

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Implementation of Artificial Intelligence: Current Experiences and Predictions on How Different Industries will be Affected

Ilkin Seyidzade

Ph.D. Student, Department of Business and Management,
Szent Istvan University, Hungary

Dr. Rudnakildiko

Associate Professor, Department of Business and Management,
Szent Istvan University, Hungary

Abstract:

Nowadays, Artificial Intelligence (AI) is present in almost every aspect of life and has a significant impact not only on our lives and work, but also in providing the foundations for a new, innovative business model, a new technological milestone. New goods are being implanted as virtual assistants, whereas chatbots are replying client inquiries on everything, the use of automatic and robotic tools is characteristic of almost every field of manufacturing and production.

In this paper I introduced the main features of AI implementation. I conducted a secondary research on different areas, such as Finance, Retail, Manufacturing, Health Care, Telecommunication and Automotive Industry. The results of the current experiences in these fields have been demonstrated, along with the estimated expectations for future.

Keywords: Artificialintelligence, innovation; technology, competitiveness, new technology

1. Introduction

While emerging and developing technology may not be fully understood, but of increasing importance, it is almost a basic requirement in business as it intensifies competition in various industries. Those who do not have the appropriate technological capabilities will be left behind, eliminated from the competition, so every company and business need to keep up the pace. Of course, there are both advantages and disadvantages of the new technology options, which should always be assessed, same way as the resources and tools available, and the difficulties of the implementation. AI is globally present, not only within a country's borders, but also internationally. The purpose of this study is to analyze the technological situation of different fields where AI is used. The paper tries to explore which industries use AI, what the benefits are, what difficulties do the companies face in implementation and integration of AI, and what possibilities and opportunities AI brings and holds for the future.

2. Finance

AI can be used in business and finance in the form of chatbots or customer support. Customers generally demand and expect quick and convenient answers when dealing with their financial subjects. Chatbots, for example, are specifically designed to respond quickly to any type of problem 24/7 by text or voice recording. Not only they are able to perform daily transactions, but they can analyze customers by their preferences to maintain customer loyalty and increase corporate efficiency. In addition, it is important to mention that in financial institutions, AI is involved in workflow automation (RPA), for example, by immediately retrieving the required information from a large amount of data, which can significantly reduce data processing time and thus allocate available capacity to other tasks. But there are also many applications of AI in the financial sector e.g. fraud detection, risk assessment (Infopulse, 2019).

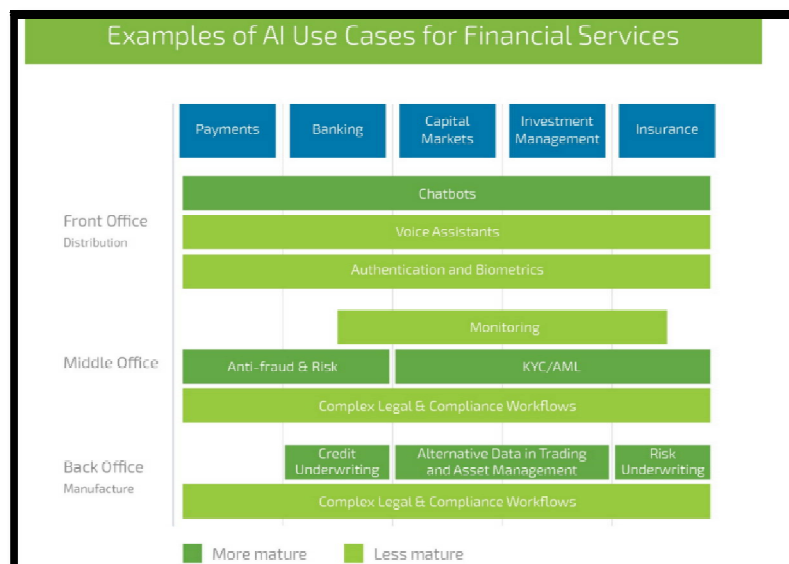


Figure 1: Examples for AI Uses in Finance
Source: Infopulse, 2019

According to the World Economic Forum (2018) the use of a multisectoral approach and the analysis of its global impacts are worthwhile and effective for AI analysis. According to the report, the institution linked the field of financial services with technology, science and public sector analysis to effectively showcase their collaboration and interdependence. Figure 2 summarizes the expected values of AI in the financial sector in the next period.



Figure 2: AI in the Financial Sector in the Next 1-2 Years
Source: World Economic Forum, 2018

Financial sector experts say there are still some shortcomings in the definition of AI in this area. It is not yet possible to define exactly what AI means in the financial sector, and the actors involved and the parties involved cannot agree on what real AI really means to them. In financial and business life, it is not defined as a specific technical approach, but as a set of abilities that support their work and do it in a new way. While the processes are highly automated, the technology background requires the coordination of interaction, decision making, customization, foresight and pattern detection. Focusing on AI is not enough for financial institutions to use it effectively. They also need to understand the technological interactions. The advancement of any technology improves other processes through these interactions. Blockchain technology, for example, facilitates authentication and offers a large data source, but requires centralized control. Stronger techniques must always be used for encryption. The AI also allows for e.g. automated contract generation, but it plays an important role in data storage and processing, supported by the cloud infrastructure. The model of the report divides financial processes in the traditional way into 6 groups, which broadly cover the main activities of the financial sector. These are the followings:

