“Company management decision-making based on the analysis of events after the reporting period”

AUTHORS	Mehriban Aliyeva

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Mehriban Aliyeva (Azerbaijan)

COMPANY MANAGEMENT DECISION-MAKING BASED ON THE ANALYSIS OF EVENTS AFTER THE REPORTING PERIOD

Abstract

The study aims to discuss the impact of the analysis of events after the reporting date (subsequent events) on management decision-making. In the interval between the end of the reporting period and the publication of the annual financial report, company management may learn about events that either occurred during the reporting period but were previously unknown or occurred when the financial report was already prepared but not approved. The consequences of these events can be so serious that they require adjustments to the financial statements, changes in the company's strategy and tactics, and radical management transformations. The paper structures such events depending on their impact on business performance and the procedure for reporting and identifies the determinants and mechanisms for their analysis and correct accounting. To assess the complex impact of events after the reporting period on the financial results of a company, an integral indicator is proposed, a set of management measures is defined in accordance with the values of this indicator, and the mechanism for its calculation and use is demonstrated on the example of a hypothetical scenario. The sensitivity analysis of this indicator to fluctuations in the weighting coefficients of its components was performed using the Monte Carlo method. In an environment where transparency, accountability, trust between key stakeholders, adaptability, and proactivity are crucial for effective management, this indicator can be used as an effective metric that is taken into account by auditors, regulators, clients, investors, company management, etc.

Keywords subsequent events, financial statements, analysis, methodology, risk assessment, strategic management, integral index, decision-making

JEL Classification M41, M10, G14

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Mehriban Aliyeva, Ph.D. in Economics, Associate Professor, Department of Applied Economics, Azerbaijan State University of Economics (UNEC), Azerbaijan.

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INTRODUCTION

In business management, there is always a time lag between the end of the reporting period and the publication (approval) of the annual financial report. During this period of time, the company's management and business owners may receive additional information about certain favorable and unfavorable events (from unforeseen changes in the market to new global trends), which in the established international terminology are called subsequent events, i.e., events after the reporting date (IAS 10, 2023). These events may significantly affect the company's development trajectory, sustainability, efficiency, and strategic vision of its future development.

If these events existed as of the reporting date but were not known before the end of the reporting period, the financial statements must be adjusted. Sometimes, such adjustments may fundamentally change previous analytical conclusions about the business, significantly affect the strategy and tactics of the company's management, and require the application of radical management measures.

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Examples of such events may include situations when the court confirmed the existence of financial obligations of the company to its counterparties; fraud or errors were detected, which confirms that the financial statements contain inaccurate information; a key counterparty went bankrupt after the reporting date, which usually confirms the existence of bad debts at the end of the reporting period; an asset was sold or purchased, the usefulness of which unexpectedly changed significantly after the reporting date, which would require an accounting estimate.

Suppose these events did not exist as of the reporting date but occurred later before the date of publication (approval) of the report (for example, the company's property was significantly damaged between the end of the reporting period and the approval of the financial statements for the issue, which led to a significant impairment of assets). In that case, the financial statements are not adjusted. However, the notes to them analyze these events in detail and their impact on business performance, based on which management decisions may also change significantly. The company must describe the nature of such events, preliminarily estimate their financial impact (based on the facts available as of the date of approval of the financial statements and not on forecasts and general statements), or state that such an estimate is impossible.

Thus, the correct, timely, and adequate consideration of events after the reporting date in preparing financial statements is essential for the company's tactical and strategic management. It allows owners and management to obtain information about real affairs and make economic decisions based on financial statements. Moreover, it provides a basis for more informed, adaptive, and strategically aligned management practices in a changing business landscape. The issue of proper disclosure of the material impact of events after the reporting date is one of the key issues in the audit of financial statements and may impact the auditor's opinion. Stakeholders, including investors, regulators, and clients, increasingly demand transparency and foresight, forcing companies to strengthen their management strategies by applying a systematic approach to events occurring after the reporting period.

Although the importance of events after the reporting period is widely recognized, the lack of theoretical and methodological consensus poses challenges for companies seeking to interpret these events holistically and integrate them into their management strategies.

1. THEORETICAL BASIS

A crucial starting point for understanding events after the reporting period is the regulatory framework and reporting standards established by accounting bodies and regulatory authorities. Michels (2017), Olowookere et al. (2022), Dechow et al. (2011), and I. Makarenko and S. Makarenko (2023) have emphