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EXPLORING THE IMPACTS OF DIGITALIZATION ON THE INTERNAL AUDIT PROFESSION[*]

DİJİTALLEŞMENİN İÇ DENETİM MESLEĞİ ÜZERİNDEKİ ETKİLERİNİN KEŞFİ

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Abstract

This article is based on exploratory research conducted to reveal the current and potential effects of the digitalization process, which gained momentum after the 4th Industrial Revolution, and the new concepts it brings to the internal audit profession such as IoT, AI, robotic process automation, blockchain, smart contracts, smart factories, etc. In this phenomenological research, which was designed considering that digitalization is still a very new phenomenon and the processes in business life are not fully digitalized, as a result of semi-structured interviews with 14 certified internal auditors, five different themes, namely "Digitalization Awareness", "Digitalization Adaptation in Enterprises", "Digitalization and Internal Audit", "Cyber Security and Internal Audit", "Additions/Recommendations" and 24 different related categories were obtained. In the study, predictive results were achieved regarding both the situation of the internal audit profession in the digital transformation process and its future position. As a result of the research, it was concluded that digital awareness was not sufficiently developed, especially in the real sector. Despite having a general understanding of digital technologies, this research shows that internal auditors need to improve their knowledge of related topics. Furthermore, the profession is expected to undergo a significant change in the future and serve as a center of consulting

Keywords: Internal Audit Profession, Digitalization, E-Transformation, Qualitative Research

JEL Classification: M10, M40, M42

Öz

İlgili araştırma, 4. Sanayi Devrimi sonrasında hız kazanan dijitalleşme sürecinin ve beraberinde getirdiği nesnelerin interneti, yapay zeka uygulamaları, robotik süreç otomasyonu, blok zincir, akıllı sözleşmeler, akıllı fabrikalar gibi yeni kavramların iç denetim mesleği üzerindeki mevcut ve potansiyel etkilerini ortaya çıkarmak amacıyla gerçekleştirilmiştir. Dijitalleşmenin henüz çok yeni bir olgu olduğu ve işletme süreçlerinin tam anlamıyla dijitalleşmediği göz önünde bulundurularak kurgulanan bu fenomenolojik nitel araştırmada, 14 sertifikalı iç denetçi ile yapılan yarı yapılandırılmış görüşmeler sonucunda "Dijitalleşme Farkındalığı", "İşletmelerde Dijitalleşme Adaptasyonu", "Dijitalleşme ve İç Denetim", "Siber Güvenlik ve İç Denetim", "Eklemeler ve Öneriler" olmak üzere 5 farklı tema ve bunlara bağlı 24 farklı kategori elde edilmiştir. Çalışmada hem iç denetim mesleğinin dijital dönüşüm sürecindeki durumuna, hem de gelecekteki konumuna ilişkin bulgular elde edilmiş, özellikle reel sektörde dijital farkındalığın yeterince oluşmadığı sonucuna ulaşılırken, iç denetçilerin genel bir dijital farkındalıklarının bulunmasına karşın, kendilerini dijital teknolojiler ile ilgili konularda geliştirmeleri gerektiği sonucuna ulaşılmıştır. Mesleğin gelecekte ciddi bir değişime uğrayarak bir danışmanlık merkezi olarak işleyeceği ön görülmektedir.

Anahtar Sözcükler: İç Denetim Mesleği, Dijitalleşme, E-Dönüşüm, Nitel Araştırma

JEL Sınıflandırması: M10, M40, M42

1. Introduction

It has been documented that auditing was present in the Mesopotamian civilization as early as 3500 BC. Researches in this area show that, small marks were found next to financial records and these marks are thought to symbolize the controls exercised over the records. (Sawyer, 2016) Understanding that the people who prepared the records and those who left the marks were different people is the first example of the distinction between accountants and auditors in the period. The origin of the discipline, which is relatively close to today's definition of internal audit, dates back to the railroad construction in America and England in the 19th century. Due to the nature of their business, railroad companies managed operations spread over a wide geographical area and needed an effective management accounting system to coordinate and organize actions such as logistics and distribution. (Johnson & Kaplan, 1987) This was one of the first sparks that created the need for an internal audit function.

The Securities Act of 1933 is considered to be the turning point in the development and importance of the internal audit discipline in the modern world. After the Great Depression in 1929, the concepts of financial audit and control came to the fore. Publicly traded companies were required to present financial statements that were reviewed by independent auditors. In addition to the independent audit process, this led to the necessity for enterprises to establish an internal audit function. (Meigs, 1951) Associated with the establishment of the IIA in 1941, internal audit began creating its own identity with a unique definition and responsibility framework. In the Third Industrial Revolution, improved production capabilities lead to a rapid increase in trade and globalization. But as Nathan Blecharczyk (2010) noted years later, "*With commerce comes fraud...*" Thereafter, standardization studies meticulously carried out by the IIA, the Foreign Corrupt Act, and the establishment of COSO played a significant role in bringing the internal audit profession into the spotlight. Today, internal audit is the most important building block of effective risk management, corporate governance, and a flawless internal control process.

