

DIGITAL FINANCIAL REPORTING IN PUBLIC UNIVERSITIES: ENHANCING TRANSPARENCY AND ACCOUNTABILITY

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Abstract

Public universities manage substantial public funds and must maintain high standards of transparency and accountability. This study examines how digital financial reporting and real-time technologies can improve financial transparency, stakeholder communication, and accountability in higher education, focusing on Romanian public universities. It integrates a literature review with analysis of financial reporting practices at nine major Romanian universities (2021–2024) to evaluate current practices and identify challenges such as thin budget margins and communication gaps. Given these challenges, the research explores how modern digital tools can enhance reporting timeliness, accuracy, and stakeholder trust in the public sector. The findings have significant implications for multiple stakeholders. University management and policymakers are advised to invest in modern financial systems and staff training to strengthen transparency and oversight. Aligning reporting practices with international standards like IPSAS is shown to improve comparability and credibility, aiding regulators and auditors in evaluating institutional performance. Real-time digital reporting can turn financial data into a strategic asset, informing policy decisions, guiding university leadership, and reassuring students and the public that funds are used responsibly. For academics and researchers, the study broadens the discourse on digital transformation in public sector accounting and suggests avenues for further research on stakeholder engagement with financial disclosures. This study's originality lies in addressing an underexplored context, digital financial reporting in Romanian public universities, through an integrative approach that combines literature review with empirical analysis. Its key contribution is highlighting the gap between basic transparency compliance and effective stakeholder communication and demonstrating how real-time digital tools can bridge this gap in practice. By aligning insights with international accounting standards and national regulations, the paper provides unique perspectives for the public sector accounting community and higher education administrators. It adds value by offering actionable recommendations to enhance accountability through digital innovation in a context where such guidance has been scarce.

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Keywords

digital financial reporting; transparency; accountability; public universities; IPSAS; real-time reporting

JEL Classification

H83, M41, I23

Introduction

Public sector entities operate under financial reporting frameworks distinct from the private sector, aiming to satisfy public accountability and resource stewardship needs rather than profit maximization. Public universities, as state-funded higher education institutions, manage substantial public funds and are expected to demonstrate transparency, efficiency, and responsibility in their financial activities. Over recent decades, public sector financial reporting has evolved, influenced by the New Public Management (NPM) movement, towards adopting private-sector practices such as accrual accounting, in order to improve decision-making and resource management (Bellanca et al., 2015). Governments and international bodies have emphasized that high-quality financial reporting is essential for public sector accountability and informed decision-making. For example, the European Union's Directive 2011/85/EU stresses the importance of reliable and transparent fiscal data, encouraging member states to strengthen their accounting systems and adopt accrual-based standards (Directive 2011/85/EU, 2011). These trends form the context in which Romania's public universities must manage and report their finances.

Despite this global shift toward stronger reporting, implementing robust financial reporting in public higher education faces multiple challenges. Public universities have unique financial characteristics, including dual funding streams (state budget allocations and own revenues like tuition fees and research grants), and must balance public service objectives with regulations and budget constraints. Ensuring transparency and accountability in university governance requires that financial information be not only accurate but also accessible and relevant to stakeholders such as oversight bodies, the academic community, students, and the public. In Romania, persistent concerns have been raised about the relevance and usability of financial and accounting information provided by public institutions, and how it influences performance evaluation and governance decisions. Studies have highlighted a recognized need to enhance the usefulness of financial reports so that stakeholders can fairly evaluate how universities use public resources and fulfil their academic mission.

Within this context, our study focuses on how digital transformation in financial reporting, including the use of real-time data systems and advanced technologies, can improve transparency and accountability in public universities. We examine the current state of financial reporting in Romanian public higher education, comparing national regulations with international standards (notably IPSAS), and analyze the financial disclosures of major universities to assess performance and transparency. We particularly emphasize the impact of real-time reporting tools and digital platforms on stakeholder communication, giving growing demand for timely and understandable

financial information. However, a notable research gap remains: few prior studies have empirically examined the integration of digital financial reporting tools with financial performance analysis in the context of Romanian public universities. Moreover, the concept of real-time financial reporting practices in this sector has been largely unexplored. Our study addresses this gap by providing an on-the-ground analysis of how financial data and digital reporting intersect in Romanian universities.

The paper is structured as follows: first, we review the relevant scientific literature on public sector financial reporting, transparency, and digital reporting technologies. Next, we outline our research methodology, which combines literature integration with a case study of Romanian universities. We then present and discuss the results, highlighting how digital reporting tools align with IPSAS, transparency legislation, and stakeholder expectations. Finally, we draw conclusions regarding the role of digital financial reporting in enhancing transparency and accountability, and we suggest implications for policy and practice in the higher education sector.

1. Review of the scientific literature

Financial reporting in the public sector is the process of preparing and presenting financial statements and related information that communicate an entity's financial position, performance, cash flows, and budget execution to stakeholders. Unlike private companies, public sector entities (government agencies, municipalities, state-funded universities, etc.) do not aim to maximize profit; instead, their financial reports serve as tools to demonstrate accountability for public resources and to inform decision-making by citizens, legislatures, and other stakeholders. According to the conceptual framework of the International Public Sector Accounting Standards Board (IPSASB), public sector financial reporting is designed to meet the needs of service recipients and resource providers who require high-quality financial information for accountability and decision-making. In other words, the primary roles of public sector reporting are to ensure public officials are answerable for the funds entrusted to them and to provide useful information for planning and evaluating government operations. High-quality financial reporting thus underpins good governance in public institutions.

Transparency is a cornerstone of good governance in both the corporate and public sectors, but it carries particular importance for public institutions such as universities. Governance through transparency means that an institution openly discloses relevant information about its operations and finances, allowing stakeholders to examine and evaluate its management. In the university context, transparency spans academic matters (e.g. admissions, educational quality), administrative processes (e.g. hiring practices, governance structures), and financial aspects (e.g. budgets, expenditures, contracts). Here, we focus on financial transparency and its accountability relationship. A transparent university proactively makes its financial reports and budget information available to the public. In Romania, public universities are generally required, and in some cases explicitly mandated by regulation, to publish their annual financial statements, budgets, and audit reports on their websites. For instance, Order of the Minister of Public Finance (OMFP) no. 1917/2005 obliges public institutions (including universities) to organize their accounting and reporting and implicitly supports the

public disclosure of financial statements. In practice, a 2016 assessment of Romanian public universities' transparency found that the majority of institutions did publish a complete set of financial statements online, although in some cases locating these documents on the websites required extensive searching. The same study rated overall transparency levels as "adequate" but emphasized the need to improve accessibility and standardization of disclosure practices. This suggests that while universities recognize the importance of transparency, there is room to enhance how financial information is communicated to ensure it is easily findable and user-friendly for stakeholders.

