Chapter 6
The Role of Artificial Intelligence Within the Scope of Digital Transformation in Enterprises

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ABSTRACT

Digital transformation, which is the beginning of a new era, and performed in order to provide a more effective service, has become a compulsory situation for the enterprises that take into account the increasing corporate volumes. However, the processes and technologies used in this transformation may change according to the enterprise volume and needs. At this point, activities that implement artificial intelligence technologies will make significant contributions to digital transformation. Artificial intelligence technologies serve many purposes such as search, reasoning, problem-solving, perception, learning, estimating, analytical thinking, optimization, and planning. The purpose of this chapter is to demonstrate the effects of artificial intelligence techniques on the processes of digital transformation utilized in enterprises by considering the difficulties experienced in the realization of digital transformation. It is expected that the study will provide a perspective for other studies on digital transformation and thus create an awareness.

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INTRODUCTION

Nowadays, the findings obtained show that the real world is rapidly digitized when the researches in digitalization topic and the statistical results in global digitalization are investigated. Digital transformation is generally the ability of organizations to provide more effective and efficient services, in line with the opportunities provided by rapidly developing information and communication technologies, and changing social needs. Within the scope of digital transformation, analog recordings are processed in a digital environment by transferring the processes that realized in the enterprises to digital media with the support of technologies such as of industry 4.0 components (smart factories, cyber-physical systems, internet of things, big data, autonomous robots, simulation, system integration, cloud computing, augmented reality), digital media, Artificial Intelligence (AI) and internet, and thus automation is provided. Today, all corporate assets and stakeholder relations are largely transferred to digital media. Thus, organizations can always make their automation more efficient with new technologies and improve the digital technology experience they use to deliver services (Bohnsack et al., 2018; Hanelt et al., 2015; Kamalipour & Friedrichsen, 2017; Gimpel & Röglinger, 2015; Morakanyane et al., 2017; Westerman et al., 2012b; Fitzgerald et al., 2014; Piccinini et al., 2015; Liu et al., 2011; Tas et al., 2017).

The digital transformation of economic processes, transactions, and human interactions are transformed into an inevitable mega-trend in unexpected ways with each passing year, and it is still at the initial level. Digital transformation has become a necessity with demographic changes, reduced availability of resources, increasing international competition and globalization of markets (Marquardt, 2017). At this point, digital transformation brings new features to the applied management strategies and plays an important role in the correct and fast decision making of business managers. However, businesses should follow innovations in digital transformation and update themselves in line with business strategies. Because digital innovations lead to new opportunities that were not possible before in management strategies. The technologies to be used in the digital transformation process also change with the rapid change in the business environment. The effective determining of these technologies bring to organizations significant advantages and opportunities such as transformation, earning, creating value and protecting their competitive advantages. Businesses must systematically develop their digital capabilities and resources to take advantage of these opportunities and respond to potential threats. The digital technologies determined in accordance with the enterprises provide better communication between different stakeholders; this turns leads to increased cooperation, quality and success in digital transformation (Hyvönen, 2018).

Managers who face the need to protect their competitiveness in enterprises must develop strategies, methods, and techniques that adopt the effects of digital

transformation and provide better operational performance, and carry out these activities in full. Otherwise, they will be doomed to disappear in the evolving digital world (Morakanyane et al., 2017; Fitzgerald et al., 2014; Piccinini et al., 2015). In this context, AI techniques are used in almost all areas for different goals (Calp, 2011; Sahin et al., 2011; Erkalan et al., 2012; Sahin et al., 2014; Edwards et al., 2018; Calp, 2018; Calp & Akcayol, 2018; Dener & Calp, 2018; Brynjolfsson et al., 2018; Elkatatny et al., 2018; Méndez-Lucio et al., 2018; Qi et al., 2018; Calp, 2019). There are two main reasons why AI is so fast in the context of solutions: The first reason is that this technique can successfully solve problems that cannot be solved. The secondary reason is that it can provide very good solutions to the problems that cannot be solved by classical methods in the effective and efficient level. For these reasons, AI has become preferable in application processes (Köse, 2017).

As a result, AI techniques, which have correct and fast results in solving difficult-to-solve problems, will play an active role, especially in digital transformation processes. In the light of all these explanations and given the difficulties of creating and administrating of digital transformation, the motivation and aim of this book chapter can be expressed as "to demonstrate the effects of AI techniques on the processes of digital transformation utilized in enterprises". In this study, the digital transformation process and the difficulties experienced in this process, the brief information about the AI techniques and properties, and the effect, the role and the contribution of AI techniques on digital transformation processes were given respectively.

DIGITAL TRANSFORMATION

Definition of Digital Transformation

Two concepts come to mind about Digital Transformation. The first concept is that printed materials (text, image, sound) called "Digitization" processing and converting them into digital versions by computer. The other concept is "Digitalization", that is digital transformation. Digital transformation is a strategy to do this rather than converting a material into digital versions, and it is the transformation in a business model. Therefore, it is not possible to talk about digital transformation without the digitalization of materials and processes. In this respect, it can be said that digitalization, ie evolution, is a prerequisite for digital transformation (Aybek, 2017).

