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Araştırma Makalesi (Research Article)

Digital Transformation of Accounting in Industry 4.0 Perspective and an Empirical Study on Turkish Accounting Education*

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Abstract

Industry 4.0, with the unstoppable development of information technologies and the internet towards the end of the 20th century, is considered an industrial revolution that brings together digital technologies that are constantly increasing in number and variety. As a result of the increase in the use of digital technologies brought by the Industry 4.0, digital transformation, this topic has become increasingly important and begun to take place more in the literature. Studies examining the relationship between the Industry 4.0 and accounting are observed in the literature. However, there were not enough studies in the literature that measured the perspectives of students studying in the business administration departments towards the Industry 4.0 as well as their attitudes toward accounting courses. In this study, the effects of the Industry 4.0 on accounting and the digital transformation of accounting have been evaluated for business administration students. A total of 491 questionnaires were applied to the students of the department of business administration, and IBM SPSS Statistics 22 package program was employed for the reliability analysis of the data obtained from 491 questionnaires. Explanatory factor analysis was benefited to determine the validity of the scalesin the study. In the analysis, Kaiser-Meyer-Olkin (KMO) and Barlett Test were performed to measure the sample adequacy. According to the results of the analysis, it was revealed that there was a significant difference in the Industry 4.0 in terms of the views of the students studying in the e business administration department according to sex, age, academic year, and grade points average. In addition, it was also revealed that there was a significant difference in attitudes towards accounting courses and the Industry 4.0 among business administration students based on sex, age, academic year, and department.

Keywords: Accounting, Accounting Education, Industry 4.0, Digital Transformation.

JEL Codes: M40, M41, M49, I20.

Endüstri 4.0 Perspektifinde Muhasebenin Dijital Dönüşümü ve Türk Muhasebe Eğitimine İlişkin Ampirik Bir Çalışma

Öz

Endüstri 4.0, 20. yüzyılın sonlarına doğru bilgi teknolojileri ve internetin durdurulamaz gelişimiyle; sayı ve çeşitlilik olarak sürekli artış gösteren dijital teknolojileri bir araya getiren bir endüstriyel devrimdir. Endüstri 4.0'ın beraberinde getirdiği dijital teknolojilerin kullanımının artması sonucu, dijital dönüşüm giderek önem kazanmış ve literatürde daha çok yer almaya başlamıştır. Endüstri 4.0 ve muhasebe ilişkisinin incelendiği çalışmalar literatürde görülmektedir. Bununla birlikte yapılan taramalar sonucunda literatürde, işletme bölümü öğrencilerinin endüstri 4.0'a olan bakış açıları ile muhasebe dersleri ve endüstri 4.0'a olan tutumlarını ölçen yeterli sayıda çalışmaya rastlanılmamıştır. Bu çalışmada endüstri 4.0'ın muhasebeye olan etkileri ve muhasebenin dijital dönüşümü, işletme bölümü öğrencileri özelinde değerlendirilmeye çalışılmıştır. Toplam 491 anket işletme bölümü öğrencilerine uygulanmış ve 491 anketten elde edilen verilerin güvenilirlik analizleri için IBM SPSS Statistics 22 paket programı kullanılmıştır. Çalışmada kullanılan ölçeklerin geçerliliğinin tespitinde ise açıklayıcı faktör analizi kullanılmıştır. Analizde, örneklem uygunluğunun ölçümü için Kaiser-Meyer-Olkin (KMO) ve Barlett Testi gerçekleştirilmiştir. Yapılan analiz sonuçlarına göre işletme bölümü öğrencileri arasında cinsiyet, yaş, sınıf ve genel not ortalamasına göre endüstri 4.0'a olan bakış açılarında anlamlı bir farklılık olduğu ortaya konmuştur. Bununla birlikte işletme bölümü öğrencileri arasında muhasebe derslerine ve endüstri 4.0'a olan tutumlarında cinsiyet, yaş, sınıf ve bölüme göre anlamlı bir farklılık olduğu da ortaya konmuştur.

Anahtar Sözcükler: Muhasebe, Muhasebe Eğitimi, Endüstri 4.0, Dijital Dönüşüm.

JEL Kodları: M40, M41, M49, I20.

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1. INTRODUCTION

Bosch first mentioned the concept of the Industry 4.0 at the Hannover Fair held in Germany in 2011, representing the fourth industrial revolution. After the concept of the Industry 4.0 emerged, it started to be used with the expression of digital transformation and the digital technologies it offered. Thanks to the advancements in information technologies, the development of internet networks, and the increase in the diversity and the use rates of the digital technologies, many professions will face the danger of extinction, new business lines will emerge in various sectors, many new professions will emerge, many professions will experience change and transformation, existing production facilities will turn into innovative facilities, businesses will have to transform digitally both on the institutionaland employees bases. One of the areas that will be most affected by digital transformation is accounting and the accounting profession. The students' perspectives of the business administration department, which is one of the departments with the most potential to work in the field of accounting after graduation, towards the Industry 4.0 and their attitudes towards the relationship between accounting courses and Industry 4.0 are essential.

In the literature review, it is clear that there are different studies on determining the Industry 4.0 awareness of the students at the faculty of economics and administrative sciences, disclosing the digital accounting literacy of the accounting professionals, the Industry 4.0 awareness of the accounting students as well as the determination of the digital literacy of the undergraduate students. No study has been found that examines both the perspectives of the students studying in the business administration department, one of the departments where students take the accounting courses more than other fields at the undergraduate level and has the highest potential to ensure a career in accounting toward the Industry 4.0, and students' attitudes toward the relationship between accounting courses and the Industry 4.0. In this direction, it is desired to contribute to the literature by discussing the perspectives and attitudes of business administration students toward the Industry 4.0 and accounting courses.

The study is designed to reveal whether there is a significant difference in the perspectives of business administration students on the Industry 4.0 and their attitudes toward the relationship between accounting courses and the Industry 4.0 according to sex, age, academic year and program difference in the department and GPA.

The study consists of three parts. While the first part presents information on the Industry 4.0 and digital transformation, the second part includes information on the digital transformation of accounting and accounting education. The third part presents the analysis of the data obtained from the survey that was conducted on the students of the department of business administrationas well asthe information on the acceptance or rejection of the hypotheses.

2. THE INDUSTRY 4.0 AND DIGITAL TRANSFORMATION

Industrial revolutions express the continuous changes in society. With each new industrial revolution, societies have experienced tremendous changes and transformations. The Industry 4.0, the last of the industrial revolutions experienced until today, covers digitalization and the effects it brings. The Industry 4.0 is often used together with the concept of digital transformation due to the many new technologies it brings.

2.1. History of Industrial Revolutions

Before examining the opportunities or challenges that the Industry 4.0 brings to the world and our country, it is important to remember all the industrial revolutions in history and try to understand the whole process, albeit briefly.

The Industry 1.0 refers to the period when human power was first replaced by the machine power. In 1769, Scottish engineer James Watt patented the first steam engine under his own name as a result of many years of research and work, and this event is considered the beginning of the Industry 1.0.

