Original Scientific Article

Influence of Professional Competence in Financial Control on the Digitalization of Control Procedures

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Abstract: *The publication examines the relationship between the basic requirements for professional competence in financial control and the digitization of control procedures. Aspects of the digitalization of business processes and their correlation with the need to form specific qualities and skills in financial control are analyzed. In connection with proving the hypothesis that the quality of control procedures requires the assessment of the risk of digitalization, a correlation analysis is made. The aim is to confirm that, despite the penetration of technology in the control process, control bodies do not sufficiently apply new technologies to minimize risk. Financial control bodies should streamline processes, increase efficiency, and improve financial information and analysis accuracy.*

Keywords: *Professional competence, Digitalization, Financial control, Control procedures.*

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1. INTRODUCTION

The dynamism of business processes has accelerated the introduction of new technology solutions by digitizing them. The acquisition of digital skills has now become a prerequisite for individual, industry, and regional success (Muro et al., 2017). The COVID-19 pandemic proved to be evidence and contributed to establishing such claims. People stayed in their homes and were given assignments. Reporting on their performance was done through online platforms, and workshops were conducted virtually in an online space. It, in turn, demonstrated the digital inequality between users of business processes. On the other hand, to the full extent, it also applies to those working in control institutions and carrying out control procedures.

In this context, the European Commission has recommended building a system of competencies that includes eight critical competencies for lifelong learning (European Commission, 2008). The system aims to equip EU citizens with digital competencies. Digital competence leads to new knowledge and skills in people. Therefore, they are committed to training themselves to acquire the necessary competencies to develop in an increasingly fast-growing digital society (Cervera et al., 2016).

Digital competence is a set of skills, abilities, and knowledge that are different for each professional field of implementation. Due to the wide variety of models, concepts, dimensions, and levels of competence, it is necessary to review the existing literature. The authors of the paper want to identify and isolate the factors of professional competence that can influence financial control processes.

The paper will focus on the rapid pace of digital transformation that affects the professional competence of control bodies that influence business processes. Some of the main characteristics of control are the existence of social relations (object-subject), the critical attitude of the subject towards the object, and the power imputed to the subject to employ a control influence on the object. It is only possible if the subject of control has the necessary skills and abilities to exercise the power provided by law. On the other hand, if there is trust in the object-subject relationship, it creates authority. Otherwise, coercion and sanctions become the primary control mechanism.

The main research areas of the author's team are financial control and auditing. We focus on these areas because our main objective is to analyze the interrelationships between control procedures and the rapid development of digitalization of business processes. The authors decided to use correlation analysis using Spearman's rank correlation coefficient. In order to achieve this goal, the authors set out to answer the following **two hypotheses:**

Hypothesis 1. Dynamic digital transformation creates prerequisites for using various digital tools in the control activity.

Hypothesis 2. Control authorities need to sufficiently implement the potential of digital tools, leading to effective financial controls.

The article is organized as follows: Section 2 reviews the academic literature on digitalizing business processes and control procedures. Section 3 describes the methodology used in the research paper to find the relationships between the different indicators. Section 4 contains the results of the correlation analysis performed regarding the relationship between control procedures and business process digitalization rates. Finally, the conclusions are summarized in Section 5.

2.   LITERATURE REVIEW

The term „digitization" is widely used by economists. The precise meaning is a topic of much discussion, particularly when measuring digitization's impact on economies (Manyika et al., 2015). Digitization, also known as digital transformation, transforms data into digital form. Likewise, society's increasing dependence on such digital data, documents, structures, and processes can also be considered digitization. Mergel et al. (2019) attempt to distinguish three terms used interchangeably - digitization, digitalization, and digital transformation. The authors put as the essence for the term digitalization „*highlighting the transition from analog to digital service and adding a technological delivery channel*," for the term digitalization „*focusing on potential process changes beyond the simple digitalization of existing processes and phenomena*" and for the term digital transformation „*highlighting cultural, organizational and relational changes in order to distinguish better different forms of outcomes achieved*" (p. 12).

