

On the role of cost-effectiveness in accounting

Paolo Candio*

Received: 29 April 2023

Accepted: 31 July 2023

Abstract

Cost-effectiveness refers to the achievement of optimal allocation of limited resources and its ultimate purpose is to support rational decision-making. Cost-effectiveness principles govern financial reporting and managerial accounting frameworks, yet in practice these might not have been formally characterised and identified within the accounting literature due to semantic issues and norms. This article explores the nexus between cost-effectiveness and accounting by conducting a scoping review of the published literature. Findings from this study suggest that use of the cost-effectiveness criterion has increased over time and been more frequently employed by authors affiliated to U.S. academic institutions. Cost-effectiveness principles have been invoked both in published financial and managerial accounting research. However, only a handful of mostly empirical studies have quantified cost-effectiveness evidence and formally applied and discussed its analytical methods. This article highlights a research gap pertaining to the development of interdisciplinary frameworks and analytical methods able to formally integrate the concept of cost-effectiveness and cost-benefit analyses into accounting research.

Keywords: cost-effectiveness, cost-benefit, accounting, decision-making.

1. Introduction

Cost-effectiveness refers to the achievement of optimal allocation of limited resources, expressed as the maximisation of output (e.g., societal value), given a resource constraint and consequent opportunity cost attached to the decision (Fattore G., 2009). Over the last decades, cost-effectiveness has increasingly provided a formal decision-making criterion (Borgonovi E., 1979; Borgonovi E. *et al.*, 1983), and its general analytical framework – economic evaluation – has been adopted to inform public and business administration

* University of Trento, Department of Economia e Management. E-mail: paolo.candio@unitn.it.

decisions as pertaining to public spending and its incremental benefits (Farneti G. *et al.*, 1996; Mussari R., 2001, Monteduro F., 2010; Mihaiu D., 2010).

Economic evaluation is the process of systematic identification, measurement and valuation of the inputs and outcomes of (at least) two mutually exclusive alternative courses of action, and subsequent formal comparative analysis (Briggs *et al.*, 2006). The ultimate purpose of cost-effectiveness analysis is to guide and support rational, evidence-based resource allocation decision-making, maintenance of institutional accountability and stewardship (Longo *et al.*, 2012). Further, in practice, accounting data and conventions are routinely applied for and essential to the derivation and implementation of public policy (Hutton *et al.*, 2021, Florio *et al.*, 2018; Andersson, 2018). Computational issues pertaining, for example, to the depreciation and amortisation of assets and attribution of overhead costs – to name a few – are intrinsic to cost-effectiveness analysis and permeate its applied literature, across its multiple sectors of application (Roberts, 2006).

One of the principles governing financial reporting is that the cost of providing a certain piece of information, disclosure or preparing a statement should not outweigh its benefits, typically associated with increased transparency and informational value for investors and other users of financial statements (IFRS Foundation, 2018). This is exemplified, for instance, by the application of cost-benefit analysis for the purpose of financial regulation and informed Security Exchange Commission rulemaking (White, 2016; Coates, 2015; Posner *et al.*, 2014) and changes in financial reporting standards (Schipper, 2011). On the other end of the accounting spectrum, and very much in line with its stated mission functional claims (CIMA, 1996), management accounting is aimed to support decision making in public and private organisations by providing managers with relevant information and analysis on the performance, costs, and benefits of any given business operation (Sargiacomo M., 2013; Sardar, 2016; Tappura *et al.*, 2015;). It would therefore appear that the cost-effectiveness criterion and principles are embedded in accounting conceptual frameworks. Yet, in practice such concepts and conventions might not have been characterised due to semantic issues and norms.

The aim of this paper was therefore to shed some light on this proposition by conducting a scoping review of the published accounting literature. The remaining of this manuscript is organised as follows: section 2 outlines the review methods used to identify the relevant literature, section 3 provides a

descriptive analysis of the identified records, followed by a narrative synthesis. Section 4 focuses on discussing the study findings and implications for future research.

2. Methods

A search strategy was developed based on a title and abstract-based extraction mode. The search was conducted in Scopus using a query based on the Boolean operator “or,” and a combination of keywords as follows: “cost-effective”, “cost-effectiveness”, “economic evaluation”, “cost-benefit”. In line with the approach used in a previously published review (Becciu *et al.*, 2022), twelve accounting journals were selected manually based on their relevance and position in the *Academic Journal Guide 2018* (Journal Ranking Portal, 2023). *Accounting Organizations and Society*, *Accounting and Business Research*, *Accounting and Finance*, *Accounting Review*, *Contemporary Accounting Research*, *European Accounting Review*, *Journal of Accounting and Economics*, *Journal of Accounting and Public Policy*, *Journal of Accounting Research*, *Journal of Business Finance and Accounting*, *Review of Quantitative Finance and Accounting*. Original research articles only were considered. The full texts of the identified records were retrieved and reviewed for content. A descriptive analysis was conducted to illustrate publication trends and article characteristics. A narrative synthesis then focused on the topic covered by the articles and evaluated how the concepts and methods of cost-effectiveness were therein considered.

3. Results

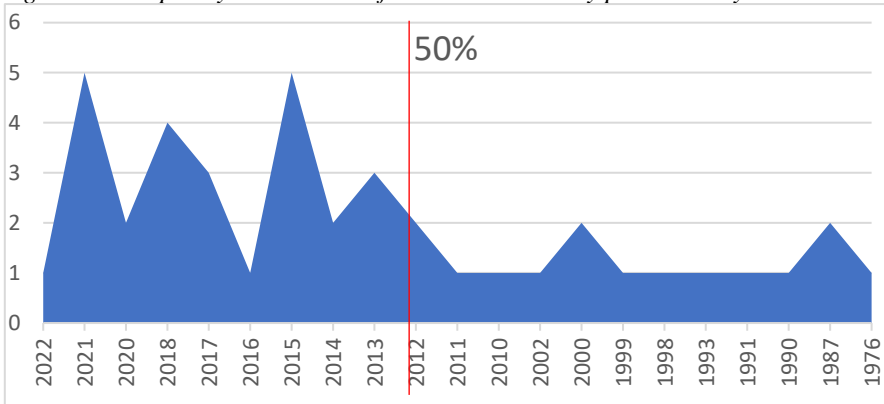
Forty-one articles were identified across the selected journals, for 37 of which full texts were available. Publications covered an almost fifty-year time span, with the oldest record being published in 1976 (**Appendix I – www.sidrea.it/cost-effectiveness-accounting**). **Figure 1** shows how the published articles are distributed over time and that most of them are concentrated within the last decade.

Table 1 shows the distribution of the identified articles by publication journal, author affiliation country and research design. At the top of the rank with 20% of all publication, the *Journal of Accounting and Public Policy* stood, followed by *Accounting Organizations and Society* and

Contemporary Accounting Research, both at 15%, for a total of 50% between these three journals. As for geographical location, publications were spread across four continents, with America holding two thirds of all records and the United States totalling over 60%. In terms of research design, a quarter of the 37 papers employed experimental or quasi-experimental approaches, around one third were theoretical or conceptual paper, as many used correlational approaches, whereas only 11% had a descriptive research design either in the form of direct observations or documental analyses.

Sixteen (43%) articles focused on research questions related to managerial accounting and decision-making, whereas the remaining papers investigated topics related to financial accounting and statements. Among the former group, issues pertaining to contractual obligations and options (Ma *et al.*, 2022; Bens *et al.*, 2020), risk predictions and asset investment decisions (Bodin *et al.*, 2018; Chen *et al.*, 2015; Huang *et al.*, 2015), management decision making (Hemmer, 1998; Chenhall *et al.*, 1991) and internal control such as misconduct (Stikeleather, 2016) and budget slack (Webb, 2002) were addressed.

Figure 1 - Frequency distribution of selected articles by publication year



Regarding financial accounting, three articles focused their research on accounting standards (Li *et al.*, 2021; Geoffroy *et al.*, 2021; Chen *et al.*, 2018), while the remaining addressed questions related to reporting issues such reporting frequency (Gigler *et al.*, 2014), disclosure of non-financial ratios (Crawford *et al.*, 2021) and auditing (Vanstraelen *et al.*, 2017; Grenier *et al.*, 2015, Trompeter *et al.*, 2010; Caplan *et al.*, 2000; Canning *et al.*, 1999). At the intersection between the two accounting areas, three articles investigated the relationship between financial reporting and management

decision-making (Nikolaev *et al.*, 2017; DeZoort *et al.*, 2017; Li, 2013) while accounting practice and methods were the focus of other three articles (Boedker *et al.*, 2013; Espahbodi *et al.*, 1987; Stark, 1987).

Most selected articles either merely invoked the principle of cost-effectiveness or used it as a compass for guiding the interpretation of study findings. Two articles focused on cost-effectiveness-related behaviours, in respect to increases in rationing decisions (Barniv *et al.*, 2000) and considerations of opportunity costs in resource allocation (Chenhall *et al.*, 1991). Two articles discussed the cost-benefit implications of using different models for accounting for inflation (Espahbodi *et al.*, 1987; Stark, 1987), while three studies evaluated the effects of changes in reporting standards (Chen *et al.*, 2021; Li *et al.*, 2021; Khan *et al.*, 2018), though without explicitly attaching any economic value to such effects. The largest category of articles addressed issues relating either to management decision-making such as the use of debt covenants (Ma *et al.*, 2022; Nikolaev, 2017), cybersecurity insurance (Bodin *et al.*, 2018), artificial intelligence (Grüning, 2021) and rewards and disincentives against misconduct (Stikeleather, 2016; Webb, 2002), or choice of disclosure/reporting methods (Crawford *et al.*, 2021; Skinner, 1990; DeZoort *et al.*, 2017; Gigler *et al.*, 2014; Li, 2013), and auditing services (Vanstraelen *et al.*, 2017; Grenier *et al.*, 2015; Canning *et al.*, 1999; Caplan *et al.*, 2000). For these papers – which were essentially quantitative in nature – the cost of the proposed options were compared with their respective benefits, (e.g., in terms of better-quality information or improved behaviour), though no formal cost-effectiveness framework was employed nor any attempt to quantifying the economic efficiency of such propositions was undertaken.

Two among the earliest articles citing the concept of cost-effectiveness formally addressed research questions pertaining to the choice of performance measurement systems (Hemmer, 1998) and measures of human resource development (Mirvis *et al.*, 1976). An article by Hemmer (1999) focused on the choice of performance measures and responsibility assignment in a two-stage sequential production setting. In the studied setting, two responsibility assignments competed for optimality – a “push approach”, whereby the agent of the final stage is made responsible for finishing whatever the agent at the initial stage produces, while the agent at the initial stage is responsible for the overall output level. The other assignment was a “pull approach”, that is the reverse. The choice of optimal assignment design was quantitatively evaluated in cost-effectiveness terms, based on whether the

benefits related to an increase in informativeness of available performance measures resulted by changing the responsibility assignment outweighed the costs of the undesirable incentive that is responsible for its availability.

Table 1 - Characteristics of the selected articles

Journal	<i>Accounting Organizations and Society</i>	15%
	<i>Accounting and Business Research</i>	10%
	<i>Accounting and Finance</i>	2%
	<i>Accounting Review</i>	12%
	<i>Contemporary Accounting Research</i>	15%
	<i>European Accounting Review</i>	5%
	<i>Journal of Accounting and Economics</i>	10%
	<i>Journal of Accounting and Public Policy</i>	20%
	<i>Journal of Accounting Research</i>	5%
	<i>Journal of Business Finance and Accounting</i>	5%
<i>Review of Quantitative Finance and Accounting</i>	2%	
Country of author affiliation	Australia	8%
	Belgium	5%
	Canada	4%
	China	3%
	Denmark	1%
	France	1%
	Germany	1%
	Hong Kong	4%
	Ireland	1%
	Netherlands	1%
	Singapore	3%
	Spain	1%
	Taiwan	3%
	United Kingdom	3%
	United States	62%
Research design	correlational	32%
	descriptive	11%
	experiment	14%
	quasi-experiment	11%
	theoretical / conceptual	32%

* 37 full-text available

The earliest article from 1976 by Mirvis and Macy presented an interdisciplinary approach to measuring the costs and social and financial benefits of human resource development in an organisational setting. Interestingly, the authors described and applied what in fact are the most commonly used approaches to economic evaluation, that is cost-effectiveness and cost-benefit analysis. Mirvis and Macy (1976) neatly illustrated both these techniques by employing a “synthesizing model”, arguing that the latter paradigm (cost-benefit) would be more suited than the former – in that it gives full reign to the productive capacities of human resource development. They highlighted the importance of considering the present (expected) value of future benefits against the programme costs when judging the relative merits of mutually exclusive options and recognised the key role that an interdisciplinary assessment (combining accounting and cost-effectiveness) can have in informing managerial decision making. In sharing their experience, the authors concluded by identifying the refinement of interdisciplinary assessment methods as a key area of future research with cost-benefit comparisons carrying an “enormous potential”.

4. Discussion and conclusions

Cost-effectiveness principles have been invoked both in published financial and managerial accounting research. Most articles used them as guiding compass, and only a handful of studies quantified cost-effectiveness evidence and applied its methods. Interdisciplinary approaches have been called upon since the mid-1970s’, with a lack of methodological research able to integrate the accounting and cost-effectiveness methods being highlighted.