In recent years, digitalization has shifted the economy to a software-controlled economy and become an essential part of the information technology sector and society. In this context, digitalization or digital transformation is discussed in many platforms such as the Internet of Things (IoT), robotics, automation, big data,

mobility, and others. Digitalization, with the shortest definition, means converting analog information into digital information (Foerster-Metz et al., 2018). According to another definition, digital transformation is described as the usage of technology to radically develop the performance or access of enterprises. Digital transformation is defined as the application of digital technologies to transform society and institutions in all respects (Heavin & Power, 2018; Westerman et al., 2012b; Gruman, 2016).

Since the mid-20th century, digitalization technologies have transformed traditional media such as signal, sound, image or video into bits and bytes of computer storages. The figures published by BMWi (2016) demonstrate that the digital information capacity has risen dramatically, in 1993 it was only 3% and in 2007 it reached 94% of the world's information (Figure 1) (Foerster-Metz et al., 2018).

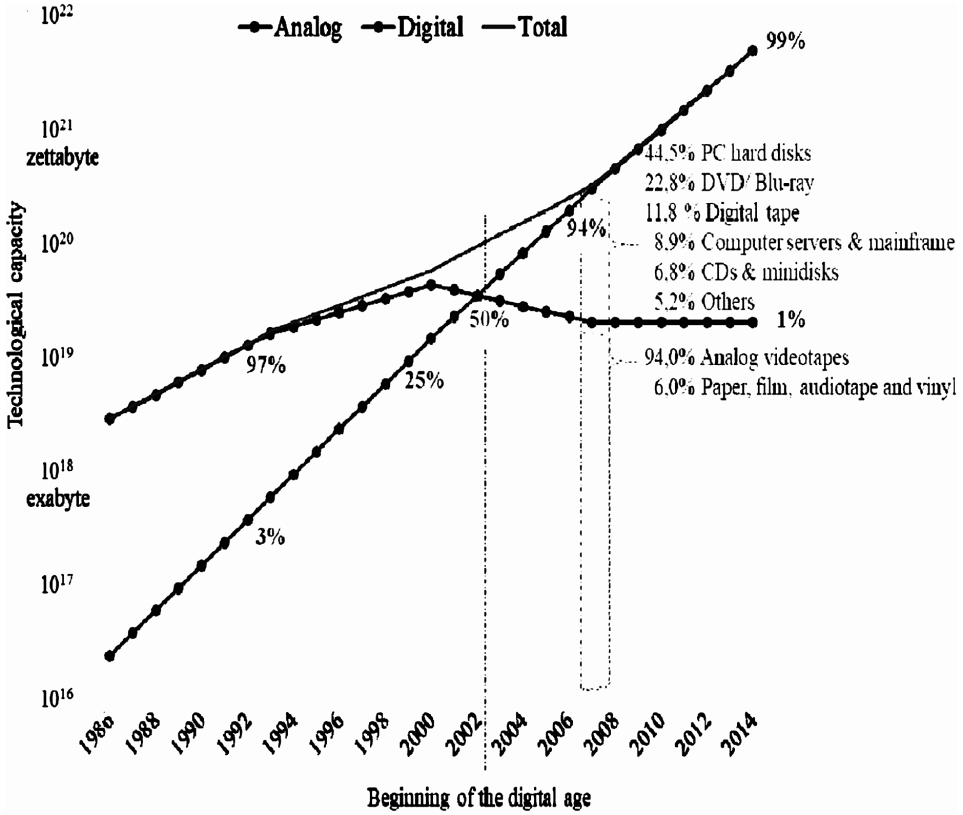
The digital transformation that allows information to be perceived, collected, managed, allocated, distributed and used plays a facilitating role in business transformation through tasks, information flows, knowledge and culture. Researches emphasize the role of IT in re-designing business processes, in particular by organizing the flow of information, obtaining and disseminating the information, arranging, tracking, analysis, evaluating and decision-making (Heilig et al., 2017; Venkatraman, 1994; Davenport, 1993; Guha et al., 1997).

Digital Transformation in Organisations

Since the 1950s, digitization and digital transformation have been realized in organizations. In the years 1943-1958, vacuum tube computers led to transformations in activities such as accounting, transaction processing, and decision support. The benefits were not so much due to technology limits and constraints. In the 1960s, some production robots were seen more transformations such as online operation processing and duration sharing. In the mid-1970s, the personal computer reform was starting. The espousal of computer technologies during the 1980s was accelerated. In the 1990s, technology possibilities such as data storages, global internet, local area networks, digital data storage, and digital phones were reached. In the 2000s, affordable mobile faster parallel processors, distributed computing and storage, and digital cellular networks were realized. Storage of digital data and computing skills raised too much in early 2010. Corporate applications provide for machine learning, modeling, speech recognition, AI applications, real-time monitoring of analytical technologies, digital assistants, predictive analytics and distributed decision support (Heavin & Power, 2018).

Digital Transformation is described as the use of technologies to essentially improve all aspects of the community. This means transforming decision making with technology for businesses. The percentage of institutions involved in digital transformation is expected to double by 2020. However, digital transformation is

Figure 1. Development of the global information storage capacity
(Foerster-Metz et al., 2018; Hilbert & López, 2011)



still ongoing in many institutions. The key factors of digital transformation in an organization in terms of business are developing customer behaviors and preferences, growth opportunities in new markets, new standards in regulatory and compliance, and increasing competitive pressure (CellStrat Editor, 2017).