The authors conceive of digital transformation as the concept that, in its most general sense and totality, contains the meaning of the form of data, its management, and knowledge about it. The terms digitization, digitalization, and digital transformation cannot be used synonymously. Each has specific characteristics, which give an idea, on the one hand, about the transition process from analogue to digital content and, on the other, about the change of digital tools cause in corporate strategies and economic alternatives (Tanushev, 2022).

Digital transformation is one of the priorities of the European Union, in addition to promoting the development of digital competencies in all groups of citizens (European Commission, 2022). According to the European Parliament policies, digital transformation offers new opportunities for businesses, helps to achieve neutrality, and promotes the development of people's digital literacy, i.e., increasing their competence (European Parliament, 2023). According to the European Digital Decade 2030 Policy Agenda, a digital business transformation has the potential to support more than 90% of small and medium-sized enterprises and facilitate their transition to a digitalization of processes (European Commission, 2022). It, in turn, also ensures sustainability in a competitive market.

In their scientific analysis, Gong and Ribiere (2021) conclude that digital transformation is inherently the implementation of advanced digital technologies to develop and maintain organizational identity. In the sense, we cannot disagree that the tools and technologies available to businesses provoke activities to transform into digital operations. According to Süße et al. (2018), digital competence is the ability to implement digital technologies using digital tools to assess problems and propose solutions critically.

2.1.   Digitalization of Business Processes

The use of information and communication technologies is an essential requirement for economic development. Dissemination of digital information is a significant process among industries. One of the main reasons is that consumers have turned to using internet resources and social networking. Thus, businesses have been forced to shift to remote service and operation. Of course, technological innovations have led to changes in technological and managerial processes. Such digital transformation of business activities is achieved through Business 4.0 and Industry 4.0 (Sergi et al., 2022). Consequently, innovations such as artificial intelligence, cloud computing, the Internet of Things, etc., are used to create and deploy business operations (Marcon et al., 2022).

In their study, a collective of authors (Norveel et al., 2022) found that digital competencies of bank employees have a low level of competence. They conclude that it is up to organizations to take care of the digital competencies of their staff. It is a barrier hindering the transition from an analog to a digital environment, as evidenced by the enterprises themselves (Steinlechner et al., 2021). Identifying digital barriers is one of the main challenges of business process management. In their study, a collective of authors (Uzule & Verina, 2023) identified two types of barriers - individual and organizational. On this basis, a properly designed HR structure provides a clear picture of the business unit's barriers. It ensures that the recruitment process selects those capable of performing certain digital operations and will continuously develop their digital competencies. Therefore, to grow at a competitive pace relative to other business organizations, the senior management team is responsible for supporting the development of staff digital competencies (Wang et al., 2024).

The digitalization of business also increases the risks of applying techniques through which companies and individuals can commit financial fraud (Kitsios et al., 2022). In addition, financial transactions that are sufficiently sophisticated and digitized are increasingly common. In 2021, cybercriminals committed $8.6 billion of financial fraud, a 30% increase from 2020 (Grauer et al., 2022). Companies are thus shifting their profits to offshore accounts registered in tax havens, providing further opportunities to hide the proper taxable size of the income (Kutera, 2022). Given this, the increase in the volume of complex financial transactions and their digitization requires a change in the procedures carried out to increase the efficiency of financial control.

2.2. Digital Competence of Financial Control Authorities

Accelerated business processes and their digitalization have also provoked changes in the actions of institutions applying financial control. In order to meet the needs of business units, state institutions have implemented several projects (Bulgarian Custom Agency, 2022; Bulgarian Ministry of Finance, 2018) to transform the collected analog data into digital format.