To the best of knowledge, this is the first scoping review exploring the nexus between accounting and cost-effectiveness. The search focused on key accounting journals and applied a systematic search strategy which improved reproducibility and reliability of findings. However, the search was limited in scope – being exploratory in essence – with only part of the published accounting literature being potentially reviewed. Nevertheless, the adopted journal selection provided a representative sample for an analysis focused on highly respected outlets in the accounting field and beyond. Heterogeneity of the literature made it particularly challenging to further dissecting and categorising the extracted information, hence a narrative synthesis approach was employed. This paper provides insight into the historical trend and distribution of the relevant articles, as well as a summary of their contents as

pertaining to the use and application of cost-effectiveness principles and methods.

While cost-effectiveness criteria are referred to in the accounting literature and used in practice, to date, the formal application of cost-effectiveness frameworks in applied research and method development remain at an early stage. Future interdisciplinary research should be conducted to advance such methods and ultimately support rational and informed resource allocation and regulatory decisions.

References

- Andersson H. (2018), Application of BCA in Europe - Experiences and Challenges, *Journal of Benefit-Cost Analysis*, 9(1), pp. 84-96.
- Barniv R. et al. (2000), The impact of medicare capital prospective payment regulation on hospital capital expenditures, *Journal of Accounting and Public Policy*, 19(1), pp. 9-40.
- Becciu A., Calota C.A., Gonnella C., Russo S. (2022), Human Resources Management, Knowledge Sharing and Innovative Behavior: which nexus? A Systematic Literature Review, *Management Control*, 3, pp 14-39. Doi: 10.3280/MACO2022-003002.
- Bens D. et al. (2020), Contracting and Reporting Conservatism around a Change in Fiduciary Duties*, *Contemporary Accounting Research*, 37(4), pp. 2472-2500.
- Bodin L.D. et al. (2018). Cybersecurity insurance and risk-sharing, *Journal of Accounting and Public Policy*, 37(6), pp. 527-544.
- Boedker C., Chua W.F. (2013), Accounting as an affective technology: A study of circulation, agency and entrenchment, *Accounting, Organizations and Society*, 38(4), pp. 245-267.
- Borgonovi E. (1979). *L'impresa pubblica*, Milano, Giuffrè.
- Borgonovi E., Dellamano R. (a cura di) (1983), *Uno strumento operativo per la decisione in sanità :l'analisi costi-benefici*, Milano, FrancoAngeli.
- Briggs A, Sculpher M., Claxton K. (2006), *Decision Modelling for Health Economic Evaluation*, Oxford, Oxford University Press.
- Bushee B.J. (2012), Discussion of “Financial reporting opacity and informed trading by international institutional investors”, *Journal of Accounting and Economics*, 54(2-3), pp. 221-228.
- Canning M., Gwilliam D. (1999), Non-audit services and auditor independence: some evidence from Ireland, *European Accounting Review* 8(3), pp. 401-419.
- Caplan D.H., Kirschenheiter M. (2000), Outsourcing and Audit Risk for Internal Audit Services, *Contemporary Accounting Research*, 17(3), pp. 387-428.
- Chartered Institute of Management Accountants – CIMA (1996), *Management accounting official terminology*, Oxford, CIMA Publishing.
- Chen J.Z. et al. (2021), Information processing costs and corporate tax avoidance: Evidence from the SEC’s XBRL mandate, *Journal of Accounting and Public Policy*, 40(2).
- Chen N.X. et al. (2018), Do Analysts Matter for Corporate Tax Planning? Evidence from a Natural Experiment, *Contemporary Accounting Research*, 35(2), pp. 794-829.
- Chen Z. et al. (2015), A model of emulation funds, *Accounting and Finance*, 55(3), pp. 717-748.