Looking at the stage of history, it is seen that industrial revolutions have played a major role in the birth of the internal audit profession, its separation from other disciplines, and its development. Accordingly, it is an important question in which direction the 4th Industrial Revolution and the digital transformation it brings with it will take the internal audit profession. At this point, the effects of the digitalization process on the profession and how the nature and functions of the profession will be positioned in the future is a research topic that should be emphasized.

2. Literature Review

This section will focus on important studies that examine the effects of digitalization and technological transformation first on professions and then on internal audit.

2.1. Impacts of Digitalization on Professions

Digitalization and the revolutionary concepts it brings affect almost every aspect of our lives. As facilitating effects of these developments are widely discussed in daily life, the automation in question could also lead to the disappearance of some professions that are currently performed by manpower or to the redefining of some professions' job description, i.e., new job titles and job definitions.

In their research, Frey & Osborne (2017) calculated the probability of extinction of 702 different professions in the USA as a result of the computerization process. According to the study, jobs with a predominantly routine aspect have a high probability of being replaced by computers, while the probability is lower in occupational groups that depend on human relations. Study findings indicate that, telemarketers were among the occupational groups most likely to be lost to automation with 99%, while pre-accounting, accounting, and auditing clerks were listed at 98% and accountants and auditors at 94%. Another study with the same theme was conducted by Dengler & Matthes (2018) across Germany. In the study, which examined the percentage of the professions that are actively functioning today and their substitutability by computers, it was revealed that while 15% of the people working as social security insured in Germany were at serious risk in 2013, 70% of the professions were substitutable by computers. The percentage in the field of business-related services was 43.6% for specialized jobs, 37.8% for highly specialized jobs, and 27.9% for jobs requiring a complex degree of expertise, while in business management and organization, these percentages were 58.5%, 26.9%, and 19.6%, respectively.

Another study conducted by UKCES (2014) has predicted that by the early 2020s, applications with smart algorithms that can replicate human judgment and experience in the digital environment will be on the market. This serious innovation in the field of information technologies is expected to have serious impacts on traditional professions. The accounting profession, the insurance sector, and law are among the most important of these. Professional service firms may lose a significant percentage of their workforce (UK Commission for Employment and Skills, 2014).

The comprehensive report on "The Future of Jobs" published by the World Economic Forum (2020) includes detailed studies on the future fate of jobs in light of all the changes. The report includes

detailed future perspectives of industries and countries, and in this context, it is stated that an average of 20.8% of those working in "financial services" are at risk of losing their jobs. Among the new and sought-after competencies and skills for employment in the field are analytical thinking and innovation, active learning, complex problem-solving, critical thinking and analysis, creativity, originality and initiative, leadership and social influence, technology use, monitoring and control, technology design and programming, emotional intelligence, troubleshooting and user-experience.

In another study, which focuses on the effects of technological transformation on occupations and the question of whether human resources will hire machines instead of humans in the future, it is stated that businesses are integrating artificial intelligence applications and automation technologies into their processes in order to reduce costs and develop long-term automation strategies, and this situation creates a serious fear of job loss among people and has a significant impact on the increase in unemployment. The research draws three possible scenarios. These are listed as routine jobs will disappear and these processes will be maintained by technological tools, new job tasks and definitions that require human-machine integration will be developed, and there will be a serious supply of positions that require high creativity and technical knowledge (Odeibat, 2021).

The BCG also offered recommendations for policymakers, businesses, and individuals in a separate report. One of the key findings in the report states that the proposition that "jobs lost to automation will be replaced by new ones and therefore there will be no reduction in employment" can lead to serious economic problems for both individuals and countries in terms of difficulties in understanding the spirit of jobs and occupations (Strack et al., 2021).

2.2. Impacts of Digitalization on Internal Audit

Digitalization has a constantly evolving and changing systematics both in Turkey and other countries. The concepts it will bring, the areas of use of these concepts, and the changes they will cause are a subject of discussion in almost every subject. Obviously, the digitalization process, which will deeply affect the business world, will also affect the structure, elements, operational processes, and methods related to the internal audit profession. However, since digitalization is still a new process and businesses are still in the early stages of adaptation, the relevant literature remains in a more theoretical perspective. Prominent studies and opinions on the effects of digitalization on internal audits are given in the rest of the section.

The "Internet of Things" (IoT), which is one of the leading concepts symbolizing the arrival of Industry 4.0, is very important for today and future businesses and their structures. IoT, which brings with it both many opportunities and many risks, should also be closely examined by internal audit units. It is a well-known fact that, there is a serious risk that internal auditors are not familiar with the new concepts that come with technology and remain unfamiliar with their functioning. In doing so, they may be exposed to the vulnerabilities created by concepts such as the IoT. However, another risk is the risk of not being able to use the technological advantage in its favor compared to competitors by staying away from the opportunities to be offered, and it is very important that all internal bodies,

especially internal audit units, seek an answer to this question (Protiviti, 2016). In Tone at the Top (2017), artificial intelligence is presented as the future of internal audit. This article is considered important as it brings to the agenda various views on whether the internal audit profession will continue to exist in the future (The Institute of Internal Auditors, 2017).