In the process of adaptation to the digital age, it is a fact that businesses can prevent them from lagging behind in this process of change by making the right moves and that the needs can be responded to more effectively. In this context, the points that businesses should take into account can be listed as follows:

- Digital transformation should influence the organization in every way. Digitalization is not just the use of information technologies. Technology only prepares the ground. Some organizations initiate programs in the management of information technologies in order to accelerate this transformation, but very few of these transformation programs, which are initiated without realizing

the important role that digitalization plays throughout the organization, are efficient. The IT department should be involved in the transformation process. However, this should be done by making good planning on which technology will be more efficient in the field, by creating support units and converting them into sustainable applications.

- Digital transformation should cover all the vision and strategies of the organization. The vision and strategy clearly laid out by the management is the basic element of the change program. In the initial stage of technological transformation, the employees of the institution should be aware of the objectives, areas of use, and the roles of these technologies in their access to the learning outcomes with these technologies. All stakeholders should be aware of this transformation in a transparent manner and why, how and who will contribute to this transformation should be clearly understood from the beginning of the process.
- One of the most important prerequisites for digital success in the digital age is to provide the necessary training for transformation to all needy people with the best opportunities when making the necessary investments. Throughout the business, staff should be provided with training on digital technologies and technical support networks should be provided and this incentive should be made sustainable. The holistic point of view is important in this process. This transformation will not take place at a time and there is no specific point to end this transformation. This transformation process should keep going continuously with the new technologies brought by the digital age. Employees should be encouraged to implement new technologies and flexibility should be ensured throughout the organization.
- A digital transformation approach should be adopted not only as a digital transformation that will shape the internal structure of the organization but also as a design that can meet the needs of customers outside the organization. In this process, external suggestions, criticisms, and feedback should be taken into consideration. Feedback should be continuously taken from formal and informal social media groups, by surveys, discussion forums, questionnaires, and it evaluated for change (Taskıran, 2017).

Strategies of Digital Transformation

There are components of digital transformation strategies regardless of industry or business. These can be expressed in four basic dimensions: ***the use of technologies, changes in value creation, structural changes*** *and* ***financial aspects***. *The use of technologies is to address the attitude of an enterprise to new technologies and the using skills of them.* Therefore, it includes the strategic role of an enterprise for IT

and technological purposes. A firm should decide whether it wants to be the market head in issues such as to need for creating its own technological standards in terms of technology use and to see technology as a means of performing business operations. Leadership in the technological market can lead to competition and dependency on other companies on technological standards. However, this situation may be riskier and require some technological competences. Utilization of new technologies generally means changes in value creation from a business perspective. They show how digital transformation strategies have an impact on firms' value chains. Digitization of products or services can even provide different strategies for moneymaking and business arrangements in terms of new markets or customers. Structural changes are generally required to ensure a sufficient basis for new transactions with forms of value creation and various techniques/technologies in use. *Structural changes* vary according to changes in the organizational installation of a firm, particularly with the settlement of new digital activities in institutional structures. If the scope of the changes is rather limited, it may be more plausible to application new operations into available institutional structures. But, it may preferable to create another affiliate within the company for more important changes. However, the previous three dimensions can only be converted after taking into account the financial aspects. These contain the urgency of a firm to take action due to declining core business and the ability to finance the efforts spent on digital transformation. *Financial aspects* are a limiting force for transformation. Companies under financial pressure may be deprived of extrinsic means of financing a transformation. For this reason, firms should make digital transformations and discover their options in a clear and well-timed manner (Matt et al., 2015).

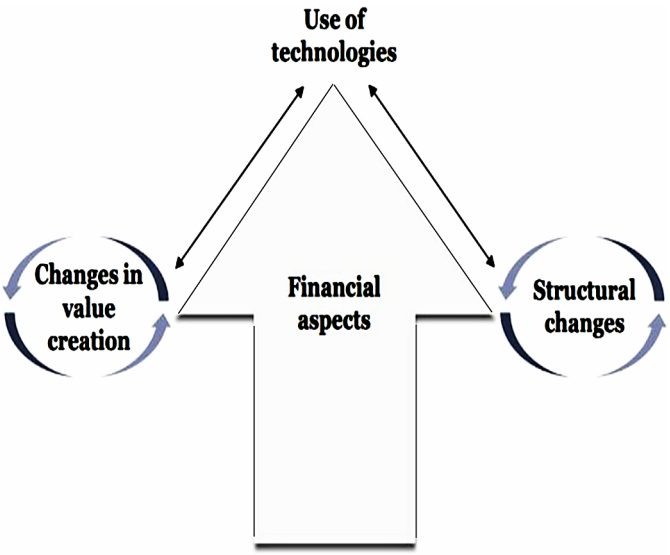
Challenges of Digital Transformation

Most businesses realize the appropriate digital transformation as a core strategy for competition and survival. Managers reported that their businesses digitally transformed three key areas: operational processes, customer experience, and business models. At this point, there are some difficulties in the process of digital transformation. These difficulties can be summarized as follows (Westerman et al, 2012a).

Priorities

The first quandary is whether rising the efficiency or performance of existing operations is a priority, or whether customer and meeting needs are the focus. Two missions may be discordant and focusing on efficiency may decrease the pleasure and loyalty of the customer, and the purchases (Tiersky, 2017).

