# Chapter 2

# The Role of Financial Managers

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## 2.1. The Role of Financial Managers – Review of Research

Digital transformation and the rapid development of technology have changed the fundamental approach to financial management in organisations, while redefining the role of chief financial officers (CFOs) and financial managers. Today's finance leaders face the challenge of integrating traditional management functions with modern technologies such as artificial intelligence, blockchain and big data. Thus, their tasks go far beyond standard accounting and control duties to become a key element in the strategic management of organisations.

Table 2.1 provides an overview of recent academic publications on the role of financial managers, taking into account aspects such as competence, the impact of modern technology, ethical challenges and reporting. The overview identifies the main research directions in this area and highlights the variety of research methods used by the authors, such as empirical analysis, qualitative research or statistical modelling. The added value of the table is the identification of the key findings of these studies,

which allows a better understanding of the evolving role of the CFO in a dynamically changing business environment.

The compilation of publications in Table 2.1 also takes into account the geographical and sectoral diversity of the studies conducted, which provides an opportunity to compare the results obtained in different cultural and institutional contexts. In this way it provides not only an overview of the state of the art, but also a valuable starting point for further research on the transformation of the financial management function.

**Table 2.1.** Summary of publications for the area "Role of financial managers (CFO)"

| No. | Paper | Test sample | Methodology | Conclusions | Number of citations |
|---|---|---|---|---|---|
| 1 | Shaikh et al., 2023 | A sample of 390 companies from the S&P 1500 in high-tech industries in the US between 2002 and 2015 | Panel data analysis (econometric testing) and hypothesis testing | The results confirm that R&D intensity is influenced by the composition of the board of directors. It is also important for maintaining R&D expenditure. | 1 |
| 2 | F. Wang et al., 2023 | 7492 listed Chinese companies, analysis also in sub-sectors, observations 2010-2017 | Statistical methods: time series regression, descriptive statistics, correlation analysis, measure of comparability of data | The results confirm that the gender of the CFO has an impact on quality, including the comparability of financial statements. | 117 |
| 3 | Hrazdil et al., 2023 | The final sample consists of 3840 US listed companies from which 19215 different pairs of chief executive/general managers (CEOs) and CFOs were selected by gender between 2006 and 2019. | Statistical methods: e.g. analysis of distributions of variables, factor analysis, regression models | The results support the view that gender diversity among top management improves the quality of financial reporting, which has important implications for corporate governance mechanisms. | 2 |
| 4 | Osei--Assibey Bonsu et al., 2023 | A survey of chartered accountants and certified public accountants in Ghana and Nigeria; after qualifying 201 questionnaires for final analysis | Structural equation modelling; regression method. Using a Likert scale, the relationship between the use of AI and improved functionality of accounting practices was confirmed. | The results show the positive impact of technology use on financial reporting and accounting practices. | 6 |
| 5 | Afzali, 2023 | US-listed companies from 2001-2018, 30,875 observations, sampling subordinated to the sample of research on organisational culture | A measure of corporate culture (machine learning techniques); measures of comparability of financial statements; empirical model (regression model) | The results show that companies with a strong organisational culture have greater comparability of financial statements. | 5 |
| 6 | Harrison & Malhotra, 2024 | 14,000 observations | Searching for information in databases; statistical methods: descriptive statistics, correlation analysis | The results show which CEO and CFO personality traits influence the tendency towards higher or lower leverage levels. | 1 |

| No. | Paper | Test sample | Methodology | Conclusions | Number of citations |
|---|---|---|---|---|---|
| 7 | Gonzalez & Ashworth, 2021a | 307 students, 82 managers | Qualitative analysis – views of business students and senior managers; discriminant analysis | The results show that the profile of CIOs causes them to be perceived as less authoritative and less socially competent, qualities that are important for strategic leadership, so that they are often depreciated in the company structure. | 3 |
| 8 | Kipp et al., 2020 | 146 participants from Amazon's Mechanical Turk platform (they get 3 USD per participation, they are qualified on the basis of experience) | A 2 × 2 research experiment (agent type × agent autonomy) between participants. Managers are confronted with a decision problem in different contexts (with the support of a different agent). | The results show the impact of using AI in financial reporting decision-making and confirm that managers' use of AI undermines their aggressive financial reporting decisions. | 6 |
| 9 | Bassyouny et al., 2020 | 283 companies from the FTSE All-Share stock market Index | Lexical analysis – study of the frequency of occurrence keywords using several proprietary regression models | The results show the key factors influencing the tone of the narrative in the UK context, where managers have greater flexibility in shaping the narrative with stakeholders. The upstream theory that financial performance and strategic choices can be predicted by the characteristics of upstream managers is confirmed. | 35 |
| 10 | Uwizeye-mungu et al., 2020 | 171 online job advertisements for accounting positions published by Canadian organisations in 2016-2017 | Using labour market signalling theories, a content analysis of 171 online job advertisements for accounting positions published by Canadian organisations in 2016-2017 as a competency requirements analysis was conducted. | The results are based on an analysis of the competency requirements of 171 job advertisements for accounting positions in Canada and the competencies adopted for the accreditation of professional accountants. | 26 |
| 11 | Wu & Zhang, 2019 | Financial data for companies from Worldscope and share price data from Datastream. The names and ages of company directors are collected from BoardEx. | Sensitivity analysis of rotation to performance | The results show whether mandatory IFRS adoption is associated with changes in the sensitivity of CEO turnover to accounting returns and how the impact of IFRS adoption varies by institution at the country level and incentives at the firm level. | 13 |
| 12 | Rubin & Segal, 2019 | Director data for the period 2000 to 2010. Data mainly includes companies from the S&P 1500 index. | Regression method using Tobit methodology | The results indicate whether there is a correspondence between CEO skills and company size, and then whether the average measure of board members' skills is positively related to the quality of financial statements. | 13 |

| No. | Paper | Test sample | Methodology | Conclusions | Number of citations |
|---|---|---|---|---|---|
| 13 | Albrecht et al., 2018 | A sample of 19,058 companies from 2004-2013 | Variable decomposition method | The results show that practice and research recognise the importance of a broad knowledge of accounting and financial reporting for the production of reliable financial statements. | 30 |
| 14 | Arnold, 2018 | No data available | Structural equation modelling; behavioural methods | The results identified contemporary changes affecting the accounting environment, discussed the potential impact on individual and organisational decision-making, and explored how behavioural research can be used to examine these changes. | 44 |
| 15 | Dauth et al., 2017 | German companies listed on the DAX-30 from 2005 to 2010, plus demographics of 1,800 people (members of management and supervisory boards | Hypotheses tested using pooled OLS regressions, Pearson | The results show a relationship between the quality of financial reporting and the international experience of CFOs. The research shows that managers with international experience provide higher quality financial reports. | 37 |
| 16 | Davidson et al., 2012 | A sample of 271 fraudulent companies from the SEC's AAER (US Securities and Exchange Commission) | Dynamic gambling model | The results show how executives' off-duty behaviour, as measured by their ownership of luxury goods (low 'frugality') and previous breaches of the law, is associated with financial reporting risk. | 169 |
| 17 | Bedard et al., 2014 | 7034 companies from English-speaking countries | Literature review; lexical analysis of reports; statistical methods correlation | The results assess the role of the CFO. Comparisons are made between companies where this position exists and those where it does not. In addition, the impact of the CFO on the quality of the financial reporting of the entity where this role exists is examined. This study considers this issue in the context of chief financial officers (CFOs) sitting on the board of their own company. | 78 |
| 18 | C. Zhang et al., 2023 | 47 interviews conducted with companies, AI system provider and regulators | 'Open coding' technique; lexical analysis | The results help to fill a gap in the literature by examining the actual ethical impact of artificial intelligence on management accounting at both the pre- and post-adoption stages. Compared to other areas of accounting, the application of artificial intelligence in management accounting has a wider impact on the organisation and is more likely to raise ethical issues. | 18 |