Blockchain, which is one of the most important innovations brought by digitalization today, leads to many radical changes in audit and control procedures and even renders many of them invalid and unnecessary due to its features such as transparency, traceability, and immutability. This necessitates a review of professional standards and procedures. Rooney et al. (2017) questioned whether internal audit is ready for blockchain and all that it brings (will bring) with it. Although blockchain offers unwavering security, transparency, and many new digital solutions, the article states that the structure of internal audits and the qualifications of internal auditors need to change in certain directions, internal auditors should be subjected to detailed training on innovations, internal auditors should be involved in any project where blockchain infrastructure is installed in businesses, and the concept of continuous auditing should be adopted by all circles with blockchain adaptation; They also emphasized that internal auditors, who are cautious by the nature of their profession, should not have problems in adapting to the technology developing at a dizzying pace. Lee et al. (2018) examined the relationship between internal audit and blockchain. In their article, the authors state that blockchain is not just about bitcoin or other virtual currencies, adding that internal auditors have a lot to learn about the systematics of the chain and how it works. In this context, the authors state that the scope of internal auditors' duties will change with the blockchain, especially the testing of the information in the chain in many different ways will bring new obligations and job descriptions to internal auditors. Kumar et al. (2018) addressed the challenges and opportunities that blockchain will present to the audit field in general. However, they did not differentiate much in terms of the topics they addressed. Research conducted by Brender et al. (2019) based on interviews with auditors, indicated that all respondents expected a significant transformation in the nature of the profession in the medium term, with more than half expecting the professional orientation to be IT auditing in general. This suggests that the current profile structure of auditors may undergo a radical change. In addition to this radical change, it is obvious that blockchain will change many processes for businesses. The unalterability of the data registered in the chain will eliminate the need to develop an additional control system to protect this data. This will ensure that one of the main focuses of internal auditors is already realized, and auditors will no longer have the obligation to guarantee the accuracy and integrity of the data. In contrast, the new focus of auditors will shift to more complex areas such as systematic assessment and fraud detection (Karahan & Tüfekçi, 2019).

While the dizzying pace of technology provides many opportunities and conveniences for businesses, it also makes them more vulnerable to the outside world. To prevent this, it is very important to establish a high-level cyber security system. Güler & Arkın (2019) stated that in order to be able to talk about cyber security, first of all, cyber hygiene should be provided and the right information flow should be ensured. While stating that internal auditors should play a role as a consultant in the integration of cyber hygiene into the existing defense lines of businesses, they underlined that this

will expand the scope of internal auditors' assurance roles and that it is a serious necessity for internal auditors to be aware of their "personal risks" and to stay up-to-date in the face of cyber incidents.

As businesses increasingly adopt new technologies that will disrupt traditional understandings and methods, it is clear how important it is for internal audit functions to keep pace with these innovations. Deloitte, a world-renowned audit and consulting firm, has compiled a list of contributions that internal audit units can make in this process. Accordingly, first of all, strategic planning and adaptation activities should be carried out, and it is of primary importance to create a strategic roadmap, vision, and new goals on how new technologies can be audited. It is also important to align these with the existing enterprise risk management framework. Second, the assessment of digital risks should start as early as possible, so that vulnerabilities can be quickly identified and priority audit areas shaped. After these, statistics and indicators will be another important aspect. Establishing and using indicators of whether technological factors are working properly will always keep internal audits one step ahead. For all this to happen, internal audit experts need to adopt and master all these automation processes. In addition, senior management, which will be fed by internal audit, should be tasked with injecting new perspectives throughout the business (Deloitte, 2019).

In another study questioning what the functions and roles of internal audit will be in a digitalized world, it is stated that the digital knowledge of auditors should increase due to the fact that information technology risks, including cyber threats, are expected to come to the forefront in the coming years, the demand for consultancy activities of internal auditors will increase, and accordingly, internal auditors will undertake consultancy roles related to digital transformation activities in enterprises (Betti & Sarens, 2021).

Lenz and Jeppesen (2022) define the internal audit job as a profession "at a crossroads". They also state that business stakeholders are increasingly undervaluing the profession. In the article, it is stated that the internal audit profession has not progressed sufficiently in the last decade, all these developments jeopardize the existence of the internal audit profession, and it is suggested that the profession should be identified with the "Gardener of Governance" metaphor in the future.

3. Methodology

In the relevant section, which research method was used in the study and why, the research design chosen for the method and its justifications, the research sample, and the research questions formed were explained.