With this revolution, which spread from England to the USA and all over Europe, the idea of production by machine became widespread, the use of fuel-based machines such as steam or coal increased, and many different innovations and technologies came to the forefront (Durmuş, 2019).

It is possible to say that the Industry 2.0 represents the period between 1850-1950. The Industry 2.0 refers to the transition to mass production based on electrical energy, with the emergence of newer technologies over the years due to the mechanization of production. In the period of the second industrial revolution, the machines used were more complex, and the advancement of technology accelerated. Therefore, the Industry 2.0 is also known as the Technological Revolution. The beginning of the Industry 2.0 dates back to the invention of a less costly steel production method by English inventor Henry Bessemer in the 1860s.

The initiation process of the Industry 3.0 was slower than other industrial revolutions. The experience of the first and second World Wars and the great economic crises experienced in the industrialized countries, especially in the light of the previous revolutions, slowed the pace of technological advances. As the negative impact of war and economic crises waned technological advances were renewed. The process, which started with the production of the mechanical-electrical calculator in the 1950s and continued with the introduction of computers into our lives, and was completed in 2011 with the emergence of the concept of the Industry 4.0, represents the Industry 3.0 period.

2.2. The Industry 4.0 and Digital Technologies in Industry 4.0 Perspective

The term the Industry 4.0, which expresses the fourth industrial revolution, was first used by Bosch at the Hannover Fair in Germany in 2011. For Industry 4.0, it is possible to say that it is a process that started with the emergence of the concepts of the Internet of Things and Cyber-Physical Systems via the rapid and continuous development of the digital technologies. In other words, the Industry 4.0 is the whole of technology and systems that enable production to become the fastest and most efficient, thanks to the communication of all objects in the production process with each other. With the advanced digital technologies brought by the Industry 4.0, businesses and production facilities will become more intelligent (Minister & Şekkeli, 2018; Popkova et al., 2018).

The features underlying the Industry 4.0 can be summarized as follows (Demirer & Cindiloğlu-Demirer, 2019):

- *Interoperability*: The ability to connect, communicate and exchange data between innovative facilities and people via cyber-physical systems and the internet.
- *Service Orientation*: Providing services for the needs of individuals or businesses.
- *Decentralized Management*: Remote management is possible thanks to digital technologies, such as cloud computing, the internet of things, and three dimensional printers.
- *Real-Time Information*: Simultaneous collection, analysis and interpretation of data and simultaneous transmission to the user.
- *Virtualization*: Smart facilities or business models can be copied, tested, or converted into simulations.
- *Modularity*: The ability of innovative facilities to transform themselves in accordance with needs or current conditions.

The Industry 4.0 contains many different components and technologies, such as the Internet of Things (IoT), Big Data, Cloud Computing, Cyber Security, three dimensional Printers, Augmented Reality, Artificial Intelligence, System Integration, Blockchain, and Autonomous Robots (Nayyar & Kumar, 2020).

Internet of Things: The concept of IoT refers to the ability of many different objects to interact via the internet, with various markings to distinguish them from each other. To put it more clearly, IoT connects different objects using the Internet. Besides, it allows these objects to mutually produce and

share data (Bumin-Doyduk & Tiftik, 2017). IoT is a complete system and here is what it can do:

- *Connecting different objects with internet infrastructure,*
- *Allowing interconnected objects to exchange data,*
- *Checking the collected data,*
- *Thinking and deciding on the controlled data.*

Big Data: Big data is defined as large amounts of data that are impossible to analyze using old databases and become very difficult to manage. Trillions of networked sensors are embedded in many devices capable of operating, generating, and sharing data, from smartphones to social media sites, computers, and industrial machines. Outdated databases have been insufficient to store large amounts of data, and at this point, big data technology, one of the components of the Industry 4.0, has started to provide convenience in processing this data (Çelik, 2017).

Cloud Computing: For individuals or businesses to survive successfully in the global economy and trade, it has become necessary to have knowledge of information technologies and to be constantly updated on this subject. Regardless of the sector, especially the adaptation of businesses to the latest technologies brought by information technologies and the use of these technologies implies gaining an advantage over their competitors in the global competitive environment (Aytekin et al., 2016). The following statements can be given as examples of the advantages brought by the cloud computing (Elitaş & Özdemir, 2014):

- *Continuous availability of data on the drive,*
- *The recorded data can be used easily at any time,*
- *Accelerating data access,*
- *Data scaling according to needs,*
- *Simplified source or management assignments to data.*

Artificial Intelligence: Artificial intelligence is the ability to transfer human abilities such as thinking, decision-making, perceiving events, or drawing conclusions to non-living beings such as computers, robots, etc. Artificial intelligence is a technology that enables human-specific behaviors and abilities to be copied and transferred to inanimate objects (Tekbaş, 2019).

Cyber Security: Almost all the digital technologies brought by the Industry 4.0, especially cloud computing and artificial intelligence, are related to the internet or software. As a result of the increase in the use of these technologies by businesses or individuals over time, security problems have appeared. Cyber security has become an indispensable technological system for enterprises to continue their production processes healthily and to continue to exchange data with their technological devices. Cyber security allows only authorized persons or machines to see, change or use the data, thus keeping the need for individual or corporate security at the highest level (Petekçi, 2021).

Autonomous Robots and Robotic Process Automation: With the developments following the Industry 4.0, the robot technology is no longer just machines or robots that can provide automatic workforce but has become a technology with self-learning and data processing capabilities. Autonomous robotscooperate with human intelligence and abilities, constantly update themselves in this direction and work in harmony with humans (Çirkin & Özdağoğlu, 2021).

Three-Dimensional Printers: Three-dimensional printers, one of the rapidly developing technologies that entered our lives with the Industry 4.0, are quickly integrated into all areas of our lives. Three-dimensional printers are tools that allow objects to be produced in three dimensions. Despite the two-dimensional printers that have been used frequently until today, three-dimensional printers allow

printing not only on the X-Y axis but also on the X-Y-Z axis. The positive aspects of three-dimensional printers can be listed as follows: saving both time and cost during the output and production phase and the ability to produce original designs without depending on ready-made shapes or molds. The negative aspects of three-dimensional printers can be listed as follows: lack of widespread individual use owing to the high costs in individual use, difficulties in finding the materials required for output and production (Yıldırım et al., 2018).

2.3. Digital Transformation

Digital transformation is a concept that has been used quite frequently in recent years. In short, digital transformation refers to combining physically and digitally maintained services. When expressed in more detail, digital transformation means introducing and integrating digital technologies such as the IoT, autonomous robots and robotic process automation, cloud technology, or artificial intelligence into our lives, both individually and corporately. From this point of view, it can be claimed that digital transformation has a profound effect on human life and the ecosystems of businesses (Gonçalves et al., 2022).

It is possible to discuss digital transformation in the world under two main headings, the first being digital technologies used in industry and the second being advanced production technologies, and it can be stated that this transformation is structured or trying to be structured in a similar way in Turkey. Examples of the digital technologies used in the industry include big data, cloud computing, artificial intelligence, IoT, and cyber security. Examples of advanced production technologies include robotic process automation, autonomous robots, and three-dimensional printers (Ballı, 2021).