- Deposits and lending
- Insurance
- Payments
- Investment management
- Capital markets
- Market infrastructure

Nonetheless concentrating completely on the competences that AI delivers dangers missing the essential move that is occurring in the physics of financial services. The ties that have factually kept organized financial establishments are failing. The models of financial organizations are being primarily transformed. Thus, these organizations and financial units are more specific, extremely interacted and reliant on the competences of a diversity of expertise actors. Competition dynamics within the sector are slowing down. Financial units need to strike a balance between their ability to cooperate and their competitiveness. They can only respond effectively to deficiencies if they can fundamentally identify common problems. It should be borne in mind that AI is often seen as a substitute for human activities, although it is necessary to find a way and tone to inform people of how AI can be realized. AI solutions must primarily serve the needs of people and society, and thus address uncertainties appropriately by coordinating time, energy and other inputs. These shortcomings

and weaknesses listed are those areas that may cause significant problems and misunderstandings in the financial sector, and it is advisable to continuously improve these processes by integrating AI to achieve proper operation and efficiency. The report shows, through nine major trends, how AI is changing the physics of financial services, weakening the bonds that have held together financial organizations so far, creating new focuses that unexpectedly combine the old and the new resources.

- From cost center to profit center: With the help of AI, financial institutions are increasingly able to develop their back-office processes into outsourced services, while outsourcing their other, less advanced processes. As a result, financial institutions are moving towards the 'back-office as a service model', which accelerates the ongoing development of capabilities held within the financial institution and forces others to become consumers of these services - if they do not want to fall behind.
- New tools for customer retention: Past methods of differentiating services (such as cost-effectiveness, speed of service, or (physical) access to customers) are diminishing; which will effectively distinguish themselves from their competitors.
- Automatic financial advice: Currently, most financial advice that is part of every financial product is often general and impersonal. Artificial intelligence can facilitate the so-called. the development of automated financial consulting, primarily in the following three areas: (i) comparison platforms where the user can compare different products and freely switch between products and service providers, (ii) data-driven personalized financial consulting, (iii) automatically optimized by algorithms decisions.
- Common solutions to common problems: Shared data files between users allow for collaboration between financial institutions in areas such as fraud detection or money laundering, increasing the accuracy, timeliness, and effectiveness of these features, contributing to operational efficiency and the security of the financial system.
- The financial institution market breakdown: While AI reduces clients' search and comparison costs, the financial institution market structure shifts to extremes: increasing profit and dominance of market owners with new market opportunities.
- Data management collaborations: Organizing alliances with competitors and potential competitors will be key to compiling data diversity. However, this carries significant strategic and operational risks.
- The power of data protection regulation: The possibilities of using AI by financial and non-financial organizations are heavily influenced by data protection and portability laws, so they will be just as important to companies' competitive position as traditional law.
- Importance of proper talent management: The biggest challenge in introducing AI will be the transformation of the workforce, as the competitive position of companies and geographic regions that cannot adapt their workforce to the changing operating environment is at stake.
- New ethical dilemmas: AI requires a joint review of ethical principles and regulatory approaches to eliminate ethical concerns and regulatory uncertainties that make organizations less inclined to implement AI tools that result in more drastic transformation (Deloitte, 2018).

In the opinion of a partner at Deloitte's Business Consulting Business (Deloitte, 2018), the rise of AI in the financial sector can give new impetus to cost-efficiency and customer experience. At the same time, much remains to be done to exploit these opportunities in the areas of data consolidation, deep integration into banking and regulation.

3. Retail

AI can also have a very positive impact on commercial life. It can have a positive impact on productivity by automating tasks. In addition, the commercial utility that can be achieved can improve the efficiency of storage methods, which can also save significant operating costs. AI is also able to help retailers effectively identify demand for a product based on a variety of factors. In 2018 the main benefits for the retail sector worldwide were:

- Cost savings (49%)
- Increased productivity (44%)
- Increased revenue (43%)
- More informed business decision making (40%)
- Faster resolution for business problems (39%)
- Automated processes and tasks (38%)
- Expansion of employee knowledge and skills (27%)
- Faster delivery and new products and services (26%)
- Predictive/prescriptive analytics (24%)
- Ability to design and test new ideas (24%)
- Increase in innovation (22%)
- Ability to identify new revenue streams (16%)
- Attract new high skill employees (11%) (Infopulse, 2019).

As technology and digitalization progress, typically offline traders are already switching to online trading to level the playing field and rely on AI. From the sights of operation, Caggemini also mentions efficiency gains on the part of the merchant side, as AI is able to eliminate inefficiencies in workflows. Performing repetitive tasks can be easily accomplished using AI. And using AI, human work can be focused on tasks that require human presence and

execution. The analysis mentions profit growth in second place, meaning that in addition to lower production and transportation costs, traders can expect revenue growth (Hackernoon, 2020).

As AI revolutionizes commercial processes, there are plenty of positives on the customer and retailer side as well, which can be summarized as the followings.

