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Compliance 4.0: Transformation of Enterprise Financial Management towards Transparency, Integrity and Fraud Protection

Abstract: Ensuring transparency, integrity and protection against financial fraud is one of the key challenges for enterprises under the conditions of digital transformation and increasing financial risks. The effectiveness of financial management directly depends on the ability of enterprises to identify threats, prevent fraudulent activities and develop reliable compliance systems. Although traditional compliance mechanisms are widely used in enterprises, modern economic conditions require their transformation towards Compliance 4.0, which combines digital technologies, risk management, automated monitoring and principles of corporate integrity. The subject of the study is the transformation of enterprise financial management through the implementation of Compliance 4.0 tools aimed at increasing transparency, strengthening integrity and preventing financial fraud. The object of the study is the enterprise financial management system under the conditions of digitalisation, growing compliance risks and the need for effective protection against internal and external threats. The study aims to develop theoretical foundations and practical recommendations for implementing Compliance 4.0 as a modern approach to transforming enterprise financial management towards transparency, integrity and fraud protection. The article proposes an integrated approach to the development of Compliance 4.0 systems in enterprises. The importance of transforming traditional control mechanisms into proactive digital compliance models is substantiated. The study analyses the main types of financial fraud, systematises compliance risks and identifies key instruments for improving the transparency of financial flows. The proposed approach is based on the integration of digital monitoring technologies, automated risk analysis, internal control mechanisms, ESG principles and ethical standards into enterprise financial management. Particular attention is paid to the role of compliance in preventing fraud, strengthening stakeholder trust and improving financial security. The stakeholder-oriented approach is considered as an important element of Compliance 4.0 aimed at developing responsible interaction between enterprises, employees, partners, investors and regulatory authorities. The paper presents the classification of enterprise financial fraud, compares Compliance 4.0 with internal and management control systems, and develops an organisational model for implementing compliance mechanisms. The results confirm that Compliance 4.0 allows enterprises to move from reactive control methods to preventive risk management systems focused on early identification of threats and protection of financial resources. The implementation of Compliance 4.0 is especially important for enterprises

operating under conditions of economic instability, digital risks and integration into the European business environment. Consequently, the proposed approach is recommended as a strategic tool for increasing financial transparency, developing a culture of integrity, reducing fraud risks and ensuring sustainable enterprise development.

Keywords: Compliance 4.0, financial management, transparency, integrity, fraud protection, risk management, digital technologies, financial security.

Abbreviations:

ACFE is Association of Certified Fraud Examiners

AI is artificial intelligence

COSO is Committee of Sponsoring Organizations of the Treadway Commission

ESG is environmental, social and governance

ISA is International Standard on Auditing

INTOSAI is International Organization of Supreme Audit Institutions

USA is United States of America

Introduction

Ensuring transparency, integrity and financial stability of enterprises is one of the main challenges in the modern digital economy. The rapid development of digital technologies, the growth of financial transactions and global business changes require new approaches to financial management and control. Although traditional compliance systems are widely used in enterprises, modern conditions require their transformation towards Compliance 4.0, which combines digital technologies, analytical tools and proactive methods for preventing fraud.

Recent studies show that financial fraud, corruption risks and violations of corporate rules remain serious problems for enterprises. These problems lead to financial losses, reduce business reputation and negatively influence stakeholder trust (*Association of Certified Fraud Examiners, 2024; PricewaterhouseCoopers, 2024*). Even with the development of internal control systems and regulatory standards, many enterprises still use compliance mainly as a tool for detecting violations. However, modern business conditions require compliance systems that can identify risks at an early stage and prevent possible financial threats.

The development of Compliance 4.0 changes the role of compliance in enterprise management. It is no longer only a control function but becomes an important part of strategic financial management. Modern compliance systems help enterprises increase transparency, improve financial security and support responsible decision-making (*Oriekhova, 2017; Azarenkova et al., 2020*). The use of digital platforms, artificial intelligence and automated monitoring allows enterprises to create more effective systems for fraud protection and risk management.

The subject of the study is the transformation of enterprise financial management through the implementation of Compliance 4.0 tools aimed at increasing transparency, strengthening corporate integrity and protecting enterprises from financial fraud.

The object of the study is the enterprise financial management system under the conditions of digitalisation, increasing financial risks and the growing need for transparency and responsible business behaviour.

The study aims to develop theoretical foundations and practical recommendations for using Compliance 4.0 as a modern approach to transforming enterprise financial management towards transparency, integrity and effective fraud protection.

To achieve the stated purpose, the following study objectives were formulated:

- to analyse modern approaches to compliance development and their role in enterprise financial management;
- to identify the main financial risks and fraud threats affecting enterprise activity;
- to study the influence of digital technologies and artificial intelligence on the development of Compliance 4.0;
- to determine the relationship between compliance, financial security and sustainable enterprise development;
- to systematise the main Compliance 4.0 tools used for increasing transparency and preventing fraud;
- to develop recommendations for integrating compliance mechanisms into enterprise financial management;
- evaluate the role of Compliance 4.0 in improving corporate integrity and stakeholder trust.

Thus, the development of Compliance 4.0 as a tool for transforming enterprise financial management is a relevant scientific and practical task. Its implementation allows enterprises to move from traditional control mechanisms to digital, risk-based and proactive systems aimed at improving transparency, strengthening integrity and preventing financial fraud.

Methods

The research uses a set of general scientific methods commonly applied in financial management, compliance analysis and enterprise security studies. Analytical methods were used to study existing approaches to compliance management and define the role of Compliance 4.0 in improving transparency, integrity and protection against financial fraud. Theoretical generalisation was applied to systematise modern concepts of compliance, financial security and digital transformation of enterprise management.

System analysis was used as the main method for studying compliance as an important part of enterprise financial management. This approach made it possible to identify the relationship between compliance procedures, internal control systems, financial risks and stakeholder interests. The structural approach was applied to define the main elements of the Compliance 4.0 system, including digital monitoring tools, risk assessment mechanisms and fraud prevention instruments.

Comparative analysis was used to study traditional compliance models and modern digital compliance approaches. This helped to identify the main differences between reactive systems focused on detecting violations and proactive Compliance 4.0 systems aimed at preventing financial risks. The comparison was based on criteria such as transparency, level of automation, effectiveness of fraud prevention and influence on enterprise financial security.

Among the specialised methods, risk-oriented analysis was used to identify the main sources of financial fraud, compliance risks and threats affecting enterprise activity. This method helped to assess the influence of internal and external risk factors on financial management processes and develop measures to reduce their negative impact.

Digital analysis methods were applied to study the role of modern technologies in compliance transformation. In particular, the research considered the use of artificial intelligence, automated monitoring systems and data analysis tools for improving financial control and preventing fraud.

Expert evaluation methods were used to develop practical recommendations for applying Compliance 4.0 tools in enterprise financial management. This made it possible to identify effective compliance instruments for increasing transparency, strengthening integrity and supporting responsible financial decisions.

Finally, evaluation methods were applied to assess the expected results of Compliance 4.0 application in enterprises. The analysis included improvements in financial security, reduction of fraud risks, development of stakeholder trust and creation of a sustainable compliance culture.

Literature Review

The development of Compliance 4.0 is based on the transformation of traditional compliance systems into modern digital models focused on transparency, integrity and fraud prevention. Existing studies consider compliance from different aspects, including legal regulation, financial security, risk management and sustainable enterprise development.

A number of researchers analyse the theoretical foundations of compliance and its role in business activities. Korshun (2021) studies the introduction of the concept of “compliance” into the business environment and highlights the importance of following legal and ethical standards. Ovsiienko and Svitlychnyi (2021) consider compliance consulting as a tool for improving enterprise management and adapting business processes to modern requirements. However, these approaches mainly focus on organisational and legal aspects and pay less attention to the digital development of compliance mechanisms.

