



The Fourth Industrial Revolution is the AI Revolution A Business Prospective

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ABSTRACT

The engines of the first industrial revolution were coal and steam, the second - electricity and cars, the third - computers and the Internet. The Fourth Industrial Revolution (Industry 4.0) – in a broad sense, characterizes the current trend in the enterprise business development through automation and data exchange, which includes cyber-physical systems, the Internet of Things and cloud computing. It represents a new level of organization of production and value chain management throughout the entire life cycle of products, controlled by intelligent systems in real time in a dynamic interaction with the external environment, going beyond the boundaries of one enterprise, with the prospect of combining services into a global business / industrial network.

Artificial intelligence is still at the start of business development in all levels. The paper analyzes in detail the specifics of the so-called “platform” business models that have become widespread in the era of digital business transformation, and also proposes a mechanism for their comparison with traditional business models. It is shown that in a number of industries platform business models, using the latest scientific achievements, are rapidly replacing traditional ones. The paper conclusion directs a clear message to LAS (League of Arab States) to consider the importance for Arab Countries contribution to the National Strategy for Artificial Intelligence.

Key words: 4th industrial revolution, artificial intelligence, technology future, business models of artificial intelligence, national strategy for Artificial Intelligence.

1. INTRODUCTION

How artificial intelligence as an element of the 4th Industrial revolution can change the organizational structure of business organizations. Already more than 40% of the companies surveyed by Deloitte [1] in the world have fully implemented or achieved significant progress in the use of artificial intelligence technologies in the workforce. How the organizational structure of companies is changing and what we should prepare for in the future.

Advances in modern technology convince companies of the need for reorganization, transformation of human resources departments and the development of new models for training. The approaches to hiring staff are also changing.

These findings were presented in the report of the consulting company Deloitte "Trends in the development of human capital in 2017", which is based on surveys of more than 10 thousand HR and business leaders in 140 countries. Most of these reforms are a response to the first examples of the use of artificial intelligence, as well as preparation for its development.

Josh Bersin, founder of Bersin by Deloitte, a consulting firm, notes [2] “We have come to the conclusion that artificial intelligence does not eliminate jobs, but rather solves work tasks and creates even more new jobs for people.”

In his understanding, “new jobs” are those types of work that have not yet been mastered by robots, requiring empathy, communication and solving problems at the junction of areas. “Narrow specialists will have to retrain or learn new professions for themselves,” he adds. The study showed that 41% of respondents fully implemented or made significant progress in using artificial intelligence technologies in the workforce, but only 15% of world leaders say they are ready to manage a team of “robots, people and artificial intelligence workers who will work side by side”

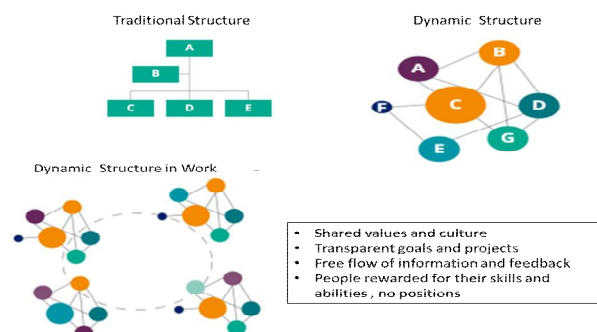


Figure 1: Comparing traditional and modern structure

The development of artificial intelligence forces organizations to review a number of established (or by this time already outdated) strategies. Instead of hiring the most qualified specialists to carry out specific tasks, many

companies now pay more attention to the cultural form and adaptability of an employee, realizing that individual work roles will develop taking into account the onset of the era of artificial intelligence.

Training people to innovate in the workplace with the development of technology is playing an increasingly important role and fulfilling the traditional functions of HR employees in finding and evaluating employees is already in the background, because these tasks can be done more efficiently and quickly by artificial intelligence, which puts a lot of emphasis on improving experience current employees.

The Deloitte survey also showed that 56 % of respondents are already reviewing their HR programs to make better use of digital and mobile tools , while 33% already use various artificial intelligence tools to perform HR functions .

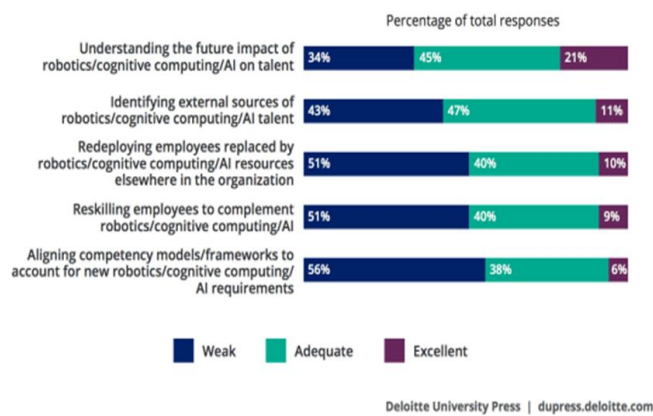


Figure 2: Rating of sub capabilities related to cognitive computing and AI –Study by Deloitte 2018 [3] .

This integration of traditional and modern approaches allows organizations to build a more harmonious work structure and move away from the traditional hierarchical structure.

“Integrating AI into an organization requires experienced professionals and engineers who can work with it,” said Jan Crosby, one of the founders and CEO of Bench, which provides digital accounting services. “When we work with artificial intelligence, we don’t go into the dark room to return after a year with a masterpiece. We work openly with our accountants every day,” he continues.