Figure 2. Digital transformation framework: balancing four transformational dimensions
(Matt et al., 2015)



Aggregate Data or Personalization

Emphasizing the prediction of customer behavior may lead to ignoring model searches and serving individual customers. While meeting needs often require personalization, too much accent on customer categories leads to personalization. Normally, business managers will be mind to the interests, requests, and needs of customers and employees, understand the individual and serve to them (Tiersky, 2017).

Supplying More Resources to IT Staff for More Equity Analysis

IT staff and non-IT employees desire more resources. In this point, more data scientists and IT staff require more education and resources compared to manager and staff in functional fields (Panetta, 2016).

Storing All Data

All data can be stored at a charge. It is much more difficult to understand which data is selected and useful for analysis. It is even more difficult to index data sources and evaluates data quality while finding opportunities to bring data sources together.

Data is both an opportunity and a problem. Unused or unavailable data are worthless. Therefore, it is very important to select data that serve a specific goal (Tiersky, 2017).

Work Implemented by People

IT machines and robots will keep going to replace unqualified and semi-qualified personnel. The continuing transformation, including Question / Answer boats, assistance, and decision automation, suggests that qualified personnel can also be replaced (Newman, 2016; Davenport & Kirby, 2016).

Security

It may be easy to access and use data or enforce. Administrators should balance the importance and sensitivity of data with accessibility concerns. This is actual indecision in the field of health (Filkins et al., 2016).

Privacy of Individuals

Although digital transformation has difficulties, current studies suggest that digital fact is a chance to renew and re-identify the work way of organizations (Bharadwaj et al., 2013).

ARTIFICIAL INTELLIGENCE

The first to introduce the concept of AI to the literature was John McCarthy. McCarthy (2007) defines this concept as intelligent machinery making science or engineering. Nabiyev (2012) defined a computer or a computer-controlled machine, generally assumed to be man-made attributes such as reasoning, meaning extraction, generalization and learning from past experiences as high mental expressed the ability to perform tasks related to processes. Many alternative definitions can be reached when the literature is examined. Firstly, the concept of AI, which was introduced to the literature in an event in Dartmouth, USA (McCarthy et al., 2006:1955), was based on imitating the way people think and behave. But, over time, all kinds of dynamic that can be put into logical and mathematical patterns within the framework of intelligent mechanisms in nature have been taken into account within the scope of this field. According to Chuck Williams, AI is a multidisciplinary field that aims to automate activities that require human intelligence (Williams, 1983).

It is the sub-research area of computer sciences, which works on the simulation of human thought and behavior and natural dynamics in computer-based systems

when the AI is defined as a research area. It is that natural dynamics by human thought and behavior forms are fulfilled as much as possible by computer-based systems when it is necessary to define as an abstract concept. AI has developed in a short time with effective solutions to real-world based problems, especially in different disciplines. It is able to offer its solution to any problem that can be expressed in the logical and mathematical plane. They have presented successful solutions for different AI approaches, methods, and techniques which developed over time, advanced mathematical analysis, prediction - prediction, pattern recognition, audiovisual recognition and identification, adaptive control and interpretation - diagnosing (Allahverdi, 2002; Aydın, 2013; Elmas, 2011; Nabiyev, 2012; Strong, 2016). This situation has caused the field to be in demand by all disciplines. It can be stated that AI has gained widespread use in the name of automating many activities in our daily life, not only in the scientific solution of interdisciplinary specific problems. Progress has reached such a point that it has often become controversial whether intelligent systems will bring about the end of humanity, whether working individuals will cause them to lose their jobs (Brougham & Haar, 2017; Brynjolfsson & McAfee, 2014; Makridakis, 2017; Niewiadomski & Anderson, 2017). Hence, AI has developed significantly in recent years and has entered every aspect of life. The complex problems can be solved by using AI and many processes such as classification, optimization, estimation, and image recognition can be carried out (Agrawal et al., 2018; Brynjolfsson & McAfee, 2014; Cockburn et al., 2018; Brynjolfsson et al., 2018). A computer is not capable of recognizing emotions and placing them in real situations. Therefore, it is almost impossible to convert some sub-components that make up human intelligence into a system. However, AI is more of a research field, dealing with some aspects of human intelligence in computer science, such as speech recognition, interruption, interference, creative behavior, the ability to learn from personal experiences, computer skills, and the ability to draw conclusions from incomplete information (Tohănean, 2018). However, AI can also be distinguished as strong AI and weak AI. Powerful AI is described as a general intelligence in the meaning of creating human-like intelligence of machines; the weak AI purposes to ensure intelligent techniques/algorithms in a place stored within the software (Hanne & Dornberger, 2017).

Stuart J. Russell and Peter Norvig further divide AI into four categories: *Systems that think like humans, Systems that act like humans, Systems that rational-thinking and Systems that act rationally.* Act like a human being is important for AI while interacting with people. In the category of thinking like humans, historically, AI is designed in a way similar to the thinking patterns of the human brain. Nowadays, AI is used to evaluate decisions made by people. The systems that rational-thinking and systems that act rationally include logic-based decision-making processes. Accordingly, the problems should be simplified and defined in a logical representation.

