of the “new normal” period, which points to a “paradigm change” where nothing will be the same as before in a wide range from daily life to the way of doing business after the Covid-19 epidemic.

In this period when billions of people around the world are confined to their homes and many major industries are at risk of shrinking, the time spent on this platform, which enables digital business meetings, pieces of training, and many other vital activities to continue, and the like, seems to be an extension of human behaviors that become permanent in the “new normal.”

The pandemic is forcing a sudden economic shift from physical to digital. The fact that the digital conferencing platform Zoom, which had 10 million daily users worldwide in December, increased to 300 million users by April is one of the simplest indicators of the radical transformations in the way of doing business in the “new normal.” When we expand the frame, we have mentioned that many businesses are still distant as parts of a distant future, IoT, Industry 4.0, artificial intelligence, robots, big data, blockchain, many elements seem to turn into “must-haves” for the “early future.”

The growth rate of the digital economy in the world is higher than the global GDP. However, 52% of the companies that were on the Fortune 500 list in 2000 are no longer on the list because they could not catch up with the digitalization trend. On the other hand, 14 of the 30 companies with the highest brand value are platform-based. For example, the number of internet-connected objects globally, which was 15.4 billion in 2015, has reached 26.6 billion at the end of 2019. The forecast for 2025 is 41.6 billion, and 2030 is 50 billion. This provides a small clue about the new momentum that the rapid digital transformation we face will gain when combined with the “new normal.”

Number of Internet Connected Objects Worldwide and Projection (2015-2030)



Source: DataProt, Statista

Therefore, even when the effects of the pandemic are entirely erased from the world in a time we cannot foresee, the “digital revolution” will continue to be at the top of our agendas. We need to look at this process as a period in which a 360-degree digitalization will inevitably penetrate the capillaries of daily life and all sectors at various scales. Therefore, we are in the middle of a “paradigmatic break” where the new normal and the digital revolution cannot be separated from each other.

The Impact Of Digital Transformation On Your Business Processes

Erman KARACA

TUBISAD - Chairman Of The Board



The technological revolution based on information and communication technologies, which has been taking place since the 1970s, has changed the paradigm prevailing in the world.

In this period, which we call globalization, all countries have become integrated economically and in almost all dimensions of social life.

This situation led to the spread of wealth and disasters between countries without borders. We have argued so far that globalization has led millions of people living in developing countries out of poverty, but it also provides the groundwork for crises to spread from one country to another.

Today, a pandemic has revealed a new dimension of the process. Intertwined business processes connect all countries from supply chains to sales markets. But, in the face of a crisis that threatens human health, these chains are forced to break.

Health risk and economic risk are linked, and the aggravation of the problem in one aggravates the situation in the other.

This makes all countries more fragile both in terms of health and economy. This pandemic has shown us one more thing: the importance of digital technologies in our lives. If our jobs and lives have continued for a bit, it has been thanks to information and communication technologies. Companies that have invested in information and communication technologies have survived this process with less loss, and maybe even companies from different sectors have had the opportunity to increase their sales thanks to this.

Digital transformation is not just about technology; this process has clearly shown that it should be evaluated with integrity, including people and business processes.

Those who cannot realize the opportunities this transformation will create and cannot adapt to the age dynamics will undoubtedly lag behind those who acknowledge and adjust themselves.

For the last ten years, maybe more, we have brought up digital technologies that will fundamentally change our ways of doing business and our lives at every opportunity.

There is no doubt that no one has heard of the concepts of artificial intelligence, machine learning, the internet of things, big data, blockchain, nanotechnology, and digital transformation. So it was a matter of curiosity when and how the change created by all these technologies would come.

We waited for the next 5-10 years, but the effective use of information sector products and solutions against the epidemic. Thanks to this, the transition to the future working model and the digital transformation process accelerated by an average of five years. Therefore, we talked about the digitalization processes and the epidemic

together. Technology will be the most significant factor in returning economic and social life to normal. The post-pandemic economic order will depend more on the use of technology than before. The importance of digital technologies will be felt with all its weight in all areas of life, from safe travel opportunities to monitoring infected and contact information to the fact that many sectors of the economy can operate within social distance rules, to the continuation of education services. For this reason, countries that have invested in information and communication technologies and companies will be more advantageous in dealing with the challenges of the coming period.

Before the epidemic, we were building more schools more campuses, but now we are moving to the online education system. Thanks to digitalization, everyone will access equal information anytime and anywhere. We talked about the transition to online education rather than campus. Large campus buildings will no longer be needed, and there will no longer be a need for predetermined curricula where specific departments, certain levels receive the same education. In particular periods of the year, instead of education, there will be online and timeless-spaceless pieces of training. Thus, electricity, heating, maintenance-repair, security will be saved. With online training, everyone will access equal information anytime, anywhere. Students will no longer take lessons from one school and certain educators, but from any teacher/trainer, they want from many schools. Formal education will be a thing of the past.

Changes are taking place in education and the business world. Concepts such as high plazas, meeting rooms, the time spent in commuting, and carbon emissions are changing, and digitization affects all of them. For example, while virtual reality meetings replace physical meetings, meetings can now be held from anywhere. If we go a little further, even the language will no longer matter; we will be able to understand it in our own language, no matter what language the other person uses in meetings to be held in virtual environments with VR glasses.

Companies will interact much more with technology startups to be more innovative and agile. Robotic process automation will turn into one of the most critical solutions for companies to reduce labor costs and increase operational efficiency. In addition, growing investments in big data and analytics will reveal the importance of data architecture.

Cloud services will become one of the essential components of digital transformation projects with their flexibility.

With digitalization, the information sector; has become a sector that interacts and needs to work together with many sectors, especially health, finance, education, and production sectors.

In the education and business world, digitalization is effective in lifestyle. From now on, multi-story stores and shopping malls will be replaced by online shopping sites that provide 24/7 service, and logistics companies will offer innovative solutions, especially autonomous vehicles, and drones. As a result, speed, quality, and the price will be much better than before.

Artificial intelligence is revolutionizing health and in all areas of our lives. Artificial intelligence, algorithms, machine learning help doctors in all fields of medicine. Artificial intelligence and robotic solutions are important factors in the speed and accuracy of diagnosis and treatments. In fact, technology is in health; It provides a wide range of developments from psychology to surgery, from diagnostics to genetics.

Facebook recently announced that it will switch to a working model like "Facebook employees sitting all over the world." This working model will find more place during the epidemic in big technology companies such as Google, Amazon, IBM, Apple, which cannot find the necessary digital competencies and workforce physically in their own country. Employees; Thanks to digital competencies and digitalization, they will have the opportunity to work in global companies from their home country instead of going to work physically.

In summary, digitalization will cause a radical change in our life and business processes.

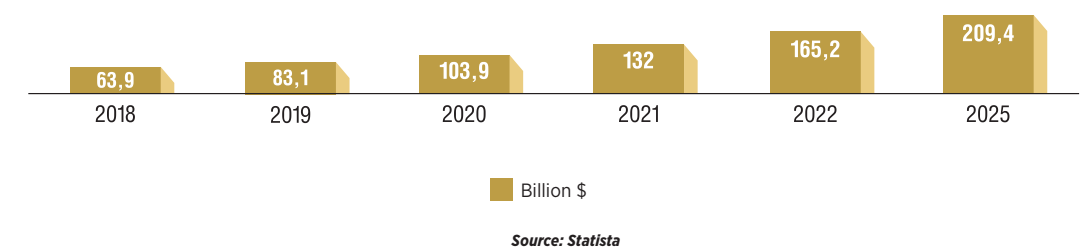
Adaptation of Industry and Business Processes to the New Normal

The "New Normal" brings with it a period in which the conditions of competition in the world are redefined, and the possibility of many businesses that cannot adapt to the conditions will be excluded higher than ever. Hence, efficiency, profitability, disruptions, and even collapses in supply chains, adaptability, strategic product orientation, separation, transparency, ethical trade... We will see that these concepts cease to be a discourse and are a report card that businesses must prove to all their stakeholders.

The slowdown of production and logistics operations in China, which was at the center of the global supply chain during the intensive times of the epidemic, brought the issue of "one-dimensionality in supply chains" to the discussion. China's position is debated in many developed countries, first for health reasons and then for "not being transparent enough to the global public." In the expected "new trade war" attack with the increasing reactions from the USA to China, while China's place in the supply chains is questioned, new alternatives and the return of production to the "central countries" are discussed. Therefore, the argument that "when China stops, the world stops" stands out as something that the world does not want to experience again. On the other hand, Covid-19 reminds the world of the risk of "external dependency" in strategic products. The fact that many developed countries could not meet the demand for primary health materials, and related materials would be subject to a "foreign trade war" brought the importance of "domestic production" in associated products and the existence of "new production and export" areas to the agenda with great importance. Turkey's mobilization of a robust local production eco-system in this area (masks, hygiene products, etc.) and successfully testing its ability to develop domestic products (respirator project, etc.) stand before us as a positive outcome. Besides, another point that the process shows is the "level of technological development." In the Covid-19 pandemic, we have witnessed the shining of technological developments and many "many human emotions" that undoubtedly mobilize the world. It has been seen that the operational capability of robots brings excellent opportunities in many areas, from retail to industry, especially in the health system.

It is foreseen that the distance between those who do business with these technologies in a wide range from production to delivery and those who are still distant from these technologies will gradually widen. For example; By 2023, more than 30% of warehouse workers in operations are expected to be supported by assistant robots. In the next 25 years, robots are expected to take over almost half of existing jobs.

Industrial and Non-Industrial Global Robot Market Volume and Projection (2018-2025)

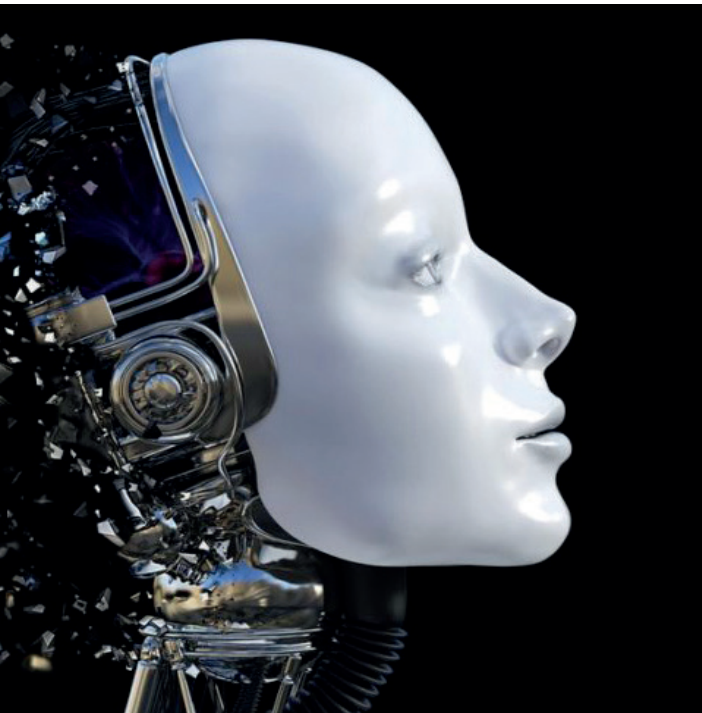


In the light of all these data, technological adaptation and "digitalization" as the critical concept at its center will continue to play a vital role in optimizing the ways of doing business in the "new normal" era.

Artificial Intelligence Economics

Today, artificial intelligence is at the center of the new paradigm where the “future is brought forward”. Artificial intelligence (AI), which means systems or machines that imitate human intelligence to perform tasks and can iteratively improve themselves based on the information that they collect, was first introduced by John McCarthy in 1956 within the framework of a two-month workshop has been suggested titled “Machine Simulated Intelligence” at Dartmouth College. However, it is stated that the origins of the idea of artificial intelligence go back much further in the article titled “A Logical Calculus of the Ideas Immanent in Nervous Activity” by Warren McCulloch and Walter Pitts in 1943 in the Bulletin of Mathematical Biophysics magazine based on neurons functioning like a Turing machine —the idea of a processor-based on feedback nodes.

The purpose of using artificial intelligence is to “improve” human capabilities and contributions. Chatbots that produced to understand customers' problems faster and to provide more efficient answers; smart assistants which used to improve scheduling and extract critical information from datasets in big-data; recommendation engines that offer automatic recommendations for TV shows based on users' viewing habits; drones, autonomous vehicles, cashierless and fully digitalized stores can be given as examples of artificial intelligence.



Artificial intelligence technology, which is expected to contribute more than \$50 trillion to the world economy (about 20% of global GDP) in 2050, is expected to have a leverage effect on the economies of North America and Europe, especially China. On the other hand, health, automotive and financial services are among the sectors that will gain the most efficiency in product improvement from artificial intelligence.

Artificial Intelligence Economics

Recently, in some way, every day, many people worldwide use artificial intelligence services. It includes navigation apps, streaming services, smartphone personal assistants, ridesharing apps, personal home assistants, and smart home devices. Artificial intelligence is expected to transform production technologies besides everyday use rapidly. In the USA, new startups Vicarious, Kindred, Osaro have already started to use artificial intelligence technologies for production.

On the other hand, the effects of artificial intelligence on the workforce and employment also bring many discussions. According to Oxford Economics, for every robot in the industrial sector, while leaving 1.6 people unemployed, there is a risk that 20 million people working in the manufacturing industry worldwide will be unemployed by robots by 2030.

Especially in low-skilled labor and weak economies, robotization is predicted to cause higher job losses. For example, according to a report by Forrester, 73% of cubic office tasks such as data entry will be automated by 2030, eliminating more than 20 million jobs. According to the same study, 29% of jobs in the US will disappear due to artificial intelligence, and only 13% will be created instead.

However, depending on the developments in artificial intelligence technology, it is expected that the world will meet at least 143 new professions. Innovative home design manager, human-robot team manager, digital tailor, digital therapist, Robo-psychologist are only a tiny part of these professions.

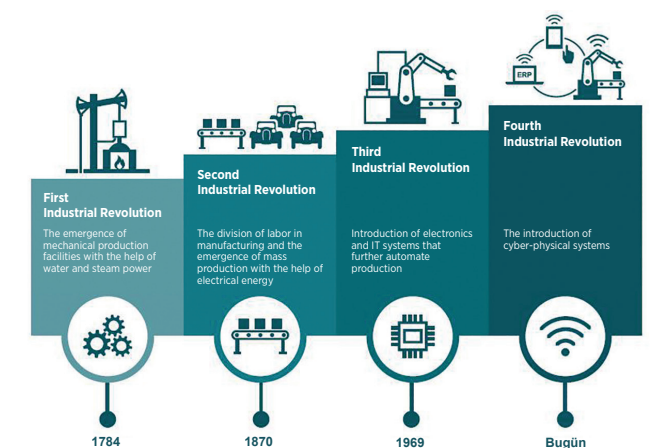
Sectoral Transformation

The digital revolution will radically transform many industries and redefine how we do business. So let's take a look at those sectors:

A. Transformation in Industry

The application field of one of the most dramatic transformations of digitalization will be the industrial sector. When we look back, we have faced the First Industrial Revolution, in which mechanical production systems emerged in Europe at the end of the 18th century using water and steam power; The Second Industrial Revolution, which started Fordist mass production with the help of electric power at the end of the 19th century and lasted until the last quarter of the 20th century; and the Third Industrial Revolution, where the first microcomputers came into play and production was automated. However, when it comes to digital transformation in the industry, the concept of Industry 4.0, which is presented as the Fourth Industrial Revolution, comes to mind. With the idea of Industry 4.0, which was first mentioned at the Hannover Fair in Germany in 2011, “smart factories” where automation technologies are involved in every moment are spreading around the world and rewriting the rules of competition.

Development of Industrial Revolutions

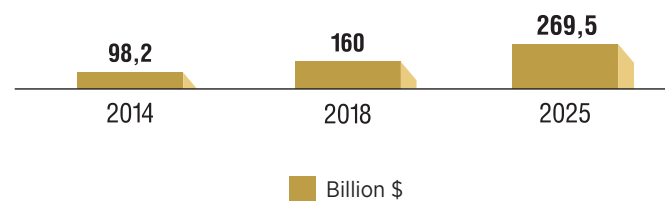


Source: Statista

Sectoral Transformation

In this way, monitoring production processes with more advanced methods and automatically correcting errors, supply chain, production optimization, and demand-based production offer “high potential.” As a result, the size of the industrial control and factory automation market today is \$160 billion, and it is predicted to reach \$269.5 billion in 2025.

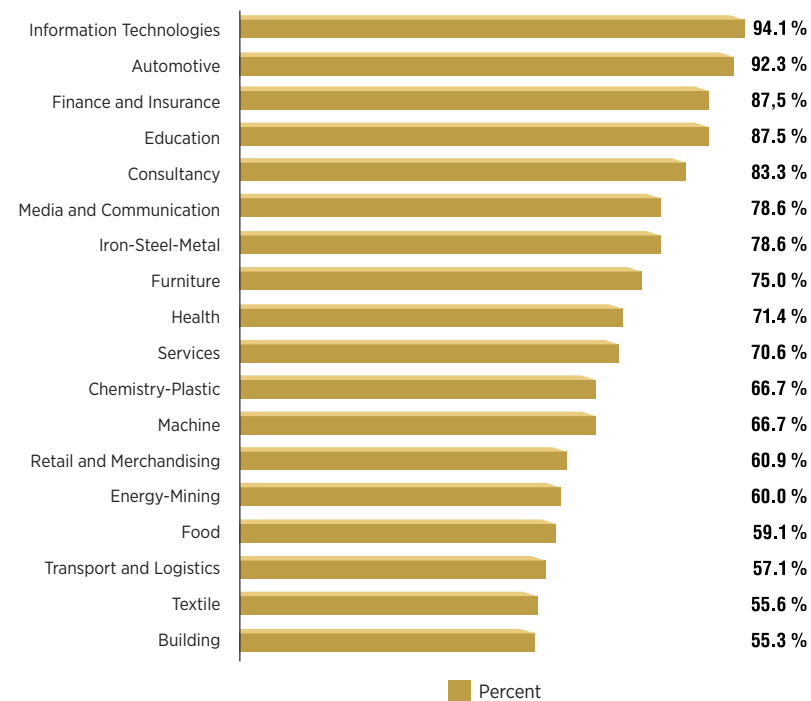
Industrial Control and Factory Automation Market Volume and Projection (2014-2025)



Source: Markets&Markets

When a ranking is made according to the digital infrastructure usage levels among the sectors participating in our research, it is observed that the technologies of cognition (94.1%) and the automotive industry (92.3%) are positively differentiated. At the same time, it has been determined that the finance and insurance, education, and consultancy sectors follow them.

Digitization Level of the Sectors Participating in the Research



Source: MÜSİAD Analizi

The Impact Of Digital Transformation On Your Business Processes

Gönül KAMALI
The President of YASAD



Although the concepts such as digital conversion industry 4.0 have been on our agenda for the last few years.

The quarterly century in our country is progressing in this way. When we say digital conversion, we are not in a period of everyone alone, and we will stay without our turn. If we want to compete in the global arena as a country, we need to remain behind our competitors. When it comes to technology, we see that firms are in two types of behavior; The “Trend-setter” is the creative-innovative studies that change the standards and those who have changed the standards and to keep up to these standards, while the world is in the digital conversion, we cannot stay out of this transformation. So what do we understand from digital conversion?

For us, the digital conversion is proportional to the “measurability” and “speed.” When you carry out manual-based processes in the industry, you always lose the “measurability” when you carry out human-based functions. It is impossible to improve defects unless you detect your techniques, raw materials, and errors.

The measurability also prepares the ground for calculating, planning, risk management. Another output of digitalization is a “speed.” We are in a highly speedy rotating world. Produced goods are now “customized” for customers. According to customer requests, the variants of products must be produced. When you face the problems of 400 references of a product with 3000 reference parts according to customer request, and when you face issues such as 15 days, it is only how difficult to make it without manual human power, and it is difficult to continuously. Our businesses consist of thousands of square meters, and the dimensions are above the sizes that the human eye can control.

Even in elementary operations, you need to interact with hundreds of parameters to decide correctly when you say, “I will increase productivity.”