In order to properly adapt to changing technologies, organizations abandon the downward structure to multidisciplinary teams. Almost a third of respondents said that they were rebuilding the structures of their companies in order to reorient themselves towards more team work and optimize its work in anticipation of the expected technological boom.

However, the search for a balanced team structure does not happen overnight, Crosby [4] explains. “Often, if it’s a large organization, it’s better to start with small reforms in a small team, this will allow them to gradually develop and expand its scale, and not try to squeeze the whole company into a new

framework at once.”

Crosby adds that Bench’s desire to integrate new technologies also affects HR experience in hiring new employees. In addition to checking the technical requirements for work, the company is looking for candidates who are ready to adapt to upcoming technological changes, he notes. “When you work with artificial intelligence, you create things that no one has used before, and no one even knows how it will look,” says Crosby.

The issue of artificial intelligence in the organizational structure of the company is becoming increasingly philosophical, but in the end, managers will have to decide where and how to use AI employees and what can be done to most effectively combine all the employees of the company.

“Only after a few years we will have real artificial intelligence and this moment is getting closer and closer, but the technology still has big problems with understanding human intentions,” emphasizes Rurik Bradbury, head of research and communication at LivePerson, software developer. As more AI solutions becomes available, we would advise business organizations to “think about three different categories of workers — people, machines, and cyborgs — and decide who to hire in the future for a particular job.”

While artificial intelligence technologies are still in their infancy, it will not take long before organizations have to develop their own AI implementation strategies to remain competitive. Those who reorient to teamwork, prepare appropriate training programs and adapt the structure of their staff will be better prepared for this impending reality.

Artificial intelligence and its technology sisters, such as machine learning and vision will be the main tools of everything we do,” says Rachel Weiss, vice president of innovation and entrepreneurship has changed its internal organizational work after marketers began to educate and train employees in the use of AI, and how to work with content. And at Depot Home, with the advent of new technologies, they began to use targeting with certain content and added creative managers to the staff.

2. INDUSTRIAL REVOLUTION 4.0: CHANCES THE BUSINESS MODELS

Like previous industrial revolutions, industry 4.0 relies on concrete scientific breakthroughs. In a sense, it consists of elements, a number of which to the greatest extent determine its qualitative structure. These elements can be analyzed from two points of view: what it is and what it gives for management.

So, the following can be considered the main components:

1. The Internet of things is the concept of digital space, a network in which various household appliances, production machines, in other words, all electronics, are integrated. Using sensors and other means, objects of the physical world are connected into a single virtual network, through which

they can interact without human intervention. The use of the Internet of things for managers is to simplify control over equipment and production processes. The time and human effort required for timely monitoring and preventing deviations from normal operation are reduced.

2. Robotization is by no means a new term, but in the new conditions it acquires a different vector of development. Robots are distributed in various fields, up to the service sector, where direct contact with people is required. They are being modernized, acquiring an expanded set of functions, becoming able to perceive changes in the environment and react in a certain way to these deviations. According to the International Federation of Robotics [5], in 2017 in the world on average 10 thousand workers accounted for sixty-six robots. The leaders in this indicator were Germany, South Korea, Japan, the USA and China; Altogether, these countries accounted for 70% of all robots in the world. For the foreseeable future, experts say, the growth of robotics will increase significantly: in China by 25% per year or more, in Germany - by 5-10%, in the USA - by 8% [10, p. twenty].

Particular attention is paid to the development of artificial intelligence (AI). AI is a complex of technologies that promotes more efficient behavior of machines and robots by increasing the capabilities of computing processes and other functions. A characteristic feature of AI is the desire for similarity with human biological thought processes.

It is too early to say that these two elements will soon give a "mechanical manager" who will manage the enterprise instead of a person. Despite the speed of improvement and development of technologies, this kind of result of progress can be observed only after a rather long period of time. But robotization and artificial intelligence, now and in the near future, can partially replace human labor. The manager will also be able to shift the solution of simple tasks to the program.

3. In the modern world, data is one of the most valuable resources. And clouds and cloud computing are a new step in data storage and processing. Devices connected to the clouds receive a much larger set of functions than devices with a "local" computing field. Clouds allow you to collect a huge amount of data from sensors, analyze them. And in conjunction with AI, cloud computing offers great opportunities for streaming data analysis and monitoring. In this regard, one can also consider such an attribute as Big Data. This term means all kinds of information that is no longer possible to process in traditional ways. In size, this information exceeds trillions of gigabytes and includes various kinds of media files, etc. To work with such data, new types of analysis are created and actively tested,

What is new in cloud management? The process of collection and subsequent analysis of information is simplified and accelerated, the quantitative and qualitative framework of information that can be collected and analyzed

is erased.

4. Now scientists are creating unique materials with properties that decades ago were impossible to imagine. An example is graphene, which is hundreds of times stronger than steel, as well as new types of plastics and polymers. This is just a small part of the huge list of chemical innovations. The only question is the high cost of these materials: it is still much more profitable to use traditional analogues. But with a reduction in the cost of obtaining innovative compounds, their introduction into production will give a multiple increase in the quality of products.

5. 3D printing - the process of creating a physical object by layer-by-layer printing on a special device. Researchers have announced the creation of 4D printing technology. This technology allows you to create objects that are capable of self-change and respond to deviations in the environment [6]. The complexity of projects for engineers, there are new opportunities for growing organs for transplantation, the possibility of creating complex parts for various devices.

6. Virtual and augmented reality technologies allow you to create a connection between the physical world and the virtual world. Elements of the virtual world add convenience, provide new opportunities. Modeling of situations is entering a new stage, acquiring a new look. Now you can create a situation in virtual reality and calculate the desired result with a much lower error [7].