Rapid advances in information technologies such as the Internet of Things, machine learning, artificial intelligence (Aleksandrova et al., 2023), and big data lead to a high risk of financial fraud (Ruan et al., 2019). Recent years have seen cases of companies working together to avoid liability from financial misconduct through connected transactions (West & Bhattacharya, 2016). This further increases the risk of vulnerability to financial fraud and a low success rate of detection or containment by control institutions.

A collective of authors (Zhu et al., 2021) provides an overview of intelligent financial fraud detection practices by classifying data into three groups - structured, semi-structured, and unstructured. Based on the data type, they group the more well-known financial frauds (credit, insurance, loan fraud, money laundering, financial statement fraud, e-commerce transaction fraud, and others). They conclude that analyzing the multitude of data from different sources and using machine learning-based methods are the answers against financial fraud. However, financial fraud schemes are rapidly evolving, and attention needs to be paid to the models and the skills and competencies that control authorities need to develop to work successfully with new solutions involving machine learning and artificial intelligence.

As a result of professional competence, financial control bodies are making an effective link between technology and the requirements for proficiency in financial software, managing enterprise resource planning (ERP) systems, and using data analysis tools. The streamlines processes, increases efficiency, and improves the accuracy of financial information and its analysis.

The digitalization process requires a transformation that targets business activities, processes, competencies, and models to fully exploit the changes and opportunities of digital technologies and their impact on society as a whole in a strategic and prioritized way (Anciollo & Gavrila, 2023; Bansal et al., 2023). At the same time, significant new risks arise related to expanding the scope of financial control. In order to minimize them, adequate control procedures need to be implemented, including verification of information provided by software and applications; text data from social networks; videos; captured images, sensor data (e.g., GPS location, data, RFID data) combining financial and non-financial information (Amiram et al., 2018).

3. METHODOLOGY

The survey was conducted among more than 453 experts working in the national financial control bodies: The National Revenue Agency, the Customs Agency, the State Audit Office, and the State Financial Inspection Agency. The first two are the primary revenue administrations, collecting 80% of all revenues in the state budget. The Audit Chamber and the State Financial Inspection Agency inspect 90% of the organizations that manage budget funds. The survey was conducted in May of 2023. The data are collected through a Google Forms questionnaire and processed with the statistical tool SPSS. The obtained results are based on a guaranteed probability equal to 95% and a guaranteed factor of $Z = 2$, which requires a minimum of 437 respondents for the sample's representativeness.

The use of Spearman's rank correlation coefficient in the study is justified for several reasons. In the study, we examine two sets of nominal variables: digital tools and elements of the information management process. The rank coefficient measures the relationship between nominal independent variables, assessing the monotonic relationship between variables. Because we are not looking for a linear relationship between the final scores and the correlated factors, the Spearman coefficient gives an idea of the strength and direction of the relationship between the different nominal categories.

The correlation analysis examines the degree of correlation between the methodological tools applied by the control bodies and the possibilities for digitizing control procedures. It is perceived that when the coefficient is equal to +1.00, there is a positive linear correlation (or a right proportional relationship), and conversely when it is similar to -1.00, there is an absolute negative correlation (inverse relationship). The closer to 0 it is, the weaker the relationship. However, the converse is not true - it does not follow from the correlation coefficient being equal to 0 that there is no relationship between the two variables.

It is necessary to point out that the data from the study are rank-ordered, and therefore, using Spearman's correlation coefficient (rs) is appropriate. The latter is called the coefficient of rank correlation or Spearman's rank. Spearman's rho „measures the strength of the increase or decrease in the relationship between two variables by not using the original data, but by ranking and analyzing them. The coefficient measures the connection using the following formula:

$$r_s = 1 - \frac{6 \sum_{i=1}^{n} d_i^2}{n(n^2 - 1)}, \text{ where}$$

$\sum d_i^2$ – the sum of the square of the differences between the ranks of the assessments
n – number of the sum of observed cases

The choice of the coefficient is based on the following circumstances:
–   rank scales were used in the survey, and therefore, the data can be defined as such;
–   because a significant number of persons were not surveyed, the use of other types of scales would not be helpful as there would not be a normal distribution;
–   the Spearman coefficient is appropriate precisely because it uses the ranks of the observations rather than their values and thus gives an idea of the strength of the relationship because it minimizes the influence of outliers.