Digitization and automation enable you to “see” your business, make decisions, get the reports/KPIs (Key Performance Indicators) you want instantly, and give you accuracy and speed, regardless of where you are. Let’s not forget that there are many different layers and specializations, different positions and duties in the management staff of our enterprises.

Starting from the Board of Directors, there are units such as Factory Management, Production Management, Process Management, Planning Directorate, Operations Management, IT Management, Quality Management, and Maintenance Management, each of which looks at different parameters and makes decisions according to these

parameters. Without digitization, you can imagine how difficult it would be for these units to reach homogeneous and consistent information. Unfortunately, in manually operated businesses, we also see that employees leave their work and production and spend day and night to match data. On the other hand, our world faces a devastating technology revolution. We can liken this to the transition period of internet and mobile technologies.



Is mobility part of our life?

These mobility tools, starting from mobile phones and tablets, an extensive portfolio we call intelligent, clean, move with us in every part of our lives.

This mobility brings us to speed. The first of our new disruptive technologies is artificial intelligence, decision support systems. Advanced algorithms provide an infrastructure for us to make the most accurate decisions based on actual data.

Another is augmented reality, which is as important as this, which allows us to make decisions or understand what is going on by superimposing the information we cannot see on the reality we see, technology that gives us information in a format that we can easily perceive.

Therefore, when the facts we see and additional information we do not see come together, a decision support system accelerates our perception, making it easier for us to make decisions and act. This is such a powerful change that we are moving to a fast-paced world that will eliminate the need for certain professions or reduce the required level of expertise, making young workers as experts as those with 20 years of experience, and on top of that, running the best decision support systems.

Especially with the decision support systems provided at the management level, It will make the right decisions you need to make today, without the need for 20 years of technology and ten years of experience. I say that experienced managers like me are waiting for a great competition, and as a technologist, I can do this in our own company today. I see seeing and experiencing as a great advantage and gain. With this vision, we aim to tell our industrialists the truth, the facts, and the predictions for the future.

Sectoral Transformation

B. Conversion in Automotive

In France in 1769, the three-wheeled and steam-working machine that can progress to self and 5 km by Nicholas Cugnot is the first automobile in the 1908 world automotive history. The Ford's T model, which has accumulated all the initiatives in the day, and the first mass production is the first mass-production automobile.

In 1913, after these cars a day, the UK developed the mechanical blasting diesel fuel system. In 1918 -1919, the first mass-production automobile Type A Citroen in Europe in 1919 was the first of the ABS in 1920, 1934 The initiation of producing the front-wheel-drive vehicle in 1938 is the production of the first turbo motor truck in 1938, the patent of the three-point seat belt in 1958, the development of the first mass-production Turbo motor cars in 1962 came in 1962. In 1961 in the first 100% domestic automobile initiating in 1967, the first ABS applications in 1967 are commissioning the first tube coolers in 1984, the first car equipped with variable geometry turbo in 1993, in 1995 to ensure the activated driving safety of the EPS system by Bosch in 1995 Production of for this paradigm is essential as significant developments.

However, the American Tesla is the first electric vehicle, the first electric vehicle in 2008; it means the footsteps of a new paradigm change. The number of automobiles, which are about 250 thousand in 1907 on the world, in 1914, the Ford Model T is presented to the market 500 thousand times, II. Just before World War, this number exceeded 1 million. Today, the number of cars reaching 300 million in 1975, today is around 1.2 billion pcs. Tesla has produced a millionth electric car as of 2020.

The Historical Transformation Of The Car



In the light of all these developments, the automotive sector comes the fastest adapting to digitalization. There are electric, connectable car investments in many automotive deviants agenda today in cooperation with Tesla or independently.

According to the World Economic Forum analysis, it is envisaged that \$ 670 billion is an economic value of \$ 3.1 trillion and \$ 3.1 trillion by 2025 by the digital transformation of the automotive sector.

Today, when the automobile of 2030 was called the automobile, it comes to mind electric, autonomous, shareable, linked and updated every year, which is very important in terms of digitalization rate and sector projection. As a matter of fact, the "linked" vehicle sales of over 50 million in 2019 to reach 76.3 million counts of 76.3 million with up to 2023. Furthermore, in 2025, the expectation of more than 470 million "linked" tools on roads is another indicator supporting this table.

Sectoral Transformation

In advance, many global automotive giant investments have been established on the “tomorrow’s tool.” Tesla’s initiatives have encouraged Apple’s Carplay and Google to enter the sector with Android Auto solutions. Rooted vehicle manufacturers have directed investments towards Startups in a short time. Entering the Daimler RideScout and Mytaxi to the car-sharing industry, Toyota’s silicon valley companies in the \$ 100 million deposits that \$ 100 million deposits will drive this trend. Turkey’s “native automotive,” TOGG’s CEO Gurcan Karakas underlined that when they preferred to participate in the CES Fair for the launch of the car, “We are not a classic automobile company. We are in a mobility-oriented technology company. Our first output is going to be cars. We are trying to create our mobility ecosystem.” These words should be evaluated in this context.

Although it is entirely autonomous in autonomous driving to the 5th level applications, there are many attempts in this area. According to Elon Musk, it will also see 1 million Robo-Taxi on the roads inroads, but also a bit early to say that, according to many experts, autonomous driving technologies are not limited to the services on the roadways. For example; The electric air taxi project developed by Uber and Hyundai cooperation in the CES Fair in Lasvegas was introduced. This system has been presented with a new concept to transport.

Although it is entirely autonomous in autonomous driving to the 5th level applications, there are many attempts in this area. According to Elon Musk, it will also see 1 million Robo-Taxi on the roads, but it is a bit early to say that, according to many specialists. However, autonomous driving technologies are limited to the services on highways. For example; The electric air taxi project developed by Uber and Hyundai cooperation in the CES Fair in Lasvegas was introduced. This system has been presented with a new concept to transport.

We closely identified that digitalization in the automotive sector feels the effect of the Covid-19 pandemic in the warmest days. For example; The Mayo Clinic in Florida has partnered with Jacksonville Transportation Authority to run Covid-19 test samples from the test area to the laboratory. In addition, it works with two autonomous car companies to be Clinical Beep and Navya. It aims to reduce the rate of exposure to the virus and health workers with autonomous vehicles.

On the other hand, the autonomous trucks produced by Beijing-centered Neolix were able to take medical supplies in the needs of needs in the region where Covid-19 was mainly influenced. Moreover, this can disinfect the streets using autonomous vehicles, GPS, and imaging systems.

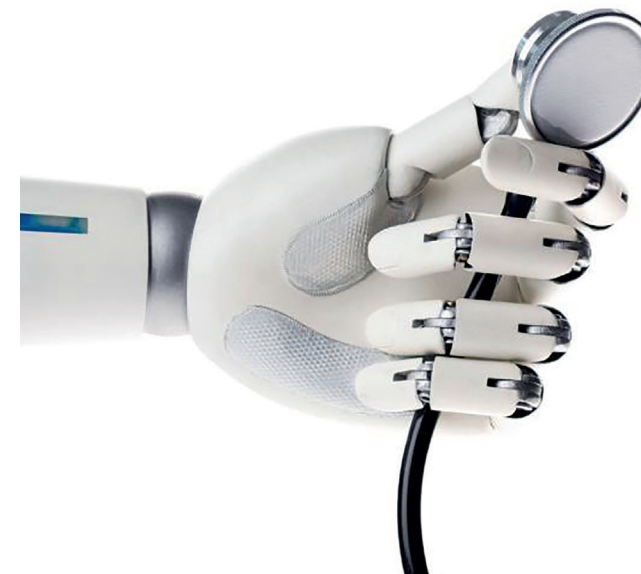


C. Health Transformation

During the Covid-19 Pandemia, the importance of digital solutions revealed was once again in the field of health.

In advance of the medical innovations aimed at the front of digitalization and aiming to reduce human error; microsurgery initiatives with robots artificial organs produced with 3D printers are transported to critical patients in remote locations with drones; DNA profiles and early treatments, root cells developments, smart cards, and implant applications, wearable medical devices (heart rate sensors, exercise followers, sweat counters, oximeters, etc.), continuously control of patient in smartphones, virtual reality tools, teletype applications remotely with applications, Blockchain electronic health records, etc. entered into the application, and these form only the outcrop of the digital conversion in health services. With digital moves to be held in the field of health;

- Increased human life and quality of life with early diagnosis and treatment optimization
- Relieving financial burdens on national health systems
- Personalization of health experience
- Reshaping of insurance risk rates
- The patients receiving preventive measures to improve health will be able to access more accurate insurance pricing



Drug and biotechnology companies, thanks to artificial intelligence, the drug development cycle can abbreviate with machine learning algorithms. With Artificial Intelligence, it seems possible to withdraw the sector four years down and save 60% cost savings.

Thanks to Artificial Intelligence Applications in the US, it is envisaged that the healthcare economy will be 150 billion per year until 2026. On the other hand, global virtual and increased reality practices in the health market are expected to access \$ 5.1 billion in 2025.

According to Forbes’s research, in 2020, the hospital, clinical and medical offices are estimated to use 646 million pieces of connected devices. In this way, it is envisaged that medical data will double each of 73 days. With the dissemination of 5G mobile networks of global widespread, robotic surgery operation waves can gain speed from remote locations. 5G by Chinese researchers is already proven feasible with remote surgery.

Demand for digitalization; one of the areas that it will significantly shape is optional health services. According to research performed by DMN3, the “digital input gate” will have great importance to access these services on the consumer facade. For example, a medical appointment of a 77% audience, researching a doctor for 47%, to investigate doctor and hospital and medical facility of 38%, has expected to create “instant markets.”

Converter Effect In Artificial Intelligence and Technology In Medicine Field

Professor Doctor Leyla TURKER

Istanbul Medical Faculty Biophysics Science



Developments have been seen in many areas with the development of constructive technologies. Technological developments have the most sound in the field of health. Health service has shown an exponential increase in recent years with faster, accessible, lower costs, and more successful diagnosis-treatment protocols and serving this field. Most valuable from today's technologies and after this "Artificial Intelligence" technology, which is the subject of discussion, has found a common area of application in health services. Diagnosing diagnostics in display systems and the state of health or disease follows patients in real-time. In other words, the applications focusing on facilitating their lives are no longer a fantasy but the products that give successful results.

If we look at the studies carried out, investigations on diagnosis with radiological-pathological images using artificial intelligence continue at full speed. A method has been developed with Arterial Spin Labeling imaging for the differential diagnosis of cognitive disorders and Alzheimer's disease. In another study, the anticoagulant use of stroke patients was monitored in real-time with an artificial intelligence-based program. Designed program as an easy-to-use, the software uses technology well. It has been used successfully even in patients who cannot use it, and better results have been obtained than the old method. According to artificial intelligence-based assessment results, motor skills, nutritional abilities, spasticity type, intellectual disability, and communication disorders were found 75% correlated with ASD.

In another study, a system was developed to adequately recognize cerebral palsy patients at risk of, which has been shown that early initiation of the treatment of this common couple can be achieved.

In a study based on cancer and artificial intelligence, an algorithm was developed to predict the presence of Lymph Node Metastasis after endoscopic resection. When the artificial intelligence model predictions were verified by comparing them with the American, European, and Japanese guidelines, it concluded the precision was 100% (CI: 95%).

The program was expected to test the polyps in the videos used for the test. In the study, tests were made with the images used in the routine, and the sensitivity was found to

be 90% in the results obtained; in fact, the feasibility of artificial intelligence in routine colonoscopy was demonstrated.

In addition to these, there are studies on many systems that can be used in hospitals or homes, such as ophthalmology, neurosurgery, psychiatry, chest diseases (lung cancer, COPD), cardiology (percutaneous coronary intervention, coronary aortic bypass surgery), emergency medicine (triage system).

As can be seen, artificial intelligence technology finds application in many fields of medicine. Since the studies are related to human health, they are not limited to Istanbul or Turkey but are global products. Whichever country develops products in this field, both the health data of its country will not go abroad, and these products will have economic returns in the form of per patient/hospital or monthly membership fees. In particular, the frequency of studies on gastroenterology, radiology, cancer diagnosis, and research and the achievements in this field predict that artificial intelligence will become a more common supportive material in routine use in the future.



It is also seen that the more patient data is processed with artificial intelligence in studies, the accuracy rate increases in correlation with this.

Data storage, which is also a part of the working methodology of artificial intelligence, is another area that will develop with this technology. There is also an accumulation of big regional data. When we look at the frequency of studies by years, it is observed that clinical research in artificial intelligence is increasing. Despite the completion of the first half of 2020, there is an increase in research articles compared to previous years. It is predicted that it will be in an even higher trend in the coming years and its market share will grow. These systems, which will support the physician in the diagnosis of the patient and the implementation of the treatment, will also be with the health professionals in the evaluation of the research results. With the trio of wearable technologies, the internet of things, and artificial intelligence, quality of life - hospital processes will be much more fluid, successful, financially more economical, and sustainable. Food and Health are always needed, and companies' directing their work areas to this area with constructive technologies in their digital transformation processes will enable them to catch up with rising trends.

Sectoral Transformation

D. Energy Conversion

It is known that the energy sector is one of the earliest adopters of digital technologies. As early as the 1970s, we saw new technologies in energy services to facilitate grid management and operation. On the other hand, oil and gas companies have long used digital technologies to optimize decision-making in their exploration and production processes, along with reserves and pipelines. It is observed that investments made by energy companies in digital technologies have increased sharply, especially in recent years. Today, more energy companies turn to cloud technologies to reduce their costs and optimize efficiency.

Thanks to digitalization in energy, the grids' reliability and profitability increase while providing efficiency in energy production, distribution, and consumption and enabling consumers to exchange energy among themselves, not from producer to consumer. While it is predicted that digital grids will provide an additional income of 800 billion dollars in renewable energy by 2030, it is estimated that 60 GW solar energy capacity can be reached in the European Union by 2025 with controllable intelligent applications. In this way, it is stated that the highest demand point can be reduced by 10%. It is impossible to consider all these developments independently of global "renewable" and "storable" energy targets.

While digitalization responds to a holistic need for the energy sector, it is of great importance in terms of energy security, especially renewable energy. On the other hand, it is possible to make end-to-end energy distribution simpler and more efficient with smart contracts to be realized within the scope of blockchain technologies.

In this way, accounting for emissions, more efficient use of energy resources, delays, and solutions costs will also be reduced. All these developments remind us again of the importance of digitalization in energy in the world, which is expected to exceed 9 billion people in 2050 and whose energy consumption is expected to double.

"The new oil of the energy sector is data. But there is more to the difference between "data" and "data processed with artificial intelligence and deep learning algorithms" than between crude oil and processed oil. Undoubtedly, the digital transformation will make data the most valuable commodity in the energy industry."

Dr. Cihad TERZIOGLU
360 Energy General Manager



Digital Transformation in the Solar Energy Industry and Effects

Kutay KALELI
President of GUNDER



Digitalization which is frequently discussed as the primary enabler of the transition to a low-carbon energy system, has been on the agenda of the solar energy industry for a long time with its transformative potential. This rapidly changing environment creates long-term value, and it requires a well-defined definition of all digital goals and strategies that spread. While the digital transformation of the energy sector is vital for sustainable economic development, it enables natural resources such as solar energy to be used more intelligently and efficiently.

Digitization is driving the proliferation of new business models by providing tools to manage demand and supply intelligently. In particular, it enables the emergence of platforms that connect large numbers of suppliers and consumers and prevent disruptions in infrastructure.

This situation requires existing companies to reposition themselves by adopting new technologies. As a result, digital transformations in the renewable energy sector are primarily driven by digital start-ups in development.

While most major transformations are successful in the broader economies, strong leadership and effective change management are an essential part of the transition adaptation process. The competition is getting fiercer, especially for forward-thinking organizations, quick to try and learn and do not retreat to their core and wait. In recent years, with the combination of a favorable market environment and technological developments, the speed and scope of digitalization of solar energy systems have increased.

The most crucial trend in developing intelligent grids comes from digitalizing electricity distribution systems. As demand and supply become more dynamic and uncertain, their qualities change, requiring faster awareness, analysis, and control. On the other hand, technological advances on both sides of the electricity meter make it possible to add new digital technologies and integrate them into ever-evolving grid automation systems.

Technologies used by companies in the solar energy sector contain different components. These are; big data analysis and evaluation (analytics), internet of things (IoT), robotics and unmanned aerial vehicles (drones), blockchain, cloud computing, 5G communication, wireless connectivity, 3D (3D) printing.

The study, which analyzes 789 energy technology initiatives by dividing them into 12 categories, emphasizes that there is a sector size of 72 billion dollars consisting of 1630 investors worldwide.

Among the digital technologies used by 181 companies in the solar energy sector, there are many technologies, from solar panel production to design, mounting, and monitoring solutions.

A better understanding of the use of virtualized power plants, where renewable resources are fully integrated and the necessary flexibility is provided, and their effective positioning depends on experience and using the digital world well.

Therefore, digital transformation is not just solar energy; all energy sector stakeholders must understand it as part of their social responsibilities. Only in this way can digital technologies help increase the amount of renewable energy in the energy mix reduce carbon footprint and climate change.



Sectoral Transformation

E. Transformation in Smart Cities

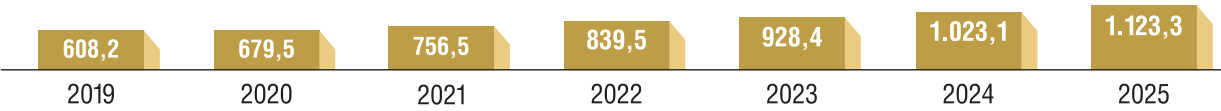
Another important trend that stands out with digitalization is “smart cities.” According to OECD data, more than 180 thousand people migrate to a city to live every day. It is expected that the world population will exceed 9 billion in 2050, and 70% of this will live in urban centers. On the other hand, 75% of the world’s energy production is consumed in cities, and 80% of greenhouse gas emissions are produced. From this point of view, smart cities do not only represent optimizing city services with technology but also stand out as the only solution to reduce the alarming risks posed by existing cities for the future of humanity.

The smart city eco-system consisting of smart grids, devices, sensors, and buildings guarantees sustainable growth. Sensors placed on traffic lights and buses to solve traffic, autonomous public vehicle fleets to reduce pollution, internet-connected garbage containers, carrying special devices that allow all senior citizens to access 24/7 medical consultation...

A fully sustainable city without cars in Dubai today Dongtan, near Masdar, Shanghai, and Aperi, 14 km from Vienna, where only renewable energy is used, and all of the waste produced is recycled, are among the rarest examples of “smart cities.” The global market of smart cities, which is the embodiment of the link between the digitalization of cities and the proper management of resources, is expected to reach \$608.2 billion in 2019 and will grow by 84 percent until 2025, reaching a volume of \$1.12 trillion.



Global Smart City Market Volume and Projection (2019-2025)



Billion \$

Source: Statista

Digital Transformation and Its Effects in the Electricity Distribution Sector

Yaşar ARVAS

General Manager of Dicle Electricity Distribution Inc.



The achievement of successful results in terms of performance and efficiency due to combining the labor force with technological tools has led all sectors to turn to digitalization and even rave in this regard. Like all other sectors, necessary steps have been taken towards digitalization in order to increase efficiency and performance in the electricity distribution sector. We can basically collect the industry's transformation for digitalization under two main headings. Digital Transformation in Support Operations: Enterprise Resource Planning Systems (ERP), which includes Purchasing, Logistics, Accounting, and Human Resources, within the scope of the digital transformation of support operations, which has many common points with all other sectors; Customer Information Management Systems (CMS) consisting of subscriber processes, meter reading, accrual and collection processes; Digital Archive Systems that provide fast access to documents and information; Integrated Call Center Systems for quick response to requests and complaints; Systems such as Asset Management Systems have been configured and developed for the tracking and maintenance of all assets in the inventory. Although these systems, which are relatively easy to configure and use, contribute to the sector, they are not sufficient transformation stages for real digitalization.

Digital Transformation in Distribution Systems: The main digital transformation studies in the distribution sector are digital transformation studies for systems that transform distribution networks into smart structures and make them remotely manageable and observable. SCADA Systems are at the forefront of these systems, which enable an intelligent network infrastructure in which the network is instantly monitored, faults are reported in advance, and the network is automatically turned on and off when necessary. Other systems that support SCADA systems are Interruption Management Systems (OMS), which allows minimizing downtime and affecting limited areas, informing subscribers in advance, Geographic Information Systems (GIS) for geographical tracking of the electrical network, instant updating, and display on the digital map, working in the field. Field Management Systems for the follow-up of all personnel and effective workforce management.