Transparency in financial reporting is fundamentally about building trust. Research indicates that transparent financial practices strengthen stakeholders' confidence in an institution's governance. When a university openly communicates how it spends public funds and tuition revenues, it signals that it has nothing to hide and is willing to be held accountable. Greater financial transparency enables students, faculty, oversight agencies, and the public to verify and evaluate how resources are managed, thereby reinforcing the university's legitimacy and social contract (Monitorul Oficial no. 1186/2005). Conversely, a lack of transparency can breed suspicion, rumours, and a breakdown of trust between university leadership and the community or funders. From a governance perspective, transparency and accountability are intertwined: transparency provides the mechanism for external parties to hold university management accountable for the stewardship of funds, and accountability pressures in turn motivate sustained transparency.

Adoption of accrual-based accounting standards in the public sector is a key development that has implications for transparency and comparability. Under cash-based accounting, financial reports may not fully capture liabilities or resource usage, whereas accrual accounting (as embodied in IPSAS) records economic events when they occur, thus offering a more complete picture of financial position and performance. Many countries, including Romania, have gradually moved toward accrual accounting in the public sector in recent decades as part of NPM reforms. Studies have found that full accrual accounting can improve not only transparency but also the reliability and credibility of financial statements, since information becomes more comprehensive and decision-useful (e.g. revealing the full cost of services). However, this shift is not without challenges: one study noted that some users, including legislators, initially had difficulty understanding financial statements and budgets prepared on an accrual basis. This highlights the need for training and change management when new accounting practices are introduced. Despite transitional difficulties, the global trend (encouraged by organizations like IFAC and the EU) is toward accrual-based standards for public entities, reflecting a consensus that robust financial reporting is essential for sound financial management and accountability in the public sector. In Romania, researchers have analyzed the alignment between national public-sector accounting regulations and IPSAS. Tiron-Tudor and Crişan (2017) document that formal harmonization is partial; many elements of IPSAS are present in Romanian regulations, but gaps remain (Pantazi, 2013). Their work provides evidence-based recommendations for improving alignment, noting that Romania is considering future implementation of European Public Sector Accounting Standards (EPSAS). This ongoing harmonization effort underscores that Romanian public accounting is in a transition toward international best practices, which

is expected to increase transparency and comparability of financial reports across institutions and countries.

Beyond accounting standards, legal requirements for transparency influence university reporting. Romania's legal framework (e.g. the Freedom of Information law and specific orders like OMFP 1917/2005) sets minimum disclosure obligations. EU-level norms, such as the aforementioned Directive 2011/85/EU, also exert pressure by requiring member states to have transparent budgetary frameworks. Compliance with these regulations ensures a baseline of transparency, but universities can go further by voluntarily providing more frequent updates or more detailed financial information to stakeholders.

The rise of digital technology is fundamentally changing how financial information is collected, processed, and disclosed in both corporate and public sectors. Universities, like other organizations, are experiencing a shift from traditional manual or paper-based accounting systems to automated, data-driven solutions that enhance accuracy, efficiency, and transparency. Studies highlight that technologies such as artificial intelligence (AI) and blockchain can play a pivotal role in strengthening data security and enabling real-time financial reporting in the public sector (Tiron-Tudor & Crișan, 2017b). For example, blockchain's immutable ledger could ensure the integrity of financial records, while AI algorithms can automate transaction processing and flag anomalies in real time (Thursina, 2023) (Tiron-Tudor & Crișan, 2017b). The transition from traditional to digital financial reporting systems has generally improved financial accountability by reducing errors and delays, though it also introduces new compliance challenges, such as ensuring data standards and cybersecurity in digital platforms.

Big data analytics is another component of digital transformation affecting university financial management. With modern systems, universities can capture large volumes of financial and operational data. Analyzing this "big data" can provide meaningful insights that help optimize resource allocation and financial performance. For instance, data analytics can enable predictive modeling of budgets, forecasting student enrollment, expenses, and revenues, thus allowing institutions to plan more effectively. Attaran et al. (2018) note a trend of increasing research on the role of big data in financial reporting, as analytics facilitate predictive insights and proactive risk management (Thursina, 2023). By implementing big data solutions, universities can perform scenario analyses and identify financial risks or opportunities ahead of time, which strengthens their financial sustainability. However, harnessing big data also poses challenges: ensuring data quality and privacy, and hiring or training skilled personnel to analyze and interpret the data are noted hurdles to fully leveraging these tools.

Recent literature emphasizes the transformative potential of specific technologies in public financial reporting. Artificial intelligence has the potential to revolutionize financial processes by automating routine accounting tasks, enhancing error detection, and providing predictive insights. AI-powered financial tools can assist universities in budgeting, forecasting, and risk assessment (Attaran et al., 2018). For example, machine learning algorithms might analyze spending patterns to predict budget shortfalls or recommend optimizations, improving financial planning (Attaran et al., 2018). A study on Romanian accounting practice by Gușe & Măngiuc (2022) reported that the profession is increasingly integrating digital tools and AI, which is expected to impact

both how financial data is processed and how future accountants are trained (Nagham et al., 2024). However, AI's introduction raises ethical and governance concerns; issues of algorithmic bias, data privacy, and transparency of AI-driven decisions must be addressed. Scholars argue that universities need to develop AI governance frameworks to ensure responsible use of AI in financial reporting (Díaz-García et al., 2022).

In summary, the literature suggests that digital transformation offers powerful mechanisms to enhance financial transparency and accountability in universities. Automated, real-time reporting can make financial information more timely and accurate; data analytics can extract insights that improve decision-making; and online dissemination can make information more accessible to stakeholders (Nagham et al., 2024). At the same time, successful implementation of these innovations requires alignment with standards (IPSAS/EPAS), adequate investment in technology and human capital, and management of the new risks and challenges they bring (Nagham et al., 2024). The convergence of these themes, public accountability demands, accounting standards harmonization, and rapid technological advancement, sets the stage for our investigation into Romanian public universities, which we expect to reflect these global trends and challenges. Nevertheless, specific empirical research connecting these developments to actual financial performance data in Romanian universities is scarce. The literature does not yet provide evidence on how digital financial reporting tools are being applied (or could be applied) in Romania's higher education sector, especially regarding real-time financial disclosures. This gap in scholarly understanding underlines the importance of our study, which aims to fill this void by examining digital reporting practices alongside financial performance outcomes in Romanian public universities.