- **Customer Service:** As commerce emerged on the online platform, through online resellers, AI offers an opportunity that surpasses previous customer service. Appropriate corporate marketing (such as multi-channel access through a marketing strategy or a multitude of advertisements and promotions) involves optimizing PR and customer relationships, representing high-quality customer service solutions, and making overall experiences interactive (Hackernoon, 2020).
- **Digital help:** even the participation of robots in the case of customer service and contact tasks could be included among the customer service experiences. Chat bots are not only suitable for answering a question in a short time with constant availability, but e.g. they can help customers find a product or provide product information, be it a product description or current stock (Hackernoon, 2020). They are also able to even send notifications to customers about a particular topic, but they can also perform refund processes (Chuprina, 2019).
- **Data collection and processes:** AI can be a great help in collecting and grouping large amounts of customer data. By using the data, companies can draw analyzes, thus creating a personalized shopping experience for their customers. It is easier to determine which customer groups, what they prefer, what product they are interested in. AI not only helps identify demand priorities and needs, but the supply side can also draw conclusions for their future strategic decisions (Hackernoon, 2020) as the owners of the businesses are able to extract anomalies and correlations with the support of AI/machine learning models (Chuprina, 2019). Thus, AI helps to understand the customers, increase the punctuality of the predictions, the automatized and individualized process make purchases comfortable and less stressful (Bayern, 2019).
- **Targeted marketing campaigns:** These can also be derived using AI algorithms. Not only do they help define personalized products, but ads can also be customer specific, and this helps increase customer loyalty, customer retention, and gaining new customers (Hackernoon, 2020).
- **Price adjustments and price forecasts:** these activities are primarily to help traders. They present appropriate pricing by presenting the results of pricing strategies; and the price forecast helps to outline what the demand would be for the product at that price. However, these tasks require prices and information from competitors, which AI is also able to collect. Optimal pricing not only helps the merchant attract customers, but also helps to retain them in the long run, increasing customer loyalty (Chuprina, 2019).
- **Stores can be cashier-free:** Roboticization allows robots to take over cashier tasks instead of human. Taking over cashier jobs can result in significant operating costs save. Using robots also reduces the chances of errors and speeds up the billing process (Chuprina, 2019).
- **Visual and voice search.** These AI features give customers the option to either display multiple similar products to the customer by uploading an image, or search by sound (Chuprina, 2019).
- **Virtual trial rooms:** Traditional shopping is often time consuming and tedious e.g. trying on clothes one after another. The virtual trial rooms provided by AI use digital tricks to allow shoppers to try on specific garments without any effort. Cosmetics companies are also rarely using this option these days (Hackernoon, 2020).

However, the application of AI can be extended not only to commercial units, but to the entire commercial supply chain, as fast, accurate and safe product delivery, route optimization, proper stock management and associated optimal orders, cost reduction, optimal logistics, predictive and descriptive analyzes and forecasts, interconnection of capacities, design processes are all prerequisites for the efficient operation of individual commercial units (Chuprina, 2019). Based on the study of Jaln (2019) the supply chain of retail can reach many benefits with the use of AI tools, such as stock reduction by 20% due the increased use of e-commerce, 2 million fewer returns annually, 30% less lead times thanks to automatic devices, 50% enhancement in collection efficiency, 4-6% sales growth, 30% increase in online sales. By 2024, AI's contribution to the retail industry is expected to exceed \$ 8 billion, the compound annual growth rate will be 40% during the period of 2018-2024 (Figure 3).

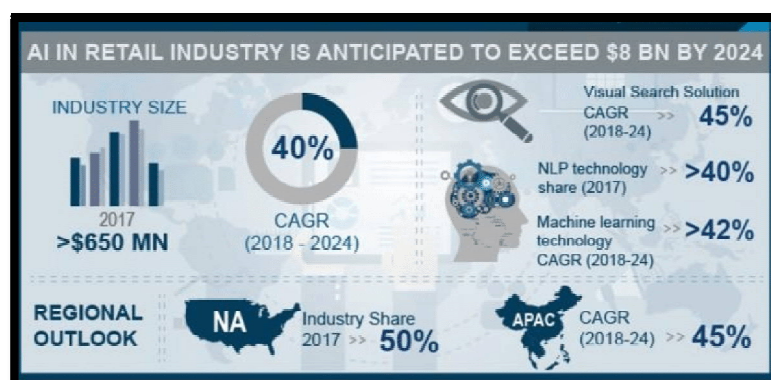


Figure 3: AI in Retail Market

Source: Jaln, 2019

According to an industry analysis (Mordor Intelligence, 2019), AI in retail market will reach the value of \$10.90 billion by 2025, the annual growth rate will be 35% during the period of 2020 and 2025. The most significant market share will be possessed by machine learning and deep learning technology, it will cover all areas of retail. With the efficient use of Big Data analysis, the best growing area will be the product optimization segment including product recommendations and planning in a great extent.