4.   RESULTS

Based on the analysis of dependencies between individual procedures and approaches, there needs to be more connection between personal control activities regardless of the ratio between personal control activities. It is due to an overextended range of procedures and approaches, which leads to inefficiencies. Therefore, it is necessary to update and improve the toolkit, with control bodies directing their efforts to increase their professional competence in the following directions:
•   the implementation and use of more automated and digitized applications, techniques, or (IT) controls is crucial. These changes will achieve faster and more reliable detection of deviations and inconsistencies in the control system, enhancing the overall efficiency and effectiveness of our operations.
•   performing an assessment of new types of risks caused by cyberspace, the cyber environment and the implementation of a significant part of the processes in an online (digital) environment;
•   to reduce the possibility of missing significant deviations and ignore the fact that, taken together, individual variations can be more significant and convincing, it is necessary to examine them in their entirety (totality), not only individually.

The following conclusions can be drawn from the established interdependencies and their analysis:

First, the research found that many digital tools are applied in the field of financial control, which confirmed our first hypothesis.

Second, the established risk assessment procedures and approaches do not necessarily mean that they are not subject to updating and renewal. In order to carry out effective counter-control procedures, adequate tools must be applied at all levels of control. Since then, it has been found that a strong positive correlation depends on the availability of a digital tool and its application in only a few cases - between the assessment review of and risk software (0.565), between inquiries and applications (0.759), verification and recalculations (0.510) and most -very -strong between survey and CRM (0.701), all shown in Table 1. The strong negative correlation indicates that the digital tools for minimizing the risk in executing the control procedures must be applied sufficiently. In this case, appropriate and adequate controls must be implemented to reduce them to an acceptably low level.

In order to increase the professional competence of control authorities, it is necessary to focus your efforts on implementing and using more automated and digitized applications, techniques and IT controls. Introducing these technologies will allow faster and more reliable detection of deviations and inconsistencies in the control system. Automation will leverage the time to perform checks and increase data accuracy, thereby improving operations' overall efficiency and effectiveness. Control authorities need to keep up with the latest technologies and integrate them into their procedures in order to meet the control and supervision requirements.

Table 1. Interdependence (by Spearman) between applied risk assessment procedures (horizontally) and the applied approaches for assessing the risk of material deviations (vertically)

	Software		Application		ERP systems		CRM		Rerun		Recalculation		Analytical Procedures	
	r_s	t-stat	r_s	t-stat	r_s	t-stat	r_s	t-stat	r_s	t-stat	r_s	t-stat	r_s	t-stat
Inquiries	-0,409	0,092	**0,759***	0,000	0,07	0,758	0,131	0,603	-0,111	0,661	0,193	0,444	-0,227	0,365
Observations	-0,210	0,404	0,046	0,858	0,048	0,851	**0,701****	0,001	0,021	0,933	-0,142	0,575	-0,452	0,060
Documents check	-0,272	0,275	0,377	0,123	-0,319	0,197	0,325	0,188	-0,171	0,498	0,212	0,399	0,007	0,977
Review the organization's risk assessment and documentation process	**0,565***	0,015	**-0,842****	0,000	-0,034	0,892	-0,018	0,944	0,029	0,909	**-0,491***	0,039	0,091	0,720
Verification of transactions and their processing	-0,068	0,790	0,334	0,175	0,247	0,323	-0,460	0,055	-0,059	0,818	0,142	0,574	0,101	0,690
Process check	0,008	0,976	0,163	0,519	0,134	0,597	**-0,688****	0,002	0,240	0,336	**0,510***	0,031	0,068	0,789
Inspection	0,358	0,145	**-0,535***	0,022	-0,231	0,357	0,067	0,792	-0,141	0,576	-0,172	0,494	0,256	0,304