3.1. Determination of Research Method and Research Design

In this study, the semi-structured interview technique, one of the qualitative methods, was used. Quality is a concept related to what and how something is, when and where it happens, and why it happens (Dabbs, 1982). In a simple analogy, qualitative research can be defined as a set of activities that make the world meaningful through the eyes of the researcher and describe this world through interviews, conversations, photographs, or written notes. (Creswell, 2014) Instead of finding the

causes of events, and measuring and predicting the future, qualitative research focuses on how a selected group interprets their own experiences, what meanings they attribute to developing events, and how these events shape their world (Merriam & Tisdell, 2016).

For the study, it was decided that the most appropriate research design was "phenomenology", which, originating from the sciences of philosophy and psychology, is the study of the experiences of the participants in relation to any phenomenon and its essence (Giorgi, 2009; Moustakas, 1994). Phenomenology aims to uncover the essence of lived experiences by describing the reality experienced by the participants in order to discover the common meanings underlying the phenomenon (Baker et al., 1992). In the present study, the impression created by the digitalization phenomenon on internal auditors will be interpreted based on their past experiences and its possible effects on the profession will be examined

3.2. Research Sample

The sample for this study consists of Turkish internal auditors who are expected to hold at least one of the following certifications: CIA, CFE, CRMA, CAC, ITIL, CISA, or CCSA. A total of 16 internal auditors comprise the research sample, with 2 participating in the pilot study and 14 in the main study. The reason for the prerequisite of certification in the sample is to benefit from both the theoretical and practical experience of internal auditors.

The questions that are the subject of the research and the motives that paved the way for the formulation of these questions are summarized in the following flow:

Table 1: Formulation of Questions

With Industry 4.0, the concept of digitalization has entered many areas of our lives. How would you evaluate the adaptation process of businesses to these technological developments?
►   Examination of digitalization processes according to sectoral distributions
►   Evaluation of the technical infrastructure of enterprises
►   Comparison of the situation in Turkey with the situation in other countries
From an internal auditor's perspective, how would you interpret the awareness of businesses towards digitalization and the phenomena it brings with it?
►   Examining the concept of digitalization as perceived by internal stakeholders
►   Examination of internal auditors' perception of digitalization
►   Understanding whether the technical infrastructure of internal auditors is suitable for the digitalized world order
•   Understanding to what extent the academic background of internal auditors serves the needs of digitalization
•   Investigating the quality of digitalization-themed documentation and training for internal auditors
Studies indicate that some professions may end their lifespan, new professions may emerge, and some professions may evolve with the impact of digitalization. How do you see the fate of the internal audit profession in this context?
►   Investigating the continuity of the need for the internal audit profession
►   Inquiring into the change in the basic functions of internal audit
•   Discussing the attrition rate of the assurance service in the face of the phenomena brought about by digitalization

° Exemplification and elaboration of the subject with concepts such as blockchain, smart contracts, and smart factories	
• Future state of the balance of the assurance-advisory function	
► Inquiring about the change in internal audit processes	
• Examining the cyber security issue together with the new risks that digitalization will bring with it from the internal auditor's perspective	
• Analyzing artificial intelligence and robotic process automation through smart factories	
What issues have not been mentioned under the heading of digitalization in an internal audit that you consider important?	
► Measuring the scope of the study and the question set	
► Shedding light on new research topics within or outside the scope of the study	

4. Findings

As a result of the interviews, a total of 5 different themes and 24 different categories related to these themes were obtained and a coding list was obtained as shown in the table below. The number of expressions in the interviews related to each category and code is also indicated in the right column of the table.

Table 2: List of Themes, Categories, and Codes

Theme / Category / Code Title	Number of Expressions (N)
1 Digitalization Awareness	
1.1 Digitalization Awareness in Enterprises	13
1.1.1 High-Sufficient	10
1.1.2 Low-Insufficient	3
1.2 Digitalization Awareness in Internal Audit Units	16
1.2.1 High-Sufficient	10
1.2.2 Low-Insufficient	6
2 Digitalization Adaptation of Enterprises	
2.1 High Adaptation	29
2.2 Low Adaptation/Resistance	19
2.2.1 Cyber Security	2
2.2.2 Tradition/Culture	10
2.2.3 High Cost/Infrastructure	7
2.3 Challenges of Digitalization	13
2.3.1 Process	2
2.3.2 Budget Problem	4
2.3.3 Formality	2
2.3.4 Cost-Benefit Analysis	1
2.3.5 Qualified Staff Problem	3
2.3.6 Interaction Constraints	1
2.4 Technical Infrastructure	11
2.4.1 Sufficient	8
2.4.2 Insufficient	3
2.5 Pandemic Impact	8

In the "Digitalization Awareness in Enterprises" category of the "Digitalization Awareness" theme, there are 2 codes, namely "High-Sufficient" and "Low-Insufficient". In this category, the High-Sufficient code seems to be dominant (N = 10). Therefore, the participants mostly think that there is digitalization awareness in enterprises. Participants stated that they observed this awareness, especially in the finance sector. According to the participants, awareness also varies according to the scale of the companies. They also think that the pandemic process has accelerated and even necessitated this awareness. The comments of the participants regarding the other code in this category (N= 3), "Low-Insufficient" awareness, mostly emphasize the conservatism towards digitalization.