- Chenhall R., Morris D. (1991), The effect of cognitive style and sponsorship bias on the treatment of opportunity costs in resource allocation decisions, *Accounting, Organizations and Society*, 16(1), pp. 27-46.
- Coates John C. IV (2015), Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications. [Available at SSRN: -- <https://www.yalelawjournal.org/article/cost-benefit-analysis-of-financial-regulation>, accessed: 27.03.2023].
- Crawford S.S. et al. (2021), Mind the gap: CEO-employee pay ratios and shareholder say-on-pay votes, *Journal of Business Finance and Accounting*, 48(1-2), pp. 308-337.
- DeZoort F.T. et al. (2017), The effect of SME reporting framework and credit risk on lenders' judgments and decisions, *Journal of Accounting and Public Policy*, 36(4), pp. 302-315.
- Espahbodi R., Hendrikson H. (1987), A discussion of cost-benefit analysis methodology, *Journal of Accounting and Public Policy*, 6(3), pp. 219-228.
- Farneti G., Mazzara L., Savioli G. (1996), *Il sistema degli indicatori negli enti locali*, Torino, Giappichelli Editore.
- Fattore G. (2009), Proposta di linee guida per la valutazione economica degli interventi sanitari in Italia, *Pharmacoeconomics-Ital-Res-Articles* 11, pp. 83-93. Doi: 10.1007/BF03320660.
- Florio M., Morretta V., Willak W. (2018), Cost-Benefit Analysis and European Union Cohesion Policy: Economic Versus Financial Returns in Investment Project Appraisal, *Journal of Benefit-Cost Analysis*, 9(1), pp. 147-180. Doi: 10.1017/bca.2018.4.
- Geoffroy R., Lee H. (2021), The Role of Academic Research in SEC Rulemaking: Evidence from Business Roundtable v. SEC, *Journal of Accounting Research*, 59(2), pp. 375-435.
- Gigler F. et al. (2014), How Frequent Financial Reporting Can Cause Managerial Short-Termism: An Analysis of the Costs and Benefits of Increasing Reporting Frequency, *Journal of Accounting Research*, 52(2), pp. 357-387.
- Grenier J.H. et al. (2015), The effects of accounting standard precision, auditor task expertise, and judgment frameworks on audit firm litigation exposure, *Contemporary Accounting Research*, 32(1), pp. 336-357.
- Grüning M. (2011), Artificial Intelligence Measurement of Disclosure (AIMD), *European Accounting Review*, 20(3), pp. 485-519.
- Harp N.L., Barnes B.G. (2018), Internal control weaknesses and acquisition performance, *Accounting Review*, 93(1), pp. 235-258.
- Hemmer T. (1998), Performance measurement systems, incentives, and the optimal allocation of responsibilities, *Journal of Accounting and Economics*, 25(3), pp. 321-347.
- Huang M., Wu C.C. (2015), Economic benefits and determinants of extreme dependences between REIT and stock returns, *Review of Quantitative Finance and Accounting*, 44(2), pp. 299-327.
- Hutton G., Baltussen R. (2021), Valuation of goods in cost-effectiveness analysis: notions of opportunity costs and transferability across time and countries. [Available at: -- <https://www.who.int/publications/m/item/valuation-of-goods-in-cost-effectiveness-analysis-notions-of-opportunity-costs-and-transferability-across-time-and-countries>, accessed: 27.03.2023].
- IFRS Foundation (2018). Conceptual Framework for Financial Reporting. [Available at: -- <https://www.ifrs.org/issued-standards/list-of-standards/conceptual-framework/>, accessed: 27.03.2023].
- Jalal Sardar (2022). The Role of Management Accounting in the Decision-Making Process. [Available at SSRN: -- <https://ssrn.com/abstract=4116922> or -- <http://dx.doi.org/10.2139/ssrn.4116922>, accessed: 27.03.2023].
- Journal Ranking Portal (2023), *Abs journal Ranking 2018*. [Available at: -- <https://journalranking.org/wp-content/uploads/2020/11/ABS-LIST-2018.pdf>, accessed: 27.03.2023].