In the electricity distribution sector, before privatization, mostly in Support Operations digitization studies have been carried out, integrated systems are designed to serve with these systems; it is expected to receive millions of subscribers, followed by the energy segment. Specific standards have been established in the services provided, and the digital transformation has started.

After privatization, the distribution sector transformed into different regions and structures and produced many digital transformation projects. Although an essential part of these projects is aimed at increasing the digitalization in support operations, in recent years, fundamental steps of digitalization have started to be taken in this sense. In this context, The SCADA project has been implemented and is being tried to be disseminated. Thus, the electricity distribution infrastructure should be managed with technological tools whenever possible. Significant progress has been made in terms of continuity and sustainability in energy supply has been recorded.

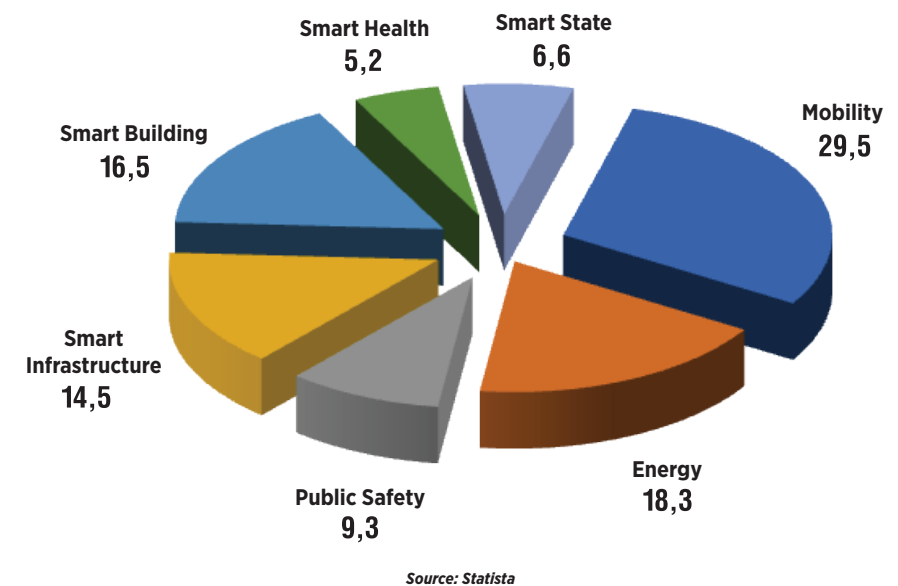
As a result of the digital transformation studies in the distribution sector, an electricity distribution infrastructure will ensure safe and maximum efficiency in every sense by becoming completely digital. Even as a result of these studies, our it will not surprise that it has a 100% national SCADA system.



Sectoral Transformation

By 2025, mobility expenditures are expected to have the largest share in the world smart city market, followed by the energy segment.

Segment Based Distribution of the World Smart City Market in the Future (2025)



As can be seen, “digitalization” has led cities to become a smarter places with the use of artificial intelligence and the most crucial option for humanity to manage resources more accurately and thus a sustainable world.



Ways of Doing Business In Corona Process

Murat EMIRDAG
CEO, Hepsiburada



Hepsiburada is the largest e-commerce platform in Turkey and the region. We are a giant platform that brings together more than 25 million product types in nearly 40 categories with our customers and hosts more than 200 million monthly visits. While we provide our customers with a good shopping experience by providing uninterrupted service, we continue to grow together with the retail sector with the constructive business model we have established. We have a philosophy that centers on customer experience. We continue to pursue many new projects, investments, and collaborations that make our brand more valuable. At Hepsiburada, we have created an ecosystem surrounding the online shopping experience.

In this sense, we have expanded and developed our marketplace model, which brings together tens of thousands of large and small businesses on our platform. With our "Technology Power for Entrepreneurial Women" program, we brought more women entrepreneurs into the economy. At the same time, we continue to strengthen our Smart Operations Center, which is the largest in Turkey and the region, with our Hepsijet subsidiary, which brings an innovative perspective to the logistics industry. In addition, a first as by the end of last year; We have implemented our Hepsixpress service, which we bring to our customers' daily, weekly, and monthly supermarket needs at any time they want. On the other hand, we have enriched our ecosystem with many different products and services such as HepsiPay, which offers solutions such as instant consumer loans and multi-credit card payments without going to the bank, and HepsiAd, our advertising platform that our business partners and brands can use.

While signing collaborations that will add value to our customers with many world brands from different sectors such as Apple, Allianz, and Visa, we continue to bring the businesses on our platform to foreign markets and become a world player thanks to our easy export model.

Our goal is; to make our country proud by writing an international success story. As Hepsiburada, we aim to be the largest technology company in the vast geography between the west of India and the east of Germany. We continue our investments and works without slowing down to become a giant ecosystem that will appeal to 1 billion customers located 4 hours by plane from Istanbul. As a technology company, we focus

on the constructive power of technology, not the destructive force. Together with the retail sector in Turkey, we have developed a model that supports growth.

Due to the change in consumer behavior that started with Covid-19, a digital transformation is faster than expected. As a result, consumers have experienced that they can practically and efficiently meet most of their needs in the comfort of their homes.

Therefore, we foresee that the share of e-commerce in retail will reach double digits in the near future. Turkey's Hepsiburada is at the center of the great digital transformation. We have a team that combines Silicon Valley and Grand Bazaar culture and blends data and experience.

We continue our close contact and cooperation with global brands and local SMEs. Our goal is; to make our country proud by creating a technology power and an international success story from these lands.

We are working so uninterruptedly that for life fits in the house.

In this difficult process that the world and our country are going through due to the Covid-19 epidemic, as Turkey's Hepsiburada, we have worked and continue to work so uninterruptedly that "life can fit in the house."

Of course, the health of our customers, business partners, and employees comes first. With this philosophy, we pioneered some issues by planning and implementing our health measures long before Covid-19 cases were seen in our country. Acting quickly provided a great advantage for us to manage the process more effectively. It is possible to summarize the actions we took during this period under three headings. The first is the issue of health and safety.

In line with the guidance of our Ministry of Health, we have implemented hygiene measures to protect the health of our customers, our employees, business partners, and the whole society at the highest level. We have sent a significant portion of our employees to work from home. In detail, we started accepting every product that comes to our smart operation center after sterilizing.

All orders are packed and disinfected by the teams that take the necessary hygiene measures, and they are set off most safely and are delivered to our customers by the Hepsiburada delivery teams following the hygiene rules. In addition, we regularly provide the necessary support and contribution for implementing similar measures by all our business partners with whom we work within our ecosystem.

The second was planning the supply chain, business processes, and coordination for operational continuity. Third, we created norms according to newly formed conditions and shared them among ourselves and with our business partners. Thus, we were able to continue to serve without slowing down.

Our third focus was social solidarity and community support. As Turkey, we believe that we will get through this process we are going through as soon as possible by joining hands and supporting each other.

First of all, within the scope of the national solidarity of "We are enough for us, Turkey," T.R. We supported the Ministry of Health with 500 thousand surgical masks and 500 thousand examination gloves. Then, with the arrival of Ramadan, we delivered 45 thousand Ramadan packages to families in need, in coordination with the Ministry of Interior and the Governor's Office, with the support of Hepsiburada and our customers. In addition, we announced our additional employment plan, which will reinforce our contribution to the employment and economy of our country by providing extra work of 5 thousand people until the end of 2020, to be employed in our Gebze Smart Operations Center, Hepsijet Logistics, and Hepsipress units.



In addition to our support to SMEs and Women Entrepreneurs, we recently launched the Retail Solidarity Movement to support Turkey's leading sector, ready-made clothing retailers and brands. In this context, besides the extra commercial incentives we give to BMD member brands; We offer support in marketing, e-export, logistics, and technology. With Covid19, the interest in e-commerce, where people experience its practicality, safety, speed, and advantages, continues to increase. The fact that millions of new people met with e-commerce during this period indicates this situation. In addition, people who have never shopped online or only met their specific needs tend to shop online. In general, we can expect to see our offline experiences carried over to online life.

We believe that content and features that facilitate decision-making and selection, conveniences such as installment shopping or online consumer loans, and innovations in mobile experience will shape e-commerce both in Turkey and around the world. However, big data analysis will maintain its importance. Process solutions such as warehouse software will increase their importance. E-export, which eliminates geographical boundaries for consumers and sellers, will gain even more prominence. As an extension of this, solutions such as international logistics, multi-language competence, multi-currency payment infrastructure will be needed.

As Turkey's leading e-commerce platform, Hepsiburada, our goal is to provide our customers with a good shopping experience by providing uninterrupted service and to grow together with the retail sector with the constructive business model we have established. In this sense, we will continue to produce projects and make investments with our R&D teams.

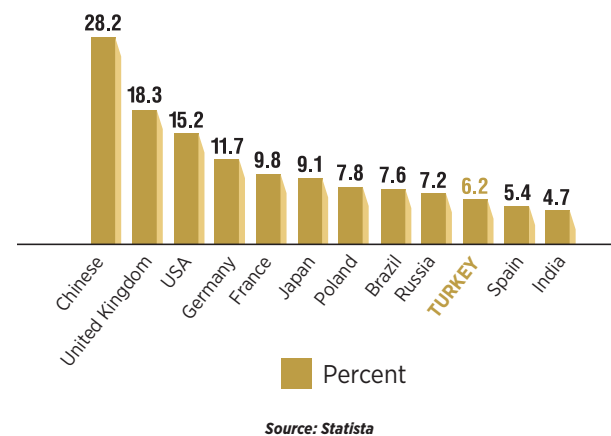
Sectoral Transformation

F. Transformation in Retail

With a volume of more than \$ 25 trillion at the global level, the retail industry is perhaps the first of the sectors where the experience of digitalization is experienced in the fastest and most competitive way. Change is redefined every moment with the consumer profile.

During the Covid-19 pandemic, e-commerce has seen a significant rise in the quarantined world. While physical sales fell dramatically in many countries, e-commerce saw substantial growth in almost every category. Today, the number of online shoppers globally with 4.5 billion interneters, 5.1 billion mobile phones, and 3.8 billion active social media users has surpassed 1.9 billion people. In China, which makes a difference to the world, the share of the online retail market in the total retail market is 28.2%.

**Ranking of Selected Countries
by Share of Online Retail in
Total Retail (2019)**



While e-commerce is growing very strongly in the retail sector, “physical stores” are at the center of the experience economy. Amid debates on whether e-commerce will end physical stores, the profitability of physical stores that have performed the proper omnichannel management is increasing. The secret to placing stores at the center of the “profit-making experience” lies in digital optimization. Thanks to in-store digitalization, it is possible to over-segment the customer and prepare hyper-personalized solutions for it.

At the end of 2016, “Which customer entered the store last, when and how often? In which department did he spend more time? How many times did he leave without shopping? What product did he search for and couldn't find?” With The AmazonGO, which gave appropriate answers to these questions, quite interesting results were achieved. According to CNBC, there will be 3,000 fully digital AmazonGO stores by 2021. Forecasts show that the cashierless retail market could grow to \$50 billion in the medium term.

While the consumer demand is measured and answered moment by moment with “instant markets,” virtual experience of products with AR-VR technologies, mobile wallet applications, instant pop-up discounts, uninterrupted customer loyalty applications, smart shopping carts, assistant robots, detailed products defined by QR codes, IDs, touch screen mirrors, Cashierless stores and delivery of products, stand out as essential patterns of the process.

During the Covid-19 epidemic, we have experienced in the world and our country that online retail order applications minimize the need for physical shopping areas with warehouse and logistics solutions. Applications such as Getir and Yemeksepeti can deliver products of many brands/businesses to consumers with contactless solutions, thanks to their regional warehouses.

On the other hand, many brands can reach more consumers without increasing the number of physical stores thanks to their “marketplaces.” In a world where competition conditions are getting more challenging, the secret of digital transformation in retail is to grasp this new spirit.

Sectoral Transformation

G. Transformation in Services

With digitalization, many services are expected to change in the near future, and new services that never existed will emerge. While traditional service providers digitize their processes, “digitalization of experience” is central to digital transformation. Especially the banking and finance sectors, where digitalization has the highest penetration, provide their digital services with each day and use technologies such as blockchain, artificial intelligence, chatbot.

It further increases with fintech collaborations and allocates billions of dollars a year for “sustainable digital innovation.” According to the World Economic Forum estimates, tourism, another traditional service sector, is expected to create an additional value of 305 billion dollars with digitalization at the global level in 2025. Many service industries, from logistics to lawyers, from the food industry to entertainment, are equally open to creating “new value” with digitalization.

Another dimension of digitalization in the service sector is the “destructive players.” From the digital broadcast service provider Netflix, whose subscriber count exceeded 180 million in the first quarter of 2020, to the car-sharing service provider Uber, which closed 2019 with a turnover of \$ 14.1 billion, to the digital meeting with 300 million daily users during Covid-19. Many digital players are redefining the “service economy” content, from Zoom, a service provider, to Airbnb, an online accommodation services provider that closed in 2019 with \$4.8 billion in revenue. In this way, many traditional service industries, from TVs to taxi services, from office spaces to hotels, face a “destructive” impact. Considering the possible “disruptive effects” of the numerous new players in the service industries, a much more competitive image is reached.



On the other hand, with the introduction of the “sharing economy,” the experience value of the service becomes more prominent. In this way, the thick lines between product and service in many sectors become blurred. It is challenging for traditional service providers to survive in the face of this dynamic structure. In the background of increasing competitiveness, there are “effective digitalization” strategies.

Digital Transformation in Education

Assoc. Dr. Mustafa AYDIN

Istanbul Aydın University
Chairman of the Board of Trustees



With the covid-19 process that shook the whole world, existing technologies in many areas have been questioned again, and new technologies have been developed and used quickly.

This rapid transformation process has undoubtedly affected the education sector as well.

Digital platforms, which have emerged in every field in recent years, have become indispensable instruments by being placed at the center of life on the occasion of Covid-19.

Educational activities, which have been understood to be unsustainable with the habits of the last century, have rapidly entered the trend of digitalization with the epidemic that caused all our life habits to change. The education sector, which is almost at the top in the use of digital platforms and applications, has begun to drag many sub-titles related to itself towards the digital world.

The need for digitalization that emerged in the past three months and the solutions that were found quickly brought a crucial issue to the agenda: synchronicity.

In other words, it has been understood enough in this short time that using digital technologies in education alone will not work, and results-oriented discussions have started on the development of all the parameters of the problem, educational technologies, digitalization in teacher-student-learning and the harmony of education with digital technology on a local and global scale. As a result, admittedly, education cannot be sustained only with technological devices. The priority of the digital content; the crucial role of gamification method is in educational technologies; facilitator effect of teachers' peace with digital technology like the students in learning; renewal of teacher and student definitions that the teacher should assume guiding roles; all these have become the main issues of education. The importance of local approaches in education is gradually decreasing, and an education model that cannot respond to global needs will be insufficient in this respect.

Istanbul Aydın University, which can quickly position itself in the focus of these discussions, has tried to evaluate this process as an opportunity in terms of technological transformation in education. Our successful experience has given us a strong vision for the future of digital transformation in education. Although increasing the online education capacity in our university was discussed from time to time before the Covid-19 epidemic,

and it was among the strategic goals, the changing higher education behaviors as of March 16 made the digital technology target in education to be at the top of our university's priorities. Narrow-scoped distance education activities, which were carried out with institutional access opportunities before Covid-19, now serve students by switching to "cloud" technology.



On the one hand, increasing the capacity of internet access, on the other hand, the use of their own devices and internet facilities by the facilitators and participants, namely the faculty and students, brought the campuses beyond the walls. We have gained a unique opportunity to transform our higher education systems into a more efficient and versatile structure in the long run. Campus-based higher education supports the power of face-to-face learning and the transition of young people to adulthood, and it is becoming a broader experience with digitally supported educational tools. However, we also face an excellent opportunity to transform the industry beyond traditional methods. Education will now continue as a hybrid education experience.

Digital Transformation in Education

Uploading lecture slides to a digital platform or converting them to PDFs should never be perceived as digital conversion; it's just digitalization. We will continue to see and develop new inclusive and forward-thinking models if we can adopt, implement and transform digital transformation into an effective educational tool if we change our perspective by using new technologies to support face-to-face campus education, which will never be irreplaceable.

Now, instead of focusing on the challenges we face, we need to start thinking about our "gains" and "how we can integrate technology to solve problems."



With the digital transformation, which is inevitable in education, we will see changes in many areas in the future.

First, outdated training models will be deprecated. We will see new visions and, accordingly, renewed strategic planning, and these strategic plans will include different goals and roadmaps. The best practices of face-to-face and online learning will be combined to provide much higher quality education services. Educational institutions will develop more collaborations and joint training, projects, research, and programs.

Many educational institutions may want to operate in the same way as before Covid-19 in the coming period, but this will not be possible. As we have always believed and advocated, forward-thinking visionary institutions like us who have always applied technology as a part of education and technology will turn this period into a unique opportunity to create and implement digital change in an unprecedented way.



Sectoral Transformation

H. Transformation in Education

According to UNESCO data, 91.4% of students, or 1.57 billion students, could not go to school in mid-April due to the Covid-19 pandemic. In this process, educational institutions offer their students via digital platforms. On the other hand, millions of people in quarantine felt the need to access “educational content” in various categories that would feed their personal development. These pieces of training have a wide range from graphic design to music, from gastronomy to engineering. Therefore, even if the effects of the pandemic will decrease in the coming period, it is easy to turn “online education” into one of the permanent behaviors.

The global online education market, which was \$187.8 billion at the end of 2019, is expected to reach \$319.1 billion by the end of 2025, supporting this insight. As of 2019, the number of students receiving online education services in China, which ranks first in the world in this regard, has reached 261 million. The motive for growth in this field is ed-tech companies. The global online education platform Udemy, co-founded by Turkish entrepreneur Eren Bali, is one of them. Celebrating its 10th anniversary, the company has increased its valuation to \$2 billion by receiving an additional \$50 million investment at the beginning of 2020 from its long-time partner, Japanese publisher BenesseHoldings.



The number of users increased by 200% when BYJU's, headquartered in Bangalore, India, the most valuable company globally with an investment of \$540 million in a round in this field, opened five live lessons for free access with the Covid-19 outbreak. Zoom, Google Classroom, Moodle, JoVE, KAHOOT! like many platforms have also increased. It is estimated that traditional education institutions will also want to reach a more competitive position by digitizing their processes in the coming period. At least, one of the signs of the pandemic process is that this process is expected to expand with more artificial intelligence, access to course content with personalized solutions, and more democratic education methods with VR / AR elements.

In the covid-19 pandemic, as in the whole world, the interruption of education in Turkey has brought the “online education” mobilization. The online social education platform, Education Information Network, whose short name is EBA, has been developed entirely by local software developers and has become a platform where national education is maintained uninterruptedly.

Similarly, it is seen that there has been a significant increase in the number of certificate programs focused on “lifelong learning” within or outside the university, which started in the pre-Covid-19 period. As a matter of fact, the global online course market, which was \$3.61 billion at the end of 2018, is expected to reach \$25.33 billion in 2025. Moreover, although computer and internet access rates have been weak in less developed regions of the world recently, online education is expected to consolidate its position, especially with the developments in broadband technology. Therefore, it does not seem possible for traditional education service providers to emerge victorious in the face of this “wave” by simply sticking to the old methods.

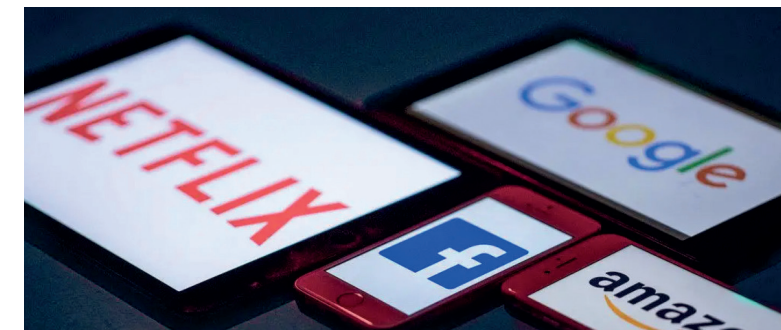
Effects of Digital Transformation on Branding

While the rules are being redefined in all sectors with the digital revolution, it is impossible to carry out branding activities without considering this parameter effectively. The tendency of brands to take advantage of the opportunities brought by digitalization, which gained momentum before the Covid-19 pandemic, will continue to be at the top of the agenda after the pandemic. With digitalization, brands can reposition their profitability, customer loyalty, and brand perception. Hence, today “Digital transformation” has a central place in the branding strategy.

While the poor management of digital channels and the delay in the process have shaken the image of many traditionally powerful brands, new brands that are active in these areas continue to write success stories. In other words, a sad end awaits brands that cannot keep up with digital change, whether they are in the B2C or B2B segment. Futurist and digital analyst Brian Solis calls this “digital Darwinism” In other words; it is an order in which brands that cannot effectively manage the digitalization process will disappear into the depths of history.

As a matter of fact, when the top 10 brands are analyzed within the scope of the 500 most valuable brands published by Brand Finance in 2020, it is observed that seven brands are technology brands. Amazon is in the first place with a value of over \$220 billion, followed by technology companies such as Google, Apple, and Microsoft.

At this point, the concept of “experience economy” comes into play. Accordingly, brands should strive to improve and perfect the quality of experience in all media to meet with consumers and business partners. From logistics to stores, from e-commerce to after-sales services, it can be easily said that companies that approach the consumer with digital innovation will be a few steps ahead in their branding adventure.



From a user-friendly website to mobile applications, from assistant robots to order delivery with drones, from AR/VR technologies to “experience stores,” digital touches by brands can strengthen brand loyalty and ultimately increase “profitability.” For example, Uber, not with its logo or slogan, but with its “quality of service,” an essential part of which has been digitized, has managed to become a rising actor. With digitalization, brands can address their micro-target audience in more ways and more cost-effectively.

In particular, brands that can obtain more personalized data about their target audience with data management can establish a closer relationship with their consumers with data-based marketing methods. In this way, brand arguments can gain integrity and consistency. On the other hand, thanks to digitalization, consumers have the opportunity to communicate “about the brand” both with the brand and among themselves. Thus, it provides a basis for them to engage in a more emotional relationship with the brands they choose.

It should not be forgotten that consumers are the “decision-makers” of the new era, but at the same time, they are all digital tired. For this reason, it is necessary to provide the most strong digitalization experience to transform the digital tired into buyers. However, it should not be forgotten that all of these also bring a “control problem.”

While brand managers could control traditional communication channels 20-25 years ago, it is impossible to keep brand perception and consumers in today's pluralistic and microchannels. This requires repositioning the “brand DNA” and being consistent across all channels.

What Is This “as a service” Economy?

One of the most important reflections of digitalization on business operations is the “as a service” (AaS) economy. This concept, which has come to the forefront with its independent cloud platforms, especially in recent years, refers to a service system where customers can leave whenever they want and return whenever they want, and it is one of the concepts that most reflects the spirit of the digital revolution. At the heart of this concept is the traditional one-off product sale. However, there are business models in which products are provided “as a service” based on subscription-based purchases. In this respect, companies have the opportunity to suspend or exit the system when they don't need them while purchasing the functions and capabilities they need as a “service.”

Thanks to this method, which brings efficiency to costs, increases efficiency and competitiveness, and encourages innovation in infrastructure and applications, companies periodically transfer their technological transformations, which mean substantial financial burdens, to independent service buyers. For example, Deutsche Bank has saved 15% procurement operations and operational IT costs by moving many of its processes to an on-demand cloud platform. Another advantage of these platforms will be that they can stay up-to-date. Again, it is possible to think that companies will no longer need weak technology and overblown personnel. Furthermore, companies with the AaS economy; can establish partnerships with suppliers, customers, and even competitors. AaS is not just a transformation process that consists of companies moving their IT systems to cloud platforms. On the consumer side, interest in similar products is increasing rapidly. Instead of buying things like software, music, movies, there is a growing tendency to subscribe to platforms that provide these goods and services. Netflix or Uber, the digital broadcasting platform with more than 180 million subscribers in the first quarter of 2020, are important actors in the “AaS” economy.

On the other hand, software company Adobe's market cap increased from \$19 billion in January 2013 to \$163 billion in January 2020, the way it stopped selling perpetual licenses. In other words, consumers want results, not ownership. As a result, the AAS economy is becoming an increasingly dominant model.



The AAS economy also removes the boundaries between product and service. For example, as early as 1997, Rolls-Royce transitioned to a “TotalCare” system that allows airlines to pay for engines based on flight hours/number. Accordingly, the “equipment-as-a-service” (EaaS) market is expected to proliferate, reaching \$21.6 billion in 2019.

In light of this dynamic digital transformation, it is necessary to focus on demand- and subscription-oriented approach rather than one-off customer relations. In such a world, it is inevitable for companies to think longer-term. So the way they do business should focus on a longer-term renewal approach rather than relying on “cash-driven” opportunity sales. The way to do this is through adaptation to the digital revolution.

Technological Trends That Will Shape the World

Let's take a quick look at the technological trends that will shape the world

Practical Internet of Things

All systems provided with interrelated computing devices, mechanical and digital machines, objects, or unique identifiers (UIDs) that can transfer data from or to people over a network without the need for a network are called the Internet of Things or IoT (Internet of Things). To give a brief example, a smartwatch on our wrist measures the distance we travel, the number of steps we take, and our heartbeats while performing these activities. It has sensors that can detect it.

In this way, the collected data is analyzed by a client (computer, mobile phone, etc.) without the need for human beings and helps us to make our daily life easier. As we can see, this relationship between two devices is at the heart of the Internet of Things. It won't be long before the number of devices connected with 5G and general IoT applications reaches a large scale today. Amazon recently launched AmazonGO, which uses IoT and machine vision technologies to enable consumers to shop without manual check-out. Of course, that means more sensors and vision technology. Already Startups Standard Cognition, AccelRobotics, Trigo, Grabango, AIFI offer similar services.



Voice-Language Applications as User Interfaces

Voice assistants, which millions of people use worldwide on their phones, tablets, speakers, or other devices connected to the internet, are the most familiar examples of voice-language applications as a user interface. The assistants, who accept the user's voice input as a command, primarily filter the noise, convert the voices into machine language by tagging and voice recognition methods, communicate with a server in the fastest way, and make this data usable through the interface. While current digital voice assistants such as Google Assistant, Siri, or Alexa aren't perfect yet, they will continue to learn quickly. As a result, many new applications are expected to be added to the family.

Technological Trends That Will Shape the World

Mass Commercialization of the Use of Quantum Computing

Quantum computers are computational model that performs quantum computation using the quantum mechanical principles of physics. While the “bit” unit is used in digital computers, and information unit called “qubit” is used in quantum computers by a few large companies worldwide. With these computers used, the problems that digital computers can solve in a very long time can be solved in a short time.



In other words, as data grows, quantum computing will be dedicated to solving the biggest problems in industries like health and energy. Big data for cancer treatment, nuclear energy control, DNA analysis machining ability will be required. IBM, Google, Intel, Microsoft, and Alibaba started working in this field. Volkswagen uses this method to test traffic flow optimization and accelerate battery development. In October 2019, Google claimed that they had completed the computation in 200 seconds on a 52-qubit quantum computing chip using a quantum computer, which takes 10,000 years in the fastest digital supercomputer. On the other hand, IBM launched the 28 qubit quantum computer Raleigh at the CES 2020 Fair. As a result, quantum volume every year since 2017 progresses by doubling.

Distributed Cloud

In its simplest definition, cloud technology stands out as an online storage service that provides operational convenience with web-based applications that do not require any installation. In this direction, cloud technology means that all applications, programs, and data on the internet are stored in a virtual machine, data center, in the cloud. Thus, it allows us to access this information, programs, and data in every location with the device we are connected to the internet. In the coming period, the location-independent cloud servers will be distributed to different locations in the new paradigm, and thus, the new dimensions to be gained are defined as “distributed cloud technology.” Accordingly, 75% of the data produced by startups is expected to be processed in 2020, regardless of whether it is stored in a central cloud.



Cloud Technologies, Digital Realty and Transformations in Industries at a Global Level

Omar M. WILSON

Founder of Anatolia.Asia™ Consulting Group
Senior Executive of Digital Realty Asia Pacific



We are going through special days.

The Covid-19 epidemic, which has affected the world, rapidly led all humanity towards a ‘digital new order’ with the effect of an ‘accelerator.’ The more we explain the importance of this period, the more we dwell on it, and the more we try to prepare ourselves. Individuals, companies, and of course, most importantly, the measures that states will take against this “acceleration” are very critical. “We’ve seen a two-year digital transformation in just two months,” explains Satya Nadella, Microsoft’s CEO. As you know, Azure, Microsoft’s cloud technology service, recorded an extraordinary increase of 775% in just the first three months of the epidemic. Likewise, Akamai, the world’s most important Internet CDN (Content Delivery Network), Internet Content Delivery Network, announced that it created a 30% increase in traffic on the internet in the first three months of the epidemic. This is an unprecedented increase in the history of the internet and means a double rise in numbers for them compared to the same period last year.

These are all effects of digitization that we have only seen so far. Most analysts say the actual big days are ahead of us when much more change will occur. For example, we first started to see the ‘tsunami’ effect in the world service industry created by this situation. In addition, since the beginning of the epidemic, 40 million people in the USA alone filed for unemployment. This is the fastest and highest unemployment figure since the great depression. So, are all these developments due to the virus called Covid-19? ...the answer is, of course, no.

The presentation of everything as an ‘App’ application, defined as ‘Uberfication,’ had resulted from the change brought about by technologies on both mobile and data basis. This era of Uberfication, which used to be led by Silicon Valley, seems to open up to different horizons with applications such as Uber, Airbnb, WhatsApp that have turned old sectors upside down, and new generation applications such as WeChat, AliPay/Alibaba, Grab etc. coming from China and emerging Asian markets.

Along with the ‘data’ of this new era, the most crucial infrastructure technology has taken its place as cloud technologies. As Amazon founder Jeff Bezos said, “...If I were starting Amazon during this period, I wouldn’t have bought and used any technology infrastructure.”

– And why is Bezos saying this?

Because we live in a period where the technological infrastructure of every person, company, and industry can be accessed through the cloud by using the public internet. What does this also cause?

A period in which every sector necessarily evolves and survives to the extent that it can adapt to change. Another area where we will feel the ‘accelerator’ effect of Covid-19 in digital transformation – “artificial intelligence.” This technology, which we should focus on, is a formation that can have the effect of ‘changing’ not only the sectors but also the whole of humanity... Artificial Intelligence, which Stephen Hawking has emphasized as the “greatest danger to mankind,” has the potential to solve our biggest problems, but it brings incredible dangers when left unchecked. Just as previous industrial revolutions were built on ‘electricity’ produced by petroleum, it is interesting that Artificial Intelligence will assume an ‘electricity’ function for digital transformation in the coming period.

This ‘electricity’ will also work and spread not with oil, but with ‘big data, which is the 21st century’s metal, as we mentioned before. But, again, interestingly, like the ‘Seven Sisters’ companies that marked the first century of oil, the ‘Seven’ companies that will manage today’s Artificial Intelligence paradigm have come to the fore, half of them based in the USA and less than half of them in China: Microsoft, Facebook, Google, Amazon, Alibaba, Baidu, and Tencent. In the new era, companies, sectors, and countries that can keep up with this tremendous technological development and preserve their ‘human’ characteristics will come to the fore. At this point, I think that Turkey and Anatolia can have a vital position in forming the infrastructure for ‘Technology ForHumans™,’ i.e., ‘Human Technologies.’ In this period when all the technology giants are making tremendous investments in ‘emotional’ intelligence and ‘ethical AI,’ Turkish companies and government strategy are ready and open-minded youth to be Turkey’s role in the new industrial revolution. It will likely play a decisive role and respond to an essential need of the world. Coding or science learned only on ‘repetition’ of the new era’ empathy,’ ‘creativity’ and ‘human feelings,’ rather than I believe that those who bring it to the fore and give direction will have a hundred years.

In this period, when all sectors are radically changed, and current business forms will be radically destroyed, Turkey can become a center where “human technologies” bridge the world with the merger of “science” and “faith.” This is something in the soil and history of Anatolia and the genes of our people. Only an awakening is expected.

I would like to end my thoughts with a comment by Thomas Friedman, an American writer, and political scientist, that I liked very much. Friedman said the following about the future of the business world and professions;

“Mankind, for a long time and ages, did work and produced with their ‘hands,’ then this evolved to work and produce with our ‘brain,’ now we will have to work and produce with our ‘hearts’... because there is one thing that machines can never reach directly and that is the ‘heart.’”

Greetings to Anatolia, the leader, and homeland of hearts and faith for centuries.

“Mankind has done work and produced production with their ‘hands’ for a long period, and then this ‘brain’ evolved to work and produce, now we will have to work and produce with our ‘hearts’... because there is something that machines cannot reach now and will never reach, he da ‘heart.’”

Greetings to Anatolia, the leader and homeland of hearts, and had been faithful for centuries.

Technological Trends That Will Shape the World

Evolution of Aerospace Technologies

As of 2020, humanity is turning its face to space again with companies that develop in aviation, such as SpaceX, Blue Origin, and LinkSpace. In fact, this field has weakened somewhat since the Cold War. However, with the introduction of commercial travel and space-related broadband services, intercontinental travel and space travel could be shortened to 20-30 minutes. On the other hand, SpaceX’s broadband provider satellites have already been spotted over Istanbul this month.



5G Technology

China’s telecom companies started using 5G technology in many metropolitan cities in the last months of 2019. With the establishment of 80,000 base stations quickly, 5G services began to be offered in nearly 50 cities at the beginning of 2020. At the same time, it is estimated that 130,000 subscribers have been reached in China at the end of 2019, in 2024. It is expected that there will be 1.9 billion mobile 5G subscribers worldwide. Internet connection speeds will be faster than ever due to the US and China’s race to bring 5G to large markets. Thanks to 5G, download speeds will increase to 10-50 gigabits per second and at least 100 billion device connections between 2020 and 2030. In addition, there will be a tremendous increase in capacity. Thanks to 5G technology, it will be possible to use minimum energy, use vehicles with autonomous driving capability, establish high-speed video conferencing connections, and play mobile games more fluently. More importantly, the “true customization” era is expected to begin with the ultra-speed and capacity that 5G will provide. In short, the 4th Industrial Revolution will start with 5G, and by 2035, 20 trillion dollars and 22 million new jobs will deliver to the global economy.



All-Digital Stores

Cashierless checkout, augmented reality, online POS... The amazing combination of all this will obviously transform our retail experience soon! Cashierless stores launched by AmazonGO are a prime example of this.

Accordingly, before entering the store, customers read the application on their smartphone to the system at the entrance. Sensors on the shelves identify the products chosen by the customer and add them to the list. When the customer puts the product back in its place, the product in question is deleted from your cart. After the shopping is completed, the transactions at the cash register are disabled, and the cost of the products they purchase is reflected on their credit cards when the customer leaves the store. Retail businesses will have to go further digital to compete with AmazonGO and its like.

5G and Digital Transformation

Can OZTURK

5G / IOT Business Development Manager
Telecom Company Seattle USA



With the introduction of the 5G network, people changed their interactions with the world, other people, and everything surrounding them.

In the 1990s, we witnessed the first digital transformation process, transitioning from “1G” analog cellular technologies to “2G” digital systems.

Most of us can remember cellular services with SMS and low-speed data in addition to voice over 2G networks.

Since then, we have been on a long journey with 3G and 4G network developments, and finally, very few Mobile Network Operators have started to use 5G networks with higher throughput, higher connection density, and lower latency. Digital transformation has brought us a new term called M2M (Machine to Machine), especially in 2G and 3G networks. With 4G and 5G networks, the M2M has been transformed into IoT (Internet of Things), which has powered by centralized data storage, big data, and additional capabilities such as machine learning and virtualization.

The most apparent impact of the introduction of 5G is the significant shifts between human-human interaction, machine-machine interaction, and human-machine interaction. Virtual communication between people in social and family relationships, remote working, and data transfer from one point to another will be seen more and more frequently with 5G capabilities.

We have started to see widespread applications of 5G use in areas such as Remote patient control, telephone inspection, environmental monitoring in farms, high-speed cellular connectivity for remote access in schools, property and people tracking, self-driving cars, smart cities, and wearable devices in healthcare, agriculture, automotive, government, education, and other industry sectors. The 5G evolution also has a hidden impact on businesses in the Telecommunications ecosystem.

In particular, Mobile Network Operators will begin to feel the need to choose the right partners who will not threaten national security. In addition, governments are becoming more aware of keeping their intellectual property, technology, and national information in their own countries. 5G is also experiencing convergence; 5G has become an alternative to wired broadband, which directly impacts the competition of ISPs and cable service providers. Within the IoT, the foresight of 5G, new business assets were created to fill the service gap for “end markets” such as Solution Providers, System Integrators and Aggregators. For example, in the US, people and companies are open to changes in technology and new ways of doing things. Startups, especially SMEs, built with unique ideas and solutions that use 5G capabilities every day. The younger generation looks pretty knowledgeable in using their daily base of new technologies.



The US government protects basic information from reverse engineering and theft by other countries. Further regulation is made by the government on information exchange with companies in opposing countries. Bringing production capacities back to the US is one of the most visible implications of the 5G evolution for the US government's decision. Meanwhile, the US government protects basic information from reverse engineering and theft by other countries. The government is making more regulations regarding exchanging information with companies in hostile countries. Bringing production capacities back to the USA, 5G evolution most visible one of its effects in terms of US government decision. Overall, 5G is not just a new technology. Instead, 5G is a constant change in how people live, how they maintain quality of life, how nations stay strong, and how they become more successful in this regard.

5G and Digital Transformation

Muzaffer GOLCU

General Manager of General Mobile
Head of MUSIAD Artificial Intelligence and 5G Working Group



Digital transformation, 5G, and this dizzying effect of artificial intelligence are among the most talked about and discussed topics these days. So let's take these developments, which reveal a great market potential in almost all sectors and excite them, separately. I seem to hear the question from investigative, enthusiastic, and enthusiastic entrepreneurs: “How can I integrate 5G and artificial intelligence into the business idea or Digital Transformation I want to bring to life?” Artificial intelligence is developing day by day. 5G, on the other hand, offers us a new generation of fast communication and telecommunication infrastructure services. In this process, instead of focusing on the complex structure of 5G and artificial intelligence, the first thing our entrepreneurs should do is realize the potential, efficiency, and positive results that this technology can create in business ideas. At this point, it is vital to make difficult decisions when necessary and to prioritize concrete results.

I would like to continue the topic of artificial intelligence with our company's study with Google's Artificial Intelligence Assistant. As you know, we have installed our assistant in the voice and Turkish assistant of “Ok Google,” which is one of the most popular voice assistants, and we have made it possible to answer almost all incoming calls to our call center. It reduced the burden of both our call center and sales and marketing units by providing 24/7 service. So how does this artificial intelligence assistant work? When you say “talk to General Mobile,” you connect to the assistant developed by the engineers in our company and start talking. Then, you give the artificial intelligence assistant to the new staff you hired to the company. With orientation, you provide a training set that teaches you what you do; they try to understand the subject by asking you questions. Using machine learning technology, the assistant asks, “Is this right?”, “Is this how I should understand it?” etc. After understanding the subject with questions, he asks you questions from your customers that he cannot answer. The next stage starts to make suggestions to you using artificial intelligence algorithms.

*So how can you create your own AI assistant?
To understand the logic of this business and experiment, I recommend you to review this site:
<https://console.actions.google.com>*

Start your digital transformation with the digital employee:

Its digital employee background includes artificial intelligence, machine learning, robotics, and automation technologies. As a result, you can create a business model that can work collaboratively with digital workers and human workers, obtained by digital twins of many roles, and provides immediate business value.