There are 2 codes in the category of "Digitalization Awareness in Internal Audit Units" belonging to the "Digitalization Awareness" theme, namely "High-Sufficient" and "Low-Insufficient". In this category, the "High-Sufficient" code seems to be dominant (N= 10). Participants mostly agree that internal audit units have digitalization awareness just like companies. Participants believe that the digitalization transformation process has forced the internal audit profession to adapt to this new structure. They stated that there is no other option to keep up with the agenda, that internal auditors should be open to change and transformation, and that they need to improve themselves with training/certifications in necessary areas. Nevertheless, there are also participants who stated that awareness of digitalization is not sufficient in internal audit units (N= 6).

The second theme of the research is "Digitalization Adaptation of Enterprises", which was analyzed under 5 categories. These categories are "High Adaptation", "Low Adaptation/Resistance", "Challenges of Digitalization", "Technical Infrastructure", and "Pandemic Impact". Although the theme of "Digitalization Adaptation of Enterprises" is similar to the theme of "Digitalization Awareness", it is not limited to "awareness" but includes participant comments on the next step, change/transformation, and adaptation. Therefore, although this theme deals with the action-oriented aspect of digitalization, the codes under it also provide information about "awareness". Awareness is a prerequisite for adaptation.

There is no separate code in the "High Adaptation" category of the "Digitalization Adaptation of Enterprises" theme, but the observations that the adaptation of enterprises is good or sufficient are collected under this code (N = 29). The codes belonging to this category seem to be more intense compared to the next category, "Low Adaptation/Resistance". It can be said that the participants mostly find the digitalization adaptation of enterprises successful. Developments in banking sector, the country's generally positive attitude towards digitalization, the prevalence of digitalization in all areas, and the pandemic effect seem to be related to this adaptation. The "Low Adaptation/Resistance" category has 3 codes. These are "Cyber Security", "Tradition/Culture" and "High Cost/Infrastructure", especially the "Traditionalism/Culture" and "High Cost/Infrastructure codes were frequently cited (N = 10, N = 7). These codes emphasize the traditional or conservative attitude towards digitalization in society and companies and the lack of necessary capital/infrastructure. Cybersecurity is another area that participants did not find sufficient in business digitalization.

The third category of the theme is "Challenges of Digitalization". In this category, the participants mentioned the factors that they consider responsible for the non-realization or difficulty of adaptation. This created 6 codes, namely "Process", "Budget Problem", "Formality", "Cost-Benefit Analysis", "Qualified Staff Problem" and "Interaction Constraints". It is similar to the "Low Adaptation/ Resistance" category. The more common codes were "Budget Problem" (N = 4) and "Qualified Staff Problem" (N = 3).

The fourth category of the theme is "Technical Infrastructure". This category consists of two codes, namely "Sufficient and Insufficient". It includes the statements of the participants about whether the enterprises have sufficient infrastructure for digitalization. The dominant code is Sufficient (N = 8) However, there are also participants who have the opposite view (N = 3).

The fifth and final category of the theme is "Pandemic Impact". The category does not have a separate code but includes participant comments mentioning the impact of the pandemic on the adaptation process of enterprises. When these comments are examined, it is seen that the pandemic mostly has an effect that necessitates and accelerates the digitalization process of enterprises.

The third and the "backbone" theme of the research, "Digitalization and Internal Audit", was analyzed under 7 categories. These categories are "The Future of Internal Audit", "Technical Knowledge of Internal Auditors", "Smart Factories and Internal Audit", "New Digital Assets", "Blockchain and Smart Contracts", "Documentation" and "Assurance Service".

The first category of the theme is the "The Future of Internal Audit". In this category, the participants' opinions on how the reflections of the fact that some professions may lose their functions and complete their lifespan or undergo serious changes with digitalization will be reflected in the internal audit profession were taken. Opinions on the future of internal audits are included in this section. As a result of these opinions, 5 codes emerged in the category. These are "Reducing Need/Scale", "Increasing Need/Scale", "Change", "Consulting" and "Fraud". The most prominent code in the category is "Change" (N = 29). Participants mostly think that the profession will perform its current functions differently or assume new functions. Topics such as consulting services, big data analysis, information technology, software, blockchain and automation are common in these comments. The consultancy code is related to the fact that the profession will be undertaking more of a consultancy function than an assurance function in the near future. The fraud code, on the other hand, reflects that the need for the profession will be maintained due to the fact that human misuse is always present.