Another research direction is related to the creation of internal compliance control systems. Tiutchenko (2021) proposes a model for organising compliance control as an instrument for increasing enterprise security. Karpushenko and Karpushenko (2023) study theoretical and methodological aspects of developing compliance systems, while Bortnikova et al. (2023) focus on practical compliance tools used by enterprises. These studies confirm the importance of compliance control, but the use of digital technologies and automated fraud prevention tools requires further research.

Financial security is also an important part of modern compliance systems. Beleviat and Spasenko (2013), Nikolaienko (2017), Oriekhova (2017), and Azarenkova et al. (2020) analyse financial security as a complex system aimed at protecting enterprise resources, ensuring stability and reducing financial threats. Their studies create a theoretical basis for considering compliance not only as a control function but also as a strategic element of financial management.

The importance of information technologies and financial processes in enterprise management was also highlighted by Fedorenko and Fedorenko (2012). The authors emphasise the role of information support and financial management tools in improving the efficiency of enterprise activities, which creates prerequisites for the development of modern digital compliance systems.

In the conditions of digitalisation, financial transactions and cash flows require new approaches to monitoring and control. Brown (2020) investigates financial compliance in the digital environment and shows the need for modern control mechanisms. Wilson (2021) studies the development of compliance in cash flow strategies. Ahmed and Singh (2022) and Nguyen (2023)

analyse compliance challenges in sectors with intensive financial operations. These studies demonstrate that traditional compliance tools are not enough for preventing modern financial risks.

Special attention in scientific and practical studies is given to fraud identification and prevention. According to International Standard on Auditing 240, fraud is defined as an intentional action involving deception in order to obtain an illegal advantage. The Association of Certified Fraud Examiners (2022; 2024), Ernst & Young (2022), and PricewaterhouseCoopers (2020; 2024) show that financial fraud remains a serious global problem that causes financial losses, reputational damage and a decrease in stakeholder confidence. These results confirm the need to move from reactive control systems to proactive compliance models.

The development of sustainable business practices has also changed the role of compliance. Poiedynok (2023) considers corporate sustainability as a new direction for compliance development. This approach expands the role of compliance from simple regulatory control to the formation of responsible corporate behaviour, ethical decision-making and long-term stakeholder trust.

At the same time, modern enterprises face new challenges caused by digital transformation, including cyber risks, data manipulation and the increasing complexity of financial operations. Therefore, existing approaches require further improvement through the use of Compliance 4.0 principles based on automation, digital monitoring, analytical technologies and risk-oriented management.

However, despite significant scientific contributions, the integration of digital technologies, compliance instruments and fraud prevention mechanisms into a unified Compliance 4.0 model of enterprise financial management remains insufficiently studied. This determines the need for further research aimed at developing practical approaches to ensuring transparency, integrity and financial security of enterprises.

Results

The analysis of scientific literature and international regulatory documents shows that the concept of “fraud” is generally understood in a similar way in international and national approaches. It is considered as obtaining illegal benefits through deception, abuse of trust or manipulation of information. Such activities create serious threats to the transparency of financial flows, enterprise stability and stakeholder confidence (*International Federation of Accountants, 2009; Criminal Code of Ukraine, 2001*). In the context of digital transformation and the development of Compliance 4.0, the identification and classification of fraud risks become especially important. The modern compliance approach focuses not only on detecting violations but also on their early prevention through digital technologies, automated monitoring and risk-based control mechanisms.

Based on the analysis of scientific studies on financial security, compliance management and fraud prevention (*Beleviat & Spasenko, 2013; Oriekhova, 2017; Tiutchenko, 2021; Skachkova, 2021; Bortnikova et al., 2023; Karpushenko & Karpushenko, 2023*), it has been established that financial fraud in enterprises can be classified according to several key criteria. These include the object and subject of fraudulent activities, methods of committing fraud, the nature of financial transactions and the tools used for fraudulent actions.

The proposed classification creates a basis for developing a comprehensive Compliance 4.0 system aimed at increasing transparency, strengthening corporate integrity and improving enterprise financial security (*Table 1*).

An important contribution to the study of financial fraud, compliance risks and mechanisms for strengthening corporate integrity has been made by the Association of Certified Fraud Examiners (ACFE) through its regular analytical reports “Report to the Nations” (*Association of Certified Fraud Examiners, 2022; Association of Certified Fraud Examiners, 2024*).

In the context of Compliance 4.0 development, special attention should be given not only to identifying fraudulent activities but also to creating an integrated system for their early detection, prevention and reduction of their impact on enterprise financial security. Such an approach requires the combination of traditional compliance mechanisms with digital technologies, automated monitoring systems and risk-oriented financial control.

According to the report “Occupational Fraud 2024: A Report to the Nations” prepared by ACFE, the main types of occupational fraud affecting enterprises include asset misappropriation, corruption and financial statement fraud (*Association of Certified Fraud Examiners, 2024*). These types of fraud differ in their mechanisms and consequences but all require the use of modern Compliance 4.0 tools aimed at improving transparency, strengthening internal control and protecting financial resources (*Figure 1*).

In addition to the ACFE research, important results in the field of financial fraud analysis and compliance risk assessment are presented in the “Global Economic Crime and Fraud Survey 2024” conducted by PricewaterhouseCoopers (*PwC, 2024*). This study provides practical evidence of the growing importance of transforming traditional financial control systems into modern Compliance 4.0 models.

In the context of Compliance 4.0 development, the results of the survey confirm the need to introduce digital monitoring tools, improve the transparency of financial flows and strengthen a culture of corporate integrity. The transition from traditional control mechanisms to risk-oriented compliance systems allows enterprises to identify threats earlier and reduce the negative impact of fraudulent activities.

According to the survey results, about half of Ukrainian enterprises (51%) analysed during the period 2020–2024 faced different forms of economic crime and fraud. Moreover, this indicator increased by 4% in 2024 compared with 2022, which demonstrates the growing importance of developing comprehensive compliance systems as an instrument for protecting enterprises from financial threats (*Figure 2*).

The analysis of the main types of fraud affecting Ukrainian enterprises shows that the most common threats include asset misappropriation (47%), bribery and corruption (43%), cybercrime (38%), and procurement fraud (35%) (*PricewaterhouseCoopers, 2024*). These areas require the use of modern Compliance 4.0 instruments focused on preventing violations, improving financial transparency and strengthening enterprise security.

The spread of these risks confirms the need to transform traditional financial management approaches through the implementation of digital compliance tools. Such tools are aimed at ensuring the transparency of financial flows, developing a culture of corporate integrity and identifying possible fraud risks at an early stage.

Since many fraudulent schemes have similar characteristics in different countries, comparative analysis is an important method for studying international experience in the development of compliance systems. This approach helps to identify common elements of fraud schemes, understand the reasons for their occurrence and develop effective preventive mechanisms based on the principles of Compliance 4.0.

Modern measures for preventing corporate fraud in different countries, including Ukraine, are gradually changing from traditional control procedures into integrated compliance risk management systems. Enterprises increasingly combine internal control, auditing procedures, digital monitoring technologies and ethical standards of corporate behaviour.

Management reviews, external audits of enterprise activities and digital instruments for analysing financial operations are widely used to reduce fraud risks. However, depending on the economic sector, the methods of committing fraud and the required compliance measures may differ.

According to the international audit company Ernst & Young (2022), internal audit remains one of the key tools for reducing fraud risks, especially for enterprises with significant financial and material flows. At the same time, under the conditions of digital transformation, internal audit should be supported by Compliance 4.0 instruments, including automated transaction monitoring, risk-oriented control, data analytics, counterparty verification and the development of a culture of corporate integrity.