In a complex environment, the solution provided by AI may not be perfect, but it can be at least at an acceptable level (Russell & Peter, 1995). The system should generally have a good knowledge of the areas of application in order to create systems thinking or acting like human beings or to act rationally. It can learn the necessary subjects or is trained on example data when applied as AI or neural network. Once activated, the AI can resolve the problems based on specific search algorithms by integrating present information with a new point of view and making decisions that information is unclear (Exner-Stöhr et al., 2017).

THE ROLE OF ARTIFICIAL INTELLIGENCE IN DIGITAL TRANSFORMATION

Nowadays, the spread of the Internet, the development of sensors, big data, and e-commerce, the increase of the information society, the integration of data and information into society, physical space and cyberspace have led to the rapid evolution of the digital world. This evolution process has led to the emergence of new technologies such as AI and to be used in areas such as digital transformation in order to get results that are more effective. The importance of AI is clearly recognized when considering the purposes of digital transformation and the scope of technologies used in this process of transformation (Li et al., 2017; Pan, 2016). The rising of AI requires a novel combination of man-machines, offering a division of labor between machines and people. The common view among partnerships between people and machines shows that machines need to take on ordinary tasks and enable people to take care of studies that are more creative. Although AI ensures for people to accomplish complexity with a successful analytical approach, the role of decision-makers to deal with the instability and uncertainty of decision-making is indisputable. AI is superior to humans in fulfilling some quantitative objectives with calculable criteria by reducing the complexity of problems. People will perform better than AI at handling subjective (personal opinions) and qualitative issues (e.g. norms, non-material political interests, and other complex social factors). The cognitive technologies such as AI can absolutely assist, but strategic thought, especially, requires a level of meaning and understanding of the world except for certain decision environments where people are competent (Jarrahi, 2018).

AI has high technology and is the development of computer systems in order to fulfill the tasks requiring that require human intelligence. At this point, AI helps the functions involved in digital transformation processes by modernizing enterprises' communication centers, business models and processes. AI is also used in many processes such as data acquisition, analysis, and estimation. These processes take part in innovations such as virtual agents, identity analysis and suggestion systems that

have previously transformed the way businesses look at staff experience in various sectors. It helps machines to analyze and process people in similar ways (Jadhaw, 2017). The use of AI in businesses' digital transformation processes is not limited to them. AI helps manage staff or customer interactions by using information from the service areas provided by operating personnel and from a series of observations. It is used in many sectors to provide automation. The most important step in incorporating AI into a business is to make it the trained. This will help them to understand areas of where and how to use a particular AI technology (Soni, 2018).

Data is the most important tool for effective AI. The more data on businesses and entrepreneurs affect more efficient decisions through automation. Enterprises process large amounts of data to meet compliance and regulatory requirements. These procedures or processes are increasingly formulated, but the performing a repetitive task of a large number of people ensures that they become candidates for robotic process automation. In its digital transformation journey, AI transforms the most central functions such as inter-business agreements and earnings reporting and has the potential to participate in more strategic tasks such as financial analysis, estimating and asset allocation. AI ensures speed and accuracy for almost all processes of businesses. For example, the entire reporting process can be performed in real time. Instead of waiting for the end of the process to be performed, the AI can detect problems beforehand and can make some adjustments much faster, improve accuracy, and eliminate the effort spent on negative results of the process. As businesses realize the digital transformation process, they must use the power of AI to simplify and automate the most basic business processes. Thus, they develop more effective and innovative strategies to expand their digital transformation (Jadhaw, 2017).

In addition, businesses should develop a strategy map before using AI technology in the digital transformation process. Staff also need to be trained in AI technologies. Because digital transformation from a technical point of view does not provide the benefit that the business will derive from this transformation. Therefore, staff should have enough knowledge about AI technologies, monitoring skills, management, and management environment, data science while the digital transformation continues. Digital conversion increases the speed of AI. Therefore, businesses should ensure that all of their staffs understand how the use of AI in the digital transformation process can affect the business and make it strong enough to compete with other top-tier businesses. For example, to personalize communication with staff, customer, and potential customers; to make all processes more streamlined and unique to prove virtual support; to estimate repair and maintenance needs; to provide service support to fill process gaps; to identify risks in the supply chain, and to fix the data errors. Today, the most important business objectives of business managers are better customer relations, competitive advantage and increased productivity. This can be perform much more effectively with AI in the digital transformation. The role of

the manager in business has altered evidently in the era of digital transformation, particularly with advanced technologies such as AI and machine learning. For this, managers need to redesign their business processes, use skilled labor, and utilize the latest technologies to maximize the benefits of organizations' digital transformation efforts (Soni, 2018).

AI is the recent trend of digital transformation, due to its continued use and its successful use in influencing decisions when combined with large data. The most common example of the use of artificial transformation in digital transformation is the implementation of a chatbot that can answer questions to people in a human and intuitive way. Some examples of effective chatbot can be seen here. The data is the basis of AI in the business world. Organizations should continue collecting data because of need much data according to past. At the same time, it is important to convert data into real actions. This is possible with automation and AI. Modern digital transformation is handled together data analysis, AI and customer obsession (Cruce, 2018).