The second category of the theme is the "Technical Knowledge of Internal Auditors". This category includes the participants' opinions on how the fact that those in the internal audit profession are mostly based on the faculty of economics and administrative sciences has an impact on the digitalization process. There are 4 different codes: "Undergraduate Curriculum", "Not Being Determinative of Undergraduate Major", "Professional/Individual Development", and "Engineering". In the "Undergraduate Curriculum" code, there are comments and criticisms of the participants about university curricula. The codes of "Not Being Determinative of Undergraduate Major" and

"Professional/Individual Development" have a similar main idea. Both of them are of the opinion that the undergraduate department is not completely determinative and does not create serious handicaps in the digitalization process. In addition to the importance of the department, they emphasize the importance of individual development, the training and certificates received, and the software learned. Finally, the "Engineering" code includes the comments of the participants that those with engineering faculty backgrounds are more advantageous in the digitalization process.

The third category of the "Digitalization and Internal Audit" theme is "Smart Factories and Internal Audit". In this category, the participants' comments on the impact of the smart factory concept that came with industry 4.0 on the internal audit profession in the digitalization process are included. It includes 4 codes: "The Need for Internal Audit", "Reduction in Workload", "Reduction in Error Rate" and "Other". Some of the participants think that the need for internal audits will continue. Especially with advanced technology, the idea that even if the number of auditors decreases, auditing will probably continue in a more advanced form stands out.

The fourth category of the theme is "New Digital Assets" and was analyzed under three codes: "The Need for Regulation", "Risk", and "Increase in Workload". Under this category, the relationship between internal audit and these assets, which have a great impact on the world but for which classification, evaluation, and accounting standards have not been set, is analyzed. When this category comes up, participants emphasized the need for regulation (N = 8). It is noteworthy that there cannot be an audit without regulation, and that it must first be recognized by the top regulatory/auditing bodies. Another noteworthy and unsurprising form is "Risk" (N = 5). The participants find this area, where there is not enough regulation, naturally risky.

The fifth category of the theme is "Blockchain and Smart Contracts". In this category, it was inquired how blockchain and smart contract concepts will affect the assurance function of internal audit, especially due to their nature. Three codes emerged: "Need for Internal Audit", "Reduction in Workload" and "Assurance Function". Participants who think that new risks will come with new technology were collected from the code "Need for Internal Audit" (N = 6).

The sixth category of the theme is "Documentation". In this category, the adequacy of the training and documentation provided by organizations such as IIA and TIDE according to the participants was analyzed. Two codes, Sufficient and Insufficient, were formed.

The seventh and final category of the theme is "Assurance Services". This category is similar to the "Assurance Function" code of the "Blockchain and Smart Contracts" category, which examines how the immutable nature of the blockchain will affect assurance, which is one of the important functions of internal audit, but it examines the impact of digitalization as a whole, not just the blockchain, on this function. There are 3 codes: "Fraud", "Automation" and "Need for Internal Audit". Especially the Need for Internal Audit (N =7) shows that the participants think that the profession will preserve its function.

The first category of the "Cyber Security and Internal Audit" theme is "Information Security Awareness". Comments on the awareness of internal audit units and enterprises on information security, the importance of which was realized late according to some participants, were shared. Most of the participants stated that there is awareness and necessity in this area and gave examples of cyber-attacks, security vulnerabilities experienced by well-known organizations, and the Personal Data Protection Law. There are also a minority of respondents who believe that cyber security awareness and measures are not sufficient.

The second category of the theme is the "Role of Internal Audit". In this category, the role of internal audit units in cyber security was analyzed. While some participants stated that internal audit units play an active role in this process, others stated that they are not involved in this process due to reasons such as lack of equipment in these units and not being included in the process by the management, and that information technology units carry out the process.

The third category of the theme is "Security Issues". Comments on security problems, information leakage, hacking, etc. that have occurred and may occur as a result of weaknesses in both technical infrastructures and cyber security were analyzed.

The fourth and final category of the "Cyber Security and Internal Audit" theme is "Budget Problems". In this category, the budget problem that the participants see in relation to the lack of cyber security was mentioned. The fact that this area requires a large investment for companies seems to be related to the fact that not enough emphasis is given to it.

5. Discussion, Conclusion and Recommendations

Understanding or measuring the level of awareness about a topic depends on variables such as what impression that topic leaves on the study test group, what meanings it has, and what emotions it evokes. In the findings of the study, it is seen that the view that digital awareness in enterprises is at a sufficient – positive level is more predominant; on the other hand, the main motivation for this is the pandemic process. While remote working and the use of online conference tools are concepts that have entered our lives with the effect of digitalization, the inclusion of digital techniques in business processes and thus the shift of the center of gravity of the required workforce to other areas can also be evaluated under the title of digitalization. Therefore, it is very important for enterprises, especially at similar scales, to be able to speak the "same language".