4. Manufacturing

In manufacturing, the manufacturing and production AI is capable of sourcing raw materials, but also able to handle and prepare human resource and financing decisions, inventory and equipment maintenance (Supryia, 2019). The application of machine learning software is typical in manufacturing. Predictive maintenance uses sophisticated AI algorithms to help eliminate potential errors through automation. AI is also an effective tool for improving product quality and meeting quality requirements, and can also be used to track technical malfunctions. In addition, it is possible to develop generation planning software that assists in analyzing product parameters, budgeting options and optimal design. (Infopulse, 2019).

According to the Annual Manufacturing Report (2018), the sector has great potentials to improve and extend the competences of people, and support businesses reach more, quicker and more professionally. Although the concept is not new, the AI that emerges in manufacturing processes, i.e., cloud-based technology and machine learning algorithms, is not yet ubiquitous. According to the report, digital technology will create 'smart factories' that will increase the sector's productivity by working smarter. Although the integration of AI systems is approximate. It will be 58%, in fact only 12% have been achieved today. In order for companies to take advantage of the opportunities offered by IoT, their devices need to be connected to smart devices, which are mostly limited to performing more traditional, repetitive tasks these days. The integration of reliable algorithms into workflows is expected to take place over the next 5 years by integrating core technologies into the network. Industrial companies need to transform into digital companies in all respects and make all their activities customer-centric. By 2035, AI-based technology in the manufacturing sector is projected to grow by 16%, an increase of about \$ 3.8 trillion. The expansion network is projected to drive the majority of the profits for this segment. Not only will manpower and human resources develop more productive, nonetheless AI will also lead to the effectuation of the complete feasibility of present equipment on the factory floor (Purdy and Daugherty, 2017). Among the automated processes implemented today are:

- Quality control: the discovery of product defects and production deficiencies has already been solved in many areas, which can be without human control. In many cases, the system integrated with AI can also detect errors that are not visible to the naked eye and immediately send an alert about the error and its exact location.
- Prediction of failure modes: errors in forecasting methods can be eliminated, instead of drawing false or erroneous conclusions, the machine can provide more accurate conclusions and results. Testing the products, collecting and analyzing larger amounts of data precedes the evaluation.
- Predictive maintenance: also used for forecasting, to assess the condition of machines, which requires very high accuracy. It helps prevent unplanned downtime, responds to alarms, and helps find solutions to machine problems. Nowadays, larger companies (Siemens, LG) are routinely using this type of AI capability to detect irregularities.
- Generative design: a design process that generates multiple outputs based on defined criteria using machine learning techniques. Although machine design is no substitute for human creativity, manufacturing methods and their costs are comparable, and these speeds up processes, even if later human imagination completes the design phase and together provides value to customers, improves efficiency.
- Environmental impact: taking into account that whatever production process takes place, most of them damage the environment. Examining environmental impacts with the help of AI helps to determine e.g. the amount of hazardous substances formed, how much waste is generated, what hazardous gases can be released into the air. AI technology gives an accurate picture of the magnitude and extent of possible damage, supports energy efficiency, minimization of harmful substances, and the development of environmentally friendly materials (Polachowska and Trojnarowski, 2019).

5. Health Care

Taking into consideration the health care and health system of any country, it can be said that AI is already present in health care in many areas, if e.g. we only think of blood pressure measurement, plus number measurement, motion monitors. Of course, more complex applications are also available in the healthcare field. Their functioning and adequacy play a huge role, as people's health and lives are at stake. Service failures are unacceptable in this area. In health care, imitation of human cognitive functions is significant, but this approach has not been accepted for a very long time (Jung and Padman, 2015). In the field of clinical application, it provides significant support in the prediction and diagnosis of AI diseases, in the measurement of the effectiveness of treatment, and in the examination and monitoring of results. The management of patient records and health records at the level is based on AI applications. Structured and unstructured data from these records can be systematized and retrieved using machine learning. The 3 main applications of AI in cancer, neurology and cardiology are also significant, relying on more informed information rather than human judgment for better decision making (Hengstler et al., 2016).

Educba (2020b) highlights and summarizes the role of AI in medical applications in the following respects.

- Medic/Physician/Doctor measures the patient's health-related figures and stats and associates the danger factors to the clients through the health care devices with the support of artificial machine intelligence.
- It provides information to patients about the side effects of medications and can also be referred to as digital care. A significant discovery in the field of AI is the surgery simulator, which appropriately prefers the applicable treatments to assist physicians.
- Its neurological application enables the simulation of the functioning of the human brain, supports the recognition, identification, monitor and control of disorders.
- Robotics can be used to help mental patients, making them more active in the real world.
- In the field of radio surgery, the use of AI makes it possible to operate on tumours without damaging the neighbouring tissue.