The most common tools for reducing fraud risks in Ukraine and worldwide are presented in the Appendix (Table 2). The results show that internal audit and internal control remain the most widely used instruments and create the basis for developing modern compliance systems.

Ukrainian researchers highlight that internal audit plays an important role as one of the main mechanisms for preventing and identifying fraud in enterprises. In the context of Compliance 4.0 development, its role is expanding from traditional verification of financial operations to an integrated instrument for risk monitoring, improving the transparency of financial flows and strengthening a culture of corporate integrity (Tutchenko, 2021; Karpushenko & Karpushenko, 2023; Bortnikova et al., 2023).

This situation can be explained by the fact that external audit in Ukraine is mainly focused on confirming the reliability of financial statements for previous periods. As a result, enterprises require additional internal mechanisms that allow continuous monitoring of financial processes and early identification of possible risks.

At the same time, international experience in combating financial fraud demonstrates a wider approach. Significant attention is paid to the combination of external audit, compliance control, automated monitoring systems and digital tools for risk analysis (Ernst & Young, 2022; PricewaterhouseCoopers, 2024).

This approach reflects the principles of Compliance 4.0, where control systems are focused not only on detecting fraud and economic crimes but also on preventing them through digital technologies, data analysis, risk-oriented management and the development of ethical corporate behaviour.

The main tools for combating fraud at the international level as elements of the transformation of enterprise financial management towards transparency and integrity are presented in the Appendix (Figure 3).

The presented data (*Figure 4*) show that external audit of financial statements remains one of the most widely used tools for reducing fraud risks in enterprises worldwide (83%). However, under the conditions of digital transformation, traditional audit procedures should be combined with compliance control, digital monitoring systems and risk-oriented technologies to improve the effectiveness of fraud prevention.

At the same time, the results presented in *Figure 4* demonstrate that the practical ability of external audit to identify fraudulent activities is limited. According to ACFE reports, only 5% of fraud cases are detected through external audits of financial statements. This indicates that traditional control mechanisms mainly focus on checking previous financial information and are not always effective for early identification of risks.

As shown in *Figure 4*, more than 38% of fraud cases remain undetected by traditional control instruments. This confirms the need to move from reactive approaches focused on detecting existing problems to preventive risk management models based on the principles of Compliance 4.0.

Compliance control is becoming one of the key instruments for identifying and preventing fraudulent activities. In modern conditions, it is transforming into an integrated system for managing the transparency of financial flows. This system combines digital monitoring, data analytics, compliance risk assessment, automated control procedures and the development of a culture of corporate integrity.

Other important instruments for reducing fraud risks include internal audit (78%) and management reviews of financial processes (75%). These tools support continuous monitoring, improve the quality of management decisions and strengthen the overall system of enterprise financial security.

The obtained results confirm the importance of integrating internal control mechanisms, digital technologies and compliance instruments within the Compliance 4.0 system. Such integration allows enterprises to prevent fraud more effectively, ensure financial transparency and increase their resilience in a changing economic environment.

The comparative analysis of fraud sources shows that the role of external participants in fraudulent activities is increasing. In Ukraine, the share of fraud cases committed by third parties increased from 41% in 2020 to 45% in 2024. At the same time, the global indicator remained almost unchanged and decreased slightly from 39% in 2020 to 38% in 2024 (*Figure 5*).

This trend demonstrates the growing influence of external compliance risks on enterprise activities and confirms the need to transform traditional financial management approaches through the development of Compliance 4.0 systems. This approach is based on digital monitoring, risk-oriented control, comprehensive counterparty verification (due diligence) and ensuring the transparency of financial flows.

Digital counterparty verification systems, including analytical platforms such as YouControl (2026), support compliance procedures by improving transparency and reducing external risks.

Considering that the level of financial fraud committed by third parties is significant, enterprises should pay more attention not only to internal risks but also to risks related to suppliers, contractors, partners and other external stakeholders. This requires the development of new mechanisms for controlling business relationships and preventing possible violations.

Therefore, the modern concept of Compliance 4.0 provides a transition from formal control procedures to a proactive system for managing corporate integrity and financial security. Such a system includes counterparty verification procedures, reputation risk assessment, automated analysis of financial transactions and the development of a culture of responsible corporate behaviour.

The experience of European companies shows that compliance has become an essential element of corporate governance and financial management. Therefore, the integration of Ukrainian enterprises into the European economic and business environment requires the implementation of modern compliance systems based on European standards of transparency, integrity, fraud prevention and sustainable development.

The development of effective compliance systems requires the use of international standards and best practices in the field of internal control, audit and risk management. The INTOSAI has developed a number of standards aimed at improving internal audit systems, strengthening control mechanisms and ensuring the transparency of financial processes (*INTOSAI, 2026*).

An important feature of these standards is their systematic approach to creating effective risk management mechanisms. At the same time, in the field of internal control, INTOSAI approaches are closely connected with the principles of the COSO framework developed by the COSO. These principles form the basis for organising internal control, identifying risks and improving management processes.

Under the conditions of digitalisation and transformation of financial management, these approaches create a foundation for the development of the Compliance 4.0 concept. This concept combines internal control, risk management, digital monitoring technologies and the principles of corporate integrity.

Compliance can be considered as a strategic tool that ensures the correspondence of enterprise activities with legal requirements, professional standards and ethical principles. Within Compliance 4.0, traditional compliance mechanisms are complemented by digital control technologies, automated risk analysis and instruments for ensuring the transparency of financial flows.

The main purpose of compliance is to reduce risks connected with possible administrative, legal, financial and reputational losses caused by interactions with regulators, customers, business partners and other stakeholders. Compliance includes following internal regulations, international standards, corporate procedures and principles of responsible business behaviour.

Although compliance is often associated with audit and internal control, it has a wider role in the enterprise management system. Unlike traditional internal audit, which mainly evaluates specific operations and financial activities, compliance provides continuous monitoring of the effectiveness of control systems and supports the prevention of possible violations.

Within the Compliance 4.0 concept, compliance is transforming from a separate control function into an integrated system of preventive financial risk management. This system is focused on preventing fraud, improving the transparency of financial operations and developing a culture of responsibility and integrity.

The effectiveness of Compliance 4.0 depends on its ability to adapt to changes in the external environment. These changes include new regulatory requirements, technological development, digital risks, cyber threats and new forms of financial fraud. Therefore, modern enterprises need

flexible compliance systems that can quickly respond to challenges and support sustainable financial development.

To determine the role of compliance in the enterprise financial management system, it is important to compare it with other control mechanisms, including internal control and management control (*Table 3*).

This comparison helps to identify the specific features of compliance development and explain its transformation from a traditional control function into an integrated Compliance 4.0 system. This system combines financial control, risk management, digital monitoring and the principles of corporate integrity.

The analysis shows that compliance, management control and internal control have a common purpose: to help enterprises prevent financial losses, reduce fraud risks and support stable development. However, each of these systems uses different methods and instruments to achieve these objectives.

Under the conditions of digital transformation of financial management, compliance is becoming a strategic element of enterprise governance. It supports transparency of business processes, protection against internal and external threats and the development of stakeholder trust.

In a broad sense, compliance can be considered as a part of the internal control system used by enterprises. In a narrow sense, compliance is a separate system focused on following legal requirements, professional standards and ethical principles in all areas of enterprise activity. Special attention is given not only to financial control but also to non-financial aspects, including reputation risks, corporate responsibility and ethical behaviour.