| No. | Paper | Test sample | Methodology | Conclusions | Number of citations |
|---|---|---|---|---|---|
| 19 | Mian, 2001 | The sample covers 2227 events from 1984 to 1997. | Analysis of data variability | The results provide empirical evidence on why companies change their CFOs. The ways in which CFOs are appointed in US companies and their impact on performance are analysed. | 177 |

Source: own elaboration based on the review conducted using the VOSviewer tool.

The role of chief financial officers (CFOs) and financial managers in today's businesses is evolving in response to changing market needs, globalisation, technology and stakeholder expectations. Over the past few decades the CFO has undergone a transformation from the role of a traditional financial controller to a strategic leader who plays a key role in shaping the business.

Figure 2.1 illustrates the complex roles played by directors and financial managers, regarding four key thematic areas: competence, technology, reporting and ethics, which are closely interlinked, indicating the interdisciplinary nature of modern financial management. The figure illustrates not only the challenges faced by CFOs, but also the potential growth opportunities arising from the integration of technologies such as artificial intelligence and blockchain with traditional management practices.
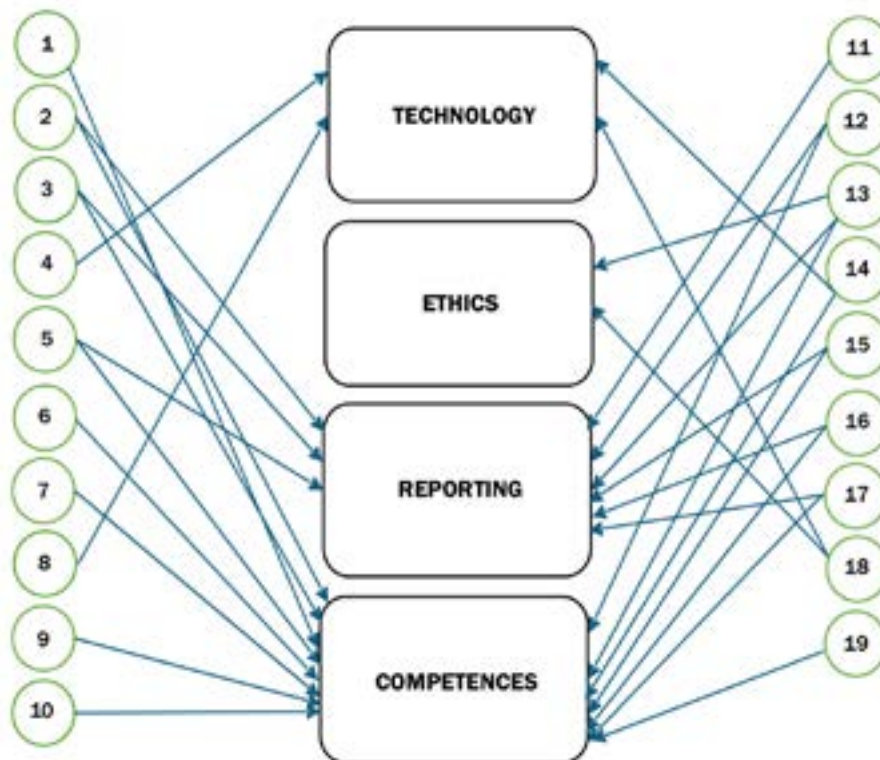


Figure 2.1. The role of finance directors and managers
Source: own elaboration.

The analysis in Figure 2.1 also highlights the importance of managerial competences in the context of various ethical challenges, e.g. transparency in decision-making processes and accountability for financial data. The role of the CFO is therefore not limited to effective financial management, but also includes shaping organisational culture and building trust among stakeholders. Through graphical representation, the figure provides a synthetic understanding of the key elements influencing the development of today's financial leaders and their importance in transforming organisations.

A review of the literature on the study area of the role of directors and financial managers makes it possible to distinguish four main sub-areas, i.e. competences, technology, reporting and ethics presented in Figure 2.1, together with the assigned article numbers in Table 2.1, and also a detailed analysis of the publications lead to the conclusion that the interests of the researchers revolve around these issues, which are intertwined.

Professional ethics, as manifested by improving professional competence, knowledge and skills, has been and continues to be the subject of much theoretical reflection and empirical research. The high professional competence of staff translates into high quality financial statements. At the same time, high competences may pose a threat to the quality of the reports, as well as knowledge and experience, and if there is a motivation to falsify the report, these competences will facilitate the distortion of the report and thus become a threat to its credibility. Among the issues troubling auditors was whether auditors perceive threats from managerial accounting competences to the credibility of financial statements (Albrecht et al., 2018).

The development of artificial intelligence (AI) and the implementation of its tools in financial and accounting systems makes both the processes involved in the implementation itself and the behaviour of accountants and other members of the organisation of interest to researchers. It has been pointed out that the changes that AI brings to accounting information systems are far more significant than all the previous ones (computer software, data clouds) (*The State of AI...*, 2024). The area of technology is therefore also explored in conjunction with the area of ethics. Researchers are interested in both the ethical use of AI (including the question of responsibility for use) and the long-term impact of AI on organisational members. (C. Zhang et al., 2023).

In the area of competence, often in conjunction with the area of reporting, gender is the subject of research. According to researchers, women in the role of CFO are characterised by a propensity to comply with standards and norms, resulting in higher quality and comparability of financial statements than in entities where the role of CFO is held by men. At the same time, studies show that the presence of female CFOs does not have a significant impact on comparability (F. Wang et al., 2023), but is related to the quality of financial statements (Hrazdil et al., 2023). This higher quality is also, for example, evident in reports produced by different-sex CEO/CFO pairs, as opposed to reports of entities led by single-sex CFO/CEO pairs (Hrazdil et al., 2023). According to other studies, the presence of women in senior management translates

into a negative relationship between female directors and a positive narrative tone with stakeholders. The researcher confirm that financial performance and strategic choices can be predicted by the characteristics of senior managers, whilst the findings have important implications for top management, policymakers, regulators and users of financial reporting (Bassyouny et al., 2020).