2. Research methodology

This paper employs a mixed-method approach combining literature review and case study analysis to explore digital financial reporting in public universities. First, a comprehensive review of national and international literature was conducted, covering academic studies, professional reports, and relevant legislation. This review provided theoretical and contextual insights on public sector accounting reforms, transparency and accountability in higher education, IPSAS implementation, and the impact of digital technologies on financial reporting. Key themes and findings from the literature (as summarized in the previous section) informed our research questions and analysis framework. In particular, the literature review helped shape RQ1 and RQ2 by identifying the state of digital practices and transparency expectations in public university reporting, thereby guiding our inquiry.

To guide the investigation, we formulated the following research questions (RQs):

1. **RQ1:** *What are the current practices of financial reporting in Romanian public universities, and to what extent have these institutions adopted digital reporting methods to enhance their financial disclosures?*
2. **RQ2:** *How do the financial reporting disclosures of Romanian public universities meet transparency requirements and stakeholder needs, and what gaps remain in terms of accessibility, timeliness, and clarity of the information provided?*

3. **RQ3:** *What do key financial performance indicators (such as revenue growth and surplus/deficit levels) reveal about the fiscal health of major Romanian public universities, and how could the implementation of real-time digital reporting tools improve transparency, accountability, and performance management in this context?*

Next, we undertook an empirical case study focusing on the financial reporting practices of major Romanian public universities. We selected the nine largest public universities in Romania, which are the members of the “Universitaria Consortium” consortium: namely, University of Bucharest (UB), Babes-Bolyai University Cluj-Napoca (UBB), Alexandru Ioan Cuza University of Iasi (UAIC), West University of Timisoara (UVT), Academy of Economic Studies Bucharest (ASE), University of Craiova (UCV), Lucian Blaga University of Sibiu (ULBS), “Dunarea de Jos” University of Galati (UDJG), and Ovidius University of Constanta (UOC). These institutions are among the most prominent universities in the country, collectively enrolling a substantial portion of Romanian students and managing significant budgets. Focusing on this set enabled a comparative perspective while keeping the analysis manageable.

For each of the nine universities, we collected financial data for the years 2021–2024. The primary sources were the official annual financial statements and budget execution reports published on the universities’ websites (as mandated by transparency regulations). In cases where documents were not readily accessible online, we relied on official public financial reports obtained through university disclosures or the Ministry of Finance’s database. The data collected included key figures such as total operational revenues, total expenditures, and the resulting surplus or deficit for each year. We compiled these figures to analyze trends in each institution’s financial performance over the four years. Additionally, we computed indicators of financial efficiency – for example, the expenditures-to-revenues ratio (what percentage of annual income was spent, an inverse measure of surplus margin) – for each university and year. This indicator provides a straightforward gauge of whether a university lived within its means (values below 100%) or overspent (values above 100%). The calculation of these financial performance indicators was aimed at directly addressing RQ3, allowing us to evaluate fiscal health through metrics like revenue growth and spending efficiency.

Alongside quantitative data, we also reviewed each university’s financial reports for qualitative information on reporting formats and disclosure practices. We noted whether the financial statements were presented in accrual format (balance sheet, income statement, cash flow, etc.), whether explanatory notes or performance reports accompanied the figures, and how easily the information could be found by the public on the websites. We also examined relevant regulatory and oversight documents: for instance, we reviewed the national legal framework (laws, government orders, OMFP regulations) governing university financial reporting and transparency, and reports from oversight bodies like the Romanian Court of Accounts regarding university audits or compliance. This allowed us to contextualize the universities’ financial outcomes within the regulatory environment and accountability mechanisms. These steps were designed to inform RQ1 and RQ2: by evaluating the use of digital reporting tools and the ease of access to information, we could gauge the current reporting practices (RQ1) and identify transparency gaps (RQ2) in how financial disclosures meet stakeholder needs.

The analysis was conducted in two parts. First, a descriptive statistical analysis of the financial data was performed to identify trends in revenues, expenditures, and surpluses/deficits at each university. We compared the institutions to highlight common patterns or outliers (such as universities with consistently high surplus margins versus those with frequent deficits). This quantitative analysis directly contributed to answering RQ3, revealing how key financial performance indicators varied across universities. Second, we analyzed these results in light of the literature and regulatory context to assess how well current reporting practices support transparency and accountability. Special attention was given to identifying gaps or delays in reporting and to considering how digital tools might address these issues. For instance, if we found that financial information is published only annually and is difficult to access, we discuss how real-time reporting systems or a better online presentation could improve stakeholder communication. By linking these findings back to RQ2 and the latter part of RQ3, we explored how observed reporting shortcomings could be mitigated through digital innovation (e.g. real-time data access), thereby improving transparency and accountability.

It should be noted that this study is largely exploratory and case-based, focusing on depth of insight within the Romanian context rather than broad generalization. The chosen time frame (2021–2024) includes years influenced by the COVID-19 pandemic (especially 2021), which might have affected university finances (e.g. sudden shifts in revenues or expenses) – our analysis takes these contextual factors into account when interpreting results. The methodological approach provides an integrated perspective: by blending literature-driven expectations with empirical observations from the case, we aim to derive informed conclusions about the role of digital financial reporting in enhancing transparency and accountability in public universities.

3. Results and discussion

3.1 Financial reporting practices and performance in romanian universities (2021–2024)

Our analysis of the nine major Romanian public universities reveals both encouraging signs of sound financial management and areas of concern that underscore the need for improved transparency and oversight. In the aggregate, all nine universities experienced growth in operational revenues over the 2021–2024 period. For example, Babeş-Bolyai University (UBB), the largest institution by revenue, saw its annual income rise from about 648 million lei in 2021 to roughly 950 million lei in 2024, an increase of approximately 46%. The University of Bucharest similarly grew its revenues from ~485 million lei in 2021 to 718 million lei by 2024, about a 48% increase. Alexandru Ioan Cuza University of Iasi recorded a substantial 40% revenue growth over the period. Notably, the Academy of Economic Studies (ASE) in Bucharest achieved one of the highest revenue increases, exceeding 50% growth in operational income, whereas smaller regional universities like Ovidius Constanta (UOC) and Galati's UDJG saw more modest revenue increases on the order of 27–28% during 2021–2024. This robust growth reflects both increased government funding and own-revenues (such as higher tuition intake or research grants), consolidating these comprehensive universities' financial leadership. Such revenue expansion indicates greater resources available for

educational and research activities, but it also requires strong financial management to ensure that expenditures do not outpace income.