The most prominent distinction in terms of digitalization awareness across Turkey is the difference between the banking and finance sector and the real sector. Most of the participants state that Turkey's banking and finance sectors are not lagging behind many developed countries in the world and are even more advanced in some areas and that the sector is the locomotive sector leading the country in terms of digitalization. One of the most important reasons for the high level of digital awareness in the banking and finance sector is thought to be the regulations introduced by the rule makers in the sector. Thanks to the regulations, institutions are forced to adapt themselves to the developing

technology, thus a compulsory digital awareness is created spontaneously. On the other hand, there is a prevailing view that digitalization awareness in the real sector is generally lacking and insufficient, except for a few large capital companies.

It would be correct to say that the majority of the companies established in Turkey are "boss-run enterprises" in percentage terms. This situation may make it difficult to distinguish the culture of the business from the culture of its owners; it may lead to the parallelism of business behaviors and individuals' behaviors. Business owners / partners with relatively low digital awareness may see these processes as an unnecessary cost element and may be closed to learning technical issues. In order to prevent such situations, it would be an effective first step to introduce mandatory annual or termly technology seminars for senior partners.

Digitalization is a transformation process that is not instantaneous but spread over time. In order for this process to begin in businesses, there must be corporate culture and a digital culture must be built on it. All this can start with the internal stakeholders being open and ready for digitalization. It is very important to be able to measure, compare and report the process followed. For this purpose, new key performance indicators (KPIs) for digital transformation should be determined and started to be used, ideally for each organization.

Awareness is seen as the most important and first step in adapting to digitalization. Therefore, questions were asked about digital awareness in enterprises in the first stage and digitalization adaptation immediately afterwards, thus enabling a healthier result to be obtained. Just as in the digitalization awareness theme, in the adaptation theme, it is seen that the digitalization adaptation of enterprises in the field of banking and finance is high, whereas the opposite is true for small and medium-sized enterprises operating in the real sector. The main factors leading to this situation are the high cost and the infrastructure problems that come to the fore as a trigger and the necessity to face possible new risks.

Although the relevant findings seem reasonable at first glance, whether the behavior of enterprises is rational or not is a very important question that needs to be examined. While it is expected that the scales of the enterprises, the activities they create, and the requirements arising from these activities are expected to be parallel, the establishment of a technical infrastructure for the needs seems to be an issue independent of the scale of the enterprises. For this, it is very significant that both manual and possible digital processes can be measured with the help of digital KPIs, a suggestion developed in the previous section, and a cost-benefit analysis can be made.

In addition to the digital awareness and adaptation of enterprises, another category assessed was the digital awareness and adaptation of internal auditors. The findings obtained here show that auditors have a sufficient level of awareness in terms of quantity. However, it would be useful to evaluate the current situation from different perspectives. In the pre-research stage, it was observed that many internal auditors did not want to participate in the interview, claiming that they were not sufficiently familiar with digital issues and concepts. This situation can be characterized as an "unwritten result" that is not reflected in the findings of the study.

The internal audit profession units draw the vast majority of its workforce from graduates of Schools of Economics and Administrative Sciences. As a result, although this is quite reasonable by professions very nature, where mastery of all business functions is highly critical, in the light of the digitalized processes, it can also be argued that internal auditors lag behind technical issues within universities. At this point, it is considered very important to review the curricula of business programs at universities in light of the fact that it will concern not only internal audits but also all professions in the near future. At the very foundation of this, universities should focus on "allocating the necessary resources for ideal improvement" instead of "the most possible improvement with the available resources".

Today, especially big data and data analytics are of vital importance for professionals such as internal auditors and independent auditors who work with large and complex data sets. In this sense, Clayton & Clopton (2019) conducted a study on the integration of data analytics into business curricula and included four core courses in the curriculum, which are Introduction to Data Analytics, Principles of Data Communication and Visualization, Data Analytics Applications, and Key Topics in Data Analytics. While the changes to university curricula are important, what needs to be emphasized, especially for business programs, is the importance of the choice of specialization. The point is that not only new technical-based specializations should be opened in order to adapt to the digitalized world, but also innovative and digital elements should be included in areas related to the basic functions of the enterprise (Qasim & Kharbat, 2020). This type of innovative approach in university business curricula will help graduates and potential internal auditors to gain digital awareness, as well as to be aware of the practices and processes relevant to their work. It is important to note that technical and theoretical aspects should be well balanced and that it is important to prevent students from getting lost in technical details.

It is also important for rule-makers and company managements to develop new strategies and methods against the changes that will be experienced professionally with technological transformation (Choi & Kang, 2019). It is considered very important for policymakers to discuss the effects of artificial intelligence on employment, how much of the labor force losses can be covered, and to keep the perspective of these discussions as broad as possible (Fatima et al., 2020). In this context, the authorities related to internal audits should lead the public on which areas will experience labor loss and which scope of internal audit will expand and create new labor needs.