AI also supports very useful processes in drug development, such as the classification of compounds based on their properties. Such properties are, for example, the determination of their toxicity or affinity. These characteristics are defined as target variables, in many cases presented by numerical or symbolic means. If all data samples are labelled, it becomes possible to apply supervisory learning techniques, but there are models that can be created without supervisory learning. In addition, there are predictive models that can assess the molecular system, the strength of the relationship between molecules, or how certain drugs exert their effects, how they correlate with test results. Mostly vector-based representation is used, the values entered are a set of properties that describe the particular molecules and their state. In the case of large amounts of data, the primary properties or function must be selected and then the result of the aggregation or transformation is described after filtering. Because the structure of molecules can be very diverse, it is not always possible to represent all molecules in the same vector space because it could produce different vector sizes. Based on their structural, descriptive properties, similar molecules are usually placed in a vector space and can be represented in the form of a graph or a tree. Defining decision boundaries also plays a role in classifying data. The two classification methods include hyperplanes and nonlinear surfaces. They are also evaluated within the given regions based on their similarities. Data with a similar label for data labelling will be placed in a classification group. The accuracy of these predictions was found to be 80%. And although drug development requires further research and human intervention, it provides sufficient support to speed up the evaluation of preliminary examinations, tests, and groupings. Traditional drug developments can take up to several years, and AI methods reduce this development time and effectively outline the results of testing multiple outcomes (Duch et al., 2007).

Davenport and Kalakota (2019) classified the types of AI in the health care according to the relevance and potential. They distinguish 5 groups according to the operation and 3 types of applications. Based on the operation, the followings are:

- Machine learning – neural networks and deep learning: Teaching to fit data and develop data models. In healthcare, precision medicine is the most common form. Predict, how successful the treatment of patients can be, what outputs and inputs there are, what influences their treatment, what is the weight of these variables, how typical they are for a given problem. Graphics processing units and cloud architectures allow for faster processing.
- Natural language processing: includes speech recognition and text interpretation functions. There are two groups of statistical and semantic NLP. In healthcare, statistical NLP is the typical, based on machine learning e.g. preparation, understanding, classification of research and clinical documentation. They are also suitable for analyzing unstructured patient data.
- Rule-based expert systems: as its name suggests, expert systems based on collections of rules for clinical decision support purposes. The basic condition is the creation and integration of human rules in a given field. These rules cannot be contradictory, they can only be very difficult to change later. Such are the electronic registration systems that work with established rules.
- Physical robots: suitable for performing predefined tasks, e.g. in health care, care is delivered within the hospital. Surgical robots have already appeared in this area, but they are not suitable for independent decision-making, it is still a human task.
- Robotic process automation: execution of digital tasks for administrative purposes using information systems. Tasks are performed based on rules or scripts. It is used specifically in computer software programs, for repetitive tasks e.g. updating patient records, licensing, billing.

The classification of AI based on applications:

- Diagnosis and treatment applications: Rule-based diagnostic systems were common as early as the 1970s, but due to their poor integration, they were not suitable for diagnosis without human approval. The breakthrough came from IBM's Watson, which was built on the foundations of machine learning but is difficult to integrate even today, so it is typically used in research laboratories, human supervision is still required.
- Patient engagement and adherence applications: Although most patients are proactively involved in self-care, preparing a care plan is a method used in many cases. Of course, if the patient does not perform the prescribed activities or does not take the prescribed medications, it is not a malfunction of the system. Messaging alerts and targeted content mostly also trigger action, so they are considered promising to use these applications.
- These are not the latest applications in healthcare, yet they are important enough to alleviate the workload of healthcare workers. Its efficiency is so significant that the time for administrative and regulatory activities is thus decreases approximately by 25%. The relevant technology listed here is RPA, which helps with clinical documentation, processing, and record keeping. NLP-based applications are chatbots that help interact with patients and support their mental health. Receivables and financial payment management can also be

implemented using AI technology, in which machine learning plays a significant role. In these cases, solving coding problems and analyzing and correcting reliable data is a sensitive area. If the system works properly, a lot of time, money and effort can be saved.

According to an estimation, the top 10 AI applications and their benefits will be the applications demonstrated in Figure 4. by 2026 (Vella, 2017).

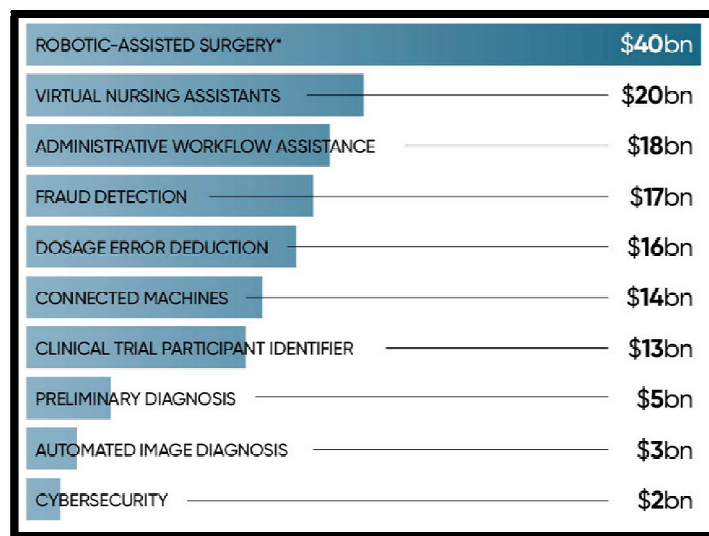


Figure 4: Top 10 AI Applications in Health Care by 2026
Source: Vella, 2017

By using machines, a better interpretation of the data and a better understanding of the diseases will help to establish a better diagnosis and treatment. DNA scans help analyze the molecular codes of diseases, although there are no standard procedures and methods yet, practices used in hospitals may vary. But the more you learn the AI, the more knowledge you will have and the stronger you will become (Vella, 2017).