Chronologically, digital transformation in Turkey includes the transition plan to E-Government applications in the public sector in 2002 and the Information Society Strategy and Action Plans in various periods following the 2005 E-Transformation Turkey Project, the Establishment of the Presidency Digital Transformation Office in 2018, in 2019 the first Digital Transformation Technologies and Standards Summit and one Million Employment (Software) Project can be given in 2022 (Karabacak & Sezgin, 2019).

3. DIGITAL TRANSFORMATION OF ACCOUNTING AND ACCOUNTING EDUCATION

Professions , which are transforming at a dizzying pace with the effect of the Industry 4.0 and digitalization,face with various opportunities on the one hand and some threats on the other. The accounting sector, one of the sectors that will be most affected by the Industry 4.0 and digitalization, faces both opportunities and threats in the professional sense. Since most of the activities performed by professional accountants can be carried out by digital technologies that are available in the light of digital transformation, it may be possible for current accountants to face unemployment if they cannot keep up with the change. In the future, with the Industry 4.0 and digital transformation, the accounting profession will turn into a more qualified profession, where people will come to the fore with their mental abilities instead of physical labor, the number of activities that can be done autonomously will increase, and digital competencies can will be used more intensively.

3.1. Current Approaches in Accounting

In the light of the information above, in this section, the relationship between cloud accounting, big data, and blockchain concepts and accounting will be discussed as current approaches in accounting.

Cloud Accounting: Cloud accounting reflects the cloud computing technology brought by the Industry 4.0 in the accounting field. It is a system that facilitates ttraditional accounting tasks and helps integrate accounting into digital transformation. When traditional accounting and cloud accounting are compared, the following differences stand out (Buyruk-Akbaba, 2019):

- *While data entry is done physically in traditional accounting, data entry is automatic in cloud accounting.*

- *While remote access to accounting information systems is not possible in traditional accounting, it is possible in cloud accounting.*
- *In traditional accounting, changes in the legislation and regulations are followed personally, while in cloud accounting, cloud computing systems are followed. This advantage also saves time.*
- *While transactions are slow and complex in traditional accounting, transactions occur quickly in cloud accounting.*

Big Data and Accounting: All accounting-related transactions have been transforming from physical records to digital records day by day. This situation reveals the necessity of storing, protecting, and accessing both data and records at any time. In the last 20 years, almost all of the data has started to be stored in the digital media. With the development of information technologies, accounting professionals first left behind an exhausting and difficult activity that is physical bookkeeping. Now, thanks to digital transformation, they have gained advantages in terms of workforce and time in almost every activity beyond computer use. The data sets that continue to grow day by day disclose the need for professional accountants to benefit from big data technology (Aslan & Özerhan, 2017).

Examples of the ways that professional accountants should follow to integrate big data technology into their professional activities are as follows (Aslan & Özerhan, 2017):

- *Developing an effective internal control mechanism for monitoring and controlling data sets by developing new models for data analysis,*
- *Using big data technology in decision-making processes,*
- *Incorporating big data technology in risk management to increase business value.*
- *Using big data technology for regulatory compliance and managerial evaluations.*

Blockchain and Accounting: The impact of blockchain technology in the field of accounting has started with the fact that the recording and storage processes of digital currencies are similar to the recording and storage processes in accounting. There is a two-sided registration system in both accounting and cryptocurrencies. In fact, when examining the name of the blockchain registry tools, the word "ledger", which means ledger, is encountered. In the future, it is possible to see the blockchain technology changes accounting recording systems or accounting information systems (Doğan & Ertugay, 2019).

3.2. Expected Characteristics of Accounting Professionals in the Future

Considering the above-mentioned digital technologies, the accounting profession will enter into a digital evolution, and accounting professionals will have to adapt to the change by improving themselves in terms of professional competence. The examples of the skills that professional accountants should have in the process of the Industry 4.0 and the digital transformation of accounting can be given as follows (Tekbaş, 2019):

Analytical Skills: Analytical skills, one of the most critical skills for professional accountants in the future, refers to the ability to analyze both theoretical and practical data and to have an analytical understanding.

Business Intelligence: Professional accountants will have to use their business intelligence to further their business, both individually and institutionally, to produce financial solutions and make strategic decisions.

Digital Literacy: Digital literacy skills are indispensable for professional accountants to adapt to rapidly changing and renewing technologies and continuously advance their profession. As new technologies enter our lives every day, even hourly, it is impossible for professional accountants to

be successful for a long time by using the same software or programs.

Creativity: One of the most important conditions to adapt to the world of technology, which is in constant and dizzying change, and to stay up-to-date individually is to be creative.. It is clear that professional accountants who cannot imagine how to integrate new technologies into their profession or who cannot produce professionally creative solutions will face great difficulties in the future.

3.3. Accounting Education and Expectations

Accounting is an area of great importance in all segments of society in countries. Many information users, such as investors, customers, partners, government, vendors, or managers, need and use the information produced by accounting (Jones & Sharma, 2021). The number and diversity of the circles that use the information produced by accounting increase the importance of accounting education. In this context, accounting education should have an infrastructure appropriate to global and local developments that can be continuously updated and transformed in line with the needs (Sevim et al., 2018).

The accounting profession, one of the professions affected by the Industry 4.0 and digital transformation, can adapt to the transformation by quickly updating existing training. All kinds of education in the accounting field should be removed from having only a theoretical structure, and should be brought to a structure that focuses on teaching applied and digital technologies. Otherwise, accounting professionals who do not renew themselves and students who are starting a business life and want to step into the accounting profession may face unemployment soon. In this respect, it is vi is importantto pay attention to the following issues for the training in the field of accounting at all levels:

- *Taking steps to increase digital literacy starting from the undergraduate level,*
- *Adding simulation training on digital technologies to prevent accounting courses from only having a theoretical structure,*
- *Organizing training to increase awareness about the Industry 4.0,*
- *Providing students or accounting professionals to receive practical training and gaining experience by finding businesses that actively use digital technologies,*
- *Continually organizing up-to-date training for professional accountants via relevant institutions.*

4. RESEARCH ON THE STUDENTS OF THE BUSINESS ADMINISTRATION DEPARTMENT

The digital transformation via the impact of the Industry 4.0 will change many professions. One of the areas that Industry 4.0 will most affect is accounting. There will be many changes in accounting and accounting profession over time. The department of business administration, bring people to the accounting sector after graduation mostly, enable them to to adapt to these changes, to take precautions, to develop their competencies and to be aware of all these changes and transformation processes. For this reason, the application part of the study was carried out on the students of the department of business administration.

4.1. Subject, Purpose, and Importance of the Research

The business administration department students' perspective toward the Industry 4.0 (EBA) and their attitude to the relationship between accounting courses and the Industry 4.0 (MUDEN) were investigated in this study.

The first aim of the research is to reveal whether the students' perspective of the business administration department toward the Industry 4.0 shows a significant difference according to sex, age, academic year, department, and GPA. The second aim of the research is disclose whether the

attitude of the students of the business administration department towards the relationship between accounting courses and the Industry 4.0 differs significantly according to sex , age, academic year, department, and GPA or not.

The main reasons for choosing this subject for the research are that it is a very current issue in Turkey, as well as the fact that it will maintain its actuality for a long time and that the tendency towards this issue will continue to increase in the future. Through the impact of the Industry 4.0 and digitalization, many innovations will inevitably come to our country. Since these innovations will bring a different change or transformation with each day, the students of the business administration department have to develop and change themselves in line with these innovations.

To take a more stable place in the sector in the future, to make a difference in the global competitive environment, and be a pioneer in integrating all new generation technologies into their profession, business administration students must be aware of the Industry 4.0,the innovations it brings and constantly update themselves in this direction.

In line with all this information, for the students of the business administration department to be involved in the process, to improve themselves, and to create their awareness early, these issues should be incorporated into accounting courses; accounting courses should be constantly updated in terms of content, lecturers should keep themselves constantly updated, and students should receive various training to keep up with the changes.

4.2. Literature Review

In the literature review, there are different studies in which digital transformation and accounting are associated. The main subjects of this study are to reveal the digital transformation of accounting, its impact on accounting education, and the thoughts of students who have a high potential to work as accountants after graduation. For this reason, the summary literature table includes studies that examine how digital transformation is related to accounting education and how accounting professionals will be affected by digital transformation. The summary information on the studies reached in the literature review is given on Table 1.

Table 1. Summary Information on the Studies Reached in Literature Review

Author	Year	Findings
Damayanti	2018	In the study, which examines the effects of the Industry 4.0 on accounting systems, it was concluded that the traditional reporting system would change, big data would be included in accounting systems, the need for professional accountants who only perform traditional accounting procedures would decrease, and accounting professionals should also improve themselves in information technologies.
Tutar	2019	The Industry 4.0 and its innovations were examined, and its possible effects on accounting were discussed. It has been concluded that accounting education offered at universities should be reshaped according to the Industry 4.0 and become more suitable for the requirements of the age.
Kruskopf et al.	2020	The study, which examined how the fields of accounting and auditing are affected by the digital technologies that come with the Industry 4.0, concluded that accounting professionals should constantly update themselves on rapidly changing digital technologies and that human-machine compatibility would increase and the existing skills of accounting professionals would lose their importance by experiencing change.

Kurnaz et al.	2020	To measure the impact of digitalization on accounting education and the adequacy of accounting education in terms of implementation, a survey was applied to accounting professionals. It was also concluded that digital technologies were not sufficiently included in the current accounting education, accounting education should be shaped in line with the needs of the business world and digital technologies should be included more in accounting education.
Şen & Aracı	2021	The study emphasized that the field of accounting will gain a new dimension with Industry 4.0 technologies. It was concluded that accounting education should be integrated into digitalization by examining the effects of Industry 4.0 on accounting education in order for both employees and students to be successful in the future.
Bağdat	2022	In the study, 13 universities were examined and it was aimed to reveal the adequacy of the courses covering e-accounting and Industry 4.0 technologies in the departments where accounting education is given at higher education level in the E-transformation process. Then, it was concluded that more importance should be given to Industry 4.0 technology and e-accounting courses in departments providing education in the field of accounting in higher education.
Bulut-Deniz	2022	The study focuses on the impact of digitalization on accounting and finance education, accounting profession and accounting professionals and a literature review was conducted on the studies conducted in Turkey on this subject.
Cunha et al.	2022	In the study, it is stated that since the accounting profession will take a different form in the future with technological developments and changes in the markets, students who will work in the field of accounting should adapt to this situation. In the study in which the accounting courses in the universities in Portugal were examined and compared with the literature review, it was concluded that students and employees should have technical skills in accordance with technological developments.
Gonçalves et al.	2022	The study investigated how digital transformation and the Industry 4.0 will affect accounting and applied the semi-structured interview method to small-medium-sized accounting firms. As a result of the study, it was concluded that artificial intelligence and robotics would be very practical on accounting and offer various advantages, it is challenging to prove the effects of digital transformation on accounting, it is also inevitable for accounting professionals to undergo a digital transformation, and many other studies should be conducted to clearly reveal the effects of digital transformation on accounting.

4.3. Research Method

Within the scope of the research, a questionnaire was applied to the students of the business administration department. The applied questionnaire was created by compiling the questionnaire statements in two separate scientific studies, one foreign and the other local. The survey, which was initially planned to be applied face-to-face, has been decided to be applied online, as the Covid-19 disease has turned into a pandemic affecting the whole country and universities. The questionnaire was applied face-to-face to 54 students at the first stage, and a Pilot Test was conducted. Then, Google Forms (Google Survey) was used as a tool in the data collection phase. The survey questions were transferred to the digital environment and applied online.

The first of the sources used for creating the questionnaire is the study entitled “Awareness and Perception of Accounting Students towards Industrial Revolution 4.0” by Omar and Hasbolah (2018). The statements taken from the study were translated into Turkish from English, the language in which they were written. The other source is the study entitled “Investigation of the Relationship

between the Factors Causing Stress and Attitudes Towards the Course in Undergraduate Level Accounting Students" prepared by Cengiz and Tekin, (2019). Not all of the expressions in the questionnaire were used, but the expressions suitable for the research were included.

IBM SPSS Statistics 22 Package Program was used to analyze the data set obtained from the survey application. Factor Analysis, Reliability Analysis, Variance Analysis, and Multiple Comparison Post Hoc Tests were performed for the obtained data set.

4.4. Sample, Constraints, and Hypotheses of the Study

The research population consists of public universities in Turkey including undergraduate business administration departments. The sample of the research consists of 23 universities that have the highest quota for the department of business administration among the public universities in Turkey. Business administration departments are generally divided into Business Administration (Formal Education), Business Administration (Evening Education), and Business Administration (English) sub-programs. Different departments such as Business Administration (German) are also available in small numbers. For this reason, in the analysis part of the research, the department of business administration is divided into Business Administration (Formal Education), Business Administration (Evening Education), Business Administration (English), and Business Administration (Other).

All necessary official permissions were obtained for sending the online questionnaire to 23 universities. The questionnaire was sent to all 23 universities with an official letter by Eskişehir Osmangazi University Rectorate. While seven out of 23 universities (Eskişehir Osmangazi University, Dokuz Eylül University, Akdeniz University, Çukurova University, Bursa Uludağ University, Afyon Kocatepe University, and Selçuk University) responded positively to our questionnaire application request with an official letter, one (Erciyes University) has responded negatively to our request due to the shortages in education and training under pandemic conditions. No positive or negative feedback was received from the remaining 15 universities.

Our questionnaire was sent to the relevant universities online, and its application was realized. A total of 491 students participated in our survey, 54 of which were face-to-face, and statistical analyzes were made on the data set consisting of the responses of 491 students to the statements.

The most important parts at the stage of evaluating the statistical results of the research are the hypotheses. It is necessary to establish a different hypothesis for each relationship that we want to test in our research and which we believe will emerge later (Gürbüz & Şahin, 2018). All hypotheses can be viewed in their respective sections.