Within the Compliance 4.0 concept, compliance is transforming into a digitally oriented risk management system. It ensures transparency of financial processes, supports a culture of integrity and provides preventive protection against fraud through the use of digital technologies, automated monitoring and analytical tools.

Compliance helps enterprises avoid the uncontrolled acceptance of risks, ensures that business activities follow legal requirements, professional standards and ethical principles, and reduces the possibility of financial, administrative and reputational losses. It also allows enterprises to respond more effectively to changes in the external environment.

In the context of Compliance 4.0 development, the role of compliance is expanding through the use of digital technologies, automated monitoring systems, risk analytics and tools aimed at preventing financial fraud. As a result, compliance is becoming not only a control mechanism but also an important element of strategic financial management.

The main purpose of compliance, management control and internal control is to support enterprises in reducing financial losses, managing risks and ensuring sustainable development through specific methods and instruments. However, under the conditions of digital transformation, compliance plays a wider role because it ensures the transparency of financial flows, strengthens corporate integrity and protects enterprises against internal and external threats.

In a broad sense, compliance can be considered as an element of the internal control system. In a narrow sense, compliance is a separate management system focused on following legal requirements, professional standards and ethical principles in all areas of enterprise activity. Special

attention is paid to non-financial aspects, including reputation, stakeholder relations and responsible business behaviour.

Within the Compliance 4.0 concept, compliance is transforming from a traditional verification mechanism into an integrated risk management model. This model combines digital control, compliance risk assessment, fraud prevention mechanisms and the development of a culture of responsible business conduct.

Compliance 4.0 can be defined as a system of rules, standards and values integrated with modern digital technologies aimed at ensuring transparency, integrity and efficiency of enterprise activities. It regulates corporate relationships between employees and establishes standards of behaviour in cooperation with external stakeholders, including suppliers, customers, contractors, public authorities, local communities, partners and other participants in business processes.

In addition, modern compliance includes the principles of corporate social responsibility, ESG approaches and mechanisms for building long-term trust between enterprises and stakeholders. This expands the role of compliance from regulatory control to a strategic instrument for sustainable business development.

Compliance 4.0 forms the basis for ensuring the transparency of enterprise financial flows because it establishes rules, procedures and standards that support legal, ethical and controlled financial operations through the use of digital tools. At the same time, the transparency of financial flows is an indicator of the effectiveness of compliance programmes, as it provides clear and reliable information about the movement of financial resources for internal and external stakeholders.

Thus, compliance acts as a strategic tool for transforming enterprise financial management by creating an integrated system that combines internal control, risk management, digital technologies and fraud prevention.

Scientific studies confirm that the transparency of financial flows is an important element of enterprise financial security. It contributes to increasing customer trust, strengthening business reputation, attracting reliable partners and qualified employees, and maintaining competitive advantages (*Beleviat & Spasenko, 2013; Oriekhova, 2017; Azarenkova et al., 2020; Bortnikova et al., 2023; Karpushenko & Karpushenko, 2023*).

International rating approaches also confirm that transparency, risk management and effective corporate governance influence enterprise reliability and stakeholder confidence (*Standard & Poor's Global Ratings, 2026*).

In the modern business environment, transparency of financial processes is becoming a necessary condition for effective enterprise development and an important component of the Compliance 4.0 concept. It supports financial stability, responsible decision-making and effective cooperation with stakeholders, including investors, creditors and regulatory authorities.

In the context of Compliance 4.0, the transparency of financial flows is the result of combining digital technologies, ethical standards, risk-oriented management and preventive mechanisms for protecting enterprises against fraud.

At the same time, the implementation of compliance at all levels of the organisational structure requires a systematic approach, appropriate resources, digital transformation of processes, the development of a culture of integrity, and the gradual implementation of a set of management measures (*Figure 6*).

The implementation of Compliance 4.0 in enterprise financial management is becoming especially important under the conditions of economic instability, digital transformation and increasing fraud risks. This concept is aimed at improving the transparency of financial flows, developing a culture of integrity and creating a preventive system for protecting enterprises against financial threats.

The development of Compliance 4.0 is supported by both enterprises and state regulatory authorities. This interaction creates opportunities for improving compliance mechanisms, developing digital control systems and strengthening trust between business, government institutions and society.

From the enterprise perspective, the main factors motivating the implementation of Compliance 4.0 include the need to increase the trust of investors, creditors, partners and other stakeholders through open and reliable financial information. Enterprises also focus on meeting regulatory requirements and international standards related to ESG principles, financial compliance, auditing and corporate governance.

Another important factor is the need to reduce internal and external risks connected with fraud, corruption, conflicts of interest, unauthorised expenses and violations of financial discipline. The use of digital compliance tools allows enterprises to improve the quality of management decisions through access to reliable financial information, risk analytics and automated monitoring systems.

From the perspective of state regulatory authorities, Compliance 4.0 is considered as an important instrument for reducing the shadow economy, preventing corruption and improving financial discipline. Digital compliance mechanisms support effective monitoring, supervisory control and the fulfilment of international requirements in the areas of financial transparency, ESG transformation, European integration and digital governance.

Thus, improving the transparency of financial flows is not only a part of an enterprise's internal management strategy but also an important direction in the transformation of financial management based on Compliance 4.0 principles. This transformation requires the use of digital monitoring platforms, automated risk analysis systems, internal control instruments and effective cooperation with regulatory authorities.

At the enterprise level, the successful implementation of Compliance 4.0 depends on the development of a corporate culture based on honesty, openness, responsibility and ethical decision-making. Management plays an important role in forming these values and strengthening trust among employees, investors, partners and other stakeholders.

The first stage of introducing Compliance 4.0 into financial processes is the involvement of employees in supporting corporate values and understanding compliance risks. This can be achieved through training programmes, management support and the development of a culture of integrity.

Effective communication is also an important element of Compliance 4.0. Enterprises should create transparent information exchange systems using digital platforms for reporting, financial monitoring and compliance risk management. These tools provide quick access to information, improve cooperation between departments and help identify possible violations at an early stage.

Managers play a key role in ensuring the transparency of financial processes because they connect strategic goals with everyday enterprise activities. They organise staff training, support

compliance with internal standards and promote a common understanding of transparency, integrity and responsible management of financial resources.

An important element of compliance culture is an open communication policy that allows employees to report problems, discuss financial risks and receive support from management. Such an approach helps prevent fraud, increases trust in decision-making and creates a corporate environment where ethical behaviour and integrity become basic principles.

Regular meetings and discussions of financial indicators, compliance requirements and possible risks are also important tools within Compliance 4.0. They help increase employee involvement, improve cooperation between departments and support the continuous improvement of financial management processes.

Therefore, Compliance 4.0 creates an integrated model of enterprise financial management that combines digital technologies, internal control, risk management and corporate culture. This approach improves the transparency of financial flows, reduces fraud risks and strengthens the long-term financial security of enterprises.

The absence of effective communication on financial issues may lead to employee dissatisfaction, internal conflicts, higher operational risks and lower management efficiency. At the same time, open discussion of performance results, possible improvements and compliance with established standards helps prevent conflicts, reduce fraud risks and increase employee responsibility.

The implementation of Compliance 4.0 principles and the improvement of financial process transparency provide several advantages for Ukrainian enterprises. Firstly, this approach demonstrates responsibility towards employees, customers, partners and other stakeholders because it ensures a clear understanding of financial operations, possible risks and expected results. It helps strengthen stakeholder trust, improve business reputation and support responsible business development in accordance with European corporate governance standards.

Secondly, transparency of financial flows within the Compliance 4.0 concept allows enterprises to respond more effectively to crisis situations and reduce the influence of internal and external risks. Under the conditions of economic instability, enterprises can use digital reporting systems, monitoring tools and communication channels with stakeholders to provide timely information about their financial position, possible risks and strategic decisions.