6. Telecommunications

Telecommunications are carried out by means of electronic devices which are not fully but capable of transmitting data. ICT is the field of information, communication and technology, within which data is transferred with the help of resources, tools, software and data carriers. Data and later information can be images, texts, videos, sounds, and wired and mobile networks are suitable for transmitting information. With the advent of AI, chat bots can be listed here, which are also suitable for information transmission and communication, but data sharing and data storage can be listed here, for example from the government side (Sharma et al., 2020). The chatbots used in the financial sector can also be mentioned in the case of telecommunications. AI-based customer services allow for quick and convenient demand fulfilment, while at the same time they can effectively value clients, network data can be quickly found and queried. It is capable of analyzing the contents of e-mails within a short period of time and can be automatically forwarded to the relevant department based on the content. AI is also able to create customized solutions and offer relevant offerings to customers. It is also an effective tool for maintaining and monitoring telecommunication equipment, providing real-time solutions to immediate problems (Infopulse, 2019).

For seamless information exchange and communication, AI has also appeared in this field and more and more developments are taking place nowadays. Of course, internet services are also an integral part of telecommunications, mobile and broadband services. The driving force behind the growth is AI, which also provides added value for businesses. In order for communications providers to provide the best possible quality to customers, improve the experience, streamline processes, they analyze the market, collect data and this sector also employs a huge amount of data from Big Data. Today, in order to achieve these goals, telecommunications are trying to integrate AI as much as possible in four areas (Churchill, 2020):

- Network optimization: Network optimization processes, i.e. the automated operation of processes based on traffic information, which includes the analysis of regions and periods. Algorithms are used to check the samples, anomalies are detected, and in case of an error, an immediate signal is given. Today, the use of AI systems in this field is 63.5% in this field.
- Preventive maintenance: Maintenance is aided by AI algorithms and machine learning to identify and prevent potential problems. These tools allow the service providers to perform a status check, monitor, and troubleshoot the problem as soon as possible. AI allows problems to be analyzed based on historical data, and subsequent problems can be eliminated by identifying the root causes. Preventive maintenance cannot only be performed at the service provider, it can also be used to support the customer side, for which telecommunications usually also provides a contact person to help the clients.

- Virtual assistants: This area also includes the chatbots mentioned earlier. The activities of virtual assistants also include not only providing immediate responses to clients, but also guidance, e.g. for setup, installation, troubleshooting, maintenance.
- Robotic Process Automation (RPA): RPA processes are automated tasks developed to eliminate human error, created for the mostly repetitive, high-volume operations. It is constantly being developed so those tasks that require a lot of time and work do not burden the person, e.g. data entry, invoicing, fulfilment of orders. Nowadays, the integration of RPA processes takes approx. 40% in the telecommunications sector, the next 3 years is expected to grow significantly.

Based on Marr's (2019) examination, not only does its efficient operation aim to integrate AI in the telecommunications sector, but as in any other sector, increasing customer satisfaction is at least as important mission. Another important area of AI in this sector, in addition to the above, is the detection of fraud e.g. eliminate illegal access, prevent theft, detect fake profiles. Algorithms learn these activities in the same way as normal activities, so they can detect abnormalities in real time against human activity. And last but not least, thanks to advanced technology, corporations can gain a competitive advantage and increase their revenues. In the field of telecommunications, there is also competition between service providers, and many large companies have already come to the conclusion that their investment in AI can generate higher profits in the long run, even exceeding the expenditures invested. Operating costs can also be reduced by using the right AI, not only saving time in workflows, but also replacing the work or even a job of some people with that particular technology, which also reduces labor costs (Venkat, 2020).

In terms of sector AI dynamics and statistics, AI is projected to grow from \$ 236 million in 2016 to \$ 2,498 million in 2016, with an annual growth rate of 46.8%. The main target audiences of telecommunication service providers (e.g. IBM, Microsoft, Google, Cisco) are:

- Government agencies
- AI in telecommunication solution / service vendors
- Application developers
- System integrators
- Application end-users

In the coming years, AI-compatible smartphones and the natural language processing (NLP) segment are expected to make a major contribution to further growth. Among the applications, the functions of the customer analytics applications are expected to expand further, which will help in planning and developing target-group oriented marketing strategies (sales and promotional campaigns) (Markets and markets, 2018).

7. Automotive Industry

The automotive AI allows to control security features (such as anti-theft protection), risk assessment, and is also well suited for physical positioning with high-end cameras and sensors. AI is able to identify people, including the driver and passengers. Nowadays, intelligent cars are also playing a major role because of the IoT and cloud technology. They are capable of processing huge amounts of data for the most comfortable use possible, e.g. suggesting locations to the driver based on their preferences. They can also be processed based on data from social networks. AI-based intelligent vehicles will soon become an integral part of the automotive industry (Infopulse, 2019). AI is already used in almost every process in car manufacturing, e.g. robots screw bolts and associated nuts, but GPS, which is now used by many drivers in transport, is also an application created as an AI solution. However, self-driving cars are sometimes mentioned as a complimentary possibility, implementation is still in doubt. We are still far from this solution, but there are attempts at it (Built in, 2019).

