AN EVALUATION OF THE MANAGERIAL CONTEXT FOR DIGITAL TRANSFORMATION IN THE CONTEXT OF OPEN EDUCATION IN HIGHER EDUCATION

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ABSTRACT

This article examines the effects of technology in the field of education and management and focuses especially on the effects of technologies used in distance education activities on transformation processes. Based on research conducted, the article explains how technological developments affect education and management processes, according to the findings obtained as a result of the interviews. The technologies used in the digitalization processes of higher education institutions that provide distance education services and the effects of these technologies on the transformation processes were examined. How artificial intelligence, blockchain, metaverse, brain-computer interfaces and similar technologies can be used in education and organizational management processes and how this use affects management processes are discussed. Findings show that technological developments have profound effects on the processes in educational environments and transform management processes. As a result, the research emphasizes the need for further research and application to effectively use technologies such as artificial intelligence, blockchain, and metaverse in education and management processes. It is stated that advances in this field can cause significant transformations in education and management.

Keywords: Open and distance education, higher education, management of education, digital transformation.

INTRODUCTION

Developments in technology lead to changes in many areas that affect people in daily life. Education is one of the areas affected by this change, which occurs in a wide range from health to commerce, from citizenship applications to smart cities. In the 21st century, distance education activities, which are carried out with the mission of providing equality of opportunity in education, especially in higher education institutions, and providing learners with the opportunity to learn independent of time and space, stand out as the services that benefit from technology at the highest level and therefore are most affected by technological developments. Looking at the literature, it is possible to find different studies on the digital transformation processes of higher education institutions.

Open and distance learning services, which offer opportunities for individuals to access information and develop themselves in their field of interest, are constantly updated with the developments in information and communication technologies and reach their stakeholders. The rapid digital transformation with the technologies used in different processes in universities has also affected distance education services. Unlike the formal system, technologies that are used in different dimensions from registration to graduation and beyond for the learner in distance education, from the opening of the program to the content of the program for the instructors in the system, from interaction to measurement and evaluation, ensure that management processes are carried out effectively and efficiently.

Today, there are developments especially in communication and information processing technology. These developments have some effects on organizations. The most important aspect of an organization is the work it aims to accomplish and the technology it uses to do this work (Kocel, 2007, p.207). What kind of work will be done, the qualifications of the people who will do these jobs, ensuring job satisfaction, the quantity and quality of production, individual or group work are all affected by the technology used (Kocel, 2007, p. 207). Technology affects individuals, groups, organizational relations and management techniques in the organization.

In their study, Tonus and Pasaoglu (2013) expressed the importance of human resources and quality in higher education, and Maral (2022) revealed the views on the perceived quality of open education in higher education by learners and instructors, and determined the aspects that need to be developed in the open education system, quality standards and the advantages of accreditation in open education according to the views of the participants.

The technology used by organizations/institutions will affect the functioning of many processes within the enterprise. The main studies expressing different views and examining the relationship between technology and organizational structure are Woodward, who tests the traditional management approach; Aston, who investigates the basic dimensions of organizational structure; Perrow, who investigates how technology can be used in management by moving from a narrow perspective to a more general perspective; Thompson, who groups the technologies used by organizations; and Tavistock Institute, which examines technology, which is an independent environmental variable, and the structure of the organization/institution, which is a dependent variable (Kocel, 2007, pp. 208-214). In the Open Education System, there are both routine and non-routine jobs, so these jobs shape the structure of the organization. When this information and the researches discussed are examined, Perrow's studies are taken as the theoretical basis for this research, since Perrow's research explains the relationship between organization and technology in the digital transformation process in the context of Open Education.

It is possible to come across different studies in the literature on the management processes of distance education and the technologies used. Kaputa et al. (2022) revealed that distance education processes in higher education institutions with digitalization are effective in accessing information and reaching the masses, as well as reducing costs related to education, Tasci and Taslibeyaz (2021) examined the studies on the digital transformation of higher education institutions, Ugur and Kurubacak (2020, 2021) evaluated the technologies employed in different processes of open and distance learning services in their studies on technological singularity and management processes of open universities. At this point, the importance of administrative processes for open education and distance education services emerges.

In this research, it is aimed to evaluate the technologies used in the digitalization processes of higher education institutions offering distance education services and the changes that these technologies will create in the managerial context, to determine the predictions for the future and to draw a road map for these transformation processes with the data obtained.

ADVANCED TECHNOLOGIES IN OPEN AND DISTANCE EDUCATION

With the advances in technology, technologies that have found a place in every aspect of life in the 21st century can also be utilized at every stage of distance education activity. With the process that started with the introduction of computers into daily life, local or global computer networks have become the main source of accumulation, access and distribution of information and communication. Institutions increase their productivity by integrating

information technology tools into their organizations and modernize themselves through processes called digitalization. One of the critical technologies of the digitalization process is artificial intelligence. Unlike the systems used before it, artificial intelligence does not only produce statistical data, artificial intelligence systems can also produce information. By imitating human intelligence, artificial intelligence aims to provide computers with a decision-making and choice-making strategy similar to human learning.

The term 'artificial intelligence' was first used at a conference held at Dartmouth College in 1956 and was basically developed with the idea that computers or robots could think (Lewis, 2014). Artificial intelligence is defined as technologies that can fulfill the qualities that are accepted as specific to humans, such as finding solutions, making sense, understanding, analyzing, generalizing and learning from past experiences (Nabiyev, 2012). With artificial intelligence, software and hardware are developed to realize certain types of human mental activities. "Productive artificial intelligence", which can produce the desired result by imitating human beings, can be considered as the initial mode of artificial intelligence at the level of imitating human beings, which is called artificial general intelligence. The version of artificial intelligence that will surpass human intelligence is called artificial superintelligence in the literature and is shown as the development that will initiate technological singularity (Ugur, 2019).

In the current age of technology, wearable technologies, which manifest themselves in many areas from shopping to health, education to media, which are daily life routines, are in constant development. Working with technologies such as sensors, receptors and artificial intelligence, wearable technologies are developed and put into use as many different technological tools from smart watches to smart wristbands, virtual reality glasses to exoskeletons. Zuckerberg used the description of an embodied internet for the metaverse, which is carried further with existing technologies and is predicted to become widespread in the near future, where the opportunity to experience the real world and the virtual world together will be offered. In the near future, new universes will be created by using technologies such as 5G, artificial intelligence and blockchain together with the Metaverse.

Brain - Computer Interfaces have an important place in this process. These interfaces are defined as technology that can collect, interpret or modify information produced by any part of the human nervous system (Wolpaw et al., 2000; Ugur, 2021). A review of different literature on inter-brain connectivity and brain-computer interfaces reveals that they have been used to transfer learned tasks from brain to brain between two rodents and to implant false memories in an animal's mind (Gil, 2020 as cited in Ugur, 2021). The Neuralink project, which can be considered in this context, was developed especially for individuals with physical disabilities or diseases such as spinal cord paralysis to gain control of their bodies (Musk, 2019).

The 21st century blockchain, which can be considered among the advanced technologies of the 21st century, can be defined as a distributed database system that enables the transfer of assets that can carry value between participants on computer/internet networks (Yildirim, 2018). In the literature, the technology has been used in the ECTS credit transfer system (Turkanovic, Holbl, Kosic, Hericko, & Kamisalic, 2018), the use of Ethereum's smart contracts to document records of acquired certificates, i.e. micro-credentials (Jirgensons & Kapenieks, 2018), its use in the management of educational processes (Bhaskar, Tiwari, & Joshi, 2020), and the integration of Internet of Things, artificial intelligence, virtual reality and augmented reality applications into open and distance learning (Sharma, Yildirim, & Kurubacak, 2020) (Ugur, 2021).

ADVANCED TECHNOLOGIES IN MANAGEMENT

When the literature is examined, it is possible to come across studies on how technological developments in the field of management affect management processes. In Appah and Oyeyemi (2018), Redmann and Kotrlik (2008) defined technology as the use of machines and techniques to solve a problem, develop a pre-existing solution to a problem, achieve a goal, address an applied input or output relationship, or perform a specific function. Technology is a resource that helps human beings to progress in their daily or business life. Technology has always been a part of the teaching and learning environment. It has become one of the resources used by instructors to facilitate student learning. Technology has changed significantly over the years and its increasing variety and accessibility has expanded the opportunities that tutorials have. Baba, Ameh, and Ezeahurukwe (2018) stated that technology has the potential to revolutionize the traditional teaching and learning process. Technology has removed the barriers of time and space to education and significantly facilitated access to lifelong learning.

According to Okoli (2010), Business Education is an important part of general education that emphasizes the acquisition of skills and competencies for use in offices and business- related occupations. For Business Education to remain relevant in meeting the needs of individuals and society, it must embrace current trends (new technologies) in the academic and economic demands of society. For Business Education to serve its purpose of meeting the needs of students and society, it is important to ensure that the quality of the education provided is in line with societal demands. Business Education needs to have curricula, tools and equipment that are able to adapt to changes associated with innovations in technologies, especially those used in modern offices and schools. It is impossible to achieve success in Business Education without the use of new technologies in the education of students. Therefore, the adaptation of new technologies to education in Business Education will help students to transfer skills and make it easier for students to find a job in an ever-changing business environment.

Artificial intelligence, blockchain and metaverse are the latest technologies recently used in businesses. Although artificial intelligence has only recently started to take place in educational institutions, there are institutions that use metaverse and provide education with this virtual reality. Especially for teaching the practices of service businesses, metaverse applications are gradually increasing in the education of institutions (Haber & Carmeli, 2019).

The use of technology in Business Education requires the application of the scientific method in solving problems related to upskilling students to meet the changing needs and demands of society. New technologies in Business Education are a tool designed to prepare students for various careers in high-tech offices. Day by day, different technologies are being used and adapted to educational institutions.

METHOD

This study is modeled as a case study, one of the qualitative research methods. The research strategy of case study is used in many situations to contribute to our knowledge about individual, group, organizational, social, political and events. Case studies are a frequently used research method in the fields of social sciences and humanities (Gilgun, 1994; cited in Yin, 2003: 1) and in the planning of social structures (Ghauri & GrOnhang, 2002; cited in Yin, 2003: 1). In case studies, instead of reaching generalization by making inferences, the emphasis is on the design to study what is most accurately understood from the situation (Denzin & Lincoln, 1985: 435). In case studies, there are stages such as collecting information, organizing the information obtained and reaching research findings through interpretation (Merriam, 1988; cited in Vural & Cenksever, 2005).

In this study, the researchers created data variations by interviewing experts on formal and informal distance education processes. The researchers of this study are academicians who have worked for more than 20 years in a higher education institution that has been providing distance education services for more than 40 years. For this study, data were collected through semi-structured interviews with academics who have at least 20 years of experience in the field of open and distance education and at least 10 years of experience in the field of distance education management, and a systematic study was carried out to ensure internal and external validity and reliability. Researcher triangulation was used for the validity of the study. Each of the researchers has expertise in more than one method and in order to ensure the validity of the research, the data obtained in the research were analyzed by each researcher and the findings were transferred to the research without biases.

Within the scope of the research, answers were sought to the following questions;

Advanced technologies (Blockchain, Augmented Reality/Virtual Reality/Metaverse, Artificial intelligence and its derivatives, Brain chips, etc.) in the future of universities offering distance education services;

1. What kind of changes in which stages of management?
2. How does it affect the structuring of organizations?
3. What impact will it have on practice/services?

It is foreseen that the results obtained from the research will be a reference for a larger-scale research project to be continued. In this context, the research participants were academics who are actively working at

Anadolu University and who have taken part in different processes from implementation to management in the field of distance education within the scope of research objectives. Among these academics, the opinions of 4 academics with at least 20 years of experience in the field of open and distance education were taken. Each of these academics are experts who have actually worked in the fields of distance education practices, technologies used in distance education processes and distance education management and have practical experience.

Their responses to the questions posed to the participants were recorded word by word and translated into English, and transcripts consisting of a total of 2442 words were created. The translation was checked by experts in both languages. Content analysis technique was used to analyze the open-ended questions in the interview, following the principles established by Braun and Clarke (2006) and George (1959) (Table 1). The data were analyzed with Nvivo 1.7.1 and a list of themes, categories and codes was created.

Table 1. Data Analysis Flowchart

Phase 1:	Familiarity with data
Phase 2:	Independent creation of the first coding
Phase 3:	Sorting codes independently according to categories and themes
Phase 4:	Meeting to compare categories and themes and to check inter-coder reliability
Phase 5:	Revising and finalizing categories and themes
Phase 6:	Frequency counting

RESULTS AND INTERPRETATION

The interpretation of the data obtained in the research is given in this section.

When the answers of the participants to the question "In the future of universities providing distance education services, advanced technologies (Blockchain, Augmented Reality/Virtual Reality/Metaverse, Artificial intelligence and its derivatives, Brain chips, etc.); what kind of changes in which stages of management?" are examined; it is seen that the participants stated that advanced technologies will have a great impact on future educational environments. The answers also emphasize that organizations need to adapt to these technologies and reorganize their processes. In the responses to this question, keywords such as technological transformation and adaptation, artificial intelligence, human factor, metaverse and virtual reality stand out.

When the response of Expert 1 is analyzed, it is seen that each of the advanced technologies has different benefits, but the use of these advanced technologies will require important decision processes and proper planning.

> *"Each of these technologies has different uses and offers different possibilities. They make our lives easier and offer opportunities to do our work in a more systematic way, faster and safer."*
>
> *"The introduction of these technologies within the organization requires important decision processes. It may require large investments at the beginning, so it is necessary to plan by accurately determining how and at which stage of the business processes they will be put to use."*

Expert 1 states that enterprises' investments in advanced technology may have high costs at the initial stage, but over time, these investments can save money in the process.

> *"Although it may initially create great costs, it will turn the investment into a positive return with the savings it will provide to the organization in terms of both financial and labor force with the opportunities it will offer over time."*

"If you have a small business, you should be cautious about making big investments in advanced technologies if they are not going to save you money."

Expert 1 warns about advanced technologies and emphasizes the importance of training artificial intelligence by feeding it with up-to-date information.

"There is a very important issue, training artificial intelligence. The current algorithm of artificial intelligence works in the form of machine learning. In other words, it tells you what you teach it. Unlike the logical artificial intelligence logic, we are used to, the current system works in this way. Therefore, the more accurate information you upload, the better/quality/accurate responses the artificial intelligence will give, close to the support service that a human would give. In this respect, it is necessary to make an effort and labor for the education of artificial intelligence. And it needs to be constantly fed with accurate/up-to-date information."

Expert 1 also expressed concern about people's existing sense of mistrust towards unmanned technologies.

"Our people want to get confirmation from a real person. No matter how much we provide information and explanations in writing or visually, they always want to confirm it from a real person."

"There is a point that leads people to distrust, even if they read it, they want to confirm it.

How the operation of unmanned systems affects this situation needs to be seen in practice."

When the answers given by Expert 2 to this question are analyzed, it is seen that he predicts that artificial intelligence will take place in managerial positions in the future.

"In the future, artificial intelligence will take place at all levels of businesses (top, middle and lower level managers). In all kinds of businesses in service, production, marketing "

Expert 2 recommends the use of augmented reality in departments that require practice or internship and states that this will soon become widespread in all distance education universities.

"Augmented reality should be used especially in departments that require practice or internships. This application will soon be available at all universities offering distance education services."

Expert 2 emphasizes that the centralization provided by the blockchain will provide better control.

"As for blockchain, it is a very important application for centralized management. With centralization, control will be better, which will cause things to be done properly and completely."

Expert 2 states that businesses will move from a hierarchical to a horizontal structure, network organizations will increase and lists the benefits of this change.

"It shapes businesses from a hierarchical to a horizontal structure. There will be a single manager, no class differences between people, work and communication will be faster, and creativity will increase."

"Network organizations will also increase. Businesses will buy an application that they can do themselves at a higher cost from other businesses that do it better and will cost less when purchased."

Expert 2 also mentions the issue of employment in his answers. According to Expert 2, instead of employees who cannot adapt to advanced technologies, employees who use advanced technologies and produce knowledge are permanent.

"Employees who are not open to technology or cannot use it will be eliminated and replaced by people who produce knowledge and use technology. Since there will be people with high creativity and risk-takers, difficulties in implementation will be easily overcome. There will be no loss of time and spatial difficulties."

In his answers to this question, Expert 3 states that customized learning experiences can be offered to students with the support of artificial intelligence and mentions his expectations about this.