Such an approach strengthens confidence in enterprises, increases their reputational stability and improves their ability to manage financial challenges. The implementation of modern compliance recommendations, including reporting automation, digital monitoring instruments, risk-based data analysis and anti-corruption mechanisms, allows enterprises to respond effectively to modern threats and ensure sustainable development based on transparency, responsibility and corporate integrity.

Taking into account the conditions of martial law, reducing the shadow economy and implementing Compliance 4.0 principles are becoming especially important. These measures support the more effective use of financial resources, contribute to economic recovery and strengthen the financial stability of enterprises and the national economy.

The development of transparent mechanisms for managing financial flows, strengthening control over fraud risks and creating a culture of corporate integrity provide the basis for improving the efficiency of resource use at both enterprise and state levels.

Transparent financial flows ensured through digital compliance tools, automated monitoring systems and risk-oriented management create the foundation for stable enterprise operation, strengthening financial security, attracting investment and developing long-term cooperation with international partners.

Thus, Compliance 4.0 acts as a strategic direction for transforming enterprise financial management. It combines digital technologies, transparency, responsibility and stakeholder trust in accordance with modern European standards of doing business.

Discussion

The results of the study confirm that Compliance 4.0 should be understood not as a technical continuation of traditional compliance control, but as a qualitative transformation of enterprise financial management. Its significance lies in the transition from fragmented, retrospective and mainly formal control procedures to an integrated, preventive and digitally supported system aimed at ensuring transparency, integrity and protection against financial fraud. This transformation is especially important under conditions of economic instability, digitalisation of financial operations, increased interaction with external stakeholders and the growing complexity of fraud schemes.

The proposed classification of enterprise financial fraud demonstrates that fraudulent activities may differ by object, subject, method, transaction type and instruments used. This multidimensional nature of fraud means that enterprises cannot rely on a single control procedure or isolated audit mechanism. Fraud may be committed by employees, managers, top management, contractors, suppliers, customers, investors, financial institutions or several participants acting together. It may involve cash transactions, bank operations, barter schemes, manipulation of financial instruments, falsification of documents, corruption, price manipulation, tax evasion, misuse of assets or insider information. Therefore, the response must also be multidimensional. Compliance 4.0 provides such a response because it combines digital monitoring, automated risk assessment, due diligence, anti-corruption procedures, reporting channels, internal control and ethical standards into one coherent management system.

The comparison between Compliance 4.0, management control and internal control shows that these systems share a common strategic purpose: reducing risks, preventing losses and supporting sustainable enterprise development. However, their operational logic differs. Management control is mainly focused on achieving planned financial and strategic indicators. Internal control is oriented towards operational efficiency, asset protection, accuracy of reporting and compliance with established procedures. Compliance 4.0, by contrast, expands the control field to include legal requirements, ethical standards, transparency of financial flows, stakeholder relations, reputation risks, corruption prevention and fraud protection. This broader scope explains why Compliance 4.0 should be considered a strategic element of financial management rather than merely an administrative control function.

The empirical evidence used in the article supports the need for such transformation. Reports by the Association of Certified Fraud Examiners and PricewaterhouseCoopers show that financial fraud remains a serious and persistent threat to enterprises. The data on Ukrainian enterprises are particularly important because they demonstrate that economic crime and fraud are not abstract global risks, but direct challenges for companies operating in Ukraine. The fact that a significant share of enterprises experienced economic crime and fraud during the analysed period confirms

the insufficiency of purely traditional control mechanisms. At the same time, the structure of fraud risks—including asset misappropriation, corruption, financial statement fraud, cybercrime, tax evasion and other forms of economic crime—indicates that modern fraud is increasingly complex and requires integrated digital and organisational countermeasures.

One of the most important discussion points concerns the limited effectiveness of external audit as an anti-fraud instrument. External audit remains widely used and necessary for confirming the reliability of financial statements, but the study shows that it is not sufficient for early fraud detection. This limitation is structural rather than accidental. External audit usually assesses financial information for a previous reporting period and is not designed to provide continuous monitoring of business processes in real time. Therefore, enterprises that rely mainly on external audit may detect fraud only after significant losses have already occurred. Compliance 4.0 addresses this weakness by shifting attention from retrospective confirmation to preventive monitoring, early warning, continuous risk assessment and rapid response to suspicious transactions.

Internal audit and internal control remain crucial elements of the enterprise security system, but their role must also change. Under Compliance 4.0, internal audit should not be limited to periodic verification of documentation and procedural compliance. It should become part of a wider digital risk-management architecture that includes automated analysis of transactions, monitoring of financial flows, verification of counterparties, assessment of corruption risks, identification of conflicts of interest and evaluation of compliance culture. In this sense, internal audit becomes not only a diagnostic tool but also an instrument of preventive financial security.

A separate issue concerns the increasing role of third parties in fraudulent schemes. The article shows that the share of fraud committed by external participants is significant and, in the Ukrainian context, tends to increase. This finding has important implications for enterprise governance. It means that financial security cannot be ensured only by controlling internal employees and internal processes. Enterprises must also manage external compliance risks connected with suppliers, contractors, partners, customers, intermediaries, consultants, investors and public authorities. Due diligence procedures, counterparty verification, reputation screening, sanctions checks, conflict-of-interest analysis and monitoring of contractual behaviour should therefore become mandatory components of Compliance 4.0.

This external dimension of compliance is especially important for Ukrainian enterprises seeking integration into the European business environment. European corporate governance standards place strong emphasis on transparency, anti-corruption mechanisms, responsible business conduct, ESG principles and stakeholder accountability. Enterprises that cannot demonstrate transparent financial flows, reliable compliance procedures and an integrity-oriented corporate culture may face difficulties in attracting investment, entering international supply chains, cooperating with foreign partners or receiving financing. Therefore, Compliance 4.0 has not only a protective function but also an integration function: it helps enterprises become compatible with international expectations of responsible and transparent business.

The role of digital technologies is another key aspect of the discussion. Compliance 4.0 is impossible without the use of digital monitoring platforms, automated risk analysis, data analytics, artificial intelligence tools and digital reporting systems. These instruments allow enterprises to process large volumes of financial and operational data, identify unusual patterns, detect suspicious transactions and assess risks more quickly than traditional manual procedures. However,

digitalisation should not be interpreted as a purely technological solution. The effectiveness of digital compliance depends on the quality of data, the adequacy of algorithms, staff competence, management support and the ethical culture of the organisation. Digital tools may strengthen compliance, but they cannot replace responsible governance.

Artificial intelligence and automated analytics create new opportunities for fraud prevention, but they also generate new risks. Automated systems may detect anomalies in transactions, compare counterparties, analyse behavioural patterns and support early-warning mechanisms. At the same time, excessive reliance on algorithms may create false confidence if models are poorly calibrated, data are incomplete or management ignores non-quantifiable risks. Compliance 4.0 should therefore combine technological instruments with human expertise, ethical judgement and managerial responsibility. The most effective model is not full automation, but hybrid governance in which digital systems support decision-making while compliance officers and managers retain responsibility for interpretation and action.

The study also highlights the importance of corporate culture. Fraud prevention cannot be reduced to formal rules, software or reporting procedures. Many violations occur not because enterprises lack regulations, but because employees do not believe in the fairness of rules, do not trust reporting channels or observe unethical behaviour tolerated by management. Therefore, Compliance 4.0 must include the development of an integrity culture based on honesty, openness, responsibility, ethical decision-making and protection of whistleblowers. Training programmes, communication policies, regular discussions of compliance risks and management commitment are essential for transforming compliance from a formal requirement into an everyday organisational practice.