The digital transformation already means the survival of the automotive industry today, and although only a few companies have been able to fully switch to AI due to high costs, about 80% of players in the sector consider AI as a basic strategy. The main areas of AI in the automotive industry are the followings (Havrysh, 2019):

- AI Software for Connected Vehicles: a combination of driving with a software that helps drivers, even when planning a trip and route (navigation software), but also provides an alert, e.g. if emergency braking is required, but mirror or seat adjustment can even be AI-based.
- Predictive Maintenance: As previously described this area, it is also common in the automotive industry to collect and analyze data for maintenance, providing information on vehicle data and any problems that may arise. This will help prevent errors if they are detected and corrected in a timely manner.
- Automotive Insurance: The AI-based solution allows, for example, documentation and claim submission processes for accidents. When determining the amount to be paid, it already takes into account the previous events of the driver and the vehicle, the driving history, so that it can be accurately classified in the risk profile. An app for car damage assessment is now available in China, so the driver can pass this data on to the insurance company right away.
- AI in Car Manufacturing: Not only automated tools and robots can be used in the assembly phase, but they can also be involved in subsequent painting and welding workflows and are able to perform tasks without assistance. But the material delivery within the factory is also based on AI technology, the elimination of subsequent errors is also performed by robots instead of quality control staff.
- Supply Chain Automation: Similar to the retail supply chain, AI optimizes processes in the areas of logistics, sourcing, delivery, sales, etc. It uses data to make various predictions, e.g. optimal ordering, cargo and store area calculation, automatic check and control, product examination. In this case, too, chatbots are suitable for recording documentation, filtering data, or even answering orders.

- AI Software for Driver Monitoring: Most applications are usually designed to assist the driver while driving (navigation or status checking). But some manufacturers are now focusing on creating an app that monitors the driver. For example, the software can tell what kind of car the driver is in, whether the seat is set correctly, and what the air temperature is. These are mostly introduced to avoid hazards, e.g., if the driver is tired, sleepy, may beep to keep awake. And determining body position can be important if the airbag deployment is also performed by the AI and knows exactly what height the driver is sitting at.

8. Conclusion

As indicated in introduction the current world economy requires the implementation of the latest technology in order to keep up the pace in open global competition. The implementation of AI may incur problematic due to several reasons, such as, lack of the skilled stuff, lack of the interest in current company culture, expansiveness, it is still important to realize that in the close future, those companies that will not be able to implement the latest technologies will face a danger of getting eliminated from the market.

As we see from the examples of different industries, the perception and implementation of AI is different in different fields.

In Finance industry, the use of AI is not fully welcomed and understood by the experts of the field, however, it is being broadly used in technical issues, specifically in customer service. It is important that the experts understand the use of AI in technological interactions. However, there is a common fear that the implementation of AI may endanger the bonds that have held together the financial institutions over decades.

In Retail industry, AI is already becoming popular. Most of the retailers switched into the online business very quickly, some of them even liquidating the offline businesses. Other than that AI helps in development of different sections, such as customer service, digital help, data collection, marketing campaigns, price forecasts and adjustments, cashier-free stores, virtual trial room, etc.

In manufacturing AI is implemented in elimination of potential errors through automation. It also increases the quality of the product, analyzes the budgeting options, product parameters, etc. Moreover, there are several other automated processes implemented, such as quality control, prediction of failure modes, predictive maintenance, generative design, environmental impact.

Health Care industry is probably the most debatable field in terms of AI implementation. In some technological aspects, AI is being utilized in several aspects, however, it is still under question how it may substitute human power in more complex situations. However, AI is broadly implemented in drug development, helping to determine the toxicity or affinity.

Telecommunication field is known for using AI to develop bots that are used in customer service. It is also helpful in seamless information exchange and communication. The areas where AI is determined to be mainly implemented are network optimization, preventive maintenance, virtual assistants and robotic process automation.

Examples of AI implementation in automotive industry are security features, risk assessments, cameras and sensors. The main areas are, software for Connected Vehicles, Insurance, Maintenance, manufacturing of cars, etc.