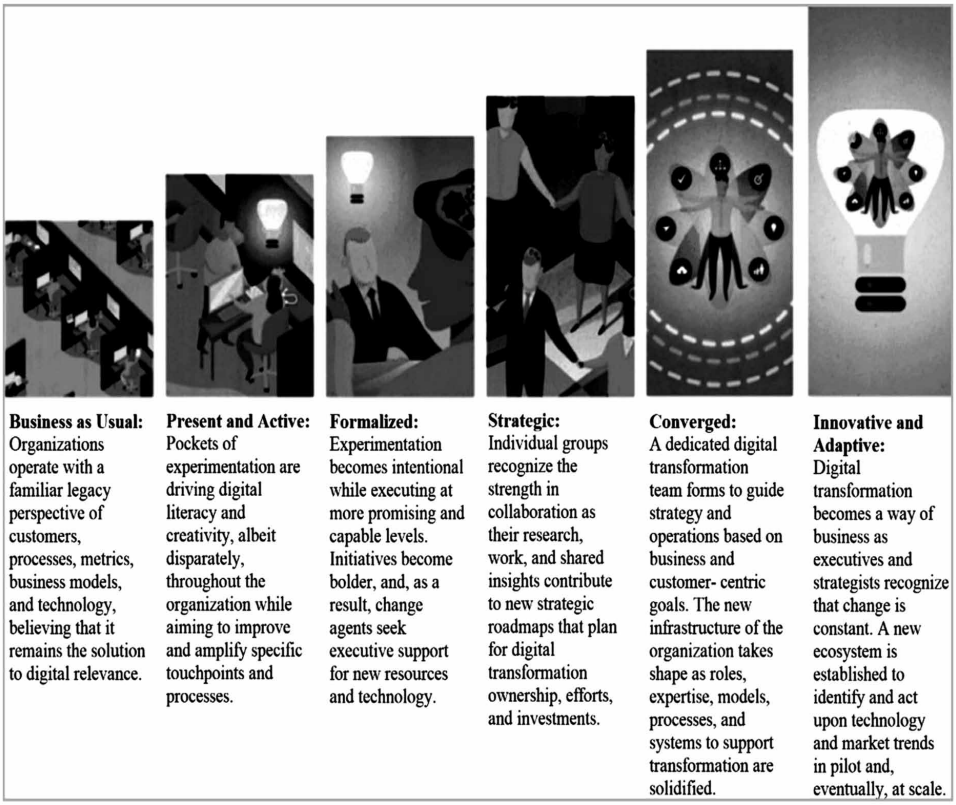
At this point, the use of AI techniques in digital transformation processes plays a very important role. AI not only improves customer experience but also has the power to change the way companies operate. Therefore, businesses should consider integrating these technologies into their digital transformation plans to remain competitive. For example, AI can be used for account management and customer service systems across sectors. Here, the benefit is not only to produce more but also to decide more quickly. Gartner predicted that by 2018, machines would write 20 percent of business content (such as shareholder reports, legal documents, and press releases). AI tools will help companies learn in ways that will accelerate innovation and will be an aid to approach targets for companies. Many companies are already using AI tools to personalize customer touches in their digital transformation work, and have begun to replace call center employees with bot-based customer service centers. In recent years, companies have only saved billions of dollars in salaries by distributing bots on customer service. The different approaches should be explored in the application of AI technologies in order to integrate AI-Digital Transformation efforts, and the best choice for the enterprise should be determined. In addition, it is necessary to make sure to large datasets for the creation of algorithms, to trained manpower in AI technologies, and to access data scientists (CellStrat Editor, 2017).

As the digital world proceed to utilize the physical world, the scope of digital transformation in businesses is growing even more. In the coming years, many sectors will be managed by AI technologies. AI is a major driving force of digital transformation in many sectors, such as automotive industry, insurance, and manufacturing. It does not include a great deal of potential for this technology to exchange business strategy into an actual customer-focused model, but business managers are more aware of the need for AI technology every passing day. The causes

of this situation are clear and understandable. It compared to existing data, it can be started to provide better experiences for modern consumer needs, which enable them to be understood with more data, and technologies that are more meaningful. AI offers a scalable, highly efficient way to fulfill this promise. It is unfeasible to discrete the digital transformation application from AI. It should be examined more deeply to reveal specific AI applications that will have the maximum effect on digital transformation. In fact, business owners and managers are aware of the importance of AI; however, it is important to implement AI in digital transformation strategies. Any successful digital transformation effort takes place by changing the mentality within an organization. It is necessary the new internal models that allow people to cooperate between functions to influence this change. These models should provide fields such as marketing and IT to work together smoothly. The level of technological complexity is increasing while moving from a digital project to a core business value. Each field must know and internalize the importance of AI, but many people or institutions do not unaware of the existence of AI's presence in the sector. Research shows that business managers are not sure whether they are currently using AI. Digital transformation is based on novel models and novel strategies of working, but company managers should also explore their existing technologies to expose their likely AI practices. Many businesses say that is customer oriented, but this does not seem to be the case, and a great effort is required. This effort becomes more effective by combining processes with AI technologies. By using large warehouses of historical data owned by companies, it is possible to use predictive analytics to understand the customer journey and reflect the results of future interactions with the brand. In a more effective organizational framework as part of the digital transformation process is most important the use of AI technologies in order to provide real customer orientation. The system is automated to create reproducible and reliable functions that can be used by everyone by using AI technology. Rather than seeing AI as a threat to employees in enterprises, most senior managers say that AI can manage the laborious aspects of the processes and work with personnel to achieve better results. This relationship between people and technology can be quite fruitful, but the responsibilities of certain tasks should be defined. AI technologies can analyze data on a conceptually scalable scale and learn from real-time feedback to adjust how it works. This could, for example, ensuring of employees to focus on the strategic vision of their campaigns. Thus, automation is not only about performing tasks that computers would prefer not to do; automation is related to performance. AI can implement these tasks in order to provide better experiences for customers and realize in a more successful and cost-effective way by revealing new insights in the process (Yu, 2018).