The stakeholder-oriented approach is particularly important. Transparent financial flows are valuable not only for owners and managers, but also for employees, investors, creditors, partners, customers, regulators and society. Stakeholders require reliable information about how enterprise resources are formed, distributed and controlled. When financial processes are opaque, trust decreases and reputational risks increase. When financial flows are transparent and compliance procedures are effective, enterprises improve their credibility and resilience. Therefore, Compliance 4.0 contributes to strengthening stakeholder trust, which is an important intangible asset in the modern business environment.

The article also demonstrates that transparency of financial flows should be interpreted as both a result and an indicator of compliance effectiveness. On the one hand, compliance procedures, digital monitoring and internal control mechanisms create conditions for transparent financial operations. On the other hand, the level of transparency allows enterprises and external stakeholders to assess whether compliance programmes are actually functioning. If financial flows remain unclear, fragmented or difficult to verify, then compliance exists only formally. If financial information is accurate, timely, traceable and accessible to authorised stakeholders, then compliance becomes a real mechanism of financial security.

In the Ukrainian context, the importance of Compliance 4.0 is strengthened by martial law, economic instability, reconstruction needs and the necessity to reduce the shadow economy. Under such conditions, the transparency of financial flows becomes not only an enterprise-level issue but also a matter of national economic resilience. Transparent resource management supports more effective use of financial resources, prevents corruption losses, increases investor confidence and

strengthens the ability of enterprises to cooperate with international partners. Thus, Compliance 4.0 may contribute to both microeconomic stability and broader economic recovery.

The integration of ESG principles into Compliance 4.0 also deserves attention. ESG-oriented business requires transparency, ethical conduct, responsible governance and accountability to stakeholders. Compliance systems that include ESG principles help enterprises move beyond narrow legal compliance towards sustainable corporate behaviour. This is particularly relevant because investors and international partners increasingly evaluate companies not only by financial results, but also by governance quality, corruption risks, social responsibility and transparency. Consequently, Compliance 4.0 can become a bridge between financial management, corporate sustainability and stakeholder trust.

At the same time, the implementation of Compliance 4.0 may face several obstacles. First, enterprises may lack financial and technological resources for introducing automated monitoring systems and digital compliance platforms. Secondly, staff may resist new procedures if they perceive compliance as excessive bureaucracy or surveillance. Thirdly, small and medium-sized enterprises may have difficulty creating separate compliance departments or appointing specialised compliance officers. Fourthly, digital tools require high-quality data and cybersecurity protection. These limitations mean that Compliance 4.0 should be implemented gradually and proportionally, taking into account the size, sector, risk profile and organisational maturity of the enterprise.

The role of the compliance officer becomes central in this transformation. In a traditional model, compliance officers may be responsible mainly for monitoring adherence to rules and preparing reports. In the Compliance 4.0 model, their role is broader: they coordinate risk management, communicate with management and employees, support ethical standards, organise due diligence, analyse compliance data, interact with regulators and contribute to strategic decision-making. Therefore, enterprises need to invest not only in technologies but also in professional competence, independence and authority of compliance specialists.

The findings also indicate that the development of Compliance 4.0 requires coordination between enterprises and state regulatory authorities. Enterprises need clear regulatory requirements, predictable supervisory practices and access to digital public infrastructure. Regulators, in turn, need reliable reporting, transparent business behaviour and effective cooperation from enterprises. This interaction is especially important for reducing the shadow economy, preventing corruption and supporting Ukraine's European integration. Compliance 4.0 can therefore be seen as an institutional mechanism linking enterprise-level governance with national-level financial transparency.

From a theoretical perspective, the study contributes to the understanding of compliance as an evolutionary concept. Traditional compliance was primarily associated with following rules and avoiding penalties. Compliance 4.0 expands this understanding by integrating digitalisation, proactive risk management, financial transparency, corporate integrity, ESG principles and stakeholder orientation. This means that compliance becomes not only a protective mechanism, but also a value-creating element of enterprise financial management. It protects resources, improves decision-making, supports reputation and contributes to sustainable development.

From a practical perspective, the study suggests that enterprises should not introduce Compliance 4.0 as a separate project disconnected from financial management. It should be embedded into budgeting, cash flow management, procurement, investment decisions,

counterparty relations, reporting, internal audit and strategic planning. Only in this case can compliance influence real financial behaviour rather than remain a formal declaration. The integration of compliance into everyday financial processes is the main condition for moving from reactive control to preventive risk management.

The discussion also confirms that Compliance 4.0 should be assessed by measurable outcomes. These may include reduction in fraud losses, faster identification of suspicious transactions, improved quality of financial reporting, increased number of detected conflicts of interest, improved counterparty verification, higher employee awareness, greater stakeholder trust and stronger investment attractiveness. Without such indicators, compliance effectiveness may remain difficult to evaluate. Future research should therefore develop methodological tools for measuring the efficiency and economic impact of Compliance 4.0 implementation.

The limitations of the present study are connected with its conceptual and analytical focus. The article systematises fraud risks, compliance instruments and organisational approaches, but further empirical research is needed to evaluate the practical effectiveness of Compliance 4.0 in different sectors and enterprise sizes. Future studies should compare enterprises with different levels of compliance digitalisation, analyse the cost-benefit ratio of digital monitoring systems, study the role of artificial intelligence in fraud detection and evaluate the influence of compliance culture on financial security.

Thus, the results of the study confirm that Compliance 4.0 represents a strategic direction for transforming enterprise financial management. It allows enterprises to move beyond formal control and create a proactive system based on transparency, integrity, digital monitoring, risk-oriented management and stakeholder trust. Under conditions of economic instability, digital risks and European integration, this transformation becomes not only desirable but necessary for ensuring financial security and sustainable enterprise development.

Conclusion

The research confirms that the implementation of the Compliance 4.0 concept is an important direction in the transformation of enterprise financial management under the conditions of digitalisation, growing fraud risks and the need to ensure financial transparency. Compliance 4.0 is considered not only as a control instrument but also as an integrated system that combines digital technologies, risk management, ethical standards and mechanisms for preventing financial fraud.

It has been established that an effective Compliance 4.0 system is based on the interaction of preventive, diagnostic and corrective functions. Together with digital monitoring technologies, automated data analysis, risk assessment procedures and counterparty verification, these functions form a mechanism for identifying, evaluating and reducing compliance risks.

The study demonstrates that Compliance 4.0 changes the traditional approach to internal control by expanding its role towards the digital analysis of financial operations, early identification of risks, fraud prevention, improvement of management transparency and development of an ethical corporate culture. The proposed classification of financial fraud and systematisation of compliance instruments provide a basis for strengthening the financial security of enterprises.

The research substantiates the need to develop an organisational model of compliance management that takes into account the size, structure and specific characteristics of enterprise activities. Within this system, the compliance officer plays an important role in coordinating risk

management processes, supporting corporate integrity and ensuring effective communication between management, employees, partners and regulatory authorities.

The implementation of Compliance 4.0 is especially relevant for Ukrainian enterprises under the conditions of economic instability, martial law and integration into the European business environment. The use of digital compliance platforms, automated financial monitoring systems, ESG principles and transparent communication mechanisms contributes to preventing financial violations, increasing investment attractiveness and developing long-term cooperation with international partners.

Thus, Compliance 4.0 represents a modern approach to enterprise financial management based on transparency, integrity and proactive risk management. Its development allows enterprises to improve financial stability, increase stakeholder trust and create conditions for sustainable growth in a changing economic environment.

Future research should focus on developing practical approaches for evaluating the effectiveness of Compliance 4.0 implementation in enterprises. Special attention should be given to the role of artificial intelligence, advanced analytics and digital technologies in fraud prevention, compliance risk management and improvement of enterprise financial security.