Table no. 1 Statement of total income and expenses of the universities in the Universitaria Consortium

University	2021		2022		2023		2024	
	Revenue	Expenses	Revenue	Expenses	Revenue	Expenses	Revenue	Expenses
UOC	195.730.681	177.414.033	201.566.206	196.260.649	209.585.734	227.547.246	251.262.963	267.048.598
UVT	266.215.853	263.280.256	285.218.853	245.214.993	303.351.435	285.597.609	384.173.605	353.079.261
UBB	648.392.379	612.818.993	709.307.708	691.942.996	823.640.906	804.443.599	949.676.363	997.920.227
UCV	300.502.431	266.865.049	331.696.758	280.892.654	424.029.255	325.944.891	426.762.706	388.419.049
UDJG	285.486.714	215.518.120	299.258.853	262.367.741	326.030.600	304.221.662	363.435.899	361.553.408
UB	485.385.632	443.598.260	545.233.176	484.688.975	646.524.678	549.398.750	717.697.435	691.865.920
ULBS	210.204.882	180.697.373	231.514.248	211.457.856	252.698.882	239.835.086	304.507.087	292.538.312
UAIC	382.666.971	328.219.514	429.608.362	382.479.453	503.353.680	434.900.682	536.709.377	549.321.126
ASE	301.669.970	277.979.375	313.791.801	306.997.299	348.063.096	344.523.687	457.716.800	436.696.971

Source: own processing

In terms of expenditures, we found that most universities utilized almost the entirety of their revenues each year, resulting in small surpluses at best, and in some cases deficits. A clear indicator is the expenditures-to-revenues ratio. Across 2021–2024, many institutions spent on average between 90% and 99% of the funds they generated. Several universities hovered very close to the break-even point by 2023–2024. For instance, ASE Bucharest had an expenditure ratio around 97–99% in 2022–2023, effectively breaking even, and managed to improve to about 95.4% in 2024. Over the four-year span, ASE’s spending averaged roughly 95.5% of its revenues, reflecting only a modest aggregate surplus – a sign that it started the period efficiently (around 92% in 2021) but lost financial slack by 2023 before a slight recovery in 2024.

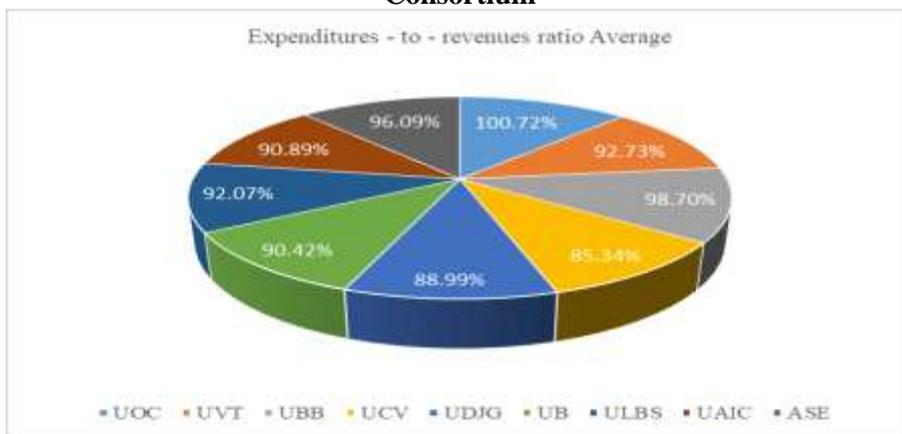
**Table no. 2 Expenditures-to-revenues ratio of the universities in the
Universitaria Consortium**

University	2021	2022	2023	2024	Average
UOC	90,64%	97,37%	108,57%	106,28%	100,72%
UVT	98,90%	85,97%	94,15%	91,91%	92,73%
UBB	94,51%	97,55%	97,67%	105,08%	98,70%
UCV	88,81%	84,68%	76,87%	91,02%	85,34%
UDJG	75,49%	87,67%	93,31%	99,48%	88,99%
UB	91,39%	88,90%	84,98%	96,40%	90,42%
ULBS	85,96%	91,34%	94,91%	96,07%	92,07%
UAIC	85,77%	89,03%	86,40%	102,35%	90,89%
ASE	92,15%	97,83%	98,98%	95,41%	96,09%

Source: own processing

Other universities struggled even more to maintain surpluses. Babeş-Bolyai University (UBB) had a relatively high spending rate throughout: about 94.5% in 2021, rising to ~97.5% in 2022, ~97.7% in 2023, and then jumping to approximately 105% in 2024. Over the four years, UBB's expenditure averaged ~98.7% of its revenues, one of the highest (i.e. poorest) efficiency averages in the group. This indicates that even when UBB ran small surpluses in 2021–2023, they were minimal relative to its large budget, and in 2024, it actually overspent, incurring a deficit (spending about 5% more than its income). As the largest university, UBB's tight financial margins suggest potential inefficiencies or cost pressures despite its scale; one might expect economies of scale to aid the biggest institutions, yet UBB's inability to sustain a healthy surplus implies challenges such as high fixed costs or underfunding relative to its scope of activities.

Figure no. 1 Expenditures-to-revenues ratio average of the universities in the Universitaria Consortium