Studies have also addressed the competences and skills of those employed as accountants, indicating that whereas there is a positive relationship between the level of competences and their growth and firm value (Rubin & Segal, 2019), at the same time others show the lack of specific core competences that are universally required for accounting positions (Uwizeyemungu et al., 2020).

Some studies also indicate that it is more important for a business entity to have a CFO than a CEO, while German regulations (in contrast to US regulations) prevent board members from making individual decisions (Dauth et al., 2017). The areas of reporting and competence are also covered by research related to the study of managers' behaviour outside the workplace, suggesting that behaviour in private life (e.g. legal violations, low propensity to save) is associated with risks for financial reporting. Chief executive officers (CEOs) and chief financial officers (CFOs) with a so-called 'legal record' are more likely to commit fraud, yet there is no correlation between frugal executives and the propensity to commit it. However, 'non-thrifty' CFOs oversee a relatively lax control environment, characterised by a relatively high and increasing likelihood of others committing fraud and unintentional material reporting errors during their tenure. Moreover, cultural shifts associated with increased fraud risk are more likely among non-fraudulent (compared to frugal) CEOs (Davidson et al., 2012). The CFO theme (still in the area of competence and reporting) also emerges in the context of CFOs sitting on boards. Research findings suggest that the CFO can increase the effectiveness of the board in terms of the quality of the financial statements. Owners should consider whether the benefits associated with the appointment of a CFO to the board outweigh the costs, as the appointment of a CFO to the board may translate into higher financial statement quality (Bedard et al., 2014).

The empirical research carried out by the authors also showed how the strength of corporate culture relates to the comparability of financial statements. Using a sample of US companies and a newly developed measure of corporate culture based on machine learning, it was found that companies with a strong corporate culture (which recognise integrity, innovation, teamwork, respect and quality as norms and values) have less opportunistic managers who make uniform decisions in the face of similar business events, resulting in greater comparability of financial statements. Further analysis suggests that changes in CEOs who lead the company towards a stronger corporate culture positively affect the comparability of financial statements and vice versa (Afzali, 2023).

In the area of competence, the results confirm that the composition of the board of directors influences R&D intensity and the maintenance of R&D expenditure. This intensity increases significantly when the CEO is accompanied by an internal CTO

(chief technology officer). In contrast, the intensity decreases significantly when the CEO is partnered with the CFO, thus a board consisting of only the CEO is associated with higher R&D intensity than a board consisting of both a CEO and a CFO. Therefore, whether the CTO or the CFO accompanies the CEO on the board makes a difference in maintaining R&D spending. For practitioners, including CEOs and directors of high-tech companies, the study reveals that they may benefit from promoting the CTO instead of the CFO as an internal director (Shaikh et al., 2023).

The personality traits of CEOs and CFOs reflecting their ideal or prototypical roles of a visionary leader (i.e. extroversion) and corporate conscientiousness (i.e. conscientiousness) also interact to influence the tendency towards higher or lower leverage levels. Leverage is higher for companies with more extroverted CEOs and lower for those with less extroverted CEOs, but CFO conscientiousness buffers this relationship by encouraging more moderate levels of debt at both levels of CEO extroversion. In other words, more conscientious CFOs reduce leverage when the CEO is highly extroverted and increase leverage when the CEO has low levels of extroversion, balancing CEO bias in each case (Harrison & Malhotra, 2024).

The area of competence also includes a study that extensively explores the perceptual profiles of chief information officers (CIOs) compared to other top executives, namely CFO and CMO (chief marketing officer). The results reveal two critical dimensions that distinguish participants of the study, i.e. the social dimension and the authoritative dimension. CIOs were perceived as less authoritative and less socially competent than CMOs and less authoritative than CFOs. The position of CIOs in these dimensions means that they are perceived as less similar to successful senior managers than either CMOs or CFOs (Gonzalez & Ashworth, 2021b).

Research findings in this area provide empirical evidence as to why companies change their CFOs. The ways in which CFOs are appointed in US companies and their impact on performance were analysed, and the conclusions drawn are as follows.

1. The succession rate of external CFOs is significantly higher than the succession rate of external CEOs.
2. The frequency of retirement for acting CFOs is less frequent compared to top executives.
3. CFO rotation is preceded by negative excess returns.
4. CFO rotation is preceded by a decline in operating profitability from assets in the preceding period.
5. Announcements of a change of CFO are associated with a significant negative share price reaction if the old CFO leaves and is replaced by an internal appointment.
6. The rotation of the CFO is preceded by an abnormally high rotation of the CEO.

Rapid sales growth accompanied by poor operational performance leads companies to hire 'talent' from outside (Mian, 2001) .

The technology area includes research showing accountants, managers and regulators practical evidence that the use of artificial intelligence (AI) and bid data (BDA)

is positive and more effective in improving accounting practices in financial reporting, management performance, budgeting, audit evidence and risk and fraud management. As such, accountants, future accountants and accounting graduates should hone their skills in learning and developing BDA and AI predictive models to help the sector. Furthermore, given the shortage of data science and AI jobs in the market, accounting regulators should increase the demand for these competencies. Hence, universities should develop business courses that include BDA and AI. Research also confirms that BDA and AI can benefit various sectors to develop advanced capabilities, providing increased innovation leading to competitive advantage in the business environment. Finally, policymakers and managers can take the opportunity to invest in BDA and AI technologies to help them achieve their ambitious accounting goal. Note that, overall, the impact of AI on accounting practices is greater than that of BDA (Osei-Assibey Bonsu et al., 2023).

Other studies show the impact of using AI for financial reporting decisions and confirm that managers' use of AI undermines their aggressive financial reporting decisions, yet according to these authors, AI cannot plunge us into a world devoid of human control and accountability; human-assisted decisions are more aggressive than AI-assisted decisions. The researchers noted that the degree of aggressiveness of decisions depends on the degree of autonomy of the AI system, believing that this is linked to the diffusion of responsibility. The less autonomous the AI system, the more it depends on the manager, who is less likely to make risky/aggressive decisions for which he or she is responsible (Kipp et al., 2020).

In an era where the pace of change continues to accelerate, behavioural research is a continuing avenue for explaining the likely effects of emerging changes on decision-making by providers, users and evaluators of accounting information, as well as providing ex-ante information for decision-makers. The aim of the research was to identify contemporary changes affecting the accounting environment, discuss the potential impact on individual and organisational decision-making, and explore how behavioural research can be used to investigate these changes. In particular, the discussion focused on the impact of technological change on financial reporting, external auditing and management accounting, given the potential of these changes to radically alter the future of accounting and auditing research (Arnold, 2018).

In the area of reporting it was investigated whether the mandatory adoption of International Financial Reporting Standards (IFRS) is associated with changes in the sensitivity of CEO turnover to accounting performance, and how the impact of IFRS adoption differs between institutions at country level and incentives at company level. The results confirm that CEOs are more responsive to the company's accounting performance after the adoption of the standards. This increase in the sensitivity of turnover to earnings was concentrated in countries with stronger enforcement of financial reporting standards and more pronounced for mandatory adopters with strong firm-level incentives to comply (Wu & I. X. Zhang, 2019).