Source: Own calculations

Control authorities should focus on assessing the new risks posed by cyberspace and the digital environment. As online activities increase, the risk of cyber-attacks and abuses increases significantly. It necessitates the development and implementation of new approaches to the assessment and management of these risks. Control authorities must be prepared to identify and respond to cyber threats while maintaining high security and data protection. For this purpose, it is crucial to organize specialized training and seminars to increase employees' knowledge and skills in the cybersecurity field.

Control bodies should adopt a comprehensive approach to assessing these deviations to reduce the possibility of missing material deviations. Instead of looking at each variation individually, they must analyze all deviations. This approach will allow a better understanding of the interdependencies between the various factors and provide a more complete picture of potential risks and problems. Using integrated software solutions and tools to collect and analyze data from various sources will help control authorities achieve more effective control and supervision. This approach will improve the quality of assessments and reduce the likelihood of errors and omissions.

A correlation and interdependence between risk and the lack of competent employees in the audited organization, as a procedure, was established. The dependence is strongly positive, indicative of proportional reliance, or the more significant the lack of competent employees is found, the more appropriate it is to use the risk-based assessment approach. It is also because in the absence of such employees, tests of details are performed, i.e., a limited number of them are used to update the risk assessment.

The knowledge and implementation of ERP and CRM systems significantly increase the quality of control bodies' work. ERP systems provide a comprehensive view of all financial transactions and processes, making it easier to detect discrepancies and fraud. CRM systems contribute to transparency through detailed data on interactions with audited public sector organizations, supporting better accountability. ERP and CRM systems facilitate risk management and regulatory compliance by offering integrated data and analytical tools. The financial control authorities can more effectively manage risk and ensure compliance. Integrated systems have powerful analytical tools that support financial transactions and making informed decisions, which is essential for the professional competence of supervisory authorities.

In conclusion, the analysis of the dependencies between the procedures and approaches highlights the need to update and improve the control tools to increase the professional competence of the control bodies. Applying automated and digitized technologies will speed up the detection of deviations and improve the effectiveness of controls. Assessing new risks in cyberspace requires specialized knowledge and continuous training in cyber security. A holistic approach to analytics will provide a better understanding of complex interdependencies and prevent gaps. Hypotheses related to the application of digital tools and the need to update risk assessment procedures were confirmed, underscoring the importance of digitization and adequate control at all levels.

4.   FUTURE RESEARCH DIRECTIONS

The research will be a starting point for a thorough study of digitizing the primary information flows in the control activity. The focus will be on the application of business intelligence and large databases' processing and verification capabilities. The authors will focus their research on the possibilities of artificial intelligence, virtual reality, blockchain technologies, and their integration control activity. The aim is to argue for practical approaches to identifying errors and fraud to ensure the accuracy and fidelity of financial and non-financial information. Data quality assessment will ensure integrity, consistency, validity, completeness, and timeliness.

5.   CONCLUSION

Financial fraud has profound economic implications for industry, government, the corporate sector, and ordinary consumers. Growing reliance on new technologies has compounded the problem in recent years. Traditional methods involving manual detection, matching, and analysis are not only time-consuming, too „expensive," and uncertain but impractical in the digital transformation of information.

Financial control professional competence encompasses skills and responsibilities critical to effective financial management by cultivating expertise in financial analysis, risk management, regulatory compliance, technology, communication, and strategic planning. Competent authorities should anticipate potential risks, develop risk mitigation strategies, and establish internal controls to protect against fraud, error, or non-compliance. In the end, they should identify, assess, and mitigate financial risks that could affect the stability or profitability of the organization. To achieve that, controllers must strive to adapt to changes in business processes and seek professional development opportunities.

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