But it's important to understand that the above components are just the technological aspects of industry 4.0. According to many experts in this and related fields, the formation of the correct perception of innovation is of great value. The psychological aspect also plays an important role: if the company (primarily its employees and management) is not ready to accept new options for production, management and service delivery, then the introduction of technical innovations will not bring much benefit and profit. Without a proper attitude and understanding of the whole essence of the phenomenon, these elements will remain fragmented and will not be able to unite into an integrated socio-technical system. With a competent approach to the transition to a new business model, a company can get a significant quantitative and qualitative effect. The overall impact of the new revolution is quite vast: it means replacing part of the jobs with automated devices, introducing new production technologies and controlling them, and increasing the efficiency of production process analysis using cloud computing, and much more.

It seems that if not now, then in the near future, remote control should become the norm. Recent inventions give managers the opportunity to make decisions, not being directly at the enterprise, but having all the necessary information at hand - using special devices, applications. Of course, in emergency situations or when making critical strategic, tactical and other decisions, the physical presence of the manager will be required, but most of the everyday tasks can be solved far from the company. Immediately, mention

should be made of automation controls. According to McKinsey, an international consulting company, even the highly intelligent work of the CEO (Chief Executive Officer) can be automated: this can be done with tasks that modern CEOs spend about 20% of their work time[8]. In other words, it is about making various routine, formalized and programmable management decisions. In addition, the controls themselves will become different. Not just a user interface with a database of specific issues; perhaps with the advent of a relatively final product of artificial intelligence, it will be a full-fledged digital assistant in business management.

Requirements for the management decision-making process will also increase. The external environment begins to change much faster, becomes more dynamic and complex in different respects. The development of the Internet and other communication channels contributes to the lightning-fast dissemination of information around the world. In this regard, in order for the company to remain competitive, able to get ahead of others, an ultrafast response to any changes and deviations is necessary. Decisions will have to be made much faster.

But, in our opinion, this process cannot be considered one-sidedly. There will be not only the requirement to make decisions more quickly, but also the very possibility of quick adoption

decisions. Industry 4.0 accelerates managerial decision-making, as well as a number of other processes that occur in the organization on a daily basis, because all the necessary information enters the management subsystem almost instantly, moreover, it is ready for processing and analysis, perhaps even already analyzed and processed using cloud technologies.

And what does this entail? Bulky structures with a large number of control levels will turn out to be too clumsy in such conditions. As a result, the transition to flat organizational structures. The number of management levels should be reduced, then all the information necessary for making a particular management decision will be accumulated at the level where this very decision will be made, and, ideally, subsequently executed. The result is an almost ideal decision-making apparatus - in one plane is information, the subject making the decision, and also another subject who will execute this decision. In turn, innovation can simplify the transition process: now, for overall coordination, you can use various digital services,

The new era requires that workers also participate in the management process. Moreover, it is not so important that they assist in making managerial decisions, it is much more important that they participate in the development of the company as a whole: offer various ideas about what kind of organization they see in the future, what it is worth changing in the structure of production, what innovations need to be introduced, as well as other constructive ideas. The fact is

that today it is fundamentally impossible for top management to keep track of all the trends, to have time to respond in time to all changes in the external environment. In addition, situations at the lower levels of the organizational structure are often unknown to senior management. In this regard, there is a need for frequent and constructive contacts with representatives of lower levels of management and ordinary personnel.

In the near future, the selection of staff will increase the importance of such quality as creativity. Almost all routine work will go to robots, people will be freed from it. But while robots cannot be as inventive and creative as humans, therefore, they cannot efficiently solve problems requiring a creative approach.

As practice shows, both in Russia and abroad there are companies actively introducing new technologies and adopting a new understanding of business. One of the international companies, they can be called the pioneers of the fourth industrial revolution in their industries. The company has been developing and actively introducing innovations in various processes taking place within the organization. The company is now undergoing "digital transformation": restructuring the organization to meet new requirements and new challenges:

- The company changed its organizational structure - the number of hierarchy levels was reduced from nine to five, and plans to make this model even more flat;
- 3D printing technology is used (for example, for applying bronze and nickel layers on equipment parts), and this reduces the cost of such operations;
- In 2017, the largest Data Lake data warehouse in the Russian industry was created. There information comes from several thousand sensors, from all devices and machines connected to the Internet of things. The collected information is used in further analysis, in monitoring the condition of the equipment;
- A company's ecosystem is being built to mobilize resources, mainly human resources, to establish their interaction; a system that allows you to deeply analyze the internal needs of the organization and adapt it to the conditions of change;
- A large-scale project "Innovations of the company" is being launched, the main purpose of which is the search and implementation of promising developments. Moreover, there is a search for developments within the company and interesting proposals from outside;
- A new direction is being developed. It includes four platforms that allow you to receive distance education, optimize recruiting, and also involve staff in the integrative processes in the company. In other words, the company is actively working with human resources in order to adapt them to new requirements despite the misconception that the Fourth Industrial Revolution will focus only on the introduction of innovations and

technological aspects of production.

The company management expects an effect of 300 million US\$ from only seven ongoing projects. in year. This figure and a concrete example confirm how far the fourth industrial revolution opens up opportunities for organizations [9].