## 2.2. The Role of Financial Managers in the Context of the Application of Modern Technologies

The role of chief financial officers (CFOs) and finance managers in companies is undergoing a fundamental transformation in the face of increasing digitalisation and the development of new technologies. The traditional perception of these functions as mainly focused on accounting, financial reporting and cost control is being radically altered by technologies such as artificial intelligence, blockchain, big data and the robotisation of business processes. According to Sandner et al. (2020), "the role of the CFO is not considered particularly innovative. For many, its day-to-day work is associated with balance sheets, cash flow analyses and Excel spreadsheets. However, with the advent of blockchain technology, this perception may change and shift this corporate finance function towards a strategic innovation manager". Whilst this transformation presents CFOs with new challenges, it also opens up a number of opportunities for them to strategically influence the development of their organisation in a rapidly changing business environment. On the basis of the research discussed in the previous section of the monograph, the most important aspects of the work of finance managers in the context of digitalisation and the use of modern technology were identified. In order to obtain synthetic conclusions, the studied material was enriched with additional publications that have appeared recently and are cited in the following text.[1]

**1. Impact of technology on financial and accounting processes.** Technological advances are fundamentally changing the way companies conduct their financial and accounting processes. According to Arnold (2018), all aspects of accounting are now shaped by technologies that collect data and support and, in many cases, direct these processes. In some areas, technology completely controls the accounting environment.

One of the key trends is the automation of routine accounting and financial tasks. As indicated by C. Zhang et. al. (2023), artificial intelligence and business process robotics (RPA) are increasingly being used to automate activities such as posting transactions, reconciling accounts and preparing financial reports. This makes it possible to significantly increase the efficiency of finance departments.

At the same time, business analytics based on big data is developing. Another study (Elbashir et al., 2011), showed that business intelligence systems significantly improve the efficiency of business processes and ultimately the overall performance of an organisation. CFOs gain tools for deeper analysis of financial and non-financial data, which supports strategic decision-making.

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[1] The following string in the Scopus database was used to identify additional articles: TITLE-ABS--KEY ("CFO" OR "chief financial officer" OR "financial managers" OR "finance managers" OR "financial management") AND TITLE-ABS-KEY ("digitization" OR "digitalization" OR "digital transformation" OR "technological change") AND TITLE-ABS-KEY ("artificial intelligence" OR "AI" OR "blockchain" OR "machine learning" OR "FinTech" OR "financial technology").

Blockchain is another disruptive technology that, according to Sandner et al. (2020) can radically change the way accounting and auditing is done. This provides an immutable and transparent record of transactions which can increase the reliability of financial data and improve audit processes.

**2. New powers for finance directors.** In the face of these technological changes, CFOs are required to develop new competencies. Arnold (2018) emphasised that CFOs must not only understand modern technologies, but also be able to implement and use them effectively to create value for the organisation.

Skills in data analysis and the use of artificial intelligence are becoming crucial. As suggested by Osei-Assibey Bonsu et al. (2023), CFOs need to be able to interpret complex data sets and draw business-relevant conclusions from them. This requires combining financial knowledge with analytical and technological competencies.

Strategic skills are also growing in importance. CFOs are increasingly involved in shaping the digital transformation strategy of the entire organisation, and need to understand how new technologies can support business innovation and the creation of new revenue streams.

**3. Changes in risk management.** The digitalisation of financial processes brings new challenges in the area of risk management. Arnold et al. (2015) highlighted the growing importance of cyber risks and the need to implement advanced IT risk management systems.

CFOs also need to understand the risks associated with new digital-based business models. This includes, for example, the legal and reputational risks associated with the use of artificial intelligence or blockchain.

At the same time, new technologies give CFOs better tools to identify and measure various risks. Advanced predictive analytics, for example, allow for the earlier detection of potential financial risks.

**4. Impact on reporting and communication with stakeholders.** Digitalisation is also changing the way companies report their performance and communicate with investors or other stakeholders. Arnold (2018a) pointed to the growing importance of continuous, real-time financial reporting made possible by automated accounting systems.

The interactive visualisation of financial data is also developing. According to Tang et al. (2014), interactive financial data presentation tools can improve investors' understanding of information and increase their confidence in decision-making.

New communication channels such as social media are increasingly being used to communicate financial information. Trinkle et al. (2015) showed that investors use these sources when making investment decisions.

**5. Ethical challenges of new technologies.** The use of advanced technology in finance also raises a number of ethical challenges. Z. Zhang and Wang (2023) emphasised issues of data privacy, potential discrimination when using AI algorithms or accountability for decisions made by autonomous systems.

CFOs must take these aspects into account when implementing new technological solutions, necessary to develop principles for the ethical use of AI or big data in financial processes.

Based on global research, key aspects of the impact of modern technology on the work of financial managers can be characterised as follows.

1. Automating routine accounting and finance tasks. Advances in artificial intelligence and machine learning make it possible to automate many time-consuming and repetitive accounting tasks, e.g. data entry, account reconciliation and basic financial analysis. This allows finance professionals to focus on more strategic and valuable tasks. Automation not only increases efficiency but also minimises the risk of human error, thereby improving the accuracy and reliability of financial processes.

2. Development of advanced business analytics based on big data. Big data opens up new opportunities for financial and business analytics. Advanced analytical tools allow huge amounts of data to be processed in real time, enabling a deeper understanding of market trends and customer behaviour. Predictive analytics using big data can help predict future financial performance and identify potential risks, which in turn supports more informed data-driven business decisions.

3. Implementing blockchain to increase transparency and reliability of financial data. Blockchain technology has the potential to revolutionise the way companies manage and share financial data. Due to its distributed nature and the inability to modify records, blockchain can significantly increase the transparency and reliability of financial transactions. This can be particularly useful in audits, supply chain tracking or international financial transactions. Implementing blockchain can also help reduce financial fraud and increase stakeholder trust.

4. The need to develop new technological and analytical competencies. As technology becomes increasingly integrated with finance, there is a growing need for professionals who combine financial knowledge with technological skills. Competences in data analysis, IT programming and IT project management are becoming crucial. Companies need to invest in training and employee development to keep up with the rapidly changing technological environment. At the same time, universities and educational institutions should adapt their curricula to better prepare future professionals for the digital financial world.

5. The growing importance of cyber risk management. With the increasing digitalisation of finance, cyber risk management is becoming a critical aspect of companies' operations. Cyberattacks can lead to serious financial, data and reputational losses. Companies need to invest in advanced security systems, regular security audits and employee cyber training; it is also necessary to develop comprehensive incident response plans to minimise the potential damage in the event of a security breach.

6. Changing modes of financial reporting and communication (continuous reporting, interactive visualisation). Traditional, periodic financial reporting is giving way to more dynamic and interactive forms of communication. Continuous, real-time reporting is becoming more common, enabling faster responses to market changes. Interactive dashboards and advanced data visualisation tools

allow complex financial information to be presented more intuitively and efficiently. These new forms of reporting increase transparency and facilitate decision-making by stakeholders at all levels of the organisation.