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Conflict of Interest

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Appendix

Table 1. Classification of Enterprise Financial Fraud in the Context of Developing a Compliance 4.0 System

Classification criterion	Types of fraud	Response measures within Compliance 4.0
By the object of fraudulent activities	Fraud involving resources of private enterprises, individuals, state institutions, local authorities or several entities at the same time	Development of transparent financial flow management; digital monitoring of resources; automated risk assessment and control mechanisms
By the subject of fraudulent activities	Fraud committed by top management, managers, employees, investors, suppliers, contractors, customers, financial institutions, public authorities or several participants together	Development of a compliance culture; due diligence procedures; management of conflicts of interest; introduction of ethical standards and responsibility mechanisms
By methods of committing fraudulent activities	Providing false information, abuse of trust, misuse of official position, influence or creation of incorrect understanding of enterprise activities	Use of risk-oriented compliance monitoring; development of reporting channels; application of digital tools for identifying suspicious activities
By the nature of transactions related to fraud	Fraud in cash transactions, bank operations, barter transactions, financial instruments and combined schemes	Increasing transparency of financial operations; automation of financial control; application of digital analytics for transaction monitoring
By the tools used to commit fraud	Manipulation of accounting documents, illegal use of assets, corruption, tax evasion, misuse of funds, price manipulation, falsification of reports, illegal use of insider information and unfair competition	Integration of Compliance 4.0 tools, including digital auditing, anti-corruption procedures, automated financial monitoring and development of corporate integrity

Source: compiled by the authors based on scientific studies on compliance, financial security and fraud prevention (Beleviat & Spasenko, 2013; Oriekbova, 2017; Tiutchenko, 2021; Skachkova, 2021; Karpushenko & Karpushenko, 2023; Bortnikova et al., 2023).

Table 2. Tools for Reducing Fraud Risks as Components of Developing the Compliance 4.0 System in Ukraine and Worldwide

Tool	Worldwide, %	Ukraine, %	Role in the Compliance 4.0 system
Internal audit	78	68	Identification of risks, evaluation of control effectiveness and continuous monitoring of financial processes
Internal control	70	66	Ensuring transparency of operations, compliance with internal procedures and prevention of possible violations
Management reviews	58	59	Strengthening management responsibility, improving decision-making and controlling compliance risks
External audit	48	42	Independent assessment of financial reporting reliability and identification of high-risk operations

Anti-fraud training and communication	55	38	Development of compliance culture, ethical behaviour and employee awareness of fraud risks
Support and protection of whistleblowers	45	28	Creation of secure reporting channels, early detection of violations and strengthening corporate integrity
Regular staff rotation	35	12	Prevention of conflicts of interest, reduction of operational risks and improvement of internal control

Source: improved by the author based on analytical reports (*Association of Certified Fraud Examiners, 2022; Ernst & Young, 2022; PricewaterhouseCoopers, 2020; PricewaterhouseCoopers, 2024; Association of Certified Fraud Examiners, 2024*), considering the Compliance 4.0 concept.

Table 3. Comparative Analysis of Compliance 4.0, Management Control and Internal Control in the Enterprise Financial Management System

Comparison criterion	Compliance 4.0	Management Control	Internal Control
Definition	A digitally oriented system for ensuring that enterprise activities comply with legal requirements, ethical standards, and the principles of transparency and integrity through the use of modern risk monitoring technologies	A process that ensures the fulfilment of management tasks by achieving the planned financial and strategic goals of an enterprise	A system of measures aimed at ensuring operational efficiency, protection of assets, accuracy of financial reporting, and compliance with legislation
Object of control	Enterprise activities in terms of compliance with external and internal regulations, transparency of financial flows, and interaction with stakeholders	Economic results of an enterprise and its responsibility centres	All business processes, operations, assets, and liabilities of an enterprise
Subject of control	Compliance risks, fraud risks, corruption, violations of ethical standards, lack of transparency in financial operations, and non-compliance with standards	Achievement of financial and strategic performance indicators of an enterprise	Efficient use of resources, reliability of financial reporting, risks, and mechanisms for their minimisation
Control indicators	Financial and non-financial compliance indicators, level of transparency and integrity, risk indicators, and indicators of compliance culture	Financial results, such as income, costs, profit, profitability, and operational efficiency	Financial and non-financial indicators, such as economic efficiency, compliance with regulations, and effectiveness of procedures
Control authority	Compliance officer, compliance control committee, digital monitoring and risk management systems	Management staff, controllers, and financial managers of an enterprise	Internal control department or internal audit service
Purpose of control	Ensuring the transparency of financial flows, reducing compliance risks, preventing	Achieving the strategic and financial goals of an enterprise through	Ensuring the accuracy and timeliness of reporting, protection of

	fraud, and developing a culture of integrity and stakeholder trust	the efficient use of resources	assets, and compliance of operations with established standards
Methods of control	Digital monitoring of operations, automated risk analysis, counterparty verification, reporting channels for violations, and control of business process integrity	Planning and analysis of financial indicators, management decisions, and assessment of information for process optimisation	Physical control, verification of documentation, computerised systems, and separation of responsibilities

Source: compiled based on the generalisation of scientific studies (*Criminal Code of Ukraine, 2001; Ahmed & Singh, 2022; Ernst & Young, 2022; Nguyen, 2023; Wilson, 2021*).

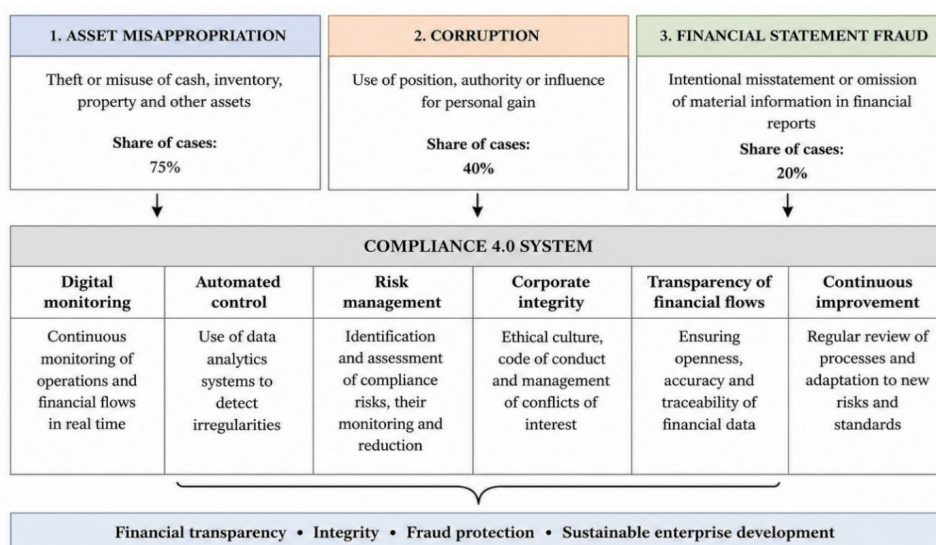


Figure 1. Main Types of Financial Fraud as Objects Influenced by the Compliance 4.0 System (Source: compiled based on ACFE Report to the Nations (2024))



Figure 2. Main Types of Financial Fraud in Ukrainian Enterprises as a Basis for Developing the Compliance 4.0 System (Source: developed by the author based on PricewaterhouseCoopers (2024))

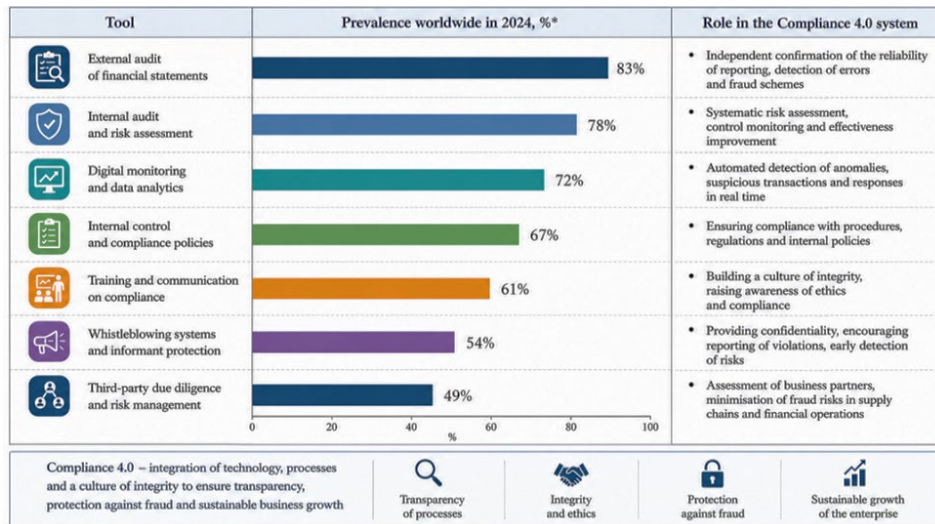


Figure 3. Tools for Ensuring Transparency, Integrity and Protection Against Fraud in the Compliance 4.0 System (Source: compiled by the author based on data from ACFE reports (2022; 2024), PricewaterhouseCoopers (2020; 2024), Ernst & Young (2022) and other international studies, considering the Compliance 4.0 concept.)

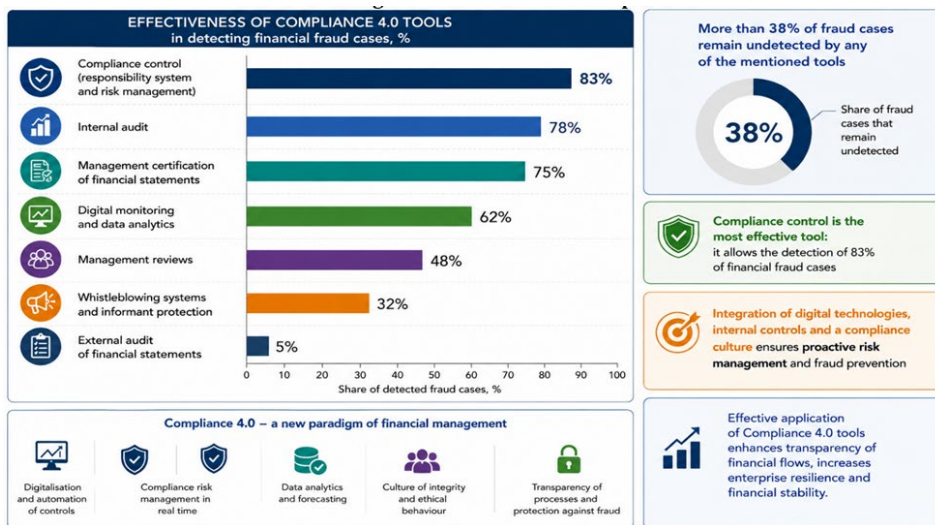


Figure 4. Effectiveness of Compliance 4.0 Tools in Detecting and Preventing Financial Fraud in Enterprises (Source: developed by the author based on data from ACFE reports (2022; 2024), Ernst & Young (2022), PricewaterhouseCoopers (2020; 2024), considering the Compliance 4.0 concept.)

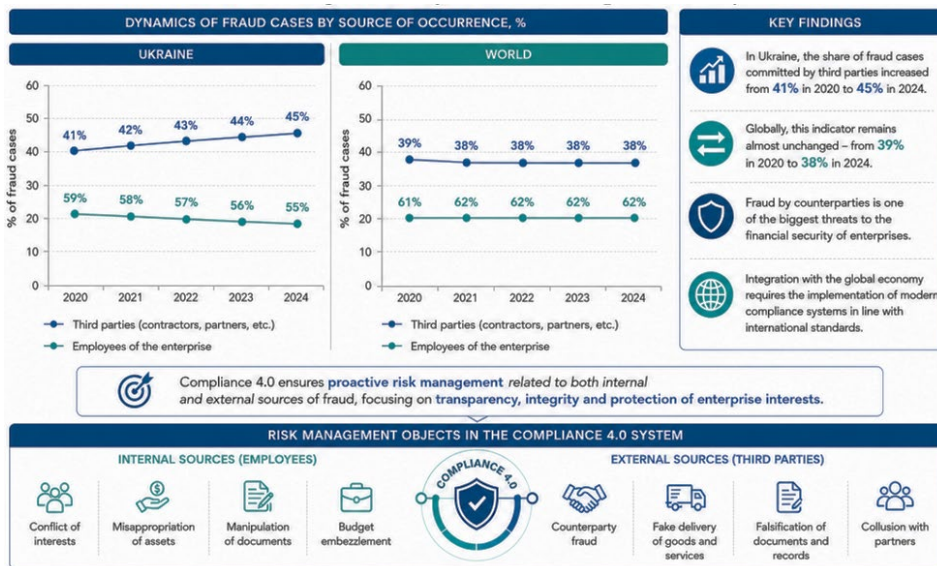


Figure 5. Sources of Financial Fraud in Enterprises as Risk Management Objects in the Compliance 4.0 System (Source: developed by the author based on data from ACFE reports (2022; 2024), PricewaterhouseCoopers (2020; 2024), Ernst & Young (2022), considering the Compliance 4.0 concept.)

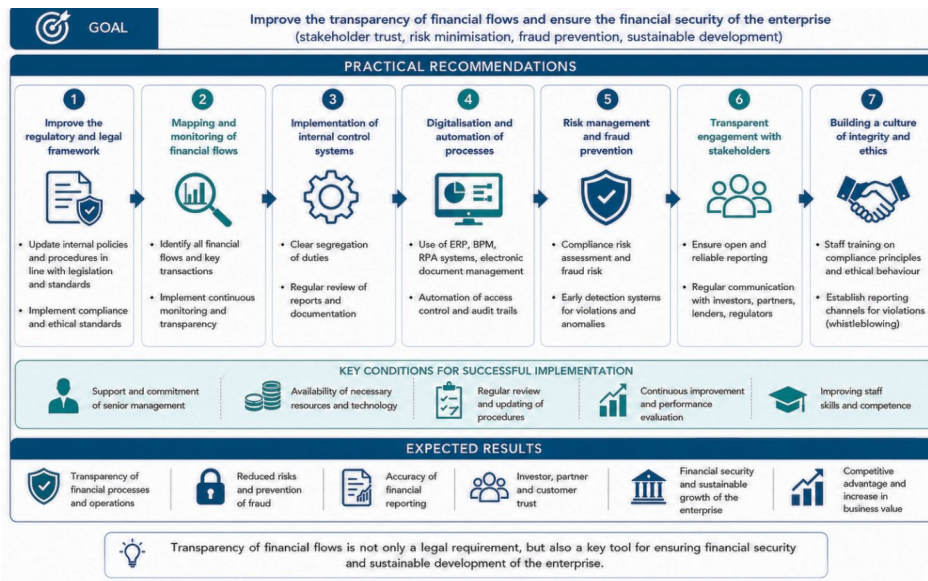


Figure 6. Architecture of Compliance 4.0 Implementation for Ensuring the Transparency of Financial Flows, Integrity, and Enterprise Protection Against Fraud (Source: author's)