Another pioneer in digitalization is Kaeser Kompressoren, a German company specializing in the manufacture and sale of equipment for compressing air and supplying it under pressure[10]. The concern is considered one of the leading companies in the industry; its production is characterized by the use of many sensors and sensors built into the equipment connected to the network. All equipment is integrated into a "smart" network, protected from external access. Thousands of indicators are read from them around the clock and are carefully analyzed. The SAP HANA system, created on the basis of the database, allows you to analyze these indicators and predict the behavior of equipment in the future: predict its breakdowns and report this to the manufacturer. Thus, Kaeser Kompressoren achieved two positive points:

By the way, staff should be involved in decision making. The world-famous company General Electric launched a project whose goal was to search for creative ideas with the help of not only the staff, but also ordinary customers. All interaction took place through the online platform. The result is more than 3 thousand ideas for new solutions in the energy sector. As a result, the five most promising ideas were introduced into the company's development programs.

Experts at McKinsey[11], an international consulting company, estimated the approximate effect of the implementation of Industry 4.0: labor productivity is increased (by 45-55%), the use of new technologies at the same time reduces equipment maintenance costs (by 10-40%) and equipment downtime (by 30 -50%), quality indicators increase (by 10-20%) and storage costs decrease (by 20-50%). The term for launching new products on the market is reduced by 20-50%, the accuracy of sales forecasting is increased to 85% and higher [10, p. eighteen; 13, p. 15-19].

The prospects for future changes undoubtedly seem bright. However, industry 4.0 may encounter some difficulties that can significantly affect its global distribution.

Some scientists are skeptical of this stream of innovation. In their opinion, industry 4.0 is nothing more than a fashionable trend, and things will not go beyond words. The skeptics argue their point of view with the following points.

Firstly, there is no serious energy base. Now they use the same sources of energy as fifty years ago. Alternative energy sources are not yet able to cover all the needs of society. In addition, there is the question of their profitability.

Secondly, there is no corresponding transport infrastructure. For the correct deployment of any large-scale project, a developed logistics system is required. At the moment, mainly old networks with outdated nodes are used. Of course, there are countries in which there is a modernized transport system with a low level of costs, but this is rather the

exception. Therefore, according to skeptic scientists, it is too early to talk about the comprehensiveness of the changes.

Thirdly, there is no material base. There is no mass introduction of new materials, since most of them remain too expensive and their use will only increase the cost of the final product [12].

Another important problem is the so-called cultural barrier and fear of the new. By tradition, within most companies, employees resist change. This is especially noticeable in Russian companies. It is always easier for workers, if the situation does not change, the content of the work will be relatively constant. And innovation always means risk, not all projects will be successful, and this is absolutely normal. At such times, trial and error prevails. But not all employees are willing to take risks, moreover, not all companies are willing to take risks.

So far, the vast majority of organizations do not realize the full potential of the revolution, the whole range of opportunities that can be derived from the competent implementation of technological and other kinds of innovations. Top management is often afraid of the "opacity" and incomprehensibility of most technologies, as well as the impossibility in some cases to determine with high accuracy the economic effect and the probability of a positive outcome.

When it comes to the massive introduction of global networks that are not limited by geographical boundaries, there is always the question of mass cooperation. First of all, this is due to the requirement to create a language in which all machines will "communicate" during interaction, and this is a rather complicated and laborious task.

Another perennial issue is a security issue. On the one hand, the integration of everything into a single system increases efficiency and reduces the time for operations. But at the same time, such systems become vulnerable to various cyber attacks [13].

It should be remembered that the fourth industrial revolution can give rise to a new surge in unemployment, because robots will take away jobs from people. But, most likely, it will be about changing the structure of labor. Routine work will be transferred to machines, and instead the share of "creative labor" will increase, new specialties based on intellectual work will appear. However, it is highly likely that those who are not ready for such changes and will not be able to adapt to new requirements will be left without work. This problem will mainly affect residents of developing countries.

Another important question: where to get the money for the implementation of all these technologies? And then - where to get the money to maintain the most sophisticated equipment in working condition? All the new technologies that have been created relay-recently, they are expensive, and the production of products using such equipment is economically unprofitable..

And therefore, after a huge list of benefits that companies can derive from, having correctly worked out the strategy for

transitioning to innovative production or introducing any technical know-how, a number of questions necessarily arise regarding the feasibility of such decisive steps. But will all this be effective? What is the likelihood that the implemented innovations will really bring the company benefits and, first of all, profit?

It is impossible to unequivocally answer these questions. The Fourth Industrial Revolution is a relatively young economic phenomenon characterized by the complexity of studying and forecasting, non-linear distribution and other consequences arising from these theses.

But it is impossible to deny that there are changes in the modern system of production and economic relations. At the same time, new trends extend their influence on management. You can predict some areas of change: the transition to flat structures, remote management, continuous monitoring of production and non-production processes at the enterprise, a change in the personnel policy of organizations.

Managers of not all companies will be able to adapt to new requirements: a too dynamic external environment will force some companies to leave the market, to go astray to form a strong and successful corporation. But some managers will undoubtedly be able to use "digitalization" for their own benefit, having obtained the necessary competitive advantage[14]s.

Thus, the concept of digitalization of everything becomes a reality. Automation, artificial intelligence, the Internet of things, machine learning and other advanced technologies allow us to quickly collect and analyze a huge amount of data that gives us previously unimaginable volumes and types of information for work. The task of society is only to move on to the next stage - changing thinking, learning and working with data - to create value for the results obtained using advanced technologies.

3. ARTIFICIAL INTELLIGENCE CHANGE BUSINESS MODELS

The Impact of AI in business models. Artificial intelligence can radically change our society. We should not exclude the likelihood that mankind will put on the shoulders of artificial intelligence a lot of work that is performed by people at this stage. Artificial intelligence can be useful not only in production processes that are constantly repeating, but also in more complex jobs. For example, robots can act as representatives of a customer relations department, they can be journalists, chefs, drivers and managers. It seems that most of the existing business processes can fall into the hands of artificial intelligence. As a result of this turn of events, many organizations will look completely different in the foreseeable future[15].