"Options such as the end-to-end production of distance education content with fully synthetic content, the introduction of new reality-based distance education and support services, and the provision of AI-powered personal teaching assistants to students will become cheaper."

"Creating student-specific curricula and content can be realized at almost zero cost."

"It will be possible to design a customized learning experience every time a student logs in. Students' learning analytics and their real-time analysis with artificial intelligence will support administrative processes."

"Brain-computer interfaces can enable each student to have an adaptive learning experience that best suits their current mental state."

Expert 3 predicts that the effective use of advanced technologies in management processes

can be of great support to management.

"Meanwhile, functions such as management, planning, supervision and evaluation will all become more efficient with the support of AI."

"Intensive use of these technologies will, with appropriate design, lead to a reduction in the management hierarchy."

"Artificial intelligence, especially when used effectively in anomaly detection, can provide great support to the management in early identification and prevention of unexpected situations in service delivery and teaching processes."

"It will cause restructuring in processes such as book writing, e-learning content preparation, live course presentation, etc."

"Processes such as preparing exam questions and evaluating open-ended exams can be handed over to artificial intelligence."

"Points that require human use, such as offices, will be eliminated."

Finally, Expert 3 talks about the new situations that students will experience in universities where advanced technologies are used intensively and what universities can do for these situations.

"Students will face more artificial intelligence, synthetic content and hyper-realistic avatars in their learning, assessment and support. As these technologies, when applied globally, will lead to similar, taken-for-granted services and environments, universities will want to differentiate themselves by incorporating creative designs that allow students to come face-to-face with humans from time to time."

"Open course materials that incorporate advanced technologies will also become widespread, reducing students' dependence on institutions for content delivery."

"Universities can be expected to reposition themselves and perhaps focus only on assessment and evaluation processes."

In his answers to this question, Expert 4 mentions the use of augmented reality, artificial intelligence and metaverse worlds in education.

"Existing technologies and systems where next-generation technologies can be put into use as quickly as possible are available at every stage of distance education."

"With virtual and augmented reality, the need for education and training environments to take place in the metaverse worlds of the future is inevitable."

Expert 4 states that advanced technologies will be effective at every stage of a distance learning program, including taking over the guiding role of the instructor.

"In the learning environment, an AI-powered meta-assistant can take over the guidance role of the actual instructor, provide access to content at the right time and in a meta- environment, and evaluate what and how much the individual accessing the content has learned."

"These technologies can bring about radical changes at every stage of a distance education program, from opening to delivery, graduation, social activities, interaction and assessment."

"This service can change by transferring the role of an academic lecturing in the system to an artificial intelligence-supported assistant application, internship processes can be realized with simulation software that will determine how the knowledge to be acquired will be used in which situations, or practical course content can turn into processes that individuals will experience with their virtual selves in the metaverse."

Expert 4 continues his predictions by listing what can be done with a chip implanted in the student's brain.

> *"It can use blockchain technologies to recognize prior learning, and it can be with the individual anytime, anywhere through the chip implanted in their brain."*
>
> *"Backups of the traces in the brain of the individual's knowledge and experiences related to the subjects they have learned can be taken, stored digitally, and transferred between brains or between brain and computer."*
>
> *"Evaluations on how much knowledge and experience individuals have on which subject or how much knowledge they have acquired can be taken to a new dimension with the combination of blockchain and metaverse technologies, and even the learning content and information offered can be transferred directly to brain chips."*

Expert 4 emphasizes that processes will be carried out with advanced technologies, which will lead to a reduction in human resources, but employment will still be needed.

> *"Processes can be coordinated and managed by artificial super intelligence systems." "The reduction in human resources will lead to a more digital hierarchical structure."*
>
> *"All processes will be driven by technology, but of course it is appropriate that the people who manage these technologies remain human."*

Finally, Expert 4 draws attention to the need for higher education institutions to take steps in the process of transition to advanced technologies.

> *"Artificial intelligence-supported systems will play a more active role in the management and organization of all these new processes of the higher education institution."*
>
> *"Services themselves and their implementation processes as well as their production processes will undergo radical change. At this point, organizations need to take steps as soon as possible to prepare themselves for this future."*

When the answers given to this question are evaluated in general, it is seen that the participants especially emphasized that artificial intelligence and advanced technologies should be included in the processes today. When the literature is examined, it is seen that many studies have been conducted on the use of artificial intelligence and advanced technologies in different processes of distance education, from management to practice. In addition, with the introduction of productive artificial intelligence, it is clear that there is a need for a rapid transformation in distance education processes, considering its effects on business processes and human resource utilization in different fields. In their studies, Ugur and Kurubacak (2019a, 2019b, 2020) developed recommendations on how to employ and manage artificial intelligence and advanced technologies for all processes of distance education, while Durso and Arruda (2022), in their content analysis of research on the use of artificial intelligence in distance education in Brazil, found that limited attention was paid to critical issues related to the increasing inclusion of artificial intelligence in distance education, such as the employability and technological training of teachers or the ethical implications of using artificial intelligence for the educational process. The needs identified in this study overlap with the results of the related study, so it can be said that there is a need for studies on the inclusion of artificial intelligence in distance education processes and the training of instructors on this issue.

The second question asked to the participants was "Do these advanced technologies affect the economy and how?".

When the answers given to this question are analyzed, the view that businesses should determine the right strategies and plan the integration of advanced technology in a balanced way with investments in human resources comes to the fore. Investment in Technology and Integration, Unemployment and Productivity, Artificial Intelligence and Automation and Block Chain, Artificial Intelligence and Human Resources are the prominent themes. When the responses are analyzed on a participant basis, it is seen that Expert 1 emphasized that investments in technologies should be large investments at the beginning, but that the right analysis should be made before technology integration.