You can hire digital workers pre-trained by your IT, service desk, or engineers. Digital workers are especially suited for customer service, finance accounting, IT and HR professionals, banking, insurance logistics, e-commerce, and healthcare industries. For example, you can achieve the fastest efficiency in finance and accounting, which has a 50% automation potential, by having the digital worker do repetitive manual tasks. Get the job done. Let it start working 24/7 and 365 days. I fully believe that you will get a lot of efficiency and pleasure from these digital employees who do not want a salary, food, service, or breaks.



Imagine that this digital employee is also your assistant. Wouldn't it be like Aladdin's magic lamp? Say whatever you want from me!

As a result, it is time to apply the technological developments that excite us to our work and our lives in a way and move forward. I hear you say, "Where should I start from": Based on the phrase "A person is his/her doctor," you know your business best. You can start by digitizing the most straightforward, most repetitive tasks, even with a small team, and then you make a roadmap for the rest. This path is neither too long nor too short. We can also liken the ride to a bicycle competition; you must keep pedaling and progressing. This process does not happen overnight and needs to be supported by continuous improvement over time. Digital transformation, rather than a project, is a change that requires patience, discipline, and constant attention. If the companies that started this transformation do not have the continued support and interest of their CEOs and senior managers, they will have to recheck where they are now. Everyone should take responsibility and create a new way of life together. That's when the technologies I described above find meaning, and companies that implement and understand them to win.

Technological Trends That Will Shape the World

Virtual (VR) and Augmented (AR) Reality

Virtual reality (VR- virtual reality); Augmented reality (AR) is the application of superimposing virtual objects on real images by using the object recognition feature of the devices. There must be internet access and devices (smart glasses, phones, tablets, etc.) that will define reality in the environment, and one of the applications must be installed on these devices to have benefited from both technologies.

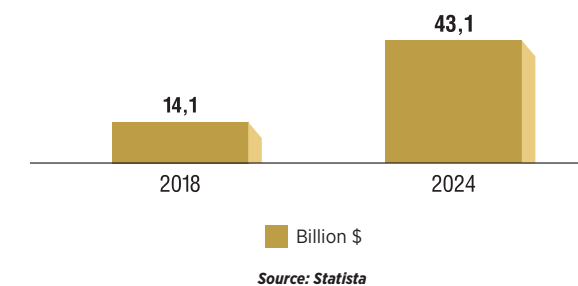
Augmented and virtual reality technologies; marketing, home decoration, entertainment, retail, education, healthcare, etc. have brought in quite innovative dimensions in a vast range. In this way, many functions, from museum tours to surgeries, can be easily performed. For instance, retail giant IKEA integrated technology into its catalog in 2014 that allows you to try to decorate an empty house without purchasing products. On the other hand, with augmented reality in the retail sector, virtual reality glasses, touch-screen mirrors, and hangers will be used more frequently, replacing test booths.



Autonomous Driving Technologies

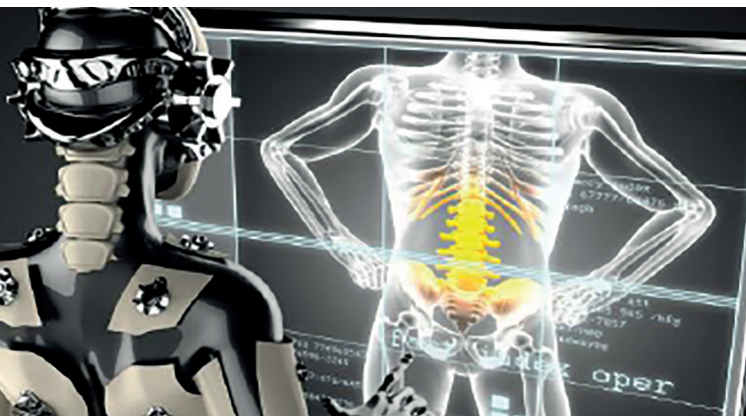
It is only a matter of time before the transition to fully autonomous, that is, Level 5, applications in autonomous driving. According to ElonMusk, it will soon see 1 million Robo-taxis on the roads, but it is a little early to say, according to many experts. However, autonomous driving technologies are not limited to road services only. For example; At the CES Fair in Las Vegas, the electric air taxi project developed in cooperation with Uber and Hyundai was introduced. With this system, a new concept has already been introduced to transportation.

Global Commercial Drone Market Volume and Projection (2018-2024)



Technological Trends That Will Shape the World

Human Empowerment



Technology for human physical and cognitive healing mobilization is prevalent. Genome analysis is already being used to learn about diseases and create prevention methods. With the development of artificial intelligence, the quality of treatment will increase. On the other hand, human empowerment technologies are not limited to the health field. Companies like Boston Dynamics offer a wide variety of human reinforcements that can be used in factories on battlefields developed devices. Smart wearables, or wearable technologies to improve worker safety in the mining industry, are the tip of the “iceberg.”

3D Printers

3D printers’ optimum solutions in all industries continue to produce. One of the most striking examples is the production of bionic body parts with 3D printers. For example, scientists at Princeton University have succeeded in 3D printing a bionic ear that can “hear” well beyond the frequencies that the normal human ear can hear.



Robot Assistants

We are in the momentum where the capabilities and uses of assistant robots have enormous expansion potential. Robot manufacturers such as Boston Dynamics have developed many robot assistants that can be used in factories or on the battlefield.



Sharing Economy

Maybe it would be more accurate to call it a business model rather than technology. However, it is clear that it has the potential to trigger new technologies and business models already. For example, reaching \$14.15 billion in turnovers in 2019 and creating the concept of getting in someone else’s car instead of calling a taxi; Airbnb, the platform where hosts worldwide rent their homes for a short time to visitors, with a turnover of \$2.6 billion with Uber, is the most important representative of this trend.



Technological Trends That Will Shape the World

Agricultural Technologies

The monitoring of crop productivity with artificial intelligence and big data the greater use of robots in the collection of fruits and vegetables will obviously be the biggest supporters of new solutions, even though humans face the risk of famine.



The reliability of the system will increase With more computers joining the system. By 2020, the use of blockchain will increase its impact and prevalence. Although it seems to be a helpful technology for the financial sector, interest in blockchain technologies will grow in a wide range from the manufacturing industry to health in a short time. This will prevent large-scale information leaks and internet fraud, provide transparency from eco-systems, enable the exchange of value, potentially reduce costs, shorten transaction times and completely reshape industries.

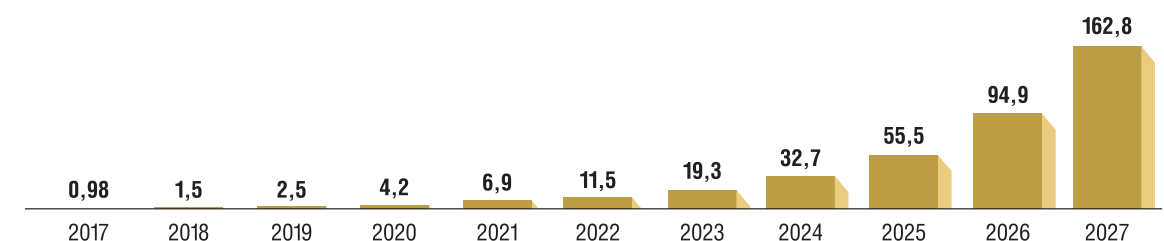
Blockchain is used in experimental and small-scale projects while it is expected to be fully scalable in 2020; research says that by 2025, 50% of people who have a smartphone but do not have a bank account will use a mobile-accessible cryptocurrency account. It is expected to exceed \$ billion.

Practical Blockchain

Blockchain is a distributed data system that provides encrypted transaction tracking. Blockchain simplifies business processes along with Bitcoin, which was based in 2008-2009 still unknown whether it was a person or a group Invented by Satoshi Nakamoto. Bitcoin is also a public and anonymous blockchain network. The data recorded in the blockchain, which is not a database, cannot be changed or deleted. The blocks in which data is accumulated in the blockchain are stored by connecting with encryption algorithms, like a chain. While it is possible to keep reliable records that cannot be altered or tampered with thanks to the blockchain, the need for a central authority is eliminated.



Global Blockchain Technology Market Volume and Projection (2017-2027)



■ Billion \$

Source: Statista

Technological Trends That Will Shape the World

Personal Profile and Instant Markets

As digital realities get complicated, capturing instant markets presents significant challenges and great opportunities. The specific reality of each moment, matched with the constantly updated digital demographic, makes it necessary to capture unmet customer needs. We are all accustomed to the fact that our internet searches come back with personalized ads or content using artificial intelligence for a long time. In a short time, we find the data that we have emphasized in a phone call or a chat environment as advertisements in a short time. For example, on your plans to go on holiday to Singapore with a friend when you sit down at your desk computer after a phone call, seeing ads for Singapore hotels gives you an idea about the frequency of marketing activities carried out to meet consumer needs. Instant markets, based on matching between the consumer profile and the algorithm of consumer movements in big data, aim to respond to a consumer need that needs to be solved in a very short time.



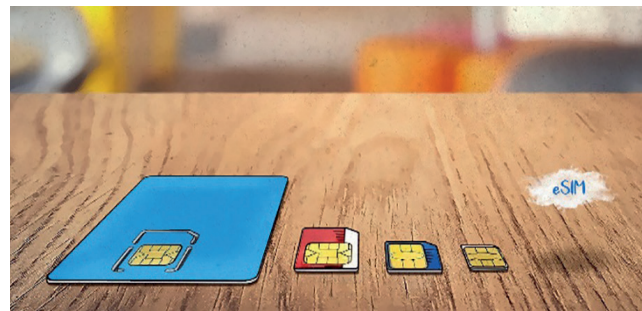
Rechargeable Batteries Through Skin

The project, developed under the leadership of scientist John Rogers from the University of Illinois and was found to produce 30% more power than electricity production with standard solar energy, is charging with both solar energy and electrical energy in the human body. It includes the development of flexible batteries in millimeter sizes. With batteries attached to the body like a band-aid, the smartwatch is a smartwatch. There is a significant contribution to wearable technology products such as wristbands. In addition, pacemakers and hearing aid batteries can have recyclable energy thanks to such technologies.

eSIM

eSim is a small chip attached to smartphones that do not require users to wait for a new sim card to be sent to activate or change their subscription.

With more reliable, remotely authorizable, fewer entry points technology, you'll be able to activate the cellular data plan your carrier provides.



How Ready Are We for Digital Transformation As Turkey?

As can be seen, the speed of technological developments in the new world to be established after the Covid-19 pandemic will gain a dizzying momentum compared to what has happened so far, and “competition spread all over” companies will be waiting. Undoubtedly, this competition, in addition to its destructive effects, will open up new opportunities for companies in Turkey.

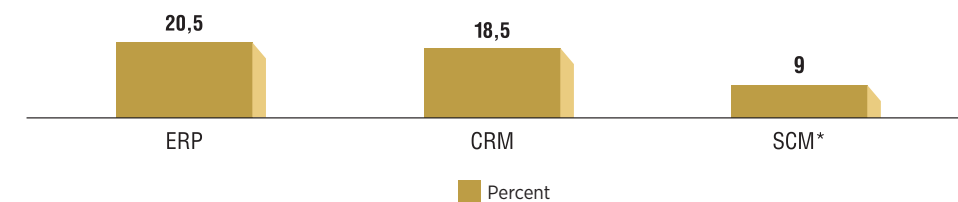
But are our companies ready enough to compete?



According to TUIK “Research on the Use of Information Technologies in Enterprises”;

- While the rate of enterprises that received product/service orders via the website or electronic data exchange was 12.4% in 2014, it decreased to 9.8% in 2017 but increased to 11.2% in 2018.
- While the rate of enterprises using social media applications was 27.7% in 2014, it increased to 49.6% at the end of 2019.
- While enterprises employing IT specialists were 10.5% in 2014, it increased to 13.7% as of 2019.
- As of 2019, 20.5% of the enterprises were using enterprise resource planning (ERP), 18.8% were using customer relationship management (CRM) software, while the rate of enterprises using supply chain management (SCM) software in 2017, when the most up-to-date data was available, is It remained at 9%.
- According to MUSIAD Analysis, the rate of those using CRM software is in the first place with 42.2%, followed by smart devices and machines (38.8%) and cloud technologies (37.1%). The rate of those using ERP is 27.4%

ERP, CRM and SCM Software Usage Rates of Enterprises (2019)



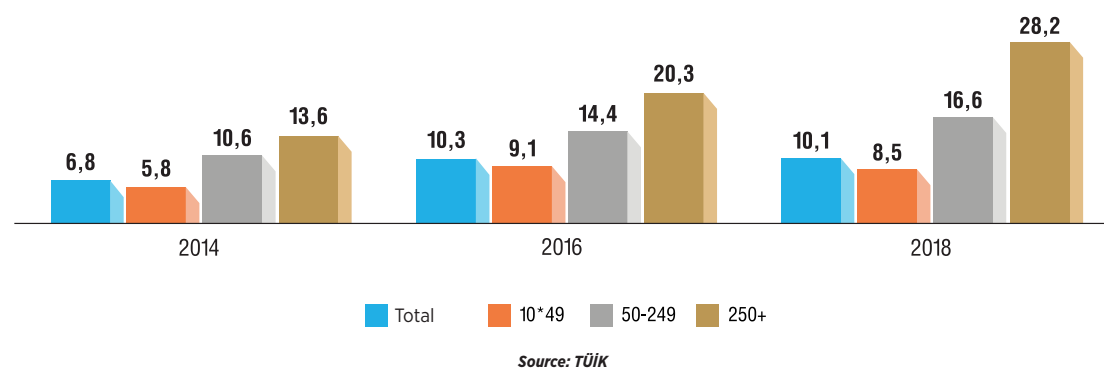
Source: TURKSTAT* The last updated data is from 2017.

How Ready Are We, as Turkey, for Digital Transformation?

On the other hand;

- The rate of enterprises using paid cloud computing, which was 10.3% in 2016, decreased to 10.1% in 2018.
- It is seen that small enterprises cause the main reason for the decline: the lack of sufficient budget for related technologies due to financial contraction stands out as a reason. Cyber concerns can also be added to this.
- On the other hand, the tendency to use cloud computing applications in medium and large enterprises is increasing rapidly.

Startups Using Paid Informatics Applications, Percent (2014-2018)



Number of Technology Development Zones, Firms and Personnel by Years

In the current situation, we can easily talk about the construction of an eco-system that will increase the competitiveness of our companies.

• As of the end of May 2020, 59,013 personnel in 5,778 companies in 70 active technology development regions in Turkey continue to contribute to the “Turkish technology eco-system actively.”

• Eco-system has signed 35,956 projects so far and continues to work on 9,982 projects.

• Total sales of 91.9 billion TL have been realized from technology development zones, while exports worth 4.8 billion dollars have been made.

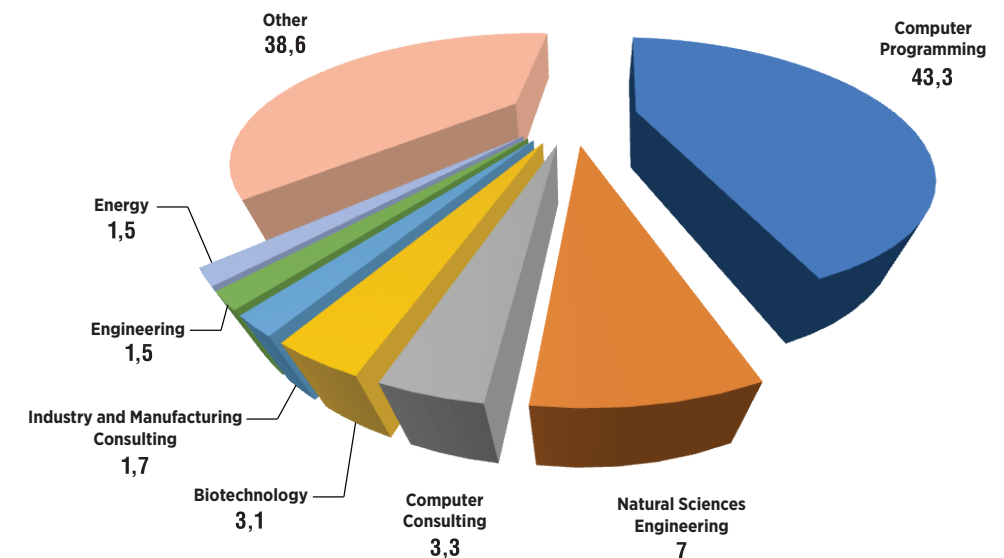
	Region	Company	Project	Employee
2002	5	0	0	0
2003	12	169	250	2453
2004	16	305	700	4196
2005	20	463	1500	5042
2006	22	546	2513	8843
2007	28	787	2525	9770
2008	31	1154	3069	11093
2009	32	1254	3403	11021
2010	39	1515	4102	13397
2011	43	1800	4979	15822
2012	49	2174	5703	19498
2013	52	2569	6997	27224
2014	59	2956	6902	29903
2019	67	5506	9673	56689
2020	70*	5778	9982	59013

Source: Ministry of Industry and Technology * Will be 84 with additions

How Ready Are We, as Turkey, for Digital Transformation?

It comes first in technology development regions with computer-programming startups (43.3%).

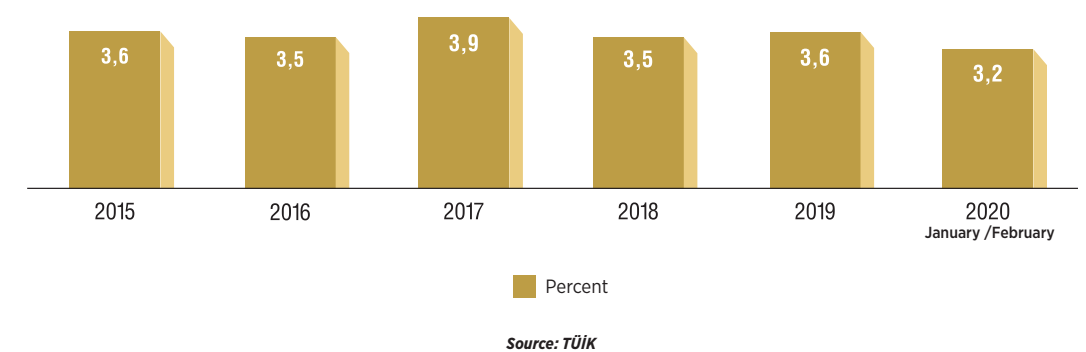
Technology Development Zone Firms by Selected Sectors (2020)



Source: Ministry of Industry and Technology

The share of high technology products in Turkey's exports of manufacturing industry products rose to 3.9% in 2017, and after the decline in 2018, it started to increase again in 2019.

Share of High-Tech Products in Turkey's Manufacturing Industry Exports (2015-2019)

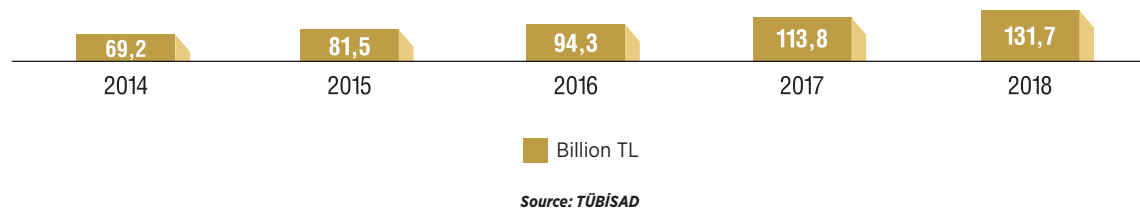


How Ready Are We, as Turkey, for Digital Transformation?