3.1. Corporate governance

Artificial intelligence has nothing to do with human intelligence. Technology has other goals and driving forces

that are different from human ones. If humanity does not want to suffer harm from artificial intelligence, then corporate governance should be transformed to solve problems that may arise in the interaction of man and artificial intelligence.

Administrative processes

In most cases, these processes are routine tasks, such as coordinating requests, organizing meetings, booking travel, or recording important points during meetings. Most of these tasks can be solved with the help of a virtual assistant, and the better artificial intelligence is, the more it will be able to perform tasks.

3.2. Innovation and Development

Artificial intelligence can help you advance your research activities by providing information on what customers need and helping you find a solution in your products. Such information will help enterprises quickly introduce truly useful innovations.

3.3. Employee productivity

Artificial intelligence technology can provide your employees with the right information in time to make them the most effective and productive. In addition, in enterprises where physical strength is required, exoskeletons are able to help employees drag and drop heavy objects. Ford is now busy massively introducing exoskeletons around the world to simplify tasks for its employees.

3.4. Customer Relations Department

Interactive AI and chat bots can significantly reduce customer service time. For example, JP Morgan Chase has implemented chatbots in its IT department and now their overall productivity has grown to 1.7 million requests per year. Chatbots were able to replace 140 people.

3.5. Company culture

At the moment, a huge number of organizations are typical human networks in which people collaborate and organize their own actions in order to achieve a specific goal. The way people collaborate and interact is an indicator of their corporate culture. But if cooperation turns into a "man-machine" form, then all processes are instantly accelerated, and the company's culture is changing for the better.

3.6. Communication with customers and employees

Here, the processes are similar to those that occur during customer service. Interactive artificial intelligence is able to communicate with customers, providing you and your employees with data to help you create the best advertising strategies. In the future, artificial intelligence will communicate directly with customers and employees.

3.7. Financial control

Obtaining a complete overview of the financial activities of the organization is a rather complex task and requires the participation of an accountant. In addition, billing, procurement and listening is still a human task. But artificial intelligence is capable of performing most of these tasks. There are already accounting systems based on artificial intelligence that are able to automate the processing of invoices, purchases and completely switch to non-cash payment methods. It is possible that in the foreseeable future, the financial condition of organizations will be checked in real time, and for this you will need a click on one button.

3.8. Workplaces

Artificial intelligence is not as harmful to the "workaholics" as they think. It can not only make a person useless in many fields of activity, but also create new ones that are now impossible to imagine. Of course, most of them will be associated with the development, management and verification of algorithms, as well as ensuring their communication without violating client confidentiality.

3.9. The language barrier

Instant translations have existed for a long time, and although improvements in Google Translate are visible to the naked eye, but this system still makes multiple mistakes. However, very soon, instant translations using artificial intelligence will become much more accurate, which will ensure the complete destruction of the language barrier in companies.

3.10. Information

When organizations begin to provide all their employees access to the necessary information through a thorough analysis of big data, many employees will become more productive. Artificial intelligence is able to provide employees with selected information and knowledge that will allow them to make the right working decisions.

3.11. Digital and more than security

Artificial intelligence can significantly improve digital security, because it is not subject to the human factor. In addition, smart cameras with installed image recognition systems can detect oddities that indicate a security breach.

3.12. Confidentiality of customer and employee data

It is widely believed that the advent of artificial intelligence will mark the end of confidentiality. No, it is not. Artificial intelligence technology is able to provide a new level of confidentiality - differential privacy. The essence of this type of personal data protection is that the methods used limit the ability to assign certain characteristics to the selected person. Thus, its identification is difficult. For the first time, this

method of protection was used by Apple. But the main thing here is ease of implementation, which will be a decisive factor in the dissemination of this technology.

3.13. Marketing

The golden rule of marketing is to offer the right product at the right time, at the right price and for the right audience. Hyper-personalization is the best opportunity to "reach out" to the client's wallet. Modern methods of deep and machine learning give organizations the opportunity to correctly draw up offers for customers who can definitely make him purchase one or another product.

3.14. Cybersecurity

Artificial intelligence can defeat cyber attacks and the spread of malware. And all because he can remember much more than an ordinary person. Quite often, so-called "precursors" appear before a cyberattack, minor malfunctions that signal a possible attack. Artificial intelligence can prevent such threats.

3.15. Breakdown prediction

Identifying the likelihood of imminent breakdowns is one of the most useful and sought-after functions of artificial intelligence. For example, take the energy company with wind power. Artificial intelligence can predict the failure of one or another part of it, saving the energy company a tangible amount of money.

3.16. Customer service

Personalized customer service will help improve their attitude towards your company. Artificial intelligence can help with social networking by answering questions. In addition, artificial intelligence is able to provide a permanent connection between the client and the brand through the channel that they use most often.

3.17. Production

Production processes can also be improved with the introduction of artificial intelligence. He can make production become fully automated.

3.18. Recruitment

New technologies will help in the selection of candidates for a particular position. Interviewing or testing can tell about the candidate very little. But artificial intelligence will provide an opportunity to consider various situations and the behavior of the candidate in them. Thus, the level of his knowledge will be revealed. This information will allow the employer to identify the best candidate.

3.19. Automation

Routine is what needs to be automated first. And you need to start with the usual processes in production. But you can automate not only the movement of goods in the warehouse, but also financial transactions. Artificial intelligence, coupled with robotic technologies, is able to perform tasks better than humans and this is a fact.

3.20. Investment activities

Before investing, you should familiarize yourself with the huge volumes of useful information. Sometimes these volumes are so large that you can miss what you need. Artificial intelligence is able to use all the information that will help optimize investment activity.

3.21. Customer Newsletters

As we mentioned above - the right offer, the right customer at the right time is the golden rule of marketing. Personalized customer contact in an e-mail can increase the number of sales achieved by your company.

3.22. Supply and demand

AI is able to simulate hundreds and thousands of possible situations and production results, as well as customer behavior. Such scenario modeling will help organizations better understand market demand and use it in production. This is necessary in order to produce the necessary quantity of goods that will satisfy demand.

3.23. Recommendations

Such systems exist for a long time, and have already proven their effectiveness in practice. The greater the amount of data that becomes available, the better and better the recommendation systems become. This increases sales and productivity.

3.24. The risks

Risks in business exist because no one can have a complete overview of everything that happens in the "internal kitchen" of the company. By exploring big data and expanding pattern recognition, such systems can predict who your next client will be and where you need to invest right now. This way you will reduce the risks that may arise when doing business.

3.25. Warehouses

With AI-powered drones, Walmart scans its warehouses to count the number of items. What a person will do for a month, the robot can do for some miserable 24 hours.

3.26. Sales

Artificial intelligence will not only give you the opportunity to predict, but also reduce the outflow of customers. Also, such

systems are able to offer the best deals based on customer habits and their hidden needs. Moreover, AI can help the sales team prioritize and automate certain processes.

3.27. Making decisions

The right decision can only be made by examining the sheer volume of data. But people cannot perceive large amounts of information. There is also the human factor, greed and other vices that can influence decision making. The algorithm takes into account all the data, which allows it to make the right and not biased decision.

3.28. Personnel Management

Very soon, artificial intelligence systems will be able to manage workers. This is what happens at Uber, which determines where the driver should go and how many passengers he will take using algorithms.

3.29. Learning other algorithms

Google recently launched Cloud AutoML, a service that consists of several machine learning methods that enable developers to create and train deep learning algorithms. The creation, training, and optimization of artificial intelligence require a deep understanding of the code and mathematical formulas that underlie the algorithm. In addition, the person creating artificial intelligence must be able to test and configure algorithms. But artificial intelligence itself can teach its "brothers". Yes, the technology is now limited, but over time, it will certainly improve. And one of the scenarios of science fiction writers will be embodied - AI will begin to teach its own kind.

3.30. ERP [16]

What will be the ERP system of the future ?

First, scalable. It should be able to read Big Data from millions of sensors (your body's receptors - your business) in real time and work equally well in a separate area (say, in a separate cell) and in general (for example, maintain balance on two legs - robots still cannot teach this).

Secondly, flexible. Flexibility is necessary for the mind to survive. In light of the development of the Internet of things, it will be strange if the "brain" of the system - ERP - is tied to one mainframe or even to a laptop. The ability to manage a business from a tablet, from a computer, in augmented reality, even from a smart watch, is the way out. The dispersion of business controls in the cloud and on the ground, on the server and in your pocket - everywhere.

Thirdly, the ERP system of the future should be sensitive. And in order to make out this point, let us return to the very beginning of our note: to the connection of business with the consumer. The basis of any business, be it b2b or b2c, the provision of social services or consulting, analytics or the

production of machines, is an important aspect: focus on the client, partner, end user. There will be no business without respect and understanding of the client (and in some cases without creating a client need at the expense of the ecosystem). The ERP system of the future must be sensitive to the requirements of the individual customer. Personalization is one of the strengths of the Internet of things. This is the case when both the client and the manufacturer win.

ERP-system gradually more and more resembles the living brain of the body, which is your business. The finer and faster the connection between the individual cell elements, the more efficient the business is. The connection between the smart products of the Internet of things and the smart machines that produce them will allow the machines to independently determine the target production depending on the needs of the end user.

Summary

Artificial intelligence technology can completely change the way you organize and conduct business. To succeed in the era of AI, companies must begin to implement it on a test basis now. Yes, it is expensive, yes, implementation will take a lot of time, but the benefits more than cover the costs.

4. APPLYING ARTIFICIAL INTELLIGENCE IN BUSINESS

The successful implementation of artificial intelligence (AI) rarely depends on the uniqueness of the innovation of a particular algorithm or data processing method. These are important factors, but even more fundamental for the successful implementation of AI are basic data operations and supporting platforms. They fuel the artificial intelligence machine that a business must create and develop in order to provide a permanent competitive advantage.

Here are five fundamental elements that need to be considered to ensure a successful transformation in an AI business:.

4.1. Define an integration strategy for implementing AI and analytic ideas in business operations.

Successful digital transformations are aimed at developing and optimizing business operations through the best use of data assets in combination with modern technologies such as machine learning (ML), artificial intelligence and robotics. These paradigm shifts are leading to new operating patterns, not just more efficient legacy operations. So digital conversion represents the operations of the enterprise in the form in which the business wants to work, and not in the form in which it operates due to technical and operational limitations and obstacles.

To take full advantage of the benefits of AI and analytics, a company must first decide how the business should function in the future. Prioritizing the transformation of your business and then evaluating advanced technologies and data processing options to solve them is a key step towards

developing a data-driven enterprise. This approach will help determine the type of AI and analytics that will be most useful for your business, and the technologies necessary to achieve it.