4.5. Findings of the Research

In the findings section of the study, firstly, the demographic findings, then the findings of the explanatory factor analysis and reliability analysis were discussed. In the last part, the findings of the variance analysis and the results of the acceptance or rejection of the hypotheses were discussed.

4.5.1. Statistics on Demographic Information

Table 2 shows the demographic findings of the students who participated in the survey. The total number of students participating in the survey is 491.

Table 2. Findings Related to Demographic Variables

Valid Data	**Sex**	**n**	**%**
	Female	278	56.6
	Male	213	43.4
	Total	491	100
	Department	**N**	**%**
	Business Administration (Formal Education)	274	55.8
	Business Administration (Evening Education)	117	23.8
	Business Administration (English)	66	13.4
	Business Administration (Other)	34	6.9
	Total	491	100
	Academic Year	**N**	**%**
	First Academic Year	71	14.5
	Second Academic Year	66	13.4
	Third Academic Year	114	23.2
	Fourth Academic Year	240	48.9
	Total	491	100
	Age	**N**	**%**
	20 and under	73	1.9
	21-22	167	34
	23-24	137	27.9
	25 and over	114	23.2
	Total	491	100
	GPA	**N**	**%**
	2.00 and below	84	17.1
	2.01-2.50	180	36.7
	2.51-3.00	115	23.4
	3.01-3.50	88	17.9
	3.51 and above	24	4.9
	Total	491	100

Source: Collected Data

As in Table 2, 56.6% of the 491 students who participated in the survey were female, and 43.4% were male. In terms of the differences between the departments, it can be asserted that 55.8% of the participants are from the Business Administration (Formal Education), 23.8% are from the Business Administration (Evening Education), 13.4% are from the Business Administration (English), and 6.9% are from the Business Administration (Other). While fourth academic year students constitute 48.9% of the participating students; 14.5% are first academic year students, 13.4% are the second academic year, and 23.2% are the third academic year students. Students aged 20 years and below constitute 14.9% of the total number of participants, students aged 21-22 constitute 34%, students aged 23-24 constitute 27.9%, and students aged 25 years and above constitute 23.2%. By examining the distribution of the GPA of the participants, it can be said that 17.1% had a GPA of 2.00 and below, 36.7% had a GPA of 2.01-2.50, 23.4% had a GPA of 2.51-3.00, 17.9% had a GPA of 3.01-3.50, and 4.9% had a GPA of 3.51 and above.

4.5.2. Factor and Reliability Analysis

Explanatory factor analysis to ensure the construct validity of the scales in the research; Cronbach's Alpha method was benefited to reveal the reliability levels.

4.5.2.1. Factor and Reliability Analysis of the Industry 4.0 Perspective (EBA) Statements

Explanatory factor analysis and reliability analysis were performed to determine the structural validity of the scales used in the study and how many sub-factors the statements were collected.

Table 3. Findings Related to Explanatory Factor Analysis (EBA)

Factors	Scale Item	Load	Explained Variance Value	Eigenvalue
Factor 1: The Industry 4.0 Awareness	15. The Industry 4.0 represents the industrial future.	0722	25.687	4.110
	20. The Industry 4.0 is more than automation and data exchange.	0697		
	18. The Industry 4.0 components include the concepts of smart factory, big data, and the Internet of things.	0695		
	19. The Industry 4.0 is about the digital transformation of the industry.	0686		
	14. I am aware of the Industry 4.0.	0638		
	12. The Industry 4.0 is a new evolution that makes automation processes smarter and better.	0618		
	10. The Industry 4.0 will increase the efficiency of processes within the organization.	0.583		
	8. In line with the Industry 4.0, the current roles of accounting will evolve toward new capabilities in data analytics.	0.539		
Factor 2: Impact on the Accounting Profession	2. With the emergence of the Industry 4.0, the robot technology will replace accountants in the future.	0.789	10.375	1.660
	5. Accounting duties, including auditing, will become fully automated with the use of artificial intelligence-based technologies that come with the Industry 4.0.	0.737		
	4. The Industry 4.0 will cause mass unemployment.	0.605		
Factor 3: Future Impacts	9. In the Industry 4.0, the problem of information security is the biggest concern.	0.705	8,029	1,285
	13. The Industry 4.0 will significantly impact the recruitment of accounting graduates.	0.595		
	7. The Industry 4.0 will increase the demand for accountants who will develop challenging technology, data analysis, critical thinking and adaptability skills.	0.574		
Factor 4: Prepare for The Industry 4.0	1. Turkey is ready for the Industry 4.0.	0.796	7,112	1,138
	16. The Industry 4.0 is similar to previous industrial revolutions.	0.614		
Total Variance Explained (%)				51.203
KMO Sampling Adequacy Measure				0,828
Barlett Sphericity Test			**Chi-Square:** 1651.742; **Significance:** 0.000	

Source: Collected Data

Table 3 shows the statistical results of the explanatory factor analysis. The Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were used to test the suitability of whether or not to perform exploratory factor analysis. The KMO Sampling Adequacy Measure value appears to be 0.828. This value, which is expected to be in the range of 0-1 and close to 1, turned out to be 0.828 in our analysis, indicating that our sample is very suitable for explanatory factor analysis. According to the results of the Barlett's Sphericity Test, the Significance value is 0.000, and it was concluded that our scale was suitable for explanatory factor analysis once again. The approximate Chi-Square value was 1651.742.

Explanatory factor analysis was carried out to see how many sub-dimensions could be examined from the perspectives of business students toward the Industry 4.0. According to the result of the factor analysis, the perspectives on the Industry 4.0 are divided into four dimensions. These factors

are named as “the Industry 4.0 Awareness (Factor 1)”, “Impact on the Accounting Profession (Factor 2)”, “Future Impacts (Factor 3)” and “Prepare for the Industry 4.0 (Factor 4)” asin Table 3. These four dimensions identified explain 51.20% of the total variance.

Investigating the other statistical results in Table 3, it is evident that there are four factors with eigenvalues greater than one. The contribution of the factors emerging from the statements of the perspective on the Industry 4.0, which is the first scale of the study, to the variance explained after rotation is given in Table 4.

It is clear that the variance explained by the first two factors after rotation is over 10%, and the last two factors are below 10%. The sum of the contributions of the last three factors to the explained variance is 25.516%. The contribution of the first factor to the explained variance is 25.687% and is more than the sum of the contributions of the last three factors. The contribution rates of the last three factors to the explained variance are relatively lower individually and in total. Which factors loaded more on the 16 expressions in the first scale of the study after the rotation process can be observed in Table 3. Most of the statements are collected in the first two factors.

When all these statistical results of the explanatory factor analysis are evaluated together and their relationship with the hypotheses is discussed, all factors will be considered in a single dimension as the perspective on industry 4.0 (EBA).

For the EBA, the reliability analysis results are also important after the explanatory factor analysis. As a result of the reliability analysis, the Cronbach's Alpha Coefficient (α) of the 16-item scale is 0.742. For Cronbach's Alpha value, values of 0.60 and above can be considered reliable in some sources, while values of 0.70 and above are generally accepted as reliable. The Cronbach's Alpha value of the Industry 4.0 perspective scale was found to be 0.742, taking place between 0.60 and 0.80, and it was concluded that the scale was quite reliable.