7.  The growing role of CFOs in shaping companies' digital transformation strategies. Chief financial officers (CFOs) are increasingly becoming key players in the digital transformation of companies. Their role is evolving from traditional financial management to a strategic business partner that uses data and technology to drive growth and innovation. CFOs must be leaders in adopting new technologies, identifying opportunities to optimise processes and using data to create value. Their unique perspective combining finance and technology is essential to successfully lead the company through the digital transformation process.

8.  New ethical challenges of using AI and big data in finance. The use of artificial intelligence and big data in finance raises new ethical questions. Issues such as data privacy, potential discrimination in decision-making algorithms and accountability for AI decisions are becoming more pressing. Companies need to develop clear ethical principles regarding the use of these technologies, while ensuring compliance with legal regulations. It is also necessary to educate employees and customers about the ethical aspects of using AI and big data in finance.

9.  The ability to better predict business risks and opportunities through advanced analytics. Advanced analytics enable companies to more accurately predict both risks and business opportunities. Predictive models based on machine learning can analyse vast amounts of historical and market data, identifying subtle patterns and trends. This allows companies to better prepare for potential threats, but also to identify and exploit emerging business opportunities more quickly. This ability to act ahead of time can make a significant difference to an organisation's competitive advantage and long-term success.

10. The need to integrate different systems and data sources for a holistic view of a company's finances. In the digital age, companies are often faced with scattered data across different systems and departments. The integration of these disparate data sources becomes crucial in order to obtain a comprehensive and consistent picture of the company's financial situation, which requires not only advanced technological solutions but also a change in organisational culture towards greater collaboration and data sharing. Effective data integration can lead to better risk management, more effective planning and more accurate strategic decisions.

Thus it is clear that technological advances are fundamentally changing the role of CFOs and corporate finance managers. CFOs are evolving from their traditional role as gatekeepers of corporate finance into strategic leaders of digital transformation, actively shaping the future of their organisations. Key findings from global research are as follows:

1. Technologies such as artificial intelligence, blockchain, big data or robotic business processes have the potential to radically transform financial processes, offering new levels of efficiency, transparency and automation.
2. CFOs need to develop new competencies that combine deep financial knowledge with an understanding of technology and the ability to think strategically.
3. Data analytics is becoming a key tool in the CFO's arsenal, enabling more precise and predictive financial management.
4. New technologies are opening the way to innovative business models and forms of financing, which CFOs must be able to use to increase the value of the company.
5. Risk management in the digital age requires a new approach that takes into account cyber threats and risks associated with new business models.
6. Success in the new reality requires the CFO to actively collaborate with other company departments and external partners, including technology providers.
7. Ethical issues related to the use of new technologies in finance are becoming an increasingly important area of responsibility for CFOs.

To sum up, digital transformation challenges finance directors and managers to redefine their role in the organisation. Those who successfully adapt to the new reality will not only be able to manage finance more effectively, but also actively shape the strategy and future of their companies in a rapidly changing business environment. The role of the CFO in the digital age is evolving rapidly, with modern technologies becoming key tools to support financial management. AI, blockchain and big data are enabling process automation, increased security and transparency and better risk management. As a result, CFOs are transforming into digital transformation leaders who not only manage finance, but also implement technology to optimise processes and add value to the organisation. In the future, the ability to manage modern technologies will be crucial to the success of CFOs in a rapidly changing business environment.

## 2.3. Diagnosis and Directions for Further Research

The role of chief financial officers (CFOs) and financial managers in modern companies is multifaceted and dynamic, and the review of the literature on this issue carried out in section one enabled to point out that articles in this area have been published for many years by various research groups, academia and financial management organisations, as well as by consultancies and analyst firms. These publications cover a variety of aspects, from financial management, the application of modern technology, to the role of the CFO in shaping organisational strategies and social responsibility.

The review of the literature on the role of finance directors and managers in contemporary companies has identified four main sub-areas, i.e. competence, technology, reporting, and ethics, which are closely related and complementary.

Most of the analysed articles address more than one issue, but the link between the areas of competence and reporting is clearly dominant. Fifteen articles

examined the issue of the broadly defined competences of finance directors and managers, such as gender, culture, collaboration, role, skills, behaviour, experience, personality traits and psychological characteristics. Nine articles dealt with financial and non-financial reporting, focused mainly on the quality of financial statements, whilst the five included in the literature review in Chapter 1 were concerned with technology, and were complemented by several papers mentioned in Chapter 2 on the most important aspects of the work of financial managers in the context of digitalisation and the use of modern technology. Two articles addressed ethical issues, including those related to the distortion of reports and the use of artificial intelligence in accounting.

The competences of the CFO and financial manager are the foundation of his or her effectiveness in managing a business. Today's CFO not only manages the company's finances, but also plays a key role in strategic decision-making, risk management, and building the value of the company. Due to dynamic changes in the business environment, the role of the CFO has evolved significantly and the required competencies have become more complex and diverse. The sub-area of technology and innovation is an essential tool in financial management, enabling better data analysis and effective decision-making. Financial reporting, in turn, is becoming more comprehensive, encompassing not only traditional financial reports, but also such areas as ESG reporting. Finally, ethics is the linchpin of the CFO, who is responsible for the transparency and accountability of the company to its stakeholders.

Based on the research conducted to date, it is therefore possible to identify a number of key issues regarding the impact of modern technology on the work of finance directors and managers (see Table 2.2).

**Table 2.2.** Areas of influence of modern technology on the role of financial managers

| Key research areas | Description | Examples |
|---|---|---|
| *Automation of financial processes* | | |
| Robotic Process Automation (RPA) | The full automation of repetitive financial tasks such as accounting and billing, through the robotisation of business processes, is changing the CFO's responsibilities, shifting their focus from operations to tasks of a strategic nature. | Arnold, 2018; Osei-Assibey Bonsu et al., 2023; Mi, 2024; C. Zhang et al., 2023 |
| AI in financial analysis | The automation of financial data analysis by artificial intelligence reduces the risk of human error and speeds up the decision-making process, which can change the role of CFOs in an organisation and support them in more complex strategic analyses. | Arnold, 2018; Bisht et al., 2022; Liu & Li, 2025; Sandner et al., 2020 |
| *Data analysis and prediction* | | |
| Big data | The use of big data analytics to identify hidden patterns and trends in the market environment enhances the CFO's predictive capabilities, although it requires sophisticated infrastructure and high analytical competence. | Arnold et al., 2015; Liu & Li, 2024; Mi, 2024; Sun, 2024; C. Zhang et al., 2023 |