> *"Initially, you need to invest heavily in the configuration of technologies. If it will really benefit you in terms of reducing costs, employing fewer people, spending less time of the qualified workforce, then you should turn to these technologies. Analyses must be done correctly before technology integration."*

In his answer to this question, Expert 1 warns that businesses that try to implement the use of advanced technology without proper analysis simply because it is fashionable will lose labor and money.

> *"If we try to integrate these technologies thinking that we should have them because they are fashionable, our business processes will be difficult, we will spend a lot of effort on the path we will take in one step, and our money will be wasted."*

In his response to this question, Expert 2 underlines that advanced technologies may increase unemployment and that especially those who are not technologically literate may be affected. Expert 2 included the following statements in his answer:

> *"It will affect the economy because a lot of people will be unemployed. Especially people who can't keep up, who can't produce knowledge or use technology."*

However, Expert 2 emphasizes that with the use of advanced technologies, the production of enterprises will increase and they will gain profit over time.

> *"Businesses will make a profit because they will not use as many human resources, money will flow more because production will increase and error rates will decrease. As different products will be produced, the country's exports will increase."*

According to Expert 3, what stands out is that entry-level white-collar jobs will disappear with artificial intelligence that will be able to make key decisions.

> *"In a world where basic everyday decisions are made by AI, millions of entry-level white- collar jobs will disappear."*

Expert 3 predicts that businesses will prefer to manage more AI processes with fewer employees and that a global wave of automation can be expected.

> *"One view is that AI will increase human productivity. But rather than employing large numbers of AI-enhanced workers, businesses will invest in automation, preferring processes in which a small number of workers oversee a large number of AI endpoints. We can expect a new wave of automation with cheap robots in every field globally."*

In his response to this question, Expert 4 states that technologies such as blockchain, artificial intelligence and metaverse will lead to radical changes in the economic sense.

> *"Advanced technologies, especially Blockchain, artificial intelligence, metaverse technologies, will bring radical changes in the economic sense."*

Expert 4 emphasizes that while advanced technologies can save human resources and time, they can also lead to new costs.

> *"It can save human resources and time, but will also open the door to new costs by investing in the infrastructure required for the technologies."*

Expert 4 also states that new human resources will be needed to manage advanced technologies and new employment opportunities will be created.

> *"New human resources will be needed to manage technologies that seem to have the potential to do many human-based jobs, and new business areas will open up."*
>
> *"It is important to make accurate cost-benefit calculations for automation systems supported by artificial general intelligences that can undertake human-assisted work."*
>
> *"There is also a need to invest in human resources to manage technology."*

The responses to this question point to the possibility of artificial intelligence and robotic technology replacing labor on an unprecedented scale, which raises the concern of automation (Autor, 2015: 4). The advancement of technology and the use of technology to do the work of human resources still helps the economy in terms of employment. The use of technology has led to increased productivity in production, increased exports and imports, and increased demand for goods and services. On the one hand, the disruption effect, which requires the reorganization of labor supply as technology replaces labor; on the other hand, the emergence of new jobs in sectors with high productivity is met by the increase in employment in these sectors (Frey & Osborne, 2013:13). Both positive and negative ideas about AI are included in the economic element. The

positive idea predicts that artificial intelligence will bring qualified people into business life. The negative idea predicts that artificial intelligence will have hidden unemployment by replacing employees. Because using artificial intelligence means less labor input (Huang et al., 2019: 45). A joint study by Nesta, a London-based innovation group, and Oxford University academics ranked the job groups in the US that would be least affected by computerization. According to the research;

a. Translators and interpreters (5.8%) b. Performing artists (7%) c. Radio broadcasters (7.7%) d. Film and TV producers (8%) e. R&D in natural sciences (10.9%) In addition, the job groups most vulnerable to computerization are: a. Office managers b. Call center workers c. Librarians d. Cattle breeders e. Wood cutters f. Miners g. Car dealers and hotel staff (Dirican, 2015:569).

Stiglitz (2014) argued that unemployment will increase due to increased productivity and innovations in human resources managers. Artificial Intelligence is becoming even more important in the economy. Research by PricewaterhouseCoopers (PwC) reveals that Artificial Intelligence will increase in importance in the global economy by 2030. Accordingly, Artificial Intelligence is expected to increase global GDP by approximately 14 percent. It is thought that a total increase of approximately USD 15.7 trillion will be achieved. Another study, launched by Accenture in 2016 and covering 12 developed economies, estimates that Artificial Intelligence could double annual global economic growth rates by 2035 (Business, 2023).

Finally, the participants were asked the question "Do these advanced technologies create socio-cultural change, and if so, in what form?". According to the answers given to this question, it is possible to talk about the effects of advanced technologies on socio-cultural change. On the other hand, the dilemma experienced by experts regarding these effects is observed. The importance of the factors that need to be taken into account in order to cope with this change and the balance that needs to be established between the opportunities and risks brought by advanced technology come to the fore.

According to Expert 1, advanced technologies affect individuals' lives in a wide range of areas, from their daily lives to their professional lives. Emphasizing that the developments related to artificial intelligence are rapid, he drew attention to the positive effects as well as the negative effects such as laziness.

> *"Recent developments in the field of artificial intelligence are progressing at a dizzying pace."*
>
> *"Sometimes it makes things easier, sometimes it makes us lazier and easier."*
>
> *"It will definitely have negative effects such as making people a little more ready-made, making them dependent on themselves, increasing their screen usage time."*

Expert 1 also gives a number of examples of the use of AI.