Digital transformation helps to create and optimize new capabilities by taking advantage of new and emerging technologies. However, the digital transformation

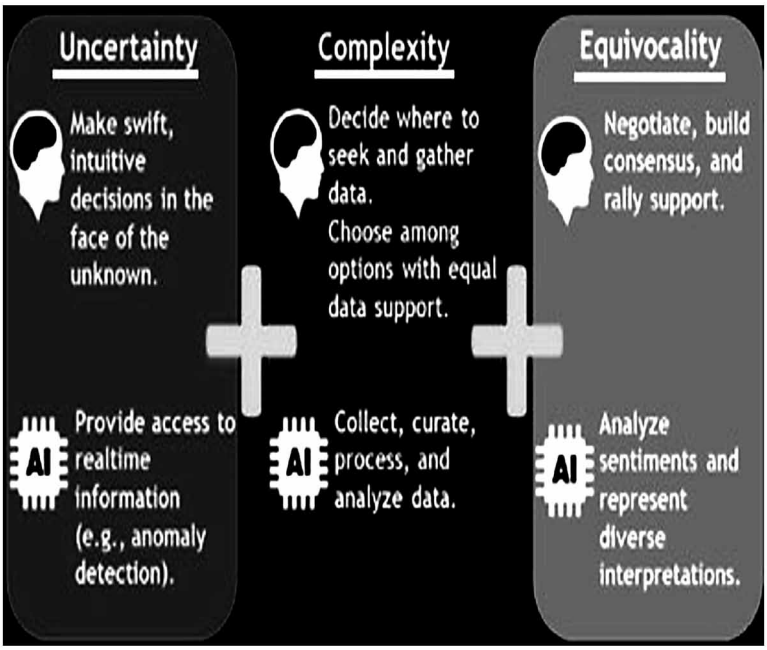
Figure 3. The six stages of digital transformation
(Yu, 2018; Solis, 2016)



journey needs a progressive approach with an open roadmap. AI also helps to guide this connected strategy, in which systems that restricted for developing high-level designs, architectures, and plans are shifted to media and content. The ability to fine-tune operational operations for business or production is now applicable to everyday consumer products such as smart homes, intrusion security, and autonomous vehicles. AI should be implemented to meet the needs for faster and better visualization of the generated content (Paulsen, 2018).

Although intuitive capabilities are the basic advantage of human in decision-making, they still require developing analytical skills. In this point, the supplementarity of humans and AI in decision-making characteristically described by uncertainty, complexity, and equivocality (Figure 4). People should develop a tactic of how analytical decisions are done by cognitive technologies and work on how to integrate the analytical skills provided by these technologies into organizational phases. Actually, the basic factor that aids people to rely on and interact more efficiently with

Figure 4. Comparison of humans and AI in decision-making
(Jarrahi, 2018)



intelligent technologies is to know how these technologies are formed by analytical decisions or suggestions (Jarrahi, 2018; Davenport & Kirby, 2016).

Transparency of the human-AI process increases human-AI interaction and offers a chance for people to develop analytical capabilities. Digital transformation-building strategies should reorganize business and decision-making around human or artistic talents for adopting AI's promises. An effective AI strategy should build existing strategic powers and detect what AI and knowledge workers can complement each other. For example, General Electric (GE) has undergone a major digital transformation in the past. In this context, GE has been able to utilize AI to produce information technologies by detecting large amounts of data (such as gigantic systems) generated by a large number of industrial devices. One of the most important results is the optimization of the decisions made by more effectively understanding how the technologies or hardware is operated. Businesses can develop the most feasible solutions to integrate AI into their service lines (Jarrahi, 2018; CIO Network, 2017).

The use of AI in digital transformation means the transformation of the system into an intelligent product. AI application in the smart product field can be evaluated in three aspects: application technology, industry, and application impact. Infrastructure installation level and capacity, single applications, synergy

applications, and business development needs should be evaluated with application technology. The evaluation of industry development includes the development of smart products, intelligent industrial software, and hardware supporting intelligent design/production/management. It is recommended that the assessment focus on changes in social and economic benefits, competition power in order to evaluate the direct or indirect impact of the intelligent production system on the implementation of the capabilities and economic advantages for implementation impacts (Li et al., 2017).