9. References

- i. Annual Manufacturing Report (2018) *The power of Artificial Intelligence in manufacturing* [Online] Available at: <https://www.themanufacturer.com/articles/power-artificial-intelligence-manufacturing/> (Accessed: 07 April 2020)
- ii. Bayern, M. (2019) *How AI can save the retail industry?* [Online] Available at: <https://www.techrepublic.com/article/how-ai-can-save-the-retail-industry/> (Accessed: 07 April 2020)
- iii. Built in (2019) *Artificial Intelligence in cars – Powers an AI revolution in the auto industry* [Online] Available at: <https://builtin.com/artificial-intelligence/artificial-intelligence-automotive-industry> (Accessed: 08 April 2020)
- iv. Chuprina, R. (2019) *Artificial Intelligence for Retail in 2020: 12 Real-World Use Cases* [Online] Available at: <https://spd.group/artificial-intelligence/ai-for-retail/> (Accessed: 07 April 2020)
- v. Churchill, L. (2020) *4 Areas where AI Is Transforming the Telecom Industry in 2019* [Online] Available at: <https://techsee.me/blog/artificial-intelligence-in-telecommunications-industry/> (Accessed: 08 April 2020)
- vi. Davenport, T. and Kalakota, R. (2019) The potential for artificial intelligence in healthcare, *Future Healthcare Journal*, Vol. 6. No. 2. pp. 94-98.
- vii. Deloitte (2018) *The new physics of financial services* [Online] Available at: <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-world-economic-forum-artificial-intelligence-summary-report.pdf> (Accessed: 18 March 2020)
- viii. Duch, W., Swaminathan, K. and Meller, J. (2007) Artificial Intelligence Approaches for Rational Drug Design and Discovery, *Current Pharmaceutical Design*, Vol. 13. pp. 1-12
- ix. Educba (2020b) *Advantages of Artificial Intelligence* [Online] Available at: <https://www.educba.com/advantages-of-artificial-intelligence/> (Accessed: 29 March 2020)
- x. Hackernoon (2020) *Six Real-World Applications of AI in Retail* [Online] Available at: <https://hackernoon.com/6-real-world-applications-of-ai-in-retail-c50736028efd> (Accessed: 07 April 2020)
- xi. Havrysh, N. (2019) *How AI Has Been Changing the Automotive Industry* [Online] Available at: <https://becominghuman.ai/how-ai-has-been-%D1%81hanging-the-automotive-industry-e3d3c5324e03> (Accessed: 08 April 2020)

- xii. Hengstler, M., Enkel, E. and Duelli, S. (2016) Applied artificial intelligence and trust—The case of autonomous vehicles and medical assistance devices, *Technological Forecasting and Social Change*, Vol. 105. pp. 105-120.
- xiii. Infopulse (2019) *Ways of AI Implementation in 5 Different Industries* [Online] Available at: <https://becominghuman.ai/ways-of-ai-implementation-in-5-different-industries-177f2501cd7f> (Accessed: 13 March 2020)
- xiv. Jaln, V. N. (2019) Artificial Intelligence (AI) for Supply Chain Industries and the Future it Holds, *International Journal of Engineering and Technical Research*, Vol.8, Issue 3., pp. 26-35
- xv. Jung, C. and Padman, R. (2015) *Disruptive Digital Innovation in Healthcare Delivery: The Case for Patient Portals and Online Clinical Consultations*, In: Agarwal R., Selen W., Roos G., Green R. (eds) *The Handbook of Service Innovation*. Springer, London
- xvi. Markets and markets (2018) *AI in Telecommunication Market by Technology, Application (Network Optimization, Network Security, Self-diagnostics, Customer Analytics, and Virtual Assistance), Component (Solutions and Services), Deployment Mode, and Region - Global Forecast to 2022* [Online] Available at: <https://www.marketsandmarkets.com/Market-Reports/ai-in-telecommunications-market-130504876.html> (Accessed: 08 April 2020)
- xvii. Marr, B. (2019) *The Amazing Ways Telecom Companies Use Artificial Intelligence And Machine Learning* [Online] Available at: <https://www.forbes.com/sites/bernardmarr/2019/09/02/the-amazing-ways-telecom-companies-use-artificial-intelligence-and-machine-learning/#44aa3ddd4cf6> (Accessed: 08 April 2020)
- xviii. Mordor Intelligence (2019) *Artificial Intelligence in retail market – growth, trends and forecast (2020-2025)* [Online] Available at: <https://www.mordorintelligence.com/industry-reports/artificial-intelligence-in-retail-market> (Accessed: 07 April 2020)
- xix. Polachowska, K. and Trojnarowski, M. (2019) *10 use cases of AI in manufacturing* [Online] Available at: <https://neoteric.eu/blog/10-use-cases-of-ai-in-manufacturing/> (Accessed: 07 April 2020)
- xx. Purdy, M. and Daugherty, P. (2017) *How AI boosts industry profits and innovation*, Accenture Report, AI Research
- xxi. Sharma, G.D., Yadav, A. and Chopra, R. (2020) Artificial intelligence and effective governance: A review, critique and research agenda, *Sustainable Futures*, Vol. 2., 100004
- xxii. Supriya, R. (2019) *Implementations of Artificial Intelligence in 2019* [Online] Available at: <https://www.fintechnews.org/implementations-of-artificial-intelligence-in-2019/> (Accessed: 11 March 2020)
- xxiii. Vella, H. (2017) *The rise of artificial intelligence in fighting cancer* [Online] Available at: <https://www.raconteur.net/healthcare/the-rise-of-artificial-intelligence-in-fighting-cancer> (Accessed: 06 April 2020)
- xxiv. Venkat, K. (2020) *The Future of AI in the Telecom Industry* [Online] Available at: <https://medium.com/@venkat34.k/the-future-of-ai-in-the-telecom-industry-5d4c83a60054> (Accessed: 08 April 2020)
- xxv. World Economic Forum (2018) *The New Physics of Financial Services* [Online] Available at: http://www3.weforum.org/docs/WEF_New_Physics_of_Financial_Services.pdf (Accessed: 17 March 2020)