> *"Today you can have a piece of writing edited, revised in the tone you want (friendly, formal), changed to the style of a writer you like, etc. etc."*
>
> *"Let's say you don't have an opinion on a topic; you can ask "if you were that person, how would you answer this?" and get an answer."*
>
> *"Let's say you have no drawing skills at all; you can have them draw an image by explaining it to them by saying "now draw me a ladybug, surrounded by..."*

Finally, Expert 1 emphasizes that the positive use of these technologies can be ensured through technology literacy trainings.

> *"The society should be taught how to use these technologies in a positive way through technology literacy trainings."*

When the responses of Expert 2 are analyzed, it is seen that he draws a more negative picture. It is emphasized that the country is not yet ready for artificial intelligence technology due to its collectivist and feminine culture.

> *"Our country is not yet ready for AI technology. Because we have a collectivist and feminine culture, we are not yet ready for rational and rule-following applications of AI."*

On the other hand, Expert 2 states that he predicts that artificial intelligence will lead to a great change for humans with the disruptive effect it will bring.

> *"It will have a disruptive effect. People's thinking, communication and lifestyles will be 180 degrees different from what is happening now."*

Expert 3 states that advanced technologies have more power than social media to change the world.

> *"Given the extent to which social media has changed the entire world in the last two decades, we can predict that synthetic reality, artificial intelligence and brain-computer interfaces could trigger even more of this change."*

Expert 3, who mentions psychological and biological problems in his answers, also draws attention to virtual addiction.

> *"It is very clear that virtual/augmented/enhanced reality in particular will add a layer between individuals and the outside world, and this layer will further distance individuals from physical communication. People spending more and more time in the virtual world will cause permanent problems in human psychological and biological functions. Advanced virtual addiction will disrupt the fulfillment of the requirements of the physical world. A major social problem awaits us in the future."*

In his response to this question, Expert 4 emphasizes the concepts of "Cyber Culture" and "Meta Culture" while stating that technology has already changed social life and cultural structure. He states that individuals living in meta-universes, especially those born into technology, can exist both in the physical and virtual world and that this situation should shape the cultural structure.

> *"When this situation is evaluated in the context of the construction of a future in which there are individuals born into technology, it can be predicted that this new culture living in meta-universes, let's call it meta-culture, will be formed. Meta-culture will refer to human beings and these human communities that exist both in the physical world and in the virtual world."*

Expert 4 emphasizes the need to start working on how to address issues such as rights, legal regulations and ethics in meta-culture.

> *"In this case, it is clear that there will be a need for studies on what will be the determinants of rights in these universes, what kind of legal and ethical regulations will be applied for who or what, and how the cultural structure will be shaped in these meta- societies, and research on these issues should be started now."*

Looking at the effects of artificial intelligence on society, it is evaluated that the main determinant of whether artificial intelligence has a negative or positive function is the human being who constructs it (oztemel, 2020:99). In fact, it is not taken into consideration that advanced technologies are created by humans. Therefore, it is ignored that the human element, especially people with creative and advanced ideas, are more important than advanced technology and that they should be valued. There is a change in society with the use of advanced technology. In particular, while emphasizing the positive aspects of artificial intelligence that facilitate life, on the other hand, there are also ideas about the lack of control or the emergence of negative effects (O'Connell, 2021: 87; Gultekin, 2021: 132). Today, it seems possible that artificial intelligence can be a project that can be a guiding field of development and change in the reconstruction of societies, as well as a project that can create difficulties with its consequences (Baudrillard, 2018: 113). However, according to Koroglu (2017), these concerns are unwarranted as they are determined by what and how, which are the questions involved in the structuring of artificial intelligence, and it is not possible for it to leave human control without modeling "why".

Artificial intelligence applications, which are evaluated with the acceptance of a political functionality, are almost imposed in a wide range of social life, who will hear, see, acquire, give up, like or dislike what, provide social guidance, and prepare the ground for social changes in this direction (Beer, 2017:6). With the impositions imposed by artificial intelligence, it is emphasized that individuals are almost exploited, and an economic, social and cultural imperialism corresponds as an application area (Muhloff, 2020: 1882). Social change is shaped by who, when, where and how artificial intelligence applications target (Joyce et al., 2021:6). Artificial intelligence, as a social actor in today's world, causes changes in society (Woolgar, 1985:558).

The themes-categories and codes formed from the data obtained by analyzing all responses are given in Table 2.