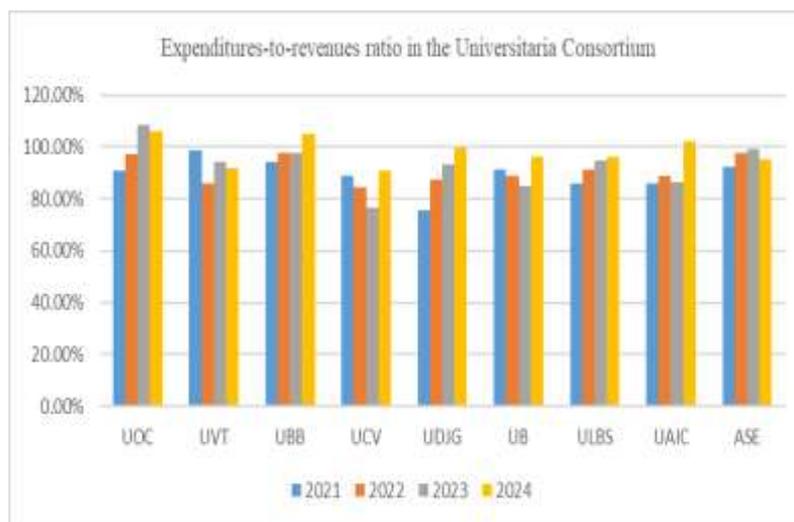
Source: own processing

Perhaps the most concerning case was Ovidius University of Constanța (UOC). Among the nine, Ovidius was clearly the least financially efficient over this period, with an average expenditure/revenue ratio of about 101%. After a reasonable surplus in 2021 (spending ~90.6% of revenues), UOC's efficiency declined in subsequent years: ~97.3% in 2022, then 108.6% in 2023 (a significant deficit), and around 106% in 2024 (another deficit). Over four years, Ovidius spent slightly more than it earned an unsustainable trajectory. Running deficits in consecutive years likely forced the university to deplete reserves or rely on short-term fixes. This pattern flags issues in financial planning or the impact of external shocks (for instance, unexpected cost increases or static funding) and underscores the importance of timely financial monitoring – earlier transparency might have triggered interventions to avoid back-to-back deficits.

Encouragingly, not all universities were in such a tight position. Several showed strong cost management and maintained comfortable surplus margins. For example, University of Craiova (UCV) and “Dunarea de Jos” University of Galati (UDJG) both spent well under 90% of their revenues in multiple years. UCV managed to keep its spending between ~77% and 91% of revenues during 2021–2024, averaging only ~85%, meaning a consistent surplus each year. Galati's UDJG had one exceptionally low spending year (75.5% in 2021) and remained below 100% thereafter, averaging about 90% over four years. These surpluses indicate room for strategic investments or cushions against future downturns; however, they also raise questions about whether the funding formulas over-allocated funds relative to actual needs in those years, or conversely, whether those universities were under-spending (potentially at the cost of forgoing certain investments).

West University of Timisoara (UVT) offers an interesting case of volatility. UVT's expenditure ratio was nearly 99% in 2021 (virtually break-even), then dramatically improved to about 86% in 2022 (an unusually high surplus year), but then rose to ~94% in 2023 and ~92% in 2024. Overall, UVT's four-year average was around 93%, indicating solid efficiency, but the swing from an extremely efficient 2022 back to higher spending levels suggests that 2022 might have involved one-off factors (e.g. specific cost-cutting measures or a spike in revenues) that were not sustained. Maintaining such low cost ratios consistently proved difficult. Still, by 2024 UVT ended with a respectable ~92% ratio, allowing a decent surplus.

Figure no. 2 Expenditures-to-revenues ratio of the universities in the Universitaria Consortium



Source: own processing

Average expenditure-to-revenue ratio of major Romanian public universities (2021–2024). This chart shows total expenditures as a percentage of total revenues over a four-year period for the nine universities analyzed. Most institutions spent between about 85% and 96% of their revenues on average, indicating small surplus margins, while one university (UOC) slightly exceeded its total revenue (~101%), reflecting an overall deficit. The 100% “breakeven” line (shown in red) highlights how close many universities are to spending all the income they receive. Such thin financial margins emphasize the importance of diligent budget management and continuous monitoring to avoid deficits and ensure long-term sustainability.

The financial performance patterns observed have important implications for transparency and accountability. The fact that several top universities (UBB, UAIC, UOC) came close to or exceeded 100% expenditure in 2024 indicates growing financial

strain even as budgets expanded. Ideally, transparent, real-time financial reporting can help detect such trends early. For instance, if throughout 2023 UBB or Ovidius leadership and stakeholders had access to up-to-date budget execution data (through dashboards or periodic online reports), they might have identified overspending tendencies and taken corrective action before year-end. Timely disclosure of financial difficulties also serves an accountability purpose: stakeholders (including the Ministry of Education and the public) can question and understand why an institution is running a deficit and demand plans for improvement. Currently, however, the financial information of universities typically becomes publicly available only in aggregated annual reports, often many months after the fiscal year close. By the time a deficit is visible in a published report, the opportunity to prevent it has passed. This lag in reporting diminishes the practical accountability of university management during the year.

On the other hand, the exercise of analyzing these financial statements demonstrates a positive aspect of transparency: the data needed to evaluate performance were, for the most part, publicly disclosed as required. As noted, Romanian universities largely comply with publishing financial statements (even if some make them hard to find). The availability of four years of data enabled us as external analysts to compute efficient metrics and identify trends. This kind of analysis by independent researchers or stakeholders is a core benefit of transparency: it allows external evaluation of whether public resources are used effectively. In our case, it revealed both best practices (Craiova's strong surpluses, etc.) and warning signs (Ovidius's deficits), information that could usefully inform policy and oversight. However, the accessibility and timeliness of such information remain issues. We often had to navigate deep into university websites or request documents to obtain all relevant reports. A more centralized or standardized reporting platform (for example, a government portal aggregating all universities' financial reports) would greatly enhance accessibility. Indeed, a 2016 study explicitly recommended improving standardization of university financial disclosures, and our experience corroborates that need.

Another point of discussion is how these financial outcomes relate to stakeholder communication and performance. Financial transparency is not just about posting numbers; it's also about explaining what those numbers mean in terms of institutional outcomes. A modern concept in public financial management is results-based reporting linking financial inputs to the outputs and outcomes achieved. As universities spend public funds, stakeholders increasingly ask: What was accomplished with these funds? Our review of university reports found that while financial statements are provided, there is often little narrative connecting expenditures to educational or research results. However, the evolving practice in other countries is to incorporate performance indicators (like graduation rates, research outputs, etc.) alongside financial data to demonstrate value for money. For instance, including a discussion of how a 10% increase in expenditure in a given year contributed to improvements in teaching quality or research output could significantly enhance accountability reporting. This is an area where Romanian universities have room to grow by integrating financial and non-financial data in their public disclosures. In essence, transparency should extend to outcomes, not just inputs.

From a qualitative standpoint, our review of reporting practices revealed that all nine universities comply with basic transparency regulations by publishing annual financial statements, typically on their websites. However, the ease of access and format of these disclosures vary. In general, financial reports are provided as static PDF documents (in Romanian, with some universities also offering an English version), which fulfil legal requirements but offers limited interactivity. We observed that none of the universities currently provide real-time financial data or dynamic dashboards to the public – the “digital” aspect of their reporting is mostly limited to using computers to compile reports and then uploading the files online. This confirms that Romanian public universities have not fully transitioned to modern digital reporting methods, aligning with earlier findings that transparency is achieved mainly through posting required reports rather than through innovative digital platforms (Crişan, 2016). While key financial statements (balance sheet, income statement, etc.) are generally available – supporting prior assessments that transparency levels in Romanian universities are formally high on average – the lack of more frequent updates or a user-friendly presentation indicates room for improvement.