| Key research areas | Description | Examples |
|---|---|---|
| Predictive analytics | The use of predictive analytics in financial management enhances the CFO's ability to forecast financial performance and manage risk, which can improve an organisation's financial flexibility, but also raises challenges in terms of predictive accuracy. | Arnold et al., 2015; Bisht et al., 2022; Osei-Assibey Bonsu et al., 2023; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| **Data security and cyber risk** | | |
| Blockchain | The introduction of blockchain in finance enables transactions to be stored and monitored securely, preventing manipulation and fraud, but requires CFOs to adapt to new security standards and work with IT departments. | Arnold et al., 2015; Liu & Li, 2024; Mi, 2024; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| Privacy protection | Advanced financial data management privacy systems minimise the risk of cyberattacks, although their effectiveness is dependent on the regulatory compliance and technological infrastructure of the organisation. | Arnold, 2018; Bisht et al., 2022; Mi, 2024; Osei-Assibey Bonsu et al., 2023; Sun, 2024; Z. Zhang & Wang, 2023 |
| **Financial risk management** | | |
| Early detection | The use of predictive analytics allows for early detection of financial risks, which strengthens preventive action and financial stability, but requires advanced analytical skills and adaptation in risk management. | Arnold, 2018; Liu & Li, 2024; Osei-Assibey Bonsu et al., 2023; Sandner et al., 2020; Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| Optimisation of investment decisions | Advanced risk analysis allows for more informed investment decisions tailored to market dynamics, but requires an appropriate analytical infrastructure and involves limitations due to data uncertainty. | Arnold, 2018; Bisht et al., 2022; Mi, 2024; Sun, 2024; Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| **Transparency and reliability of financial statements** | | |
| Real-time reporting | Implementing tools that enable real-time financial reporting promotes transparency and enables ongoing financial control, but requires investment in IT infrastructure and the adoption of new working standards. | Arnold, 2018; Mi, 2024; Sandner et al., 2020; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| Reducing fraud | Implementing blockchain to monitor transactions reduces the potential for financial fraud and allows for better control over accounting records, although it can be challenging in terms of implementation and regulatory compliance. | Arnold et al., 2015; Mi, 2024; Osei-Assibey Bonsu et al., 2023; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| **Development of technological competence** | | |
| Training in data analysis | Acquiring CFOs' data analytics skills requires investment in training and adaptation to new roles, where CFOs are also becoming leaders of digital transformation, which affects the strategic nature of their work. | Arnold, 2018; Mi, 2024; Osei-Assibey Bonsu et al., 2023; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| Integration of IT technology | Integrating advanced technology into financial processes enables more efficient management of an organisation's resources, but requires the CFO to have advanced technological knowledge and to work closely with IT departments. | Arnold et al., 2015; Liu & Li,2024; Osei-Assibey Bonsu et al., 2023; Sandner et al., 2020; Sun, 2024 |
| **Ethical aspects of technology use** | | |
| Data privacy | The introduction of advanced technologies such as AI raises ethical dilemmas around the privacy of financial data and requires CFOs to ensure compliance with regulations and ethical guidelines. | Arnold et al., 2015; Bisht et al., 2022; Mi, 2024; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |
| Problems of dehumanisation | The automation of decision-making processes through AI poses moral dilemmas, such as the reduction of human responsibility for financial decisions and the risk of dehumanising the process, which requires consideration of ethical decision-making frameworks. | Arnold, 2018; Bisht et al., 2022; Liu & Li, 2024; Sun, 2024; C. Zhang et al., 2023; Z. Zhang & Wang, 2023 |

Source: own elaboration.

Table 2.2 outlines the key areas where modern technology is impacting the work of finance managers, highlighting both the benefits and challenges of implementation. The analysis covers financial process automation, data analytics, risk management, data security, technological competence development and ethical aspects, among others, which are broken down into specific detailed issues that shed light on the evolution of the CFO function in the context of increasing digitalisation and technological advances.

**Automating financial processes** through technologies such as Robotic Process Automation (RPA) and Artificial Intelligence (AI) not only speeds up financial processes, but also minimises the risk of human error. RPA allows for the automation of routine tasks, whilst AI enables deeper financial analysis, which changes the role of the CFO from operational to more strategic. However, automation presents challenges in terms of integration with existing systems and requires high quality input data to avoid potential decision-making errors.

With big data and predictive analytics, CFOs can identify patterns and predict future financial performance. This enables managers to react faster to market changes and optimise resource allocation. However, the use of big data comes with technological challenges, such as the need to develop advanced infrastructure and acquire analytical competences that are not always standard in finance departments.

**Data security and cyber risk** are becoming key areas of focus as blockchain technology and privacy protocols are implemented. Blockchain enables the creation of immutable records of transactions, increasing transparency and resistance to manipulation. However, the full implementation of blockchain can come at a high cost and requires close collaboration between CFOs and IT departments. At the same time, advanced privacy systems protect against cyber threats, but their effectiveness is dependent on an organisation's level of technological and regulatory compliance.

**Managing financial risk** through early detection of risks and optimisation of investment decisions is a significant benefit for CFOs, enabling them to take a proactive approach to potential risks. Predictive analytics allows not only for minimising losses, but also for adapting investment activities to dynamic market conditions. However, the reliability of the predictions relies on the quality of the data and the appropriateness of the algorithms used, which is a potential limitation.

**Transparency and credibility of financial reports** are improved by the implementation of real-time reporting and blockchain technology. Transparent reporting allows for the real-time monitoring of performance, which increases stakeholder confidence. Blockchain additionally enables fraud reduction due to the immutability of recorded data. However, the effective implementation of reporting and blockchain comes with costs and the need to adapt the organisational structure to the new standards.

**The development of technological competences** is crucial in the context of the increasing demands for digital transformation in finance. CFOs need to acquire new skills in data analytics and IT management to effectively integrate advanced tools into financial processes. These competences add strategic value to the CFO, but their

development requires investment in training and close collaboration with other departments in the organisation, especially IT.

**Ethical aspects of the use of technology** in finance, such as data privacy and issues of AI dehumanising decision-making, are increasingly challenging. These technologies require rethinking ethical decision-making frameworks to ensure protection of clients' interests and compliance with regulations. CFOs face the dilemma of how to balance operational efficiency and social responsibility in the context of advanced analytics tools.

To sum up, Table 2.2 shows the multi-faceted impact of digitalisation on the role of the CFO. While these technologies support increased efficiency and transparency, they also come with technological, organisational and ethical challenges. As organisations accelerate their digital initiatives, CFOs must not only adapt their competences, but also make strategic decisions that balance the benefits of new technologies with risk and social responsibility.

The evolution of the role of financial managers (CFOs) in response to increasing digitalisation and the development of modern technology is one of the most important challenges in the management of modern organisations. With the growing importance of technology, the role of the CFO is transforming, requiring new competences, adaptation to the changing environment and the implementation of modern methods and tools.

On the basis of the evaluation of existing research and the characteristics of the areas identified in Table 2.1 concerning the impact of modern technology on the work of finance directors and managers, planned research directions in this area were set.

Table 2.3 presents three strategic directions for future research on the evolving role of financial managers (CFOs) in the face of increasing digitalisation and the development of modern technology, together with research questions and suggested methodology that help to deepen understanding of the impact of automation, digital risk management and ethical challenges. The research directions identified reflect key challenges and developments that are likely to significantly affect the tasks and competences required of today's financial managers.