Table 2. Themes, Categories, Codes and Example Phrases

Themes	Categories	Codes	Example Phrases
Education	Technology	Investment Cost	Although it may create great costs at the beginning, it will turn the investment into a positive return with the savings it will provide to the organization in terms of both financial and labor force with the opportunities it will offer over time.
		Education of Artificial Intelligence	There is a very important issue, training artificial intelligence. The current algorithm of artificial intelligence works in the form of machine learning. That is, it tells you what you teach it. Unlike the logical artificial intelligence logic we are used to, the current system works in this way. Therefore, the more accurate information you upload, the better/quality/accurate responses the artificial intelligence will give, close to the support service that a human would give. In this respect, it is necessary to make an effort and labor for the education of artificial intelligence. And it needs to be constantly fed with accurate/up-to-date information.
		Changing Educational Environments	With virtual and augmented reality, the need for education and training environments to take place in the metaverse worlds of the future is inevitable.
		Brain Chips	Evaluations on how much knowledge and experience individuals have on which subject or how much knowledge they have acquired can be taken to a new dimension with the combination of blockchain and metaverse technologies, and even the learning content and information offered can be transferred directly to brain chips.
	Educational Processes	Adaptive Learning	It will be possible to design a customized learning experience every time a student logs in. Students' learning analytics and their real-time analysis with artificial intelligence will support administrative processes.
		Virtual Self	This service can change by transferring the role of an academic lecturing in the system to an artificial intelligence-supported assistant application, internship processes can be realized with simulation software that will determine how the knowledge to be acquired will be used in which situations, or practical course content can turn into processes that individuals will experience with their virtual selves in the metaverse.
		Recognition of Prior Learning	It can use blockchain technologies to recognize previous learning, and it can be with the individual anytime, anywhere through the chip implanted in their brain.
		Management	Processes can be coordinated and managed by artificial superintelligence systems.
		Implementation Processes	Services themselves and their implementation processes as well as their production processes will undergo radical change. At this point, organizations need to take steps as soon as possible to prepare themselves for this future.
	Services	Meta Assistant	In the learning environment, an AI-powered meta assistant can take over the guidance role of the actual instructor, provide access to content at the right time and in a meta-environment, and evaluate what and how much the individual accessing the content has learned.
	Content	Adaptive Content Production	Creating student-specific curricula and content can be realized at almost zero cost.
		Independence from the Organization	Open course materials that incorporate advanced technologies will also become widespread, reducing students' dependence on institutions for content delivery.
Management	Management	Decision processes	The introduction of these technologies within the organization requires important decision processes. Initially it may require large investments, so it is necessary to plan by accurately determining how and at which stage of the business processes it will be put to work.

	Planning, supervision and evaluation	Meanwhile, functions such as management, planning, supervision and evaluation will all become more efficient with the support of AI.
	Hierarchy reduction	Intensive use of these technologies will lead to a reduction in the management hierarchy with appropriate design.
	Artificial intelligence manager	In the future, artificial intelligence will take place at all levels of businesses (top, middle and lower level managers). In all kinds of businesses in service, production, marketing.
	Structure	It shapes businesses from a hierarchical to a horizontal structure. There will be a single manager, no class differences between people, work and communication will be faster, and creativity will increase.
		Network organizations will also increase. Businesses will buy an application that they can do themselves at a higher cost from other businesses that do it better and will cost less when purchased.
Employment	Knowledge worker	Employees who are not open to technology or cannot use it will be eliminated and replaced by people who produce knowledge and use technology. Since there will be people with high creativity and risk-takers, difficulties in implementation will be easily overcome. There will be no loss of time and spatial difficulties.
	Automation anxiety	One view argues that AI will increase human productivity. But rather than employing large numbers of AI-enhanced workers, businesses are more likely to invest in automation, with a small number of workers overseeing a large number of AI endpoints. We can expect a new wave of automation with cheap robots in every field globally.
	Employment growth	New human resources will be needed to manage technologies that seem to have the potential to do many human-based jobs, and new business areas will open up.
	New business areas	New human resources will be needed to manage technologies that seem to have the potential to do many human-based jobs, and new business areas will open up.
	White collar reduction	In a world where basic everyday decisions are made by AI, millions of entry-level white- collar jobs will disappear.
Economy	Cost increase	It is important to make accurate cost-benefit calculations for automation systems supported by artificial general intelligences that can undertake human-assisted work.
	Hidden unemployment	It will affect the economy because a lot of people will be unemployed. Especially people who can't keep up, who can't produce knowledge or use technology.
	Investment	Initially, you need to invest heavily in the configuration of technologies. If it will really benefit you in terms of reducing costs, employing fewer people, spending less time of the qualified labor force, you should turn to these technologies. Analyses must be done correctly before technology integration.
	Becoming fashionable	If we try to integrate these technologies thinking that we should have them because they are fashionable, our business processes will be difficult, we will spend a lot of effort on the path we will take in one step, and our money will be wasted.
	Profit increase	Businesses will make a profit because they will not use so many human resources, money will flow more because production will increase and error rates will decrease. As different products will be produced, the country's exports will increase.
Sociocultural Impact	Increased laziness	Sometimes it makes things easier, sometimes it makes us lazier and easier.
		It will definitely have negative effects such as making people a little more ready-made, making them dependent on themselves, increasing their screen usage time.
	Lifestyle change	"It will have a disruptive effect. People's thinking, communication and lifestyles will be 180 degrees different from what is happening now."

	Psychological-Sociological problems	In particular, it is clear that virtual/augmented/enhanced reality will add a layer between individuals and the outside world, and this layer will further distance individuals from physical communication. As people spend more and more time in the virtual world, it will cause permanent problems in human psychological and biological functions. Advanced virtual addiction will disrupt the fulfillment of the requirements of the physical world. A major social problem awaits us in the future.
	Collectivism and femininity culture	Our country is not yet ready for AI technology. Because we have a collectivist and feminine culture, we are not yet ready for the rational and rule-following applications of artificial intelligence.
	Meta culture	When this situation is evaluated in the context of the construction of a future in which there are individuals born into technology, it can be predicted that this new culture living in meta-universes, let's call it meta-culture, will be formed. Meta-culture will refer to human beings and these human communities that exist both in the physical world and in the virtual world.
	Cultural structure	In this case, it is clear that there will be a need for studies on what will be the determinants of rights in these universes, what kind of legal and ethical regulations will be applied for who or what, and how the cultural structure will be shaped in these meta-societies, and research on these issues should be started now.
	Decreased communication	In particular, it is clear that virtual/augmented/enhanced reality will add a layer between individuals and the outside world, and this layer will further distance individuals from physical communication. As people spend more and more time in the virtual world, it will cause permanent problems in human psychological and biological functions. Advanced virtual addiction will disrupt the fulfillment of the requirements of the physical world. A major social problem awaits us in the future.