4.2. Create a holistic data and analytics platform

Selecting and configuring an integrated set of technologies to support data management and applied analytics is a complex task. Fortunately, solutions for such technical integration in recent years have turned into off-the-shelf components of the base platform.

Cloud-based modular platforms combine technical flexibility and financial resilience with an ever-growing technical set of capabilities, including interoperability in hybrid environments that include legacy on-premises deployments and geographic federation. In addition to open source components, such platforms include the ability to integrate selected proprietary modules and commercial technology components for greater flexibility. Also included is a custom architecture that can be represented as pre-created services for easier implementation and integration.

For example, data pipeline tools are starting to use ML (Machine Learning). Metadata tools use AI and ML to identify content and automatically generate metadata. And user interfaces include Chatbot technology and Digital Assistant AI to help users quickly understand the science of data.

4.3. Knowing your data

A complete understanding of the data your enterprise has access to may seem like a fundamental need with the support of operational reporting and analytics within the enterprise. However, many organizations focus on simple lists of source systems and some high-level business definitions and schemes.

Qualitative knowledge of data includes an idea of where the data comes from and what kind of business process they are, what operations are performed on them prior to your access, what transformations are performed after that, the corresponding level of quality and, of course, the main "five" Big data: volume (now it surpasses what our brain can process), high speed of data change, its diversity, reliability and value.

Creating an easy-to-find corporate data catalog is one of the first steps to expanding your enterprise with data. Providing a catalog of editing models using crowdsourcing provides richer content and wider dissemination of such information in the enterprise.

4.4. Control and management of data

Understanding the controls and managing your data needs is a natural process. By analyzing data types and their

business content with associated metadata, enterprises can align and define appropriate management policies related to internal policies and external standards, such as HIPAA for healthcare, PCI-DSS for secure payments, and PII and GDPR for data privacy.

It is also important that the source data maintains its original integrity without excessive filtering.

You can ensure proper policy enforcement, simplify use, and increase the trust and endorsement of the user community by ensuring that controls are built into your data management operations from the start.

4.5. Simplify access to your data.

To further expand the use of AI and analytics, it is important to simplify and automate data processing and the use of analytical tools.

Self-service leads to better integration of data and knowledge into business operations. Reducing the dependence on IT resources for complex data integration and preparation tools, average business users can interact with data through common interfaces and get results in simple and easy to use formats.

Once these fundamental elements are integrated, organizations will be able to take full advantage of the unique offer offered by leading analytics and AI.

4.6. How to implement artificial intelligence in business

and how to prepare data for AI training, extract maximum profit from technology and not lose customer confidence. Create the foundation for artificial intelligence The best foundation for implementing AI is the AI competency center. This is a diversified team that reflects all the functions of the company and which includes representatives of business, IT and AI specialists. Business and IT representatives should: Develop uniform regulations for working with data for the entire corporation and monitor their compliance; Choose the best options for accountability and corporate governance; Define technical standards for relationships with suppliers; Manage intellectual property; Assess the level of implementation of artificial intelligence. The task of AI specialists is to develop a virtual environment with embedded tools in which business and technical experts will share resources (data sets, methodologies, reusable components) and solve business problems. Train Artificial Intelligence Gather data. So that artificial intelligence can extract valuable information from a large data set and predict the future, it needs to be trained. To do this, you need to collect a large amount of information. Label the data. The collected data must be marked on some basis: for example, to determine whether the consumer is satisfied. To do this, the data for each user must be manually put down the marker "satisfied" or "not satisfied". Train AI. After marking, the data must be

shown to artificial intelligence: it will learn to find non-linear patterns in them and in the future will be able to independently put this marker on other users. Regulate labeling. In order for the marked data sets to be useful for artificial intelligence algorithms throughout the enterprise, you need to create corporate standards for their markup. All AI training needs to be addressed by the AI competency center. Artificial intelligence can learn even when the company does not have enough data: Rational and augmented learning (Lean and Augmented Learning) allows you to create your own data based on a small number of samples; Learning with the transfer of acquired knowledge (Transfer Learning) transfers the solution from one task for which there is enough data to another; Probability-based modeling is used to create "synthetic" data for AI training. Do not tackle everything at once First, it is worth developing an artificial intelligence model for one task, this will solve a specific business problem and increase work efficiency. If the company has successfully implemented AI in one business area, most likely it can be applied to other tasks. Managers need to create a portfolio of algorithms based on artificial intelligence that can be reused for different processes. This will accelerate the return on investment and spread technology to the company faster. Train employees and attract new ones Tools based on machine learning automate the work with AI and make it more accessible for workers. And yet, even those employees who have been trained in the field of artificial intelligence cannot understand some algorithms. In such a situation, they may accidentally use the wrong algorithm, which will lead them to incorrect results. To avoid this, it is necessary to create three skill levels for workers in the field of artificial intelligence. Users Most employees should learn how to use artificial intelligence, apply AI-based enterprise applications, manage data correctly and seek expert help if necessary. Developers 5-10% of employees must undergo additional training to become developers. They will create data sets, use them and collaborate with AI experts in developing new applications based on artificial intelligence. Professionals. A small portion of engineers and data mining specialists will create and manage AI-based applications. You can train company employees to act as users and developers. AI professionals must be hired from the outside, they must be technical workers. The leader should clearly distribute the responsibilities between the three groups of employees, establish joint work of artificial intelligence specialists and business professionals, develop partnerships between them and a mentoring culture. Most employees will be able to learn new skills and take on new roles, but someone will not succeed, so the manager needs to tune in to some staff turnover. Build confidence in artificial intelligence Artificial intelligence technologies still raise many questions: data confidentiality, cybersecurity, employment. In order for clients, employees and the board of directors to trust artificial intelligence tools, managers must follow the principles of