On the other hand;

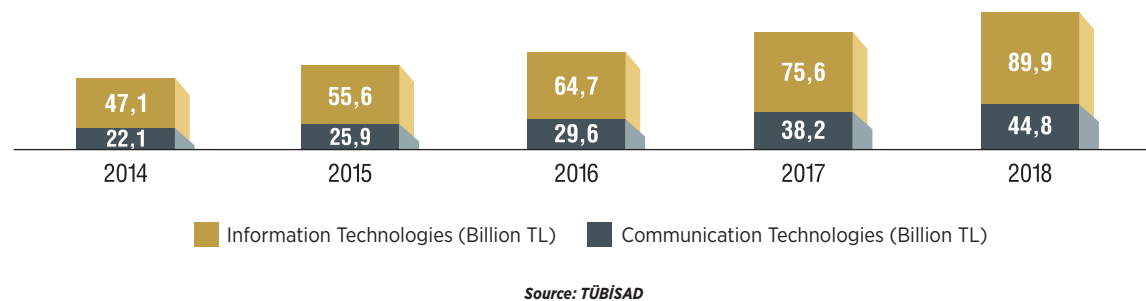
- The rate of enterprises using paid cloud computing, which was 10.3% in 2016, It decreased to 10.1% in 2018.
- It is seen that the main reason for the decline is due to small businesses: The fact that a sufficient budget cannot be allocated to the related technologies due to the financial recession stands out as a reason. Cyber concerns can be added to this.
- On the other hand, the tendency to use cloud computing applications in medium and large enterprises is increasing rapidly.

Development of Information and Communication Technologies Market Volume (2014-2018)



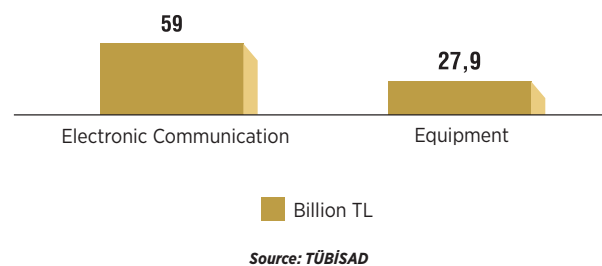
- Communication technologies accounted for 86.9 billion TL of 131.7 billion TL turnover at the end of 2018.

Information and Communication Technologies Market Breakdown (2014-2018)



- Electronic communications (59 billion TL) have the largest share among 86.9 billion TL.

Communication Technologies Sector Sub-Categories, Billion TL (2018)



INTRODUCTION TO FIELD RESEARCH

52 Cities
25 Sectors
340 Companies

Research Tag

This research was conducted between
31 May- 11 June 2020.

From **52** different cities,
in **25** different sectors,
CAWI research model interviews were
conducted with **340** business
representatives from a wide audience.

*The participants were asked questions
about the importance of digitalization in
business life and which digital methods
they use, and their opinions
and suggestions were received.*

*The answers given are statistically
evaluated and reported.*

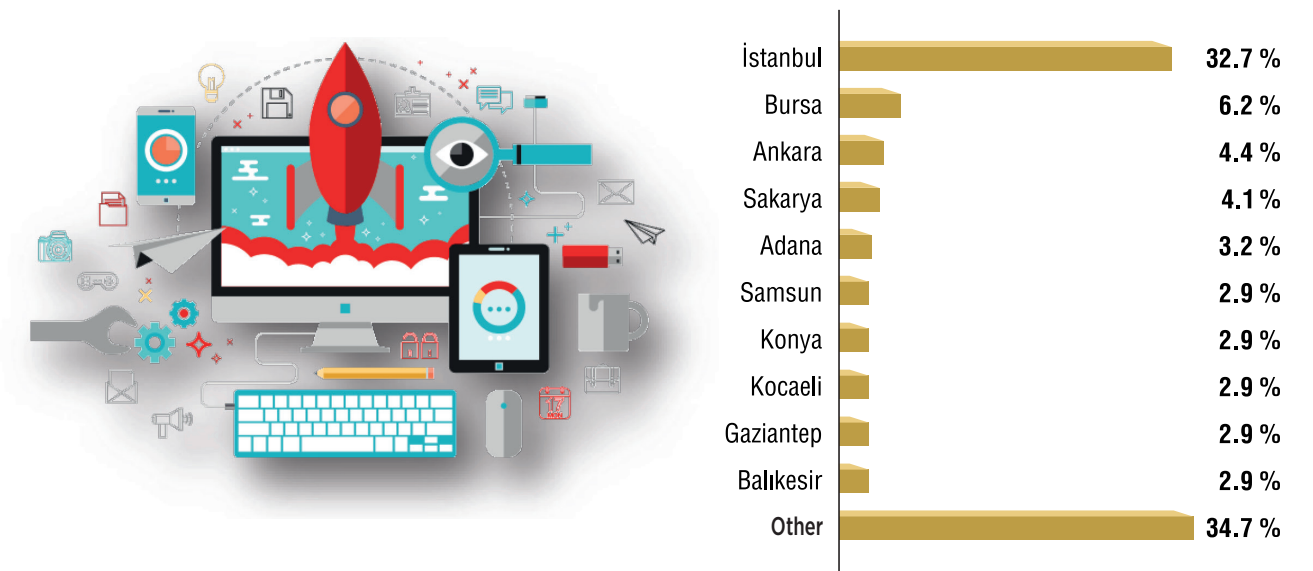
City of Company Headquarters

52 different cities



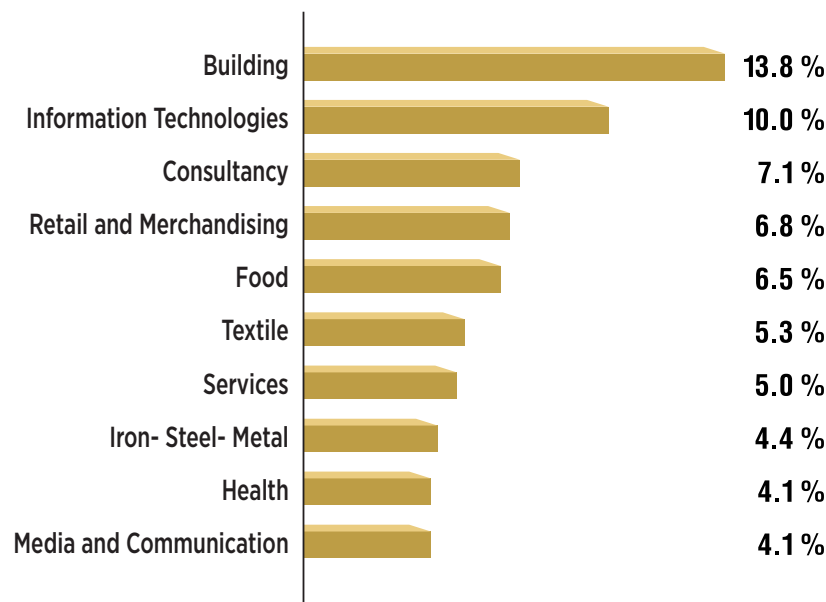
Top 10

340 business representatives from 52 different cities participated in the research. At the beginning of the provinces with the highest participation, Istanbul comes first with 32.7%. Bursa comes in second place with 6.2%, followed by Ankara with 4.4% and Sakarya with 4.1%.



Operating Sector

With the participation of businesspeople from 25 different sectors, the sector with the highest participation in the research was the construction sector with 13.8%.
The information technology sector comes in second with 10.0%. On the other hand, the consultancy sector ranks third with 7.1% in the ranking of the sectors with the highest participation.



Transport and Logistics	4,1 %	Packaging	2,1 %
Automotive	3,8 %	Tourism	1,8 %
Machine	3,5 %	Durable Consumption	1,2 %
Furniture	2,9 %	Jewelry	1,2 %
Energy-Mining	2,7 %	Cosmetic	0,6 %
Chemistry-Plastic	2,4 %	Agriculture	0,6 %
Education	2,4 %	Defense	0,3 %
Finance and Insurance			

Operating Sector

The activity type of 49.4% of the companies participating in the research is service.
45.9% of them are engaged in trade and 41.2% in production.

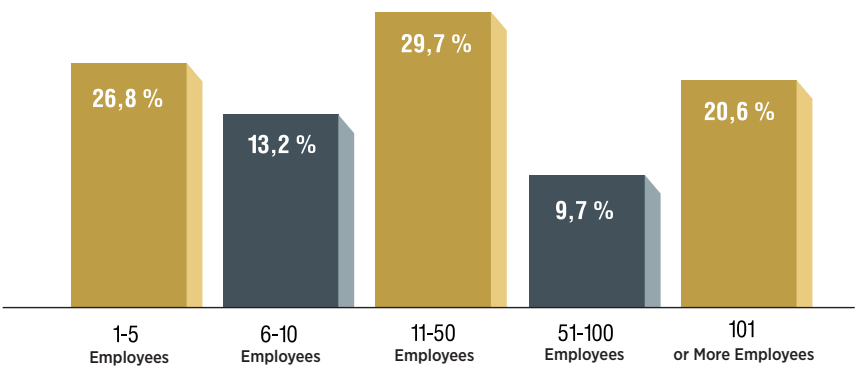


Specify the type of company activity?

Number of Employees

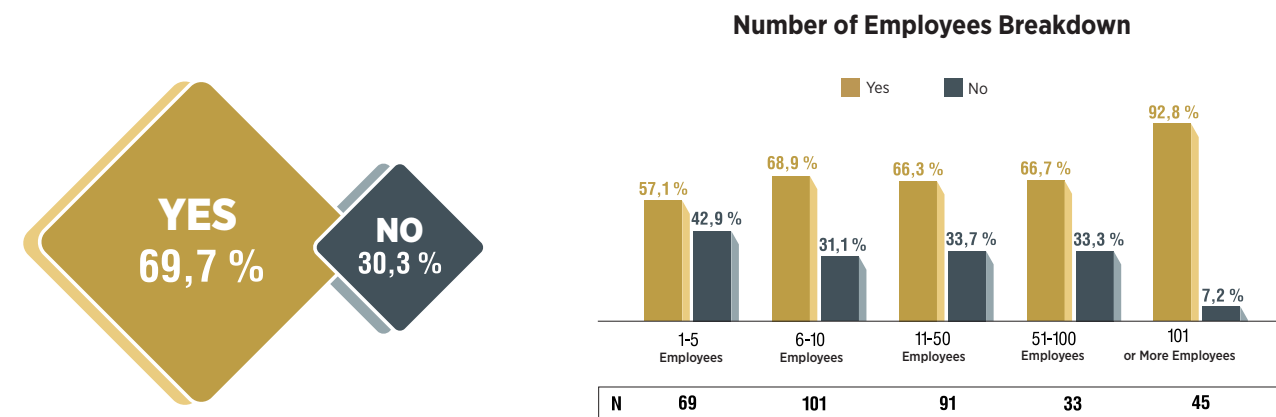
When companies are asked about the number of employees stated that:

29.7% of them are working between 11-50,
26.8% of them are working between 1-5,
20.6% of them have 101 or more employees,
13.2% of them have 6-10 employees,
9.7% of them have 51-100 employees,



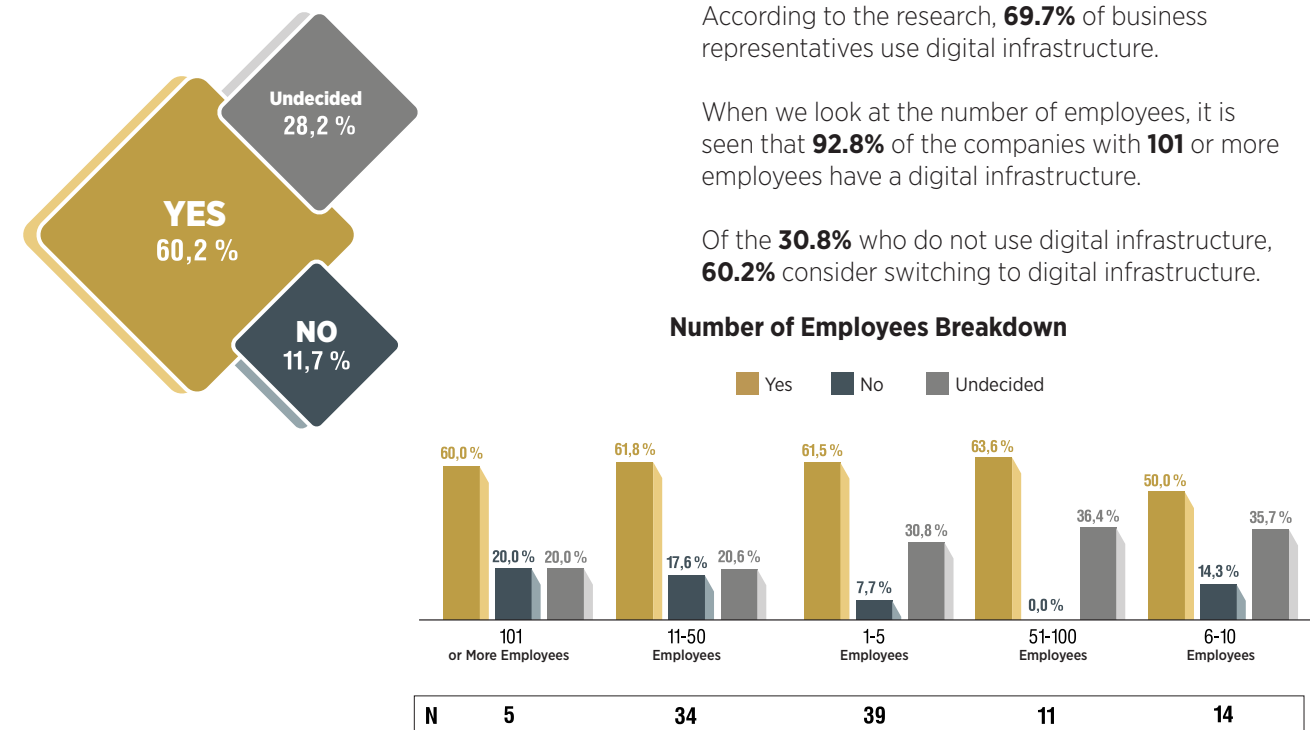
Indicate the number of personnel working in your company?

Current Digital Infrastructure Utilization Status



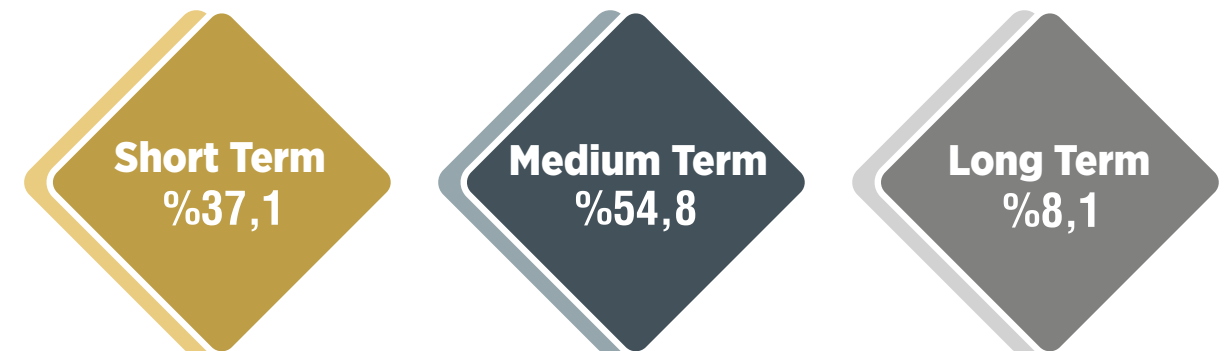
Do you have a digital infrastructure where you manage your business processes?

Transition to Digital Infrastructure (N:103)

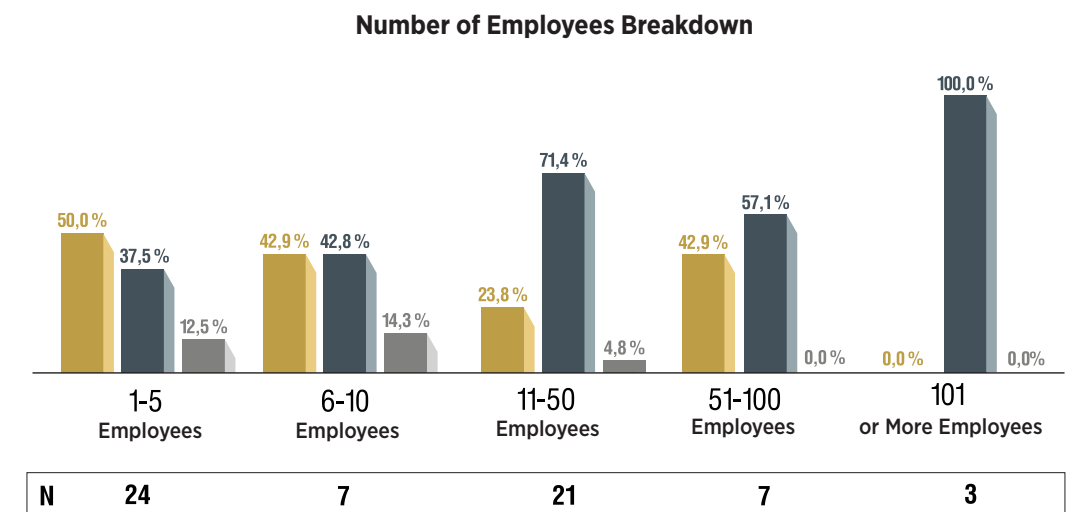


Are you planning the transition to digital infrastructure?

Transition to Digital Infrastructure (N:63)



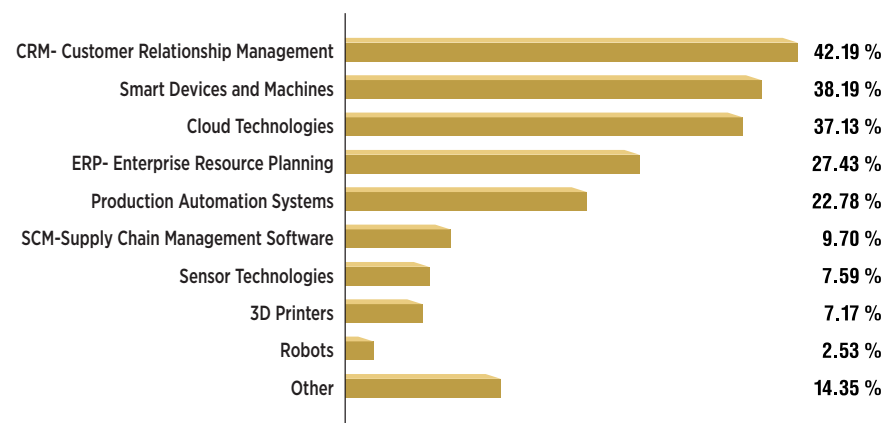
While 54.8% of the participants plan to switch to digital infrastructure in the medium term, the rate of companies that plan to switch to digital infrastructure in the short term is 37.1%, while the rate of companies that plan to change to digital infrastructure in the long term is 8.1%. While 50% of companies with 1-5 employees plan to switch to digital infrastructure in the short term, those with 11-50 employees, 71.4% of companies plan to transition in the medium term.



The process you are planning for the transition to digital infrastructure?

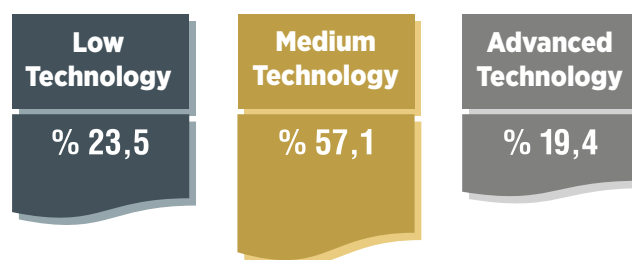
Technologies Used in Companies

Among the technologies most commonly used by MUSIAD member companies participating in the research, CRM – Customer relationship management software (42.19%) ranks first, followed by smart devices and machines (38.82%), cloud technologies (37.13%), and ERP. - It is followed by enterprise resource planning (27.43%).

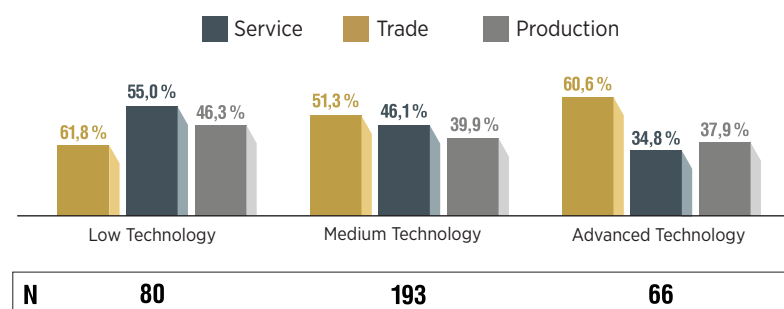


Which of the following technologies is used in your company?