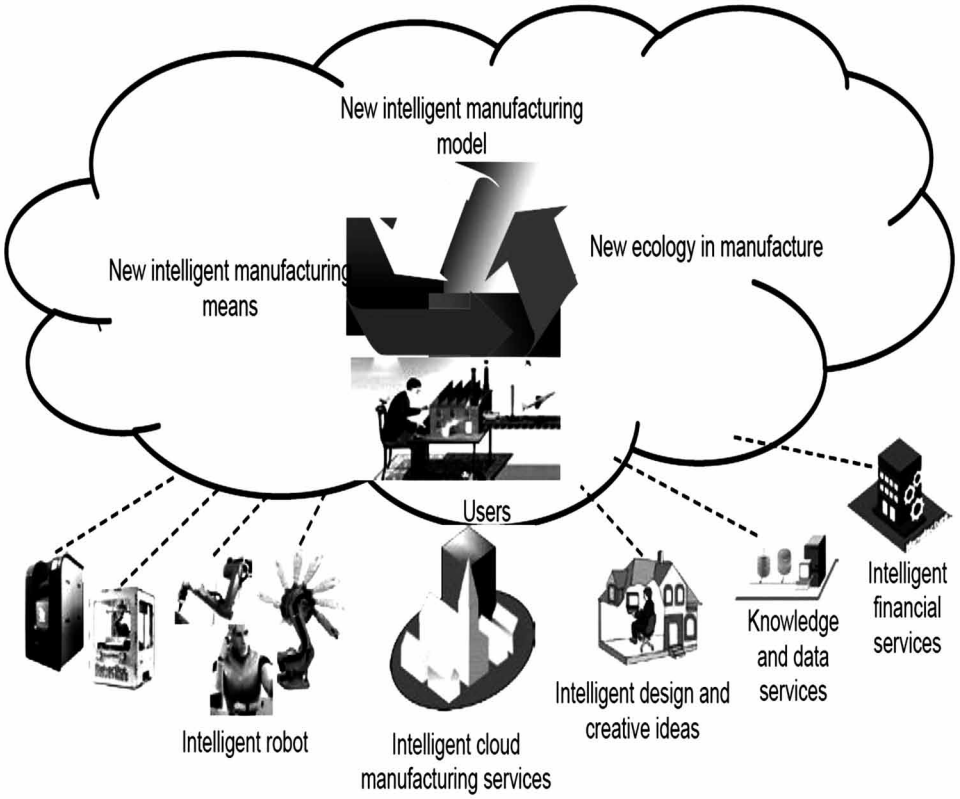
AI simplifies the development of intelligent production. That is, this technology facilitates the improving of novel models, techniques, applications, system architecture and systems containing technology in the field of intelligent production (Li et al., 2014). At this point, new models are flexible, customizable, service-oriented, internet-based, collaborative, and socialized intelligent production system that is used to simplify production and ensure service to users. New tools are digitalization, Internet of Things, virtualization, service, collaboration, personalization, flexibility and intelligent production systems that integrate human-machine. The new format is an ecology of intelligent production with interconnectedness, data loyalty, automation-based intelligence, cross-border integration, and massif innovation. This means the deep integration of the implementation of the models, and the forms will finally form a smart production ecosystem (Figure 5).

As a result, the use of AI in digital transformation processes in enterprises is very important. The use of these new technologies contributes significantly to the organization, managers and service providers.

CONCLUSION AND RECOMMENDATIONS

In this study, the effects of AI technologies on Digital Transformation processes are discussed. At this point, the use of AI technologies in digital transformation processes to improve the performance or access of enterprises were proved a very effective technique. However, in each day's growing information systems, enterprises have bigger data and they have to manage these data. Management of large-scale enterprise data is quite difficult with traditional methods. However, it will be much easier, efficient and low cost to manage these data by using AI techniques to achieve the objectives of classification, clustering, and optimization. In other words, managers will be able to make more effective and more accurate decisions with the use of AI techniques. In addition, enterprise data must be stored in a storage to save and recall them. This requires a considerable cost. Therefore, AI techniques can be used in such subjects as to which data will be stored, recalled or analyzed, and how much capacity will be needed in the future.

Figure 5. The elements of intelligent manufacturing
(Li et al., 2017).



Digitalization has shown that it greatly changes the workforce, the skills needed and the way to communicate and cooperate. AI and digital transformation go hand in hand, but a harmonious effort is needed to maximize the potential of this relationship. Digital transformation needs new structures, new technologies and, most importantly, a new mindset about the customer. This is possible by revealing new insights such as AI, creating personalized experiences and improving the capabilities of marketing departments.

Finally, digital transformation, which is realized or planned by enterprises, affects the business process in many ways. Therefore, it is necessary to make good planning on which technology will be more efficient in the field, how to create help and support units and how to be transformed them into sustainable and lower cost applications in order to make digitalization effective. However, the digital transformation should cover all the vision and strategies of the enterprises. In addition, in the initial phase of digital transformation, enterprise personnel should be informed about the vision

and purpose of the implementation of this transformation. It should be clearly known that why, by whom and how this transformation will take place by all the stakeholders in enterprise-wide from the beginning of the process.

In summary, the digital transformation should not only be seen as technological innovation or technological revolution, but also human and processes should be digitized. It is expected that the study will provide a perspective for other studies on digital transformation and the use of AI techniques in these transformation processes and thus create an awareness.

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KEY TERMS AND DEFINITIONS

Artificial Intelligence: The computers techniques that provide to behave like humans.

Decision Making: The action to be taken to reach a conclusion.

Digital Transformation: The developing new strategies and increasing efficiency to ensure competition using digital technologies.

Enterprises: A unit that produces goods or services in a planned and systematical way.

Management: The process of using financial resources, tools, materials and time factor in a coherent and effective manner in order to achieve certain objectives.

Production: The activities done in order to obtain the goods and services that will meet the human need.

System: The whole of the interactive parts that are brought together to achieve or achieve a common purpose.

Technology: Skills, methods, and processes used in the production of goods or services.