- Khan U. et al. (2018), Do the FASB's standards add shareholder value?, *Accounting Review*, 93(2), pp. 209-247.
- Konchitchki Y., Patatoukas P.N. (2014), Taking the pulse of the real economy using financial statement analysis: Implications for macro forecasting and stock valuation, *Accounting Review*, 89(2), pp. 669-694.
- Kuhlmann A., Treskova M., Braun S. et al. (2015). The Role of decision-analytic modelling in German health technology assessments, *Health Econ Rev.*, Doi: 10.1186/s13561-014-0039-x.
- Li B. et al. (2021), Economic Consequences of IFRS Adoption: The Role of Changes in Disclosure Quality*, *Contemporary Accounting Research*, 38(1), pp. 129-179.
- Li E.X. (2013), Revealing future prospects without forecasts: The case of accelerating material contract filings, *Accounting Review*, 88(5), pp. 1769-1804.
- Longo F. et al. (2012), *Governo dei servizi territoriali: budget e valutazione dell'integrazione. Modelli teorici ed evidenze empiriche*. EGEA.
- Ma Z. et al. (2022), What's my style? Supply-side determinants of debt covenant inclusion, *Journal of Business Finance and Accounting*, 49(3-4), pp. 461-490.
- Mihaiu D. (2010), *Public Expenditure Efficiency Analysis Based On Cost Benefit Analysis, Studies in Business and Economics*, Lucian Blaga University of Sibiu, Faculty of Economic Sciences, vol. 5(1), pages 113-125, april.
- Mirvis P.H., Macy B.A. (1976), Accounting for the costs and benefits of human resource development programs: An interdisciplinary approach, *Accounting, Organizations and Society*, 1(2-3), pp. 179-193.
- Monteduro F. (2010), Il ciclo di gestione delle performance, In Hinna L. e Valotti G. (a cura di), *Gestire e valutare le performance nella PA, Guida per una lettura manageriale del D.Lgs. 150/2009*, Maggioli, pp. 323-435.
- Mussari R. (2001), Misurazione e valutazione delle performance: un'analisi critica", In Lombardo A. (a cura di), *Il controllo di gestione negli enti locali*, Maggioli Editore, pp. 41-98.
- National Institute for Health and Care Excellence (2022). *Developing NICE guidelines: the manual* [Available at: -- <https://www.nice.org.uk/process/pmg20/chapter/incorporating-economic-evaluation>, accessed: 27.03.2023].
- Nikolaev V.V. (2017), Discussion of Borrower private information covenants and loan contract monitoring, *Journal of Accounting and Economics*, 64(2-3), pp. 340-345.
- Office for Health Improvement and Disparities (2020). Cost effectiveness analysis: health economic studies. [Available at: -- <https://www.gov.uk/guidance/cost-effectiveness-analysis-health-economic-studies>, accessed: 27.03.2023].
- Posner E.A., Weyl E.G. (2014), Benefit-Cost Paradigms in Financial Regulation, *The Journal of Legal Studies*, 43(S2), S1-S34. Doi: 10.1086/676985.
- Roberts J. (2006), *What Happens when Public Expenditure is Scaled Up? An Enquiry into the Costs and Cost-effectiveness of Expenditure in Phases of Expansion*. [Available at: -- <https://cdn.odi.org/media/documents/2511.pdf>, accessed: 27.03.2023].
- Samiolo R. (2012), Commensuration and styles of reasoning: Venice, cost-benefit, and the defence of place, *Accounting, Organizations and Society*, 37(6), pp. 382-402.
- Sargiacomo M. (2013), *Public Sector Management in Italy (UK Higher Education Humanities & Social Sciences Politics)*. McGraw-Hill Higher Education.
- Schipper K. (2010), How can we measure the costs and benefits of changes in financial reporting standards?, *Accounting and Business Research*, 40(3), pp. 309-327. Doi: 10.1080/00014788.2010.9663406.
- Skinner D.J. (1990), Options markets and the information content of accounting earnings releases, *Journal of Accounting and Economics*, 13(3), pp. 191-211.

- Skinner D.J. (1990), Options markets and the information content of accounting earnings releases, *Journal of Accounting and Economics*, 13(3), pp. 191-211.
- Stark A.W. (1987), Some thoughts on “A cost-benefit analysis of accounting for inflation”, *Journal of Accounting and Public Policy*, 6(3), pp. 209-217.
- Stikeleather B.R. (2016), When do employers benefit from offering workers a financial reward for reporting internal misconduct?, *Accounting, Organizations and Society*, 52, pp. 1-14.
- Tappura S., Sievänen M., Heikkilä J., Jussila A., Nenonen N. (2015), A management accounting perspective on safety, *Safety Science*, Doi: 10.1016/j.ssci.2014.01.011.
- Trompeter G., Wright A. (2010), The world has changed - Have analytical procedure practices?, *Contemporary Accounting Research*, 27(2), pp. 669-700.
- Vanstraelen A., Schelleman C. (2017), Auditing private companies: what do we know?, *Accounting and Business Research*, 47(5), pp. 565-584.
- Webb R.A. (2002), The impact of reputation and variance investigations on the creation of budget slack, *Accounting, Organizations and Society*, 27(4-5), pp. 361-378.
- White J. T. (2016), *Quantified Cost-Benefit Analysis at the SEC*. *Administrative Law Review Accord*. Forthcoming, [Available at SSRN: -- <https://ssrn.com/abstract=2820891>, accessed: 27.03.2023].