Category of Business

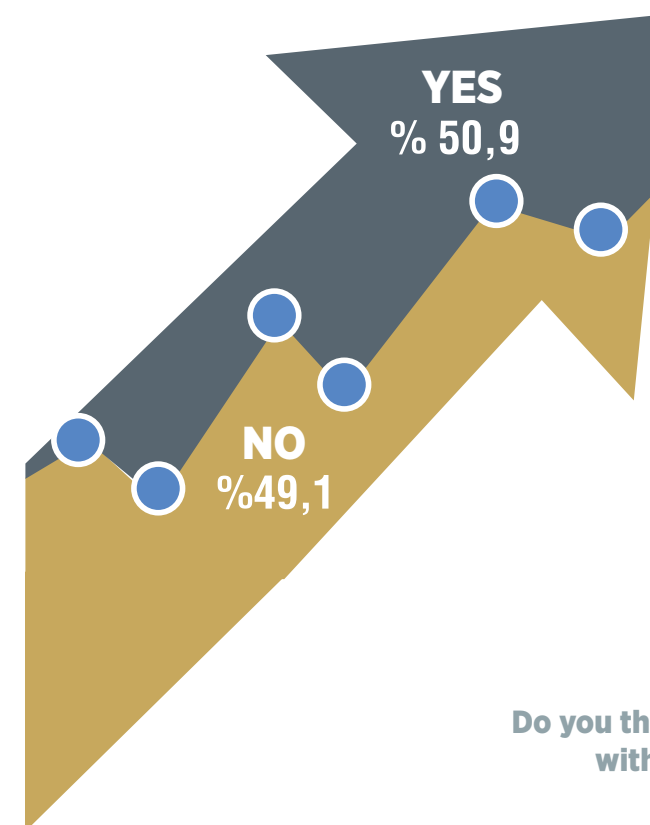


Activity Type Breakdown



When do you evaluate your work, which category does it fall into?

Less Manpower Use



Half of the participants think that their work can be done with less workforce, while the other half has the opposite opinion.

64.7% of companies operating in the service sector states that they can do it with less workforce.

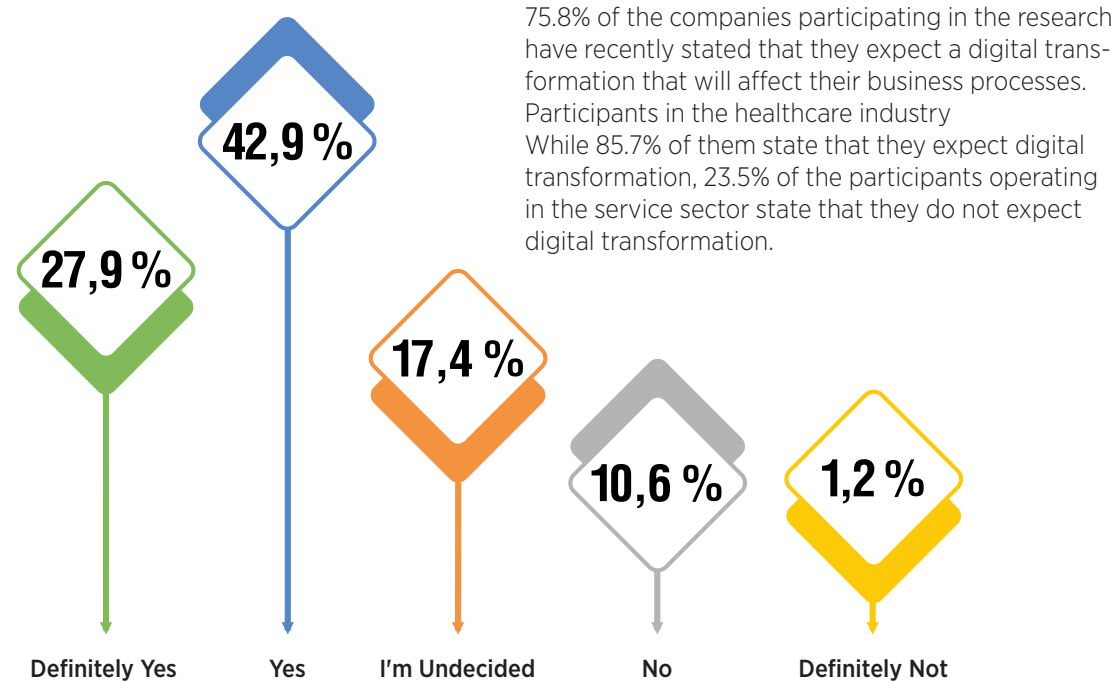
The Iron-Steel-Metal sector, on the other hand, stated that their work is primarily based on.

Do you think you can do your current job with fewer human resources?

Sector Breakdown

Sector	Yes	No	N
Building	46,8 %	53,2 %	47
information technologies	44,1 %	55,9 %	34
Consultancy	50,0 %	50,0 %	24
Retail and Merchandising	43,5 %	56,5 %	23
Food	54,5 %	45,5 %	22
Textile	44,4 %	55,6 %	18
Services	64,7 %	35,3 %	17
Iron- Steel- Metal	35,7 %	64,3 %	14
Health	50,0 %	50,0 %	14
Media and Communication	50,0 %	50,0 %	14
Transport and Logistics	57,1 %	42,9 %	14

A Digital Transformation Expectation That Will Affect Business Processes Soon



Sektörel Kırılım

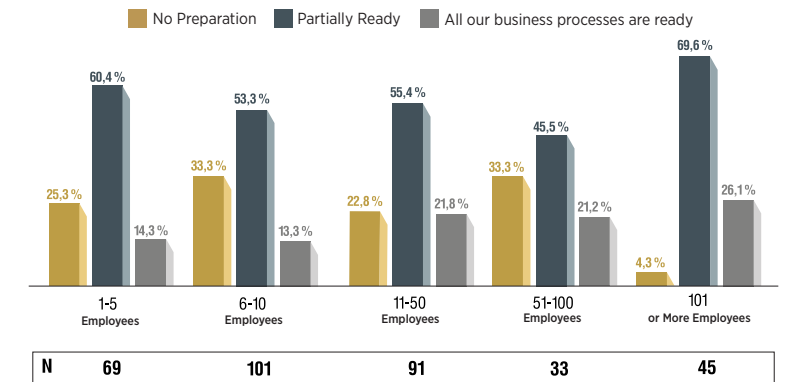
Sector	Definitely Yes	Yes	I'm Undecided	No	Definitely Not
Building	-	-	-	-	-
information technologies	41,2 %	41,2 %	8,8 %	8,8 %	-
Consultancy	29,2 %	54,2 %	16,7 %	-	-
Retail and Merchandising	34,8 %	43,5 %	21,7 %	-	-
Food	13,6 %	50,0 %	22,7 %	13,6 %	-
Textile	33,3 %	38,9 %	22,2 %	5,6 %	-
Services	23,5 %	41,2 %	11,8 %	17,6 %	5,9 %
Iron- Steel- Metal	7,1 %	50,0 %	21,4 %	14,3 %	7,1 %
Health	57,1 %	21,4 %	14,3 %	7,1 %	-
Media and Communication	28,6 %	57,1 %	7,1 %	7,1 %	-
Transport and Logistics	35,7 %	35,7 %	7,1 %	14,3 %	7,1 %

Do you think there will be a digital transformation in your industry that will affect business processes in the near future?

The Readiness of Companies for the Digital Process

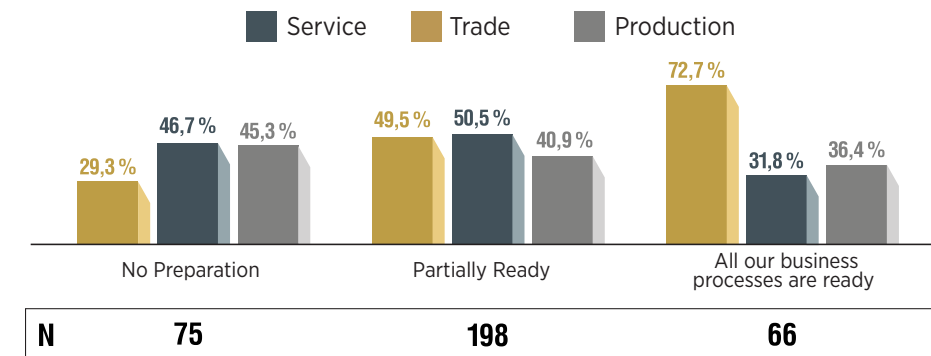


Number of Employees Breakdown



58.5% of the business representatives participating in the survey stated that they are partially ready for the digital process. In terms of the number of employees, it is observed that companies with 101 or more employees are the most prepared. In terms of the type of activity, it is seen that the service sector is ready.

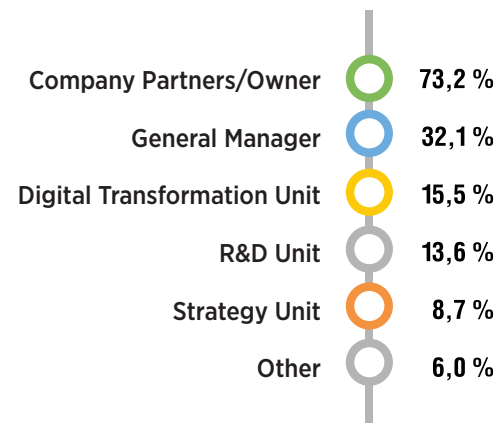
Activity Type Breakdown



How much do you think your company is ready for digital transformation processes?

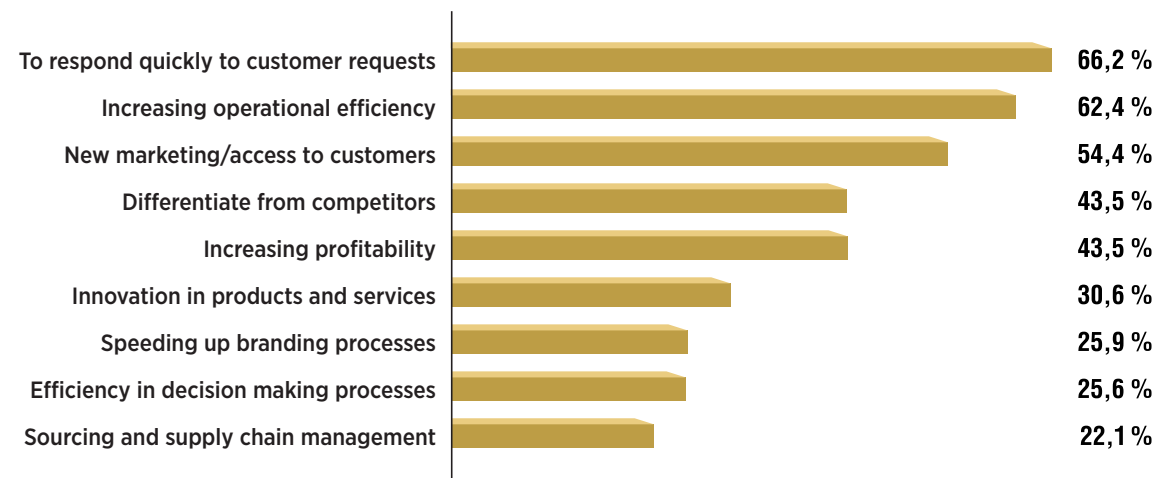
Managing Authority In Digital Processes

It is seen that company partners/owners carry out digital processes in companies. However, it is striking that the most significant factor that reveals the need for digital transformation in companies is to respond quickly to customer demands.



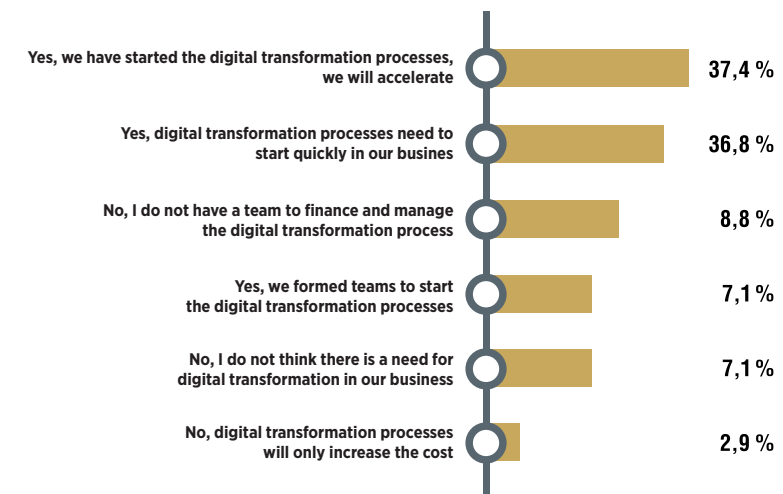
Who is running the digital transformation processes in your company?
(Priority 3 answers)

Factors Revealing the Need for Digital Transformation



What do you think are the factors that reveal the need for digital transformation in businesses?
(Priority 5 answers)

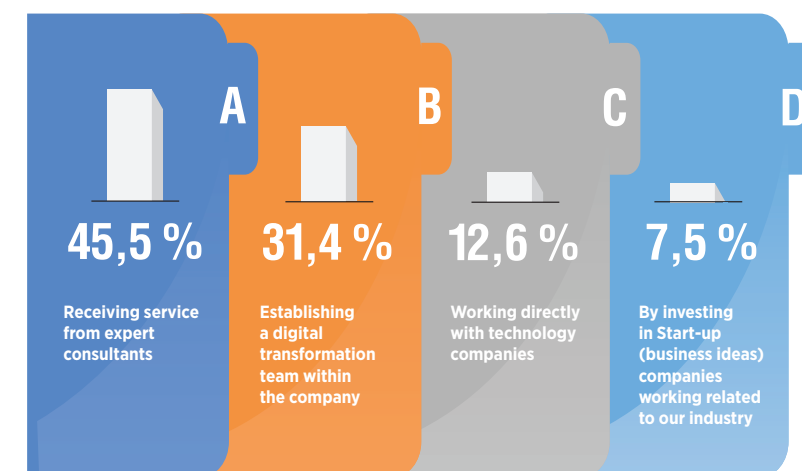
Overview of Digital Transformation Before and After Covid-19



While 37.4% of the companies participating in the research stated that they started and will accelerate the digital transformation process before Covid-19, 36.8% of them are aware of the rapid initiation of digital transformation. Those who find digital transformation unnecessary have a share of 7.1%, those who think it will only increase costs have a share of 2.9%, and those who have a negative perspective correspond to 10% of the total participants.

Has your perspective on digital transformation in your business changed when we consider it as before and after Covid-19?

By Which Method Should Digital Transformation Processes Be Provided?

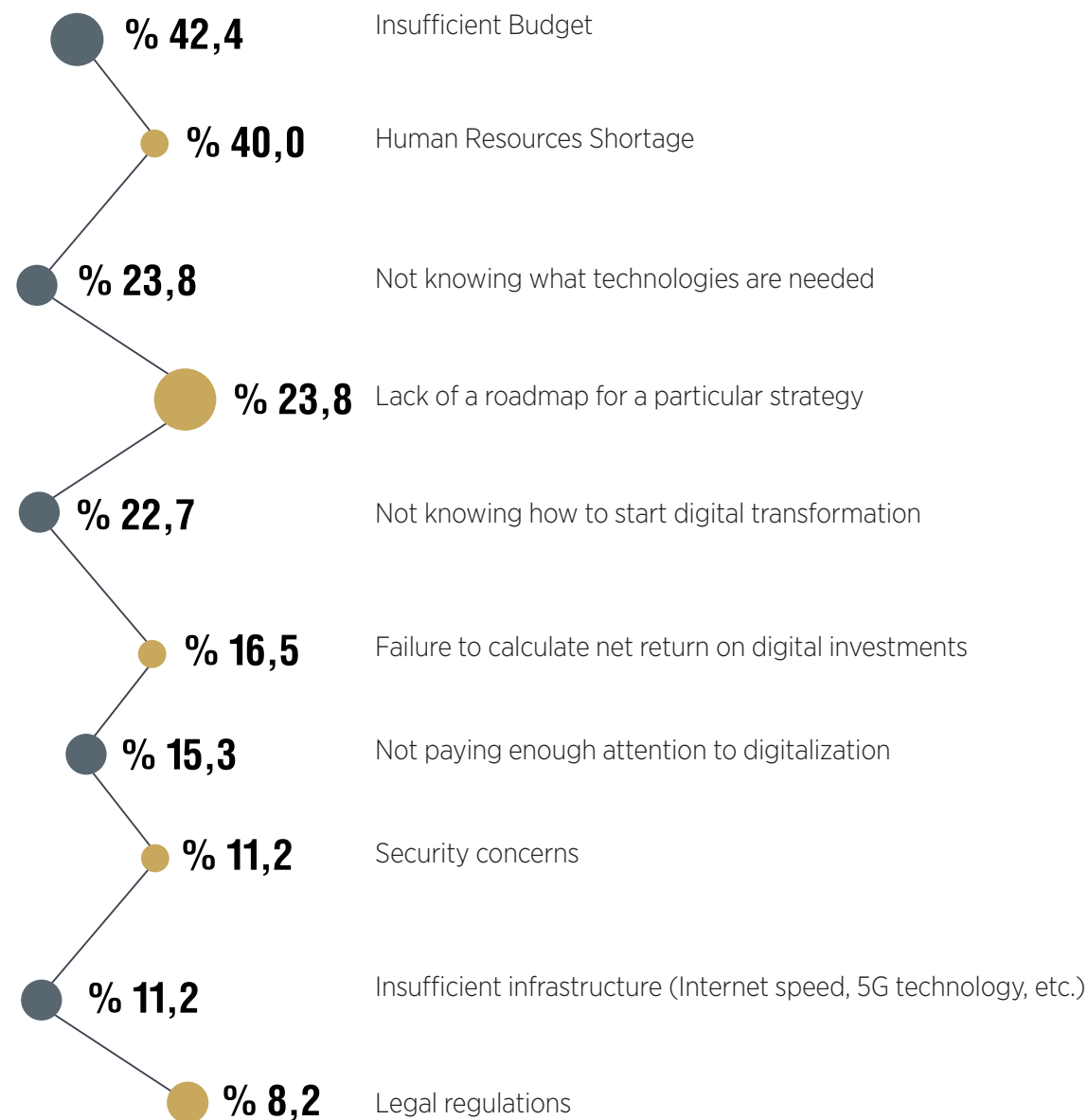


The most prominent trend among the methods of managing the digital transformation process among companies is While getting services from expert consultant companies stands out as (48.5%), the rate of those who find it right to establish a digital transformation team within the company is 31.4%.

How do you think digital transformation processes should be provided in businesses?

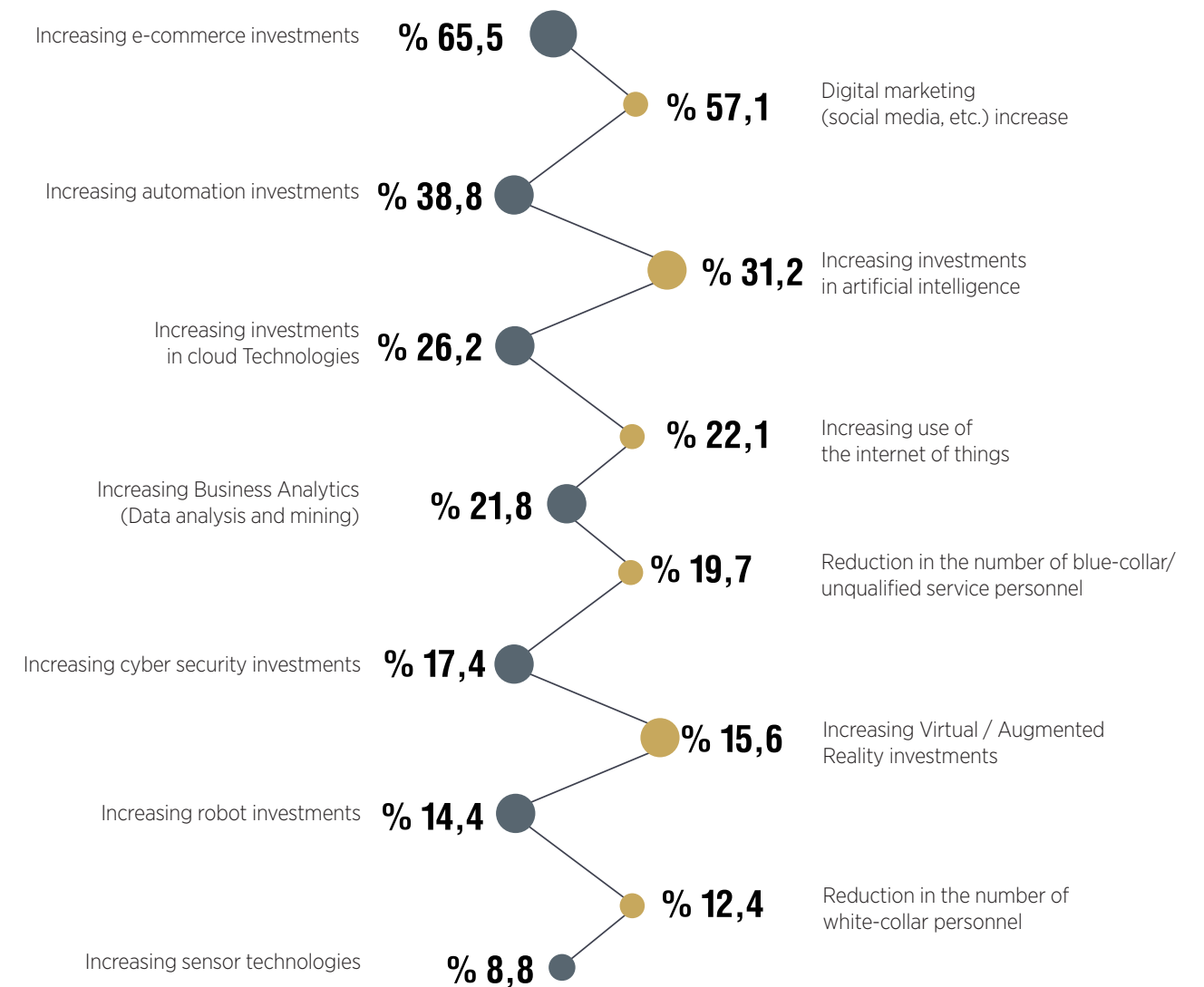
Factors That Slowing Digital Transformation

42.4% of the companies participating in the research think that the lack of budget slows down their digital transformation processes. Another factor that comes second is the lack of human resources. The third factor is that companies do not know which technologies are needed.



What do you think are the most important factors slowing down digital transformation in your business?
(priority 3 answers)

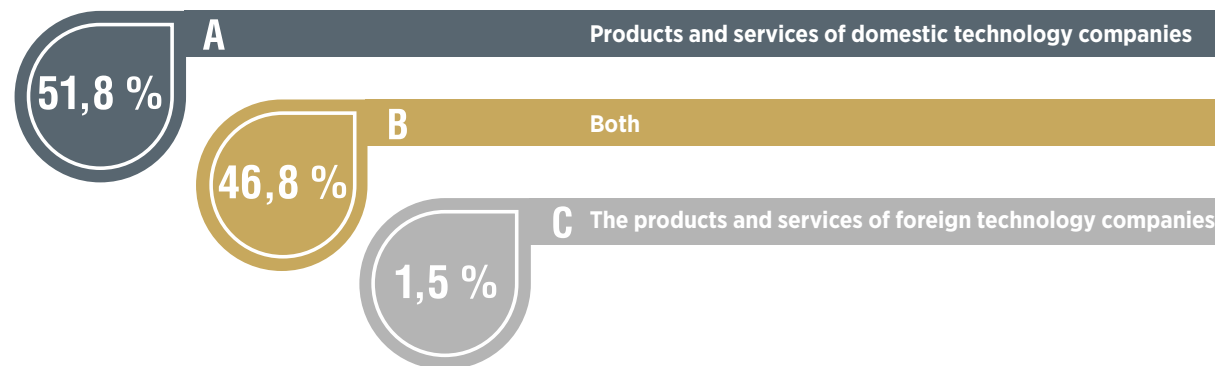
Expected Changes in the Short and Medium Term After Covid-19



66.5% of companies expect e-commerce investments to increase short and medium-term after covid-19. While 57.1% think digital marketing will increase (social media, etc.), 33.8% believe that automation investments will increase.

What changes do you think will occur primarily in your industry, production, and business processes in the short and medium-term after Covid-19?

Preferred Types of Technology

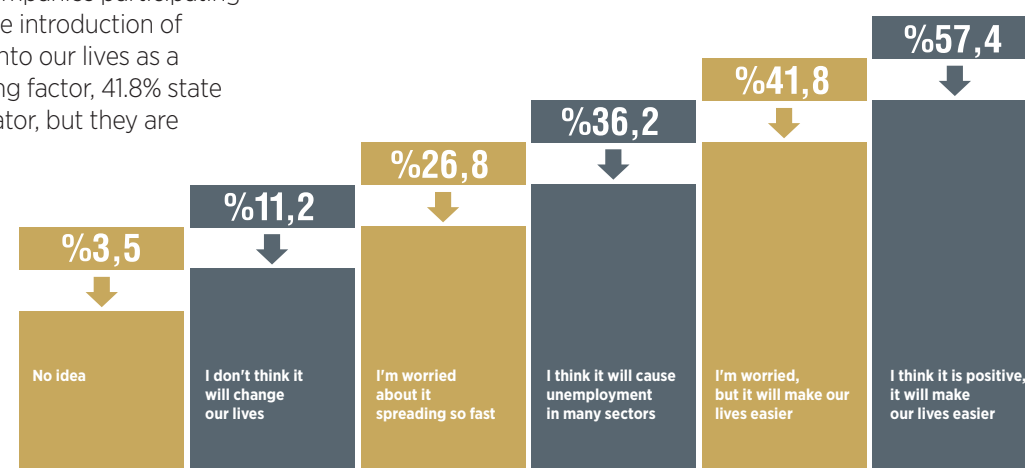


While 51.8% of the companies participating in the research emphasize that the products they will prefer in digital transformation are “domestic,” the rate of those who give both domestic and foreign answers is 46.8%. The rate of those who state that they will turn to the products and services of completely foreign technology companies is 1.5%, and it is seen that the business world representatives participating in the research are highly aware of “domestic software and technology.”

What types of technologies do you prefer to use in your business’s technological solutions?

Thoughts on Artificial Intelligence Entering Our Lives

While 57.4% of the companies participating in the research see the introduction of artificial intelligence into our lives as a positive and facilitating factor, 41.8% state that it will be a facilitator, but they are worried.



How do you respond to the rapid introduction of artificial intelligence solutions into our lives?

A Look at the Idea of Remote Management of Manufacturers with the Help of 5G Technology and Artificial Intelligence

For about half of the participating companies (48.8%), the view on the idea of remote production with the help of 5G and artificial intelligence includes a cautious positivity, while the rate of those who are entirely positive is 18.5%. On the other hand, 31.2% of the participating companies state that artificial intelligence and 5G cannot manage their own business.

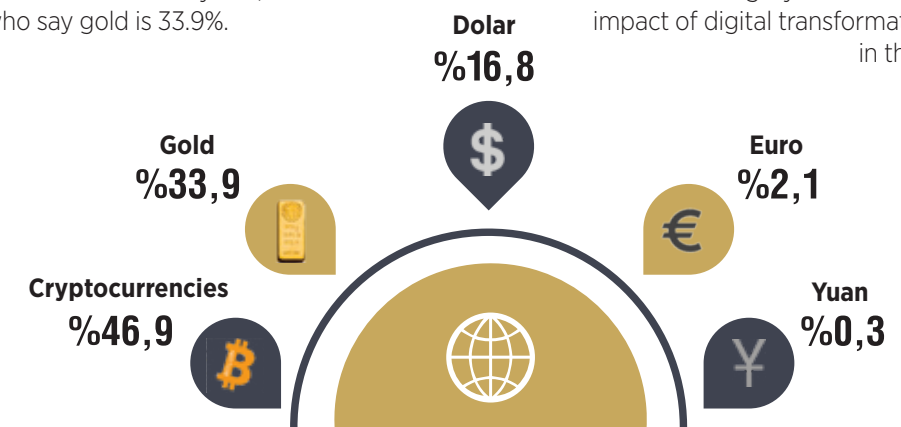


How do you view the idea of managing productions remotely on your behalf with the help of 5G Technology and artificial intelligence?

Reserve Currency Forecast over 10 Years

While 46.9% of the company representatives participating in the research stated that the world’s reserve currency would be “cryptocurrencies” in the next 10 years, the rate of those who say gold is 33.9%.

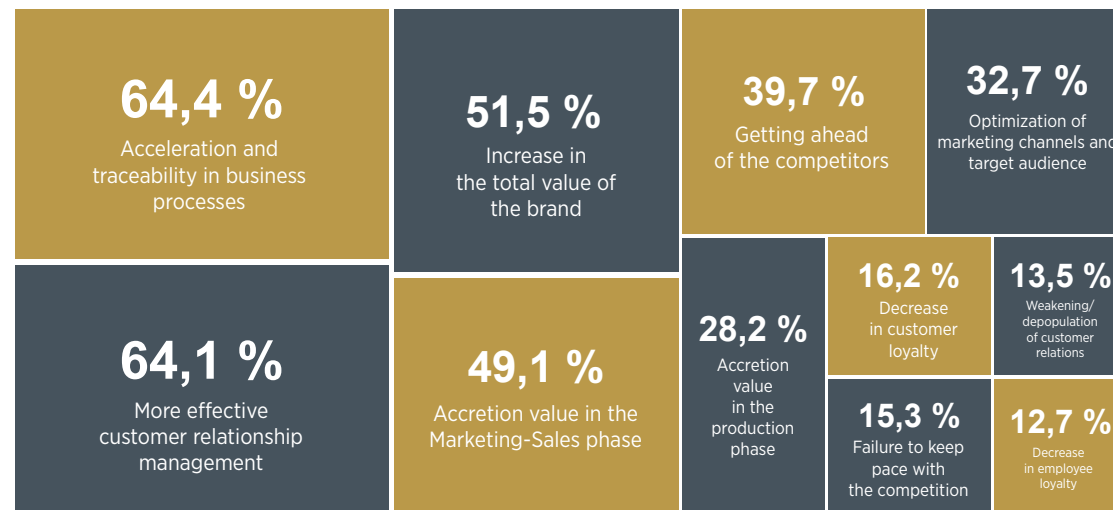
The emphasis on the US dollar by only 16.8% of the participating companies, based on the prediction of the weakening economic sovereignty of the USA, in addition to the impact of digital transformation on the currency in the upcoming period.



What do you foresee as the world’s reserve currency in the next 10 years?

Preferred Types of Technology

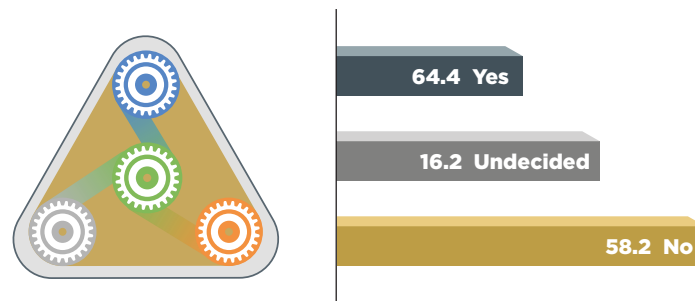
While 64.4% of the companies participating in the research stated that digitalization will have an impact on business processes as acceleration and traceability, more effective customer relationship management (64.1%) is another prominent option. The increase in the total value of the brands (51.5%) and the added value in the marketing-sales phase (49.1%) are a matter emphasized by half and more than half of the participating companies.



What impacts do you foresee on your branding and business processes with digitalization?
(Priority 5 answers)

Is It Possible To Become A Brand Without Digitalization Investment?

While 58.2% of the company representatives participating in the research believe that branding is not possible without digitalization investment, the rate of those who consider such an option possible is 16.2%.



Do you believe that branding can be achieved without investing in digitalization?

The first name that comes to mind when it comes to technology and digitalization

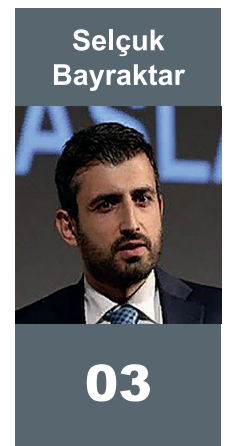
According to the representatives of the companies participating in the research, Elon Musk is the first name that comes to mind when technology and digitalization are mentioned, followed by Bill Gates.



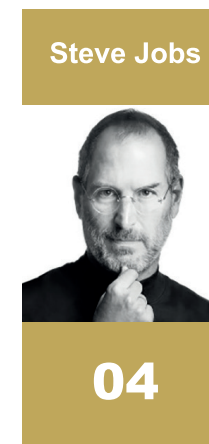
Elon Musk is an engineer and entrepreneur. He is the founder of SpaceX and co-founder of Tesla Motors and PayPal.



Bill Gates is an American author, software developer, entrepreneur, investor, and businessman. Gates is the co-founder of Microsoft and is currently the company's technical advisor.



Selçuk Bayraktar, is Turkey's first domestically produced UAV System Baykar Bayraktar TB2 architect, Baykar Defense Technical Manager, and Chairman of the Board of Trustees of T3 Foundation



Steven Paul Jobs is one of the co-founders of Apple Computer, Inc. Until 5 weeks before his death, he was served as CEO of renamed Apple Inc.



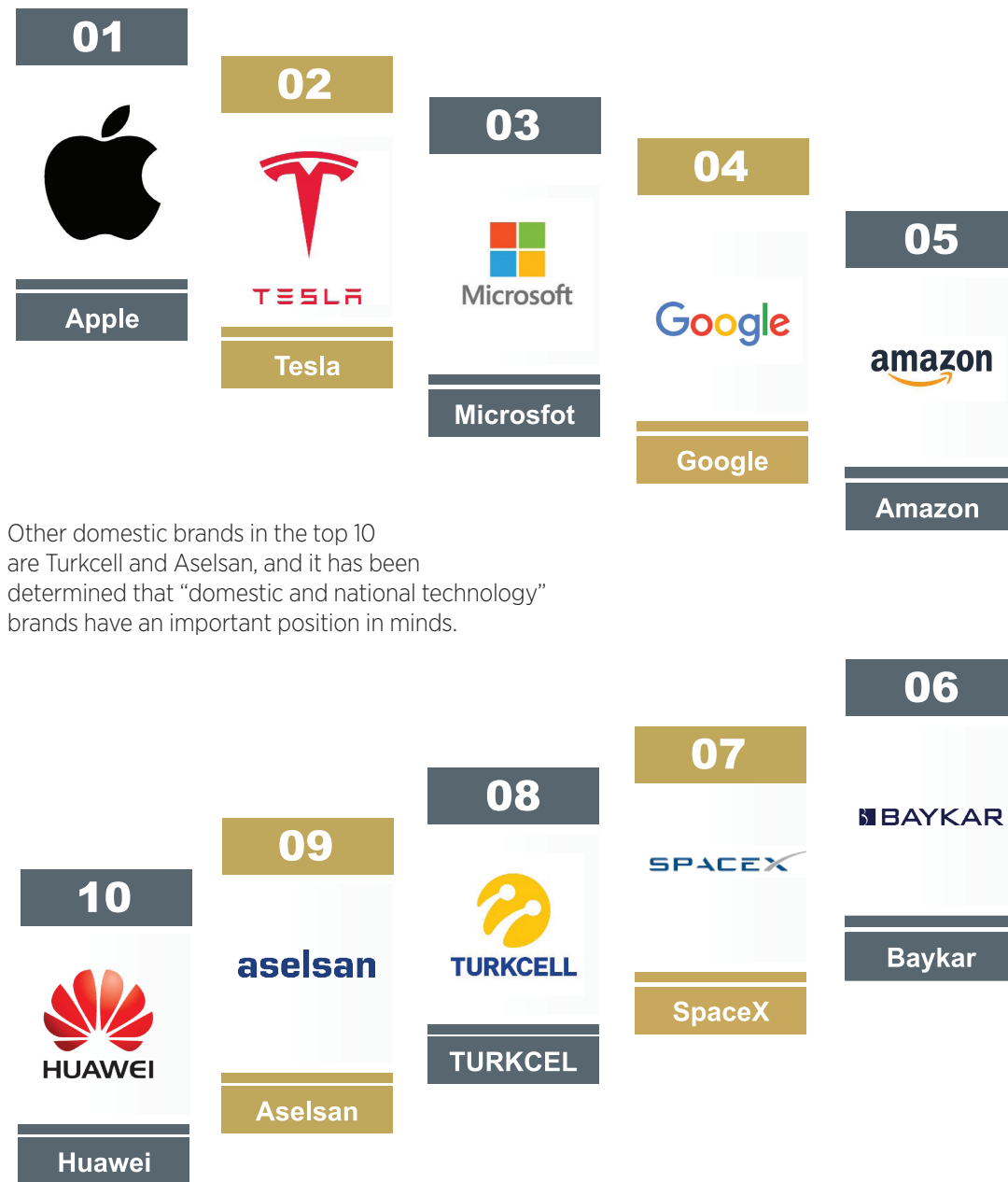
Jeffrey Preston Bezos is an American technology entrepreneur investor. He is the founder, CEO, and president of Amazon.com, Inc.

The fact that Selçuk Bayraktar, the pioneer of domestic defense technologies, ranks third, shows that the concept of "national technology move," which has been emphasized in recent years, has gained a strong place in minds.

Who is the first person that comes to your mind when you think of technology and digitalization?

The First Brand That Comes to Mind with the Concept of Technology and Digitalization

According to the representatives of the companies participating in the research, the first brands that come to mind when technology and digitalization are mentioned are Apple, Tesla, Microsoft, Google, and Amazon. The domestic defense technology manufacturer is “Baykar Machine.”



Other domestic brands in the top 10 are Turkcell and Aselsan, and it has been determined that “domestic and national technology” brands have an important position in minds.

What is the first Brand/Company that comes to your mind when you think of technology and digitalization?

Actions

1. It is seen that 69.7% of the companies participating in the research from many different sectors use digital infrastructure at various levels, while 60.2% of the companies that do not have a digital infrastructure tend to switch to digital infrastructure in the coming period. The most significant obstacles to digitalization; It is seen that there is a lack of budget and human resources, not knowing which technologies are needed, and a lack of a specific strategic roadmap. Under the leadership of MUSIAD, “digitalization, human resources, equipment and consultancy” financing projects stand out together with public institutions and specialized associations operating in the field of technology-digitalization. In the next stage, it is recommended to establish digital transformation centers for SMEs.
2. In order to encourage “digital transformation” throughout Turkey and especially at the scale of the widespread SMEs, performance indicators related to digitalization should be introduced to existing and future incentive systems. Some advantages should be given to companies that show the “will to digitize” in accessing incentive instruments. Thus, the digitalization initiative should spread to the bottom of the Turkish economy.
3. With a systematic approach, the curriculum should be prepared with a perspective based on increasing digital competencies following the needs of the business world in the process from primary education to university. The existing workforce should also be equipped with digital skills through national & regional education projects involving the public and universities to remain competitive globally.
4. It is vital to support companies to act through platforms, not alone, in data storage and processing processes. On the other hand, the most fundamental concern of SMEs is the devastating effects of “digitalization” on data security and cyber risks. Therefore, it should be ensured that mentoring services that will alleviate the concerns of SMEs about “data security” are offered to companies through MUSIAD, public institutions, and specialized associations.
5. To effectively manage companies’ digital transformation processes, incentives and tax exemptions should be optimized in digital equipment, human resources, and consultancy mentoring. In addition, “sensitivity to domestic and national technologies” comes first among the insights filtered from the opinions of participating companies. During the Covid-19 process, it is also seen that countries have experienced an essential awareness of “self-sufficiency” in many strategic areas. This awareness includes using digital resources and infrastructure and has brought up the risks of a foreign-dependent digital transformation. In this direction, it is recommended that the public introduce additional incentives and exemptions for the use of domestic software, equipment and consultancy services that will facilitate the digital transformation processes of enterprises and strengthen “domestic-national production.”