4.5.2.2. Factor and Reliability Analysis of the Attitude towards the Relationship between Accounting Courses and the Industry 4.0 (MUDEN) Statements

There are 15 statements in the Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 (MUDEN) section, which is the second part of the questionnaire. As a result of the Factor Analysis, five statements were removed because they were loaded on more than one factor and negatively affected the result of the reliability analysis. Explanatory factor analysis was performed again as a result of the removal of five statements, and the statistical results of a total of ten statements were evaluated.

Table 4. Findings on Explanatory Factor Analysis (MUDEN)

Factors	Scale Item	Load	Explained Variance Value	Eigenvalue
Factor 1: The Industry 4.0 and Digitalization Education	27. I would like to learn more about the Industry 4.0.	0.826	37.828	3.783
	25. It is important for students to have knowledge about the Industry 4.0 and its relationship with accounting.	0.789		
	23. I would like to attend any seminar or talk about the Industry 4.0.	0.758		
	30. Including digital technologies in accounting classes will provide an advantage after graduation.	0.736		
	24. Students have a lack of knowledge about the Industry 4.0.	0.643		
	35. The Industry 4.0 and its innovations should be given more space in accounting courses.	0.640		
	26. Industry 4.0 will change the learning methods in accounting courses.	0.638		
Factor 2: Overview of Accounting Courses	22. In accounting courses, information is given about the Industry 4.0 and its relationship with accounting.	0.813	14.884	1.488
	31. I am curious and follow the developments in the accounting field.	0.636		
	28. Instructors follow the innovations in the accounting field and share them with their students.	0.564		
Total Variance Explained (%)				52.712
KMO Sampling Adequacy Measure				0.825
Barlett Sphericty Test		**Chi-Square:** 1472.354; **Significance:** 0.000		

Source: Collected Data

Table 4 shows the statistical results of the explanatory factor analysis. KMO and Bartlett's tests were used to test the suitability of whether or not to perform exploratory factor analysis. KMO Sampling Adequacy Measure appears to have a value of 0.825. This value, which is expected to be in the range of 0-1 and close to one , turned out to be 0.825 in our analysis, indicating that our sample is highly suitable for explanatory factor analysis. According to the results of the Barlett's Sphericity Test, the Significance value is 0.000, and it is concluded that our scale is suitable for explanatory factor analysis once again. The approximate Chi-Square value was 1472.354.

Explanatory factor analysis was carried out to see how many sub-dimensions could be examined from the MUDEN statements. According to the result of the factor analysis, attitudes of the students towards the relationship between accounting courses and the Industry 4.0 are divided into two sub-factors. As seen in Table 4, these factors are named as “Industry 4.0 and Digitalization Education (Factor 1)” and “Overview of Accounting Courses (Factor 2)”. The two sub-dimensions identified explain 52.71% of the total variance.

Looking at the other statistical results in Table 4, it is seen that there are two factors with eigenvalues greater than 1. The variance explained by the first factor after rotation was 37.82%, and the variance explained by the second factor after rotation was 14.88%. The contribution rate of the second factor to the explained variance is lower than the contribution rate of the first factor.

Upon evaluating all these statistical results related to the explanatory factor analysis of MUDEN together and upon considering the relationship with the hypotheses, the two factors will be discussed in one dimension: the Attitude towards the Relationship between Accounting Courses and the Industry 4.0.

After the explanatory factor analysis for the MUDEN, the reliability analysis results are as follows.

As a result of the reliability analysis, the Cronbach's Alpha Coefficient (α) of the 10-item scale is 0.721. For Cronbach's Alpha value, values of 0.60 and above can be considered reliable in some sources, while values of 0.70 and above are generally accepted as reliable. The Cronbach's Alpha value of the Industry 4.0 perspective scale was found to be 0.721, between 0.60 and 0.80, and it was concluded that our scale was quite reliable.

4.5.3. Variance Analysis

After evaluating the results of the explanatory factor analysis and reliability analysis of the survey perspective on the Industry 4.0 and the attitude to the relationship between accounting courses and the Industry 4.0, the relationship between sex, department, academic year, age, and mean grade scores with these dimensions, statistical results, and acceptance or rejection of hypotheses wereexamined. The one-way ANOVA test, which is used when more than two groups are desired to be evaluated in studies, is also known as variance analysis. When there are more than two groups, the one-way ANOVA test is applied to see if the mean scores of these groups are equal to each other (Gürbüz and Şahin, 2018). For this reason, a one-way ANOVA test was applied since the variables of age, academic year, department, and GPA consisted of more than two groups. Since the sex variable consisted of two groups, Independent Samples T-Test was performed.

4.5.3.1. Variance Analysis by Sex

Independent samples T-Test was applied to see if there was a sex-based significant difference in Industry 4.0 perspective and attitude towards the relationship between accounting courses and the Industry 4.0. Table 5 shows the statistical results of the independent samples T-Test applied regarding the perspectives of male and female students toward the Industry 4.0 and their attitudes toward the relationship between accounting courses and the Industry 4.0.

Table 5. Independent Samples T-Test Table by Sex

			n	$\bar{x}$	s.s.	t	p
EBA	Sex	Female	278	3.68	0.408	2.639	0.009
		Male	213	3.58	0.431		
MUDEN	Sex	Female	278	3.81	0.510	2.119	0.035
		Male	213	3.70	0.575		

Source: Collected Data

According to the T-Test applied, the Industry 4.0 perspective shows a significant difference according to sex ($p<0.05$). When the mean scores are examined, it has been determined that female students have more caring perspective on the Industry 4.0 (3.68) than male students. Accordingly "H1: Students' Perspective on the Industry 4.0 differs significantly according to their sex." was accepted

Attitudes towards the relationship between accounting courses and Industry 4.0 also show a significant difference by sex ($p<0.05$). When the mean scores are examined, it has been determined that female students' attitudes toward the relationship between accounting courses and the Industry 4.0 (3.81) are higher than male students. Accordingly "H2: Students' Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 differ significantly according to their sex" was accepted.

4.5.3.2. Variance Analysis by Age

Since the one-way ANaVA test is used when we want to evaluate more than two groups in scientific research, this analysis technique was used to test whether there is a significant difference in EBA or MUDEN according to age.

Table 6. One-Way ANOVA and Multiple Comparison LSD Test Results by Age

w		n	x̄	s.s.	F	p	Post-Hoc (LSD)
EBA	**1.** 20 and under	73	3.63	0.410	8.211	0.000	2-3, 2-4
	2. 21-22	167	3.52	0.432			
	3. 23-24	137	3.74	0.377			
	4. 25 and over	114	3.68	0.419			
MUDEN	**1.** 20 and under	73	3.71	0.511	2.941	0.033	2-3, 2-4
	2. 21-22	167	3.67	0.624			
	3. 23-24	137	3.82	0.482			
	4. 25 and over	114	3.83	0.476			

Source: Collected Data

As seen in Table 6, it can be said that the p-value for EBA (Significance) was less than 0.05, resulting in 0.000, and for MUDEN, the p-value (Significance) was less than 0.05, resulting in 0.033. In line with this result, it is apparent that there is a significant difference according to age groups in the perspective of the Industry 4.0 and attitudes towards the relationship between accounting courses and Industry 4.0. Accordingly "H3: Students' Perspective on the Industry 4.0 differs significantly according to their age." and "H4: Students' Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 differ significantly according to their age." were accepted. However, it cannot be understood between which groups the significant differences are by examining the one way ANOVA test. LSD Test, one of the Post Hoc multiple comparison tests, was applied to see the significant differences between age groups.

Investigating the last column of Table 6, it is seen that both EBA and MUDEN show a significant difference between which age groups. According to these results, it is obvious that there is a significant difference in the students' perspectives in the 21-22 age group ($\bar{x}$=3.52; ±0.432) with both the students in the 23-24 age group ($\bar{x}$=3.74; ±0.377) and the students in the 25 years and over age group ($\bar{x}$=3.68; ±0.419) ($p < 0.05$).

Significant differences in attitudes towards accounting courses and the Industry 4.0 are between students in the 21-22 age group ($\bar{x}$=3.67; ±0.62448) and students in the 23-24 age group ($\bar{x}$=3.82; ±0). 48270) and students in the 25 years and over age group ($\bar{x}$=3.83; ±0.47610) ($p<0.05$).

4.5.3.3. Variance Analysis by Academic Year

Since the one-way ANOVA test is used when we want to evaluate more than two groups in scientific research, this analysis technique was used to test whether there is a significant difference in EBA or MUDEN according to age.

Table 7. One-Way ANOVA and Multiple Comparison LSD Test Results by Academic Year

Class		n	x̄	s.s.	F	p	Post-Hoc (LSD)
EBA	**1.** First Academic Year	71	3.68	0.437	10.940	0.000	1-3, 2-4, 3-4
	2. Second Academic Year	66	3.57	0.409			
	3. Third Academic Year	114	3.47	0.432			
	4. Fourth Academic Year	240	3.73	0.388			
MUDEN	**1.** First Academic Year	71	3.60	0.519	3.507	0.015	2-4
	2. Second Academic Year	66	3.74	0.608			
	3. Third Academic Year	114	3.83	0.501			
	4. Fourth Academic Year	240	3.76	0.541			

Source: Collected Data

As seen in Table 7, it is evident that the p-value for EBA (significance) was less than 0.05, and 0.000; for MUDEN, the p-value (significance) was less than 0.05, and 0.015. In line with this result, it can be said that there is a significant difference according to academic years both in the perspective of

the Industry 4.0, accounting courses, and attitude towards the Industry 4.0. Accordingly "H5: Students' Perspective on the Industry 4.0 differs significantly according to their academic years." and "H6: Students' Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 differ significantly according to their academic years." hypotheses were accepted. However, it cannot be understood between which groups the significant differences were by examining the one way ANOVA. LSD Test, one of the Post Hoc multiple comparison tests, was applied to see the significant differences between academic years ere.

When we look at the last column of Table 7, it is clear that both the perspective on the industry 4.0 and the attitude towards accounting courses and the industry 4.0 show a significant difference between grades. According to these results, it is also clear that there is a significant difference between first grade students ($\bar{x}$=3.68; ±0.437) and third grade students ($\bar{x}$=3.47; ±0.432); fourth grade students ($\bar{x}$=3.73; ±0.388) and second grade students ($\bar{x}$=3.57; ±0.409) and third grade students ($\bar{x}$=3.47; ±0.432) in the perspective of the Industry 4.0 ($p<0.05$).

Significant differences in the attitude toward the relationship between accounting courses and the Industry 4.0 are between second grade students ($\bar{x}$=3.74; ±0.608) and fourth grade students ($\bar{x}$=3.76; ±0.541) ($p<0.05$).

4.5.3.4. Variance Analysis by Department

Since the one-way ANOVA test is used when we want to evaluate more than two groups in scientific research, this analysis technique was used to test whether there is a significant difference in EBA and MUDEN according to age.

Table 8. One-Way ANOVA and Multiple Comparison LSD Test Results by Department

Departments		n	$\bar{x}$	s.s.	F	p	Post-Hoc (LSD)
EBA	**1.** Business Administration (Formal Education)	274	3.64	0.401	0.278	0.842	-
	2. Business Administration (Evening Education)	117	3.61	0.463			
	3. Business Administration (English)	66	3.65	0.440			
	4. Business Administration (Other)	34	3.62	0.391			
MUDEN	**1.** Business Administration (Formal Education)	274	3.82	0.544	3.598	0.014	1-2,1-3
	2. Business Administration (Evening Education)	117	3.70	0.542			
	3. Business Administration (English)	66	3.62	0.505			
	4. Business Administration (Other)	34	3.69	0.509			

Source: Collected Data

As seen in Table 8, the p-value (significance) for EBA was 0.0842, greater than 0.05, and the p-value (significance) for MUDEN was 0.014, lower than 0.05. In line with this result, it is clear that while there is no significant difference according to departments in the perspective of the Industry 4.0, there is a significant difference in accounting courses and attitude towards the Industry 4.0 according to departments. Accordingly "H7: Students' Perspective on the Industry 4.0 differs significantly according to their departments." was rejected, while the hypothesis of "H8: Students' Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 differs significantly according to their departments" was accepted. This test was not applied to the EBA scale, as no significant difference was found in the perspective of the Industry 4.0.

Looking at the last column of Table 8, it is clear that the attitude towards the relationship between accounting courses and the Industry 4.0 differs significantly between departments. According to these results, it is seen that there is a significant difference between the students of the Business Administration Department (Formal Education) ($\bar{x}$=3.82; ±0.544) and the students of the Business Administration Department (Evening Education) ($\bar{x}$=3.70; ±0.542) and the students of the Business Administration Department (English) ($\bar{x}$=3.62; ± 0.505) and their attitudes to the relationship

between accounting courses and the Industry 4.0 ($p<0.05$).

4.5.3.5. Variance Analysis by GPA

As seen in Table 9, the p-value (significance) for EBA was 0.001, lower than 0.05, and the p-value (significance) for MUDEN, higher than 0.05, was 0.109. In line with these results, it is clear that while there is no significant difference according to the GPAs of the accounting courses and attitude towards the Industry 4.0, there is a significant difference according to the GPAs of the students in the perspective of the Industry 4.0.