We also found that the timeliness of reporting is an issue: the annual financial statements are often published with a significant delay (several months after the fiscal year-end). This means that stakeholders (students, faculty, oversight agencies, the public) learn about the institution’s financial outcomes long after the fact. Important information can be hard to locate on some university websites, sometimes requiring extensive navigation or even formal information requests. There is little explanatory commentary accompanying the numbers; typically, universities present raw financial statements without a narrative or analysis of what those figures mean for institutional performance. For example, while one can find how much was spent on personnel or capital investments, the reports rarely connect those expenditures to outcomes (such as improvements in educational services or research output). In summary, current financial reporting in these universities emphasizes compliance over communication – a pattern also noted in the literature, where transparency is often treated as posting data rather than truly engaging stakeholders with understandable information (a gap highlighted by our analysis and consistent with the spirit of open government data initiatives).

3.2 Alignment with standards and the role of digital tools

The case study findings reinforce the importance of aligning university financial reporting with recognized standards and leveraging digital tools to meet stakeholder expectations. Romania’s normative framework already incorporates elements of international standards. For example, the national accounting regulations for public institutions (OMFP 1917/2005 and subsequent updates) embed parts of IPSAS principles, and the country is looking toward eventual EPSAS implementation. Our analysis period (2021–2024) falls just before the anticipated rollout of EPSAS across EU countries; thus, Romanian universities are on the cusp of possibly transitioning to fully IPSAS compliant reporting. Aligning with IPSAS would likely require more accrual-based disclosures and could improve transparency by providing a more comprehensive view of assets, liabilities, and long-term obligations. For instance, full IPSAS alignment might entail recognizing deferred revenues, pension liabilities, or

depreciation of facilities, which currently might not be fully transparent under the existing modified cash accounting approach. The universities in our study already prepare financial statements that include balance sheets and income statements, which is a step beyond pure cash accounting. Yet, true IPSAS/EPAS alignment would standardize these reports, improve consistency across institutions, and facilitate international benchmarking.

Importantly, emerging digital reporting tools can facilitate the adoption of such standards. Modern financial software can be configured to produce reports in IPSAS format relatively easily once the underlying accounting data are recorded, whereas manual or legacy systems might struggle with the complexity. For example, if Romania mandates a new reporting format, an integrated ERP system used by all universities could be updated to generate the required statements automatically, ensuring consistency and reducing errors. In the absence of digital systems, compliance with new standards could be more labor-intensive and prone to inconsistency. Thus, investment in digital tools and standards implementation should go hand-in-hand. Indeed, our findings support the recommendation that improving financial reporting and management in universities necessitates investments in both human and technological capacity. Training accountants and auditors in the new standards (IPSAS/EPAS) and deploying modern financial management information systems are vital steps.

One striking observation from the case study was that not all institutions are fully exploiting available IT tools for analysis and monitoring (Gușe & Mangiuc, 2022). Some universities appear to use only basic accounting software or even spreadsheets for financial reporting, which limits their ability to analyze data in depth (for example, calculating unit costs per student or per faculty, conducting multi-year trend analyses, etc.) (Gușe & Mangiuc, 2022). There is evidence that universities which do adopt advanced analytical tools can achieve greater efficiency. Our review suggests that integrated ERP systems tailored for universities would greatly benefit financial oversight: such systems unify budgeting, accounting, and reporting functions and can produce real-time financial dashboards for management. If Romanian universities had an integrated system, many manual processes could be automated, reducing the risk of human error and accelerating the reporting timeline (Brusca et al., 2015) (Crișan, 2016). For instance, instead of waiting several months after year-end to finalize financial statements, an ERP could allow much quicker closing of accounts and even continuous monitoring during the year. The adoption of digital solutions like ERPs was explicitly identified as a practical way to reduce errors, speed up reporting, and enable more detailed analyses (such as computing unit costs for various services). Additionally, having comparable systems across universities would simplify consolidating data at the ministry level and enable cross-institution financial benchmarking in real time.

The Romanian government and the EU have recognized these needs. European funds and national initiatives have been directed toward supporting digital modernization in public sector management (Tiron-Tudor & Crișan, 2017b). Continued investment in such modernization is recommended by our findings as well, as it lays the infrastructure for sustained transparency improvements. In effect, technology is an enabler: it can provide the tools for real-time reporting, but leadership and policy must mandate and use those tools for transparency objectives.

Real-time or near-real-time financial reporting could be a game-changer for stakeholder communication in the higher education sector. Imagine a scenario where each university maintains an online financial transparency portal that gets updated quarterly or even monthly with key financial metrics: budgeted vs. actual spending, current surplus/deficit status, and explanations for any major variances. This would allow students, staff, and the public to see how the university is performing financially throughout the year, rather than waiting for an annual report. It could also enable the Ministry of Education or funding bodies to provide timely guidance or intervention if a university is veering off its budget target. The data we analyzed show how quickly a situation can change – for example, a university can go from surplus to deficit within a single year if spending accelerates unexpectedly. Real-time monitoring could catch such trends early. Technologies to support this are readily available: from web dashboards that visualize financial data to automated email alerts triggered by certain financial thresholds. The main requirements are: (1) that the university's internal accounting systems are up-to-date, integrated, and capable of frequent data exports, and (2) a culture of open communication where interim financial data is not kept for internal eyes only but shared publicly in an appropriate format.

The alignment of digital tools with stakeholder demands also extends to the format and clarity of reporting. Stakeholders such as students or community members may not be well-versed in reading formal financial statements. Therefore, universities could use digital platforms to present information in more understandable ways, for example, through infographic or interactive charts showing the breakdown of sources of income (state subsidy vs. tuition vs. research grants) and expenditure categories (salaries, infrastructure, etc.). This kind of presentation can enhance stakeholder engagement with financial information. It answers questions like “Where does our tuition money go?” in a visual, intuitive manner. By doing so, universities fulfil not just the letter of transparency laws (which might only require posting a PDF of financials) but the spirit of transparency, which is to make information truly accessible and comprehensible.

Our examination of Romanian universities also brings to light the role of oversight and how digital reporting ties in. The Romanian Court of Accounts audits public universities and checks for compliance and financial correctness. If universities were to implement continuous reporting and even open up their accounting data (within appropriate limits) to such oversight bodies, the auditors could shift to a more preventive or real-time assurance role rather than a purely retrospective one. Some countries have experimented with connecting public institutions' ERP systems directly to a central monitoring system for the Treasury or auditor-general. While this could raise autonomy and data security concerns, it exemplifies the possibilities of the digital age for accountability: continuous auditing and monitoring are feasible with modern IT systems, as opposed to only annual audits under traditional approaches.