When the table is analyzed, the diagram created with the concepts, codes and categories reached in the research is given in Figure 1.

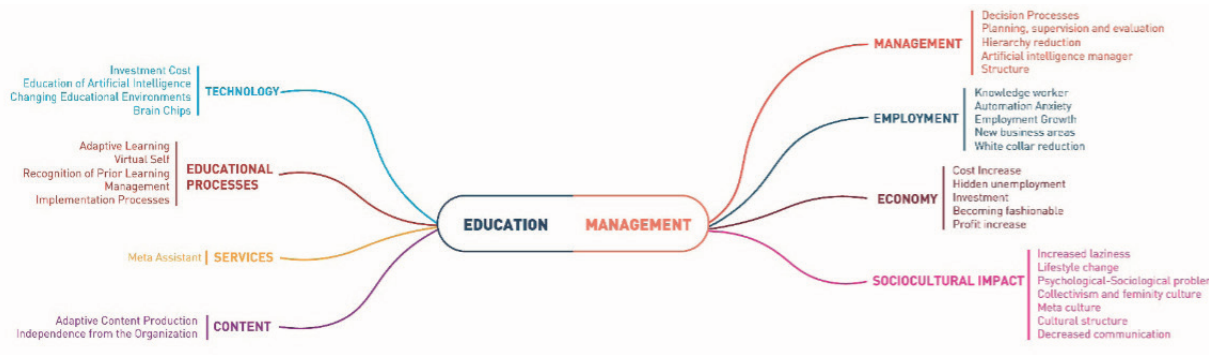

Figure 1. Concept and codes diagram

When the findings and the diagram were analyzed, it was determined that the categories that the participants drew attention to the most were technology, educational processes, services and content in the context of education, while the dimensions of management, employment, economy and socio-cultural impact in the context of management. The research codes obtained by analyzing the opinions of the participants are; investment cost, artificial intelligence education, change of educational environments, brain chips, adaptive learning, virtual self, recognition of prior learning, management, implementation processes, meta assistant, adaptive content production, independence from the institution, decision processes, planning, supervision and evaluation, hierarchy reduction, artificial intelligence manager, structure, knowledge worker,

automation anxiety, employment increase, new business areas, white collar reduction, cost increase, hidden unemployment, investment, fashion, profit increase, laziness increase, psychological-sociological problems, collectivism and femininity culture, lifestyle change, meta universe, cultural structure, communication decrease.

CONCLUSION AND RECOMMENDATIONS

In this study, the digital transformation processes that advanced technologies will affect in the field of open and distance education in an administrative context were evaluated. The prominent technologies within the scope of the research are artificial intelligence, metaverse, brain-computer interfaces, blockchain, brain chips, virtual reality technologies. The educational dimensions that will be affected by these technologies are technology, educational processes, services, content, while the managerial dimensions are identified as management, employment, economy, culture, socio-cultural change and management. The main themes of the research are education and management.

In the context of education, it is clear that the impact of technological developments on the process is inevitable. Artificial intelligence and recently popularized productive artificial intelligence applications are already experiencing a rapid transformation process. It has been observed that blockchain technologies should be employed in the processes of recognizing prior learning, creating adaptive learning opportunities, creating synthetic content with artificial intelligence, using artificial intelligence in the organization of the educational process, taking on the role of a tutor, using brain-computer interfaces in the development of learning systems, preparing new learning structures for the metaverse and structuring avatar systems for virtual self development. However, of course, calculating the investment costs and analyzing the economic impacts will be useful for the feasibility and sustainability of the process.

When evaluated in the context of management, it is clear that especially management processes and therefore managers need to undergo a rapid adaptation to this change. Artificial intelligence and blockchain technologies can be used in the processes of making managerial decisions, planning, supervising and evaluating activities, and managers to be developed with artificial intelligence will be able to take place at all levels of businesses in the future. Systems to meet the need for knowledge workers and automation concerns within the scope of employment processes can be met with technologies such as artificial intelligence, blockchain and human-computer interfaces, and contrary to the decrease in white-collar employees, there will be an increase in employment for new business areas. This need will open new business doors for people with a high level of technological literacy. Considering the economic effects, although it is seen that it will require great costs in the current conditions, in the long run, it will be able to provide financial gains due to the return of automation systems and the effect of the reduction in human resources, and the increase in production will also provide profit. With changing lifestyles, there may be an increase in laziness and psychological problems in individuals. With these changes, falling behind in terms of technological readiness will have positive and negative effects on the sociological dimension. Another impact of technology will be the emergence of virtual societies and thus the emergence of meta-culture. When cultural effects are evaluated here, it can be said that the decrease in real communication that will occur with changes in lifestyle will change the culture of collectivism.

When evaluated in the context of the sustainability of the current research, according to the results of the research, it is recommended to develop and test artificial intelligence assistants and managers, develop certification and recognition applications with blockchain technologies in management and education processes, develop and use adaptive synthetic content by using artificial intelligence technologies, configure new teaching systems and virtual selves for the metaverse, and conduct new research on the use of brain-computer interfaces and brain chips in both managerial and educational processes.

Considering the results obtained from this study, larger-scale studies using qualitative and quantitative methods can be conducted in different geographies, with academics from different universities and fields. The current research is also thought to be a basis for academics and researchers who want to conduct research in this field.

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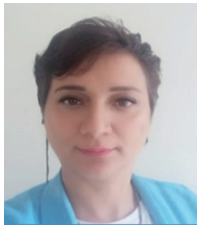

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