Table 9. One-Way ANOVA and Multiple Comparison LSD Test Results by GPA

GPA		n	$\bar{x}$	s.s.	F	p	Post-Hoc (LSD)
EBA	**1.** 2.00 and below	84	3.48	0.338	4.618	0.001	1-2, 1-3, 1-4, 1-5
	2. 2.01-2.50	180	3.64	0.441			
	3. 2.51-3.00	115	3.73	0.380			
	4. 3.01-3.50	88	3.64	0.445			
	5. 3.51 and above	24	3.67	0.479			
MUDEN	**1.** 2.00 and below	84	3.81	0.588	1.904	0.109	-
	2. 2.01-2.50	180	3.67	0.529			
	3. 2.51-3.00	115	3.82	0.530			
	4. 3.01-3.50	88	3.80	0.514			
	5. 3.51 and above	24	3.81	0.556			

Source: Collected Data

Accordingly "H9: Students' Perspective on the Industry 4.0 differs significantly according to their mean grade scores." was accepted and "H10: Students' Attitudes to the Relationship Between Accounting Courses and the Industry 4.0 differ significantly according to their GPA." was rejected. The groups between which the significant differences are between cannot be understood by looking at the results of one-way ANOVA test.. The LSD Test, one of the Post Hoc multiple comparison tests, was applied to see which GPAs differ significantly in the perspective of the Industry 4.0. This test was not applied to the MUDEN scale, as there was no significant difference in the attitude to the relationship between accounting courses and the Industry 4.0.

As seen in the last column of Table 9, it is evident that the point of view towards the Industry 4.0 differs significantly among students according to GPA. According to these results, students with a GPA of 2.00 and below ($\bar{x}$=3.48; ±0.338), students with a GPA between 2.01-2.50 ($\bar{x}$=3.64; ±0.441), students with a GPA between 2.51-3.00 ($\bar{x}$=3.73; ±0.380), students with a GPA between 3.01-3.50 ($\bar{x}$=3.64; ±0.445), and students with a GPA of 3.51 and above ($\bar{x}$=3.6; ±0.380). 01-3.50 GPA ($\bar{x}$=3.64; ±0.445), and 3.51 and above GPA ($\bar{x}$=3.6; ±0.479) had a significant difference in terms of the Indstury 4.0 perspective ($p<0.05$).

5. CONCLUSION

Following the emergence of the concept of the Industry 4.0, it included many digital technologies in our lives and soon became associated with digital transformation. The Industry 4.0, which is associated with information technologies and digitalization, will need to be addressed with a dimension that creates business value and includes risk management, legislation and managerial compliance. Through the development of information technologies, the spread of internet networks and the increase in the variety and use of digital technologies; a transformation process has started in terms of many professions that possibly will experience change and transformation. Furthermore, factories will become intelligent facilities by making use of digital technologies, and businesses in various sectors are working to integrate into digital transformation both institutionally and on the basis of employees. .

The survey method was used in the research in which the students' perspectives of the business department towards the Industry 4.0 and their attitudes towards the relationship between accounting

courses and the Industry 4.0 were examined. 56.6% of the students participating in the research are female, and 44.4% are male. The programs with the highest number of participating students were business administration department formal education (55.8%) and business administration department evening education (23.8%). Considering which academic year the participating students are mostly, it is evident that 48.9% of the participating students are fourth academic year students and 23.2% are third academic year students. When we look at the distribution of participant students by age, it has also been revealed that they are predominantly between the ages of 21-22 (34%) and 23-24 (27.9%).

According to the research results, eight of the ten hypotheses determined before the research were accepted and two were rejected. It is understood that students' perspectives on the Industry 4.0 show a significant difference according to sex, , age, academic year and GPA, but there is no significant difference according to their departments. According to the other research results, it is understood that students' attitudes towards the relationship between accounting courses and the Industry 4.0 show a significant difference according to sex,, age, academic year and department. However, there is no significant difference according to their GPA.

It has also been concluded that female students' perspectives on the Industry 4.0 and their attitudes toward the relationship between accounting courses and the Industry 4.0 are more significant than male students. The perspectives of the third and fourth academic year students towards the Industry 4.0 and their attitudes towards the relationship between accounting courses and the Industry 4.0 are more significant than the first and second nd academic year students. The reason for this is that the students at the graduation stage are following the current developments by conducting sector research with the anxiety of finding a job. It has also been seen that students with higher GPAs have a more significant perspective of the Industry 4.0 than students with lower GPAs.

When the answers given to the statements in the research are examined, the following can be stated as other remarkable issues: Students participated in the research are generally aware of the Industry 4.0 and are aware that digital transformation will occur in the accounting profession with the Industry 4.0. It was also concluded that the students, who stated that they want to attend more seminars and events about the Industry 4.0, were aware the Industry 4.0 will significantly affect their recruitment processes in the future. We can emphasize that the participating students believe that with the Industry 4.0, the accounting profession will evolve towards new talents and the need for professional accountants with the skills required by digitalization will increase.

Other remarkable answers from students participating in the research can be stated as follows: According to the answers given by the students who participated in the research, accounting courses are insufficient in terms of including the relationship between the Industry 4.0 and accounting. According to the opinions of the participating students, it is not enough for the instructors to follow the innovations in the accounting field and share these innovations with the students in the course. Students think that the Industry 4.0 and its innovations should be included more in accounting courses and that digital technologies in accounting courses will be an advantage after graduation.

The Industry 4.0 and its digital technologies have led to a new evolution in the accounting profession and accounting practices. While performing the functions of accounting applications in businesses, it should also be ensured that digital technologies are considered and applied as a whole in the perspective of increasing the business values of enterprises, taking measures against risks, and improving the evaluation of managerial control and measures. The digital transformation of accounting has become inevitable, and it has been concluded that people who want to be successful professionally in the global competitive environment should develop themselves in this direction. It has also been revealed that the students of the Business Administration Department, one of the groups with the highest potential to become a member of the accounting profession in the future, need to receive a more up-to-date and constantly renewable education in terms of accounting courses. Giving more space to the Industry 4.0 and the new technologies it brings to accounting education at all levels will provide students with an advantage after graduation. The fact that the students of the business

department have a favorable perspective of the Industry 4.0 in general, their awareness level is high, and they want to be more aware of the Industry 4.0.Students should be encouraged more in this regard and various projects should be implemented in which they can be involved in the process.

Throughout the country, the importance given to accounting departments, especially in applied sciences faculties, should be increased, and students should be given the opportunity to receive more intensive and specific accounting education in the perspective of application-based digital technologies. In addition, simulation-based teaching techniques should be included in accounting education. By integrating digital technologies into accounting courses, students and accounting professionals should be equipped with the technological equipment. In all kinds of accounting education, besides the theoretical parts of traditional accounting, current issues that capture the digital age requirements should be included. In addition, in cooperation with Union of Chambers of Certified Public Accountants of Turkey (TÜRMOB) and Basic Education and Training Center (TESMER), training including digital technologies should be given to the candidates of professional accountants who have passed the Internship Entrance Exam during the internship period. By expanding the limitations and sample of the study, applications related to the Industry 4.0 and digital technologies can be made to the students of the Faculty of Economics and Administrative Sciences in all state universities in the country, and especially to the students of the accounting department and other accounting department students studying at the Faculty of Applied Sciences. On the other hand, the study can be developed by making similar applications to the lecturers who provide education in the fields of Social Sciences throughout the country. In the global competitive environment, it is necessary to increase the importance given to the Industry 4.0 and digital transformation in accounting education to achieve a higher level of individual and institutionally success in every aspect and reach the desired level of an information society.

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