Finally, it is worth highlighting that improving financial transparency via digital reporting aligns with broader trends in public management, such as open government and evidence-based policymaking. Open government initiatives encourage the release of public data (including financial data) in accessible formats, and real-time digital reporting of university finances would dovetail with that movement. It would also provide better evidence for policy decisions regarding higher education funding, by

supplying up-to-date information on how universities are performing financially and using their resources.

Overall, these results paint a picture in which basic transparency requirements are met – the financial data necessary to evaluate performance is published, allowing us (and any interested party) to calculate indicators and identify trends – but true transparency and accountability are limited by the infrequency, opacity, and after-the-fact nature of reporting. The financial performance indicators we analyzed (revenues, expenditures, surplus/deficit, efficiency ratios) provide important insights into universities' fiscal health (addressing RQ3), yet these insights are not being leveraged in real time by current reporting practices. The implementation of real-time digital reporting tools could address many of these issues by providing more timely, accessible, and actionable financial information, which in turn would strengthen transparency and performance management (Panggeso et al., 2024). We discuss this potential in the context of our research questions below.

Based on our literature review and empirical analysis, we address each research question as follows:

- **Answer to RQ1:** Currently, Romanian public universities largely use traditional, periodic financial reporting methods, with digitalization in financial disclosure still limited. All universities publish annual financial statements in static formats (usually PDFs on their websites), fulfilling basic transparency regulations. However, fully digital or real-time reporting is not yet in place. Many institutions rely on relatively basic internal accounting software or even spreadsheets for financial management, rather than integrated digital systems (Gușe & Măngiuc, 2022). We found no evidence of universities providing live financial data to the public (e.g. through dashboards). In essence, the “digital” aspect of financial reporting is presently confined to using computers to prepare reports and posting PDF documents online. Advanced tools like Enterprise Resource Planning (ERP) systems with real-time dashboard capabilities are not universally employed; some universities appear not to be fully exploiting available IT tools for analysis and monitoring (Gușe & Măngiuc, 2022). This indicates significant room for improvement: the adoption of modern digital reporting platforms is still in an early stage, representing a major opportunity to enhance the speed, detail, and user-friendliness of financial disclosures. Our findings here align with the broader trend that higher education institutions are only gradually embracing digital transformation in reporting (Díaz-García et al., 2022), leaving untapped potential for improved data analytics and transparency.
- **Answer to RQ2:** In terms of transparency, Romanian public universities meet the formal requirements but fall short of providing truly user-friendly and timely financial information. By law, universities must publish their annual financial statements, and indeed, the majority do make at least a basic set of financial reports publicly available. Our analysis confirms that the data needed to evaluate performance (revenues, expenditures, etc.) were generally disclosed, which allowed us as external analysts to compute efficiency metrics and identify trends. This compliance with disclosure laws is a positive

foundation for transparency (as earlier assessments also noted a reasonably high transparency index on average (Crişan, 2016)). However, gaps remain in accessibility, timeliness, and clarity. Financial reports are often published with significant delays, typically many months after the fiscal year-end, which means stakeholders learn about issues (such as a deficit) only long after they have occurred. Additionally, important information can be hard to find on some university websites, requiring extensive navigation or even formal requests, as noted by prior assessments. There is also little explanatory context accompanying the numbers: the reports rarely include narrative discussion or performance indicators that link financial figures to institutional outcomes. For example, universities present income and expenditure statements, but they usually do not explain what was achieved with those funds (e.g. improvements in teaching, research outputs). This limits stakeholders' ability to truly understand the effectiveness of resource use. In short, transparency in Romanian public university finances today is mostly about compliance (posting the required financial data) rather than communication. The information is available, but not always easy to interpret or timely enough to be actionable. Our findings diverge somewhat from older evaluations that found transparency levels "high" in a formal sense (Crişan, 2016), by highlighting qualitative shortcomings – the lack of frequent updates, context, and user-oriented presentation – that impede effective transparency and accountability. Strengthening transparency will require not just publishing figures, but doing so in a more accessible, frequent, and informative manner, including providing context and explanations that make the data meaningful to stakeholders. This perspective is in line with emerging best practices in public sector reporting, where digital platforms and open data are used to turn raw data into comprehensible information for the public (Ren-Hao Xu, 2025).

- **Answer to RQ3:** Our analysis of financial performance indicators from 2021–2024 reveals that while all nine major universities enjoyed substantial revenue growth (on the order of 30–50% higher operational revenues in 2024 compared to 2021), most of them operated with very thin surplus margins. In each year, the vast majority of universities spent between about 90% and 99% of the funds they generated, leaving only small surpluses; by 2023–2024, several were at breakeven or running deficits. For instance, Ovidius University of Constanţa (UOC) moved from a modest surplus in 2021 to significant deficits in 2023 and 2024, spending roughly 108.6% of its income in 2023 and about 106% in 2024. Babeş-Bolyai University (UBB), the largest university, also barely broke even for three years and then overspent by about 5% in 2024. These patterns indicate potential sustainability concerns: even when funding increased, it was quickly absorbed by expenditures, suggesting limited financial buffers in many institutions. The lack of timely monitoring contributed to this outcome. Problems such as overspending were only clearly visible when annual financial reports were compiled and published long after year-end. By that point, as we note in our case study, the opportunity to prevent or correct the deficit had passed. This underscores how delayed

reporting can undermine accountability university management might only face scrutiny for a deficit after the fact, rather than being alerted to early warning signs. Implementing real-time or more frequent digital reporting tools could markedly improve this situation. If university leaders and stakeholders had access to up-to-date budget execution data throughout the year, they could identify overspending trends and take corrective action before a small shortfall grows into a large deficit. For example, in our findings, we noted that had UBB or UOC management seen mid-year data showing expenditures trending above sustainable levels, they might have enacted spending freezes or reallocations in time to avoid the year-end deficit. Real-time digital dashboards could also automatically flag when spending in a quarter exceeds, say, 25% of the annual budget (a potential sign of trouble), prompting intervention. In essence, modern digital reporting can turn financial data into an active management tool rather than a passive, after-the-fact record. By catching negative financial developments early and facilitating prompt responses, such tools would enhance both financial performance and accountability. This proactive use of financial data directly speaks to improved performance management – the ability of university management to monitor and adjust operations in real time – which is a core aspect of RQ3. Our findings suggest that the adoption of real-time digital reporting in Romanian public universities could be a “game-changer,” improving financial discipline and enabling continuous oversight by authorities (and even the public). This insight is consistent with recent studies emphasizing that digital technology can significantly bolster transparency and accountability in public financial management (Panggeso et al., 2024). In effect, transparency would become not just a retrospective obligation but a day-to-day governance practice, with financial data serving as a strategic asset for decision-making (Nagham et al., 2024).