In the study, it was observed that auditors displayed a more conservative attitude by making superficial comments on the use of blockchain, smart contracts, and digital assets without resorting to very technical information. The main purpose of asking these questions in the research, as explained in the previous sections, is to understand the awareness of internal auditors on digital concepts as well as to understand where they position the profession in the future. Although the use of cryptocurrencies or digital assets in general by businesses today is almost non-existent, the likelihood of transactions involving them is increasing day by day, which necessitates internal auditors to keep themselves updated and ready. The fact that there is no regulation on the related assets and/or no roadmap for their audits means that many risks are also in question. Although it is not yet heard about in Turkey,

it is known that many companies in the world made serious investments in cryptocurrencies in recent years. As a result of the study, it was observed that internal auditors showed more hesitant and conservative behavior regarding digital assets and that they generally interpreted it as risky for businesses to invest in such assets. It is also noted that it is difficult for digital assets to constitute a serious day for companies without any regulation. Despite all these, considering the examples and developments around the world, it is important for internal auditors to prepare and train themselves on audit processes regarding digital investments.

Internal audit, which first appeared on the stage of history as an internal extension of financial audit, has started to focus on operational audit over time, putting people at its center and focusing on processes. With the automation and digitalization of these processes, it seems likely that the scope of internal audit will shift from process audit and the assurance function it is obliged to provide regarding these processes to process consultancy. While the near-zero margin of error in digitalized processes ensures the perfection of the processes, the need for the existence of a unit that maintains its independence within the organization and dominates the functioning of all functions and the added value it will provide will increase in order to underpin this concept. Based on this scenario, it is possible to foresee that the current definition of internal audit will undergo some changes. A proposal developed by the authors for a new definition of internal audit in a digitalized world is given below:

"Internal audit is an independent, intra-organizational consulting center that aims to perfect business operations and processes and is responsible for the effective functioning of digital assurance systems."

Cyber security issues are one of the most important threats to the principle of corporateness, for which an effective risk management approach is indispensable. In this study, it has been noted that cyber security is on the agenda to a significant extent due to legal obligations in the banking and finance sector, whereas in the real sector, due to additional reasons such as budgetary problems and the ongoing discussion of its concrete existence, the necessary steps have not been taken and there are serious deficiencies in ensuring cyber security. In addition, there are also deficiencies in the direct participation of internal audit units in these processes. On the other hand, internal audit is expected to play an active role in matters such as (Selimoğlu & Altunel, 2019):

 – The relationship between cybersecurity and organizational risks,

 – Verify whether cyber risk issues are included in business continuity plans and disaster recovery testing,

 – Ensure continuous independent evaluation of preventive and detection measures related to cyber security,

 – Assessing IT assets of users with restricted access for standard security configurations, problematic websites, malware, and data leaks,

 – Conducting cyber risk assessments of service organizations, third parties, and suppliers

Therefore, it is very important for internal audit units to play an active role at all stages, from the installation of cyber security systems to the audit of their functionality. Based on all these, protecting the existence and integrity of the business, implementing strategies and plans for this without fail, performing scenario analyses after a possible cyber-attack, and creating alternative action plans should be among the most important tasks of internal audit units in the digitalizing world. For this, internal audit units should play an active role in all stages of cyber security processes, and the role of internal audit should be expanded by adapting to digital systems.

Last but not least, it is extremely important for internal auditors to have effective communication skills. The development of technologies will change communication processes and increase the need for innovative techniques for internal auditors who have to establish healthy communication with boards of directors, internal stakeholders, and audit teams. With the addition of remote working, it is expected that the decrease in face-to-face communication and loss of sociability at work will be even more significant (Flores, 2019). In this case, it will be essential for internal auditors to convey the processes, which have become more complicated with the effect of digitalization, to the board of directors and other stakeholders in an effective manner, and to simplify the plot in a way that is neither too much nor too little.

Considering all the factors involved, it is indisputable that digitalization has had a significant impact on almost every field in today's globalized society. As in daily life, business life is also significantly affected, and as a result, many significant elements such as working patterns, working styles, working atmospheres, ways of doing business, tools, and methods used can change shape. Moreover, existing professions can be transformed and even disappear, while new ones may arise. Even though it is difficult to predict exactly what these effects will be, it is crucial to be able to write possible scenarios and to conduct the necessary work in the triangle between professionals, academia, and the government in order to act as soon as possible.

Author Contribution

CONTRUBUTION RATE	EXPLANATION	CONTRIBUTORS
Idea or Notion	Form the research idea or hypothesis	Onur ERİŞEN Mert ERER
Literature Review	Review the literature required for the study	Onur ERİŞEN
Research Design	Designing method, scale, and pattern for the study	Onur ERİŞEN Mert ERER
Data Collecting and Processing	Collecting, organizing, and reporting data	Onur ERİŞEN
Discussion and Interpretation	Taking responsibility in evaluating and finalizing the findings	Onur ERİŞEN Mert ERER

Conflict of Interest

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Resume

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