**Table 2.3.** **Planned research directions on the role of financial managers**

| Direction of research | Research questions | Suggested testing methodology |
|---|---|---|
| The impact of automation on the role of financial managers | • How is the automation of financial processes transforming the competencies required of financial managers?<br>• Does automation limit the CFO's ability to interact with other departments and make decisions based on intuition and experience?<br>• What are the long-term effects of financial automation on organisational structures and CFO responsibilities? | Mixed methodology (quantitative and qualitative):<br>• Survey of CFOs in companies at different levels of financial process automation (RPA, AI).<br>• Long-term (longitudinal) analysis – examining changes in CFO tasks as more automation technologies are implemented.<br>• In-depth interviews with financial managers in different sectors to explore the impact of automation on their day-to-day responsibilities and decision-making. |

| Direction of research | Research questions | Suggested testing methodology |
|---|---|---|
| The role of financial managers in digital risk management | • How do CFOs manage the financial risks associated with storing and processing large data sets in the cloud?<br>• How are financial managers responding to the increased reliance on blockchain technology and its impact on the control of financial flows?<br>• Is the CFO's technological competence sufficient to proactively manage digital risk, or are new roles or collaboration with other departments required? | Qualitative and quantitative methodology:<br>• Survey on the level of adaptation and digital risk management strategies among CFOs.<br>• A case study of companies with high levels of integration with blockchain and cloud technologies.<br>• Interviews with cybersecurity experts and CFOs to assess whether current financial competencies are adequate to manage digital risks.<br>• A comparative analysis of different digital risk management strategies in organisations with varying degrees of digitalisation. |
| Ethical challenges of automating financial decisions | • What are the ethical boundaries in using AI in financial decision-making, especially in areas such as predictive analytics and risk management?<br>• To what extent does the automation of decision-making processes change the moral and legal responsibility of CFOs for their decisions?<br>• What ethical and regulatory principles should be implemented to ensure responsible management of financial data and customer privacy?<br>• What are the possible effects of dehumanising financial decisions on team morale and organisational culture? | Qualitative methodology:<br>• Ethnographic research in organisations implementing AI in decision-making processes to observe changes in organisational culture and responsibility for decisions.<br>• Interviews with financial managers and business ethics experts to assess their attitudes towards dehumanisation and accountability for AI decisions.<br>• Analysis of regulatory documents and industry reports to determine the current state of guidelines and propose possible regulations.<br>• A case study of companies using AI in decision-making, including an analysis of incidents involving potential breaches of ethics or privacy. |

Source: own elaboration.

**The first line of research** on the impact of automation on the role of the CFO highlights the increasing reliance on technologies such as Robotic Process Automation (RPA) and artificial intelligence (AI) that are transforming the operational tasks of CFOs, enabling them to focus on strategic activities. The research questions focused on how these changes affect the competences of finance managers and the way they interact with other departments, suggesting the need for quantitative and qualitative research and long-term analysis in order to reveal the deep structural effects of automation.

**The second line of research** explores the role of CFOs in digital risk management, stressing that new technologies such as blockchain and cloud storage bring unique data security challenges. The research questions identified the need for further analysis on whether the current competences of financial managers are adequate for managing digital financial risk. The suggested methodology is based on a mixed-methods approach – both qualitative and quantitative – that will provide an understanding of the different strategies used by organisations and their effectiveness in minimising risk.

**The third line of research** concerns the ethical challenges arising from the automation of financial decisions. This becomes particularly relevant when financial risk

decisions are made using AI, which can lead to the dehumanisation of decision-making processes and a shift in the moral and legal responsibilities of the CFO. The research questions in this section focused on ethical boundaries, accountability and the implications of automation for organisational culture and team morale. In this case, qualitative methods such as interviews and ethnographic research are particularly recommended for an in-depth analysis of attitudes and cultural changes resulting from the implementation of AI in financial processes.

To conclude, Table 2.3 forms the basis for future research that not only provides a better understanding of the transformation of the CFO role, but also points to the need to adapt research methodologies to the increasingly complex interactions between technology, accountability and ethics in financial management.

## 2.4. Ethical Dilemmas Regarding the Role of Financial Managers in the Context of Modern Technology

Professional accounting groups are particularly sensitive to ethical issues related to the performance of their professional duties. For example, according to the International Code of Ethics for Professional Accountants, there are five basic ethical principles to which every professional accountant must adhere, namely integrity, objectivity, professional competence and due diligence, confidentiality and professional conduct, whilst the core ethical principles named by the Institute of Management Accountants (IMA) comprise honesty, integrity, objectivity and accountability.

The use of AI by financial managers, accountants, and auditors as suggested in (Munoko et al., 2020), has a number of benefits, but can also have unintended consequences. As Alles (2020) pointed out, when there is a conflict between the decisions made by those influenced by technology and the actions required by a code of conduct or other standards, ethical risks arise.

Given that these professional groups are particularly sensitive to issues of professional ethics, according to C. Zhang et al. (2023), too little attention has been paid so far to the ethical implications of using modern technology in accounting (C. Zhang), 2023). At the same time, based on a 2023 survey of a sample of 595 respondents (*The State of AI...*, 2024), 49% of the accountants surveyed were concerned about the dilemmas and biases associated with the use of artificial intelligence. Accountants struggle with the challenges of balancing technological advances with the ethical standards of their profession and ensuring the responsible use of artificial intelligence (Ajayi-Nifise et al., 2024).

The increasing integration of automation and artificial intelligence in accounting raises a myriad of ethical issues that require special discussion (Hasan, 2022). The ethical dilemma is a form of an alternative or difficult choice – the intelligence of a human, a professional versus artificial intelligence. In the case of financial managers and accountants, the dilemmas related to the application of artificial intelligence in accounting are not related to the choice between good and bad, but to solving the

problem of using AI or other modern technologies in such a way that professional ethics are not violated.

Based on the research of many authors, it was found that ethical problems related to technological advances (including, above all, the use of artificial intelligence), are currently one of the most important research directions in the field of accounting, and one of the most complete synthetic summaries of ethical dilemmas to date was presented by Z. Zhang and Wang (2023), whose results were collected on the basis of qualitative research (47 interviews), in which the respondents described specific situations and presented their point of view.

Ethical dilemmas arise, first and foremost, from the opacity of AI algorithms and the biases exhibited by these algorithms, which may lead to unfair results (Ajayi-Nifise et al., 2024), that may, accountants feel, violate the principle of objectivity. Other authors (Ajayi-Nifise et al., 2024; C. Zhang et al., 2023) also highlighted issues of privacy and accountability for decisions made by autonomous systems. The principle of confidentiality and professional conduct requires that confidential client data be covered and that secure data processing be ensured. In order to maintain the principle of professional conduct, it seems necessary to retain scepticism in interpreting results and analysing judgements generated by AI (upholding professional accountant judgement). Professional competence, as an ethical principle, nowadays requires the expansion of professional competence and skills also (or perhaps especially) in the field of technology. Accountants are also concerned about the potential for AI to undermine human interactions and relationships (*The State of AI*..., 2024). The main, and most frequently identified ethical dilemmas for financial managers related to technological advances are presented in Table 2.4.