Conclusions

Digital financial reporting represents a transformative pathway for public universities to strengthen transparency and accountability in an era of technology-driven public management. Our study illustrated that Romanian public universities are fulfilling basic transparency mandates by publishing financial statements, but these disclosures have yet to evolve into a more dynamic, user-oriented form. The empirical analysis of nine major universities revealed a common pattern of thin financial margins, many universities operate at the edge of breakeven, with occasional deficits, highlighting the need for more responsive financial oversight. We identified that the lack of real-time data and delays in reporting can allow financial issues to go unchecked until year-end, undermining timely accountability. By integrating digital tools into their financial reporting processes, universities can move from retrospective reporting to a proactive model where stakeholders are kept informed throughout the fiscal cycle.

A key conclusion is that transparency in this context must be reimagined: it is not enough for universities to simply comply with posting annual reports. To truly enhance accountability, they should leverage digital platforms to provide more frequent updates, context for financial figures, and linkages between spending and results. In our analysis,

we noted the absence of performance context in current reports – a clear area for improvement. Explaining how financial input contributes to educational and research outcomes would make transparency more meaningful to stakeholders and would demonstrate value for money, addressing the gap between financial data and institutional performance.

Another key conclusion relates to standards and harmonization. Romania's public universities have been moving toward accrual accounting and alignment with IPSAS, but full harmonization (and the anticipated adoption of EPSAS) will demand further adjustments. Digital tools can ease this transition by automating complex accounting treatments and generating standardized reports, thereby reducing the compliance burden. Our findings support the idea that investments in modern financial systems and training are not just technical upgrades but fundamental components of improving transparency and governance. For example, an integrated financial system could enable each university to produce comparable financial statements and real-time reports with minimal extra effort, facilitating oversight by regulators and comparisons across institutions.

In conclusion, digital financial reporting in public universities is not an end in itself but a means to an end: the end goals being enhanced transparency, greater accountability, and improved decision-making. When properly implemented, real-time and digital reporting tools can turn financial data into a strategic asset for universities. They enable continuous monitoring of budget execution, early warning of financial problems, and more engaged communication with stakeholders. This leads to a governance environment where university leadership can be more swiftly held accountable for financial performance, and where trust is built through openness and responsiveness. For Romanian public universities, embracing these tools and practices could address the current gaps – the limited empirical performance analysis and the delayed reporting – that our study identified. It would assure students, staff, funders, and the public that the institutions are not only financially compliant but also financially transparent in the full sense: open, timely, and informative about how they steward the public resources entrusted to them.

References

- [1] Attaran, M., Stark, J., & Stotler, D. (2018). Opportunities and challenges for big data analytics in US higher education: A conceptual model for implementation. *Industry and Higher Education*, 32(3), 169–182.
- [2] Bellanca, S., Cultrera, L., & Vermeylen, G. (2015). Analysis of public accounting systems in the European Union. *Research in World Economy*, 6(3), 23–35.
- [3] Brusca, I., Caperchione, E., Cohen, S., & Manes Rossi, F. (2015). *Public Sector Accounting and Auditing in Europe: The Challenge of Harmonization*. Springer (pp. 235–251).
- [4] Crișan, A.-R. (2016). An assessment of the transparency level in Romanian public universities. *Cross-Cultural Management Journal*, 18(2), 83–91.
- [5] Díaz-García, V., Montero-Navarro, A., Rodríguez-Sánchez, J. L., & Gallego-Losada, R. (2022). Digitalization and digital transformation in higher education: A

- bibliometric analysis. *Frontiers in psychology*, 13, 1081595. <https://doi.org/10.3389/fpsyg.2022.1081595>.
- [6] Directive 2011/85/EU (2011). Council Directive of 8 November 2011 on requirements for budgetary frameworks of the Member States.
- [7] Gușe, G. R., & Mangiuc, M. D. (2022). Digital transformation in Romanian accounting practice and education: Impact and perspectives. *Amfiteatru Economic*, 24(59), 252–267.
- [8] Ministry of Public Finance (Romania) (2005). Order no. 1917/2005 of 12 December 2005 for approval of the Methodological Norms on organizing and managing the accounting of public institutions and the Chart of Accounts for public institutions (Monitorul Oficial no. 1186/2005).
- [9] Nagham, A., Mohamed, I., & Mohamed, R. (2024). Role of AI and digital transformation in corporate reporting: A bibliometric review. *International Business Research*, 17(5), 52–73.
- [10] Panggeso, A. G., Nirwana, Haliah (2024). Transparency and Accountability in Public Financial Reporting: Implementation and Challenges in the Digital Era: A Systematic Literature Review. *International Journal of Business and Applied Economics*, 979-990.
- [11] Pantazi, R. (2015). “Cinci universități de top din România cer clasificare internațională și finanțare pe criterii de performanță academică” (Five top universities in Romania ask for international ranking and performance-based funding). HotNews.ro, 18 May 2015.
- [12] Ren-Hao Xu (2025). Making Higher Education Market Through Open Data Platform: Digital Educational Governance and Struggling Universities. *Higher Education Policy*. <https://doi.org/10.1057/s41307-025-00405-3>.
- [13] Thursina, F. (2023). Unveiling the transformational impact of digital technologies on accounting and finance. *West Science Accounting and Finance*, 1(2), 45–51.
- [14] Tiron-Tudor, A., & Crișan, A. (2017a). Elemente IPSAS regăsite în reglementările românești de contabilitate pentru sectorul public – Armonizarea formală (I) (Elements of IPSAS found in Romanian public sector accounting regulations – Formal harmonization, Part I). *Expertiza și Auditul Afacerilor*, 36, 25–32.
- [15] Tiron-Tudor, A., & Crișan, A. (2017b). Elemente IPSAS regăsite în reglementările românești de contabilitate pentru sectorul public – Armonizarea formală (II) (Elements of IPSAS found in Romanian public sector accounting regulations – Formal harmonization, Part II). *Expertiza și Auditul Afacerilor*, 37, 21–29.