responsible AI: Equity: The company needs to minimize the bias of the data that AI works with. Awareness: you need to understand how AI makes decisions, and ensure the accuracy of these decisions. Reliability and safety: artificial intelligence systems must be resistant to cyber attacks. Control: artificial intelligence algorithms are worth checking periodically, the company needs to appoint a person responsible for AI systems. System Ethics: AI systems must comply with regulatory requirements, companies should consider how AI systems affect employees and customers. To regulate compliance with these principles, it is necessary to develop job roles that will combine technical knowledge and the ability to understand regulatory, ethical and reputation issues. Another way to increase confidence in artificial intelligence is to develop explicable AI. Such technology can justify every action and explain the benefits of the chosen strategy. This will increase the transparency, interpretability and provability of artificial intelligence solutions, and therefore, trust in it. Redefine AI Features Artificial intelligence automates business processes and helps make decisions. Many managers are now concentrating on these capabilities of the technology, however, the companies will get the greatest profit through personalization and improving the quality of goods and services. The most promising industries for AI monetization: Healthcare Artificial intelligence will allow you to monitor patient lifestyle data, diagnose diseases faster, and offer personalized health insurance. Retail. Companies are already predicting customer behavior using AI. The next stage is hyper-personalized retail: with the help of artificial intelligence and automation, retail enterprises will offer goods and services for a specific consumer. Automotive industry. Artificial intelligence allows you to simulate the consequences of different business decisions and choose the best strategy. For example, one leading automaker using AI is testing more than 200 thousand scenarios on how to bring unmanned vehicles to the market for sharing. Combine AI with other technologies Artificial intelligence works more efficiently in combination with technologies such as analytics, ERP (enterprise resource planning), the Internet of things, blockchain and even quantum computing. At the same time, the integration of AI with other technologies begins with data, so companies should pay special attention to their standardization and markup. The most promising way to integrate artificial intelligence with the Internet of things. Large enterprises use a huge number of sensors that collect information from corporate equipment and client devices. Artificial intelligence will identify patterns in this data stream for a variety of tasks: from system maintenance to marketing analysis. We need to combine not only technology, but also employees. Previously, analysts studied processes and created algorithms, then transferred them to IT professionals to write an API, and they sent it to business professionals for use in their work. Teams should now work together from the start. To do this, create

feedback between development and operation specialists so that they can collaborate and together make changes to the product (DevOps technique). Another option is to introduce an intermediary between the teams.

5. CONCLUSION AND RECOMMENDATION

It a message directed to the LAS (League of Arab States) to consider the importance for Arab Countries contribution to the National Strategy for Artificial Intelligence.

Standard Arab Countries refers to the reports from United Nation SDG. The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all worldwide countries as an input to the open consultation on the National Strategy for Artificial intelligence where everyone points the importance of sharing data on a common standardized a platform where security and ethics are taken care of.

Today, there is widespread international work on standardizing artificial intelligence. Arab Countries does not participate and thus has no influence on the outcome of these standards. By taking a more active role will enable Arab Counties interests and influence direction in the work.

The International Organization for Standardization (ISO) and the International Electro Technical Commission (IEC) are the key organizations in the field of international standardization and the only ones whose documents have the status of “standards”. The joint Subcommittee 42 “Artificial Intelligence” (ISO / IEC JTC 1 / SC 42 “Artificial Intelligence”) is responsible for standardizing the direction of Artificial Intelligence within these organizations, coordinating the work of Arab Countries experts through an Arab Technical Committee .

The development of products and services based on artificial intelligence requires an unambiguous interpretation of the concepts used by all market participants. The terminology standard will allow to unify the “language” in which developers, customers and the professional community communicate, to classify such properties of AI-based products as “security”, “reproducibility”, “reliability” and “confidentiality,”. Unified terminology will also become an important factor for the development of artificial intelligence technologies as part of the National Technological Initiative.

As part of the work at the international level, the delegation from Arab Countries should start to manage to achieve a number of landmark decisions that will have a long-term effect on the development of artificial intelligence technologies in Arab countries. The development of the ARABIC-language version of the standard, even from such an early phase, is a guarantee of synchronization with the

international field, and the development of the ISO / IEC subcommittee and the initiation of international documents with the Arabic co-editing are the foundation for further promotion of the interests of developers abroad.

Participation for Arab Countries will also add value in the form of knowledge sharing among the world's foremost artificial intelligence experts and leading Arab experts. Standard Arab Countries wants the importance of the National Strategy for Artificial Intelligence to be seen of facilitating the establishment of the building blocks by ensuring Arab Countries participation in the international work in artificial intelligence.

This can be done by securing sufficient resources, so that the experts represented by SME companies with high professional expertise, but with limited resources, access to the arenas. In addition to other good input in the consultation round, Standard Arab Countries recommends the following four areas to build a good national strategy for artificial intelligence.

1. Standard Arab Countries wants the National Strategy for Artificial Intelligence to point out international standards as one of several instruments to safeguard national interests in the development of artificial intelligence.

2. To make these international standards applicable to Arab Countries we depend on Arab experts to participate actively in their development international standards.

3. Standard Arab Countries wants the Digitalization Directorate to ensure that funds for the development of international standards already appear in the state budget for 2020.

4. Establish a learning arena for artificial intelligence that facilitates simulation with access to Big Data models. This could help SMBs and startups as well will have access to environments. Standard Arab Countries proposes that this work be added to one

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