**Table 2.4.** Basic ethical dilemmas of financial managers related to technological advances

| Key ethical dilemmas | Description | Ethical question/ problem | Examples of solutions |
|---|---|---|---|
| Transparency and reliability of financial data | Modern technology enables more sophisticated data analysis, but there is a risk of manipulation of financial results or forecasting models. Ethical concerns arise when automation and artificial intelligence affect the transparency and reliability of financial data. Financial managers must therefore ensure that automated processes do not compromise the quality of financial data. | How to ensure the transparency and reliability of the financial data presented, while protecting trade secrets and competitive advantage? | • Implement standardised reporting methods to ensure uniformity and facilitate comparison of financial data.<br>• Identify the scope of confidential information that does not need to be disclosed in reports.<br>• Implementing blockchain technology to verify the authenticity and integrity of data, which increases its credibility.<br>• Defining levels of access to information – e.g. detailed data for regulators and auditors, aggregated information for investors.<br>• Regular audits by recognised auditing firms to increase confidence in the data presented. |

| Key ethical dilemmas | Description | Ethical question/ problem | Examples of solutions |
|---|---|---|---|
| Accountability for decisions taken by AI | Automating financial decisions with AI can lead to situations where it is difficult to determine who is responsible for mistakes or unethical actions. With automation and artificial intelligence taking over routine tasks, accountants need to protect their professional judgement. Ethical issues arise when they rely solely on automated processes, potentially reducing the importance of human expertise. | How to address the accountability of financial managers for AI decisions? | • Striking a balance between technology and human judgement, based on expertise, and applying professional scepticism to the results generated by AI.<br>• Introduce detailed frameworks and regulations defining responsibilities at different levels of the company.<br>• Training financial managers in AI operations and high-tech risk management.<br>• Implement independent audits of the algorithms to assess their compliance with company objectives and regulations.<br>• Application of human-in-the-loop principles, stating that key decisions made by AI must be approved by a human. |
| Data privacy and security | Financial managers need to advocate for privacy policies, ensuring the security of customer and company data. The integration of automation and artificial intelligence introduces new risk areas for cybersecurity. Financial managers are therefore responsible for securing systems against breaches, protecting financial data from unauthorised access. | How to ensure data privacy and security? | • Transparent communication with customers about data use and protection.<br>• Implement appropriate data protection and cybersecurity measures, adhering to ethical standards and the legal framework governing customer data.<br>• Use of data anonymisation tools to protect confidential information during analysis.<br>• Implement a Federated Learning method to test AI models on local data without the need to send it to central servers. |
| Algorithmic discrimination | Ethical concerns arise from the opacity of artificial intelligence algorithms and arise when AI systems exhibit biases, leading to unfair results. Finance managers must advocate for transparent AI systems, providing insight into how algorithms arrive at conclusions. This is because transparent algorithms increase accountability by allowing the results generated by AI systems to be understood, interpreted and validated. | How do we ensure that artificial intelligence algorithms are fair and inclusive? | • Implement guidelines and measures to identify and mitigate biases in AI algorithms.<br>• Proactively engage with finance managers to address bias, ensuring that automated processes treat all stakeholders fairly.<br>• Introducing simulation tests and independent reviews of AI algorithms.<br>• Use data anonymisation techniques to eliminate information that may lead to discrimination.<br>• Introduce mechanisms to optimise results towards greater equality (e.g. 'fairness-aware' algorithms). |

Source: own elaboration.

Based on a study of the ethical implications of the use of AI in the accounting systems of multinational corporations, the introduction of ethical review committees (councils)

has been suggested to analyse and assess the ethical implications of solutions proposed by artificial intelligence before they are applied, as well as the implementation of training programmes on the responsible use of AI (Bani Ahmad, 2024).

However, the use of AI to analyse data to make work easier and quicker seems to struggle with concerns about security, privacy and misuse of data, and accountants' negative attitudes towards AI may result in incomplete information being passed on to programmers, resulting in erroneous results. The researchers also found, based on interviews, that after using AI some people lower their expectations towards it, and that human intervention and professional judgement are still necessary to use the new technology. Over-reliance on AI may weaken the professional judgement of accountants.

Nevertheless, users doubt the capabilities of artificial intelligence and fear that theoretical artificial intelligence models may encounter problems when analysing real data and dealing with complex scenarios. Due to inaccurate input of data or models, or misinterpretation of results by accountants for their own benefit, results may be distorted. Another problem is the reluctance to use artificial intelligence due to outdated knowledge and education difficulties in understanding advanced algorithms and unfamiliarity with basic IT functions. Some employees are also not well prepared to use artificial intelligence from a psychological point of view. Indeed, artificial intelligence poses new demands and challenges for accountants (for example, in relation to completing knowledge and acquiring new, necessary competences). The inaccessibility of artificial intelligence systems and data makes it difficult for users to have the autonomy to choose whether, when and how to use artificial intelligence.

The indicated ethical dilemmas that arise today in the work of financial managers and accountants are not a 'closed list'. The current codes of ethics and the so-called ethical dilemma banks should be expanded in the future with descriptions of further cases (situations) so that it is possible to educate staff by analysing cases from professional practice. It seems clear, therefore, that it is a priority to support financial managers and other professional groups in the accounting area in solving ethical dilemmas related to the use of modern technology

This section discusses in detail the ethical challenges of integrating modern technologies, in particular artificial intelligence (AI), into the field of accounting and financial management. These considerations are based on an analysis of the impact of technology on the fundamental principles of professional ethics, including data transparency, accountability for decisions, privacy and the potential risk of algorithmic discrimination.

The identified dilemmas point to the need to balance technological advances with maintaining high ethical standards in accounting. Technologies such as AI enable significant improvements in the efficiency of financial processes, whilst at the same time they also raise a number of issues related to the transparency of algorithms, accountability for automated decisions and data protection.

Research shows that technology cannot completely replace human judgement, and that the professionalism of financial managers requires their active involvement in

overseeing the results generated by AI. It is also important to stress that AI is not neutral – algorithms can introduce biases that negatively impact the fairness of decisions, hence it is crucial to put in place systems that ensure transparency and fairness in algorithmic decision-making processes.

A further challenge is the accountability of decisions made by autonomous systems, particularly in the context of the opacity of AI algorithms, which can generate results that are difficult to verify. In order to minimise the risk it is essential to create clear regulations and auditing mechanisms to reliably assess the results produced by AI systems.

Data confidentiality and security in the context of data processing by artificial intelligence systems is another aspect that requires special attention. Financial managers must strive to ensure the full protection of their customers' and organisations' data, which can be achieved through advanced data protection methods such as anonymisation and Federated Learning technologies.

These issues constitute a rapidly developing area of research that requires ongoing updates to codes of ethics and industry regulations, particularly in the context of the increasing role of technology in accounting and financial management. It is necessary not only to regulate legal liability, but also to undertake educational activities that will prepare professionals for the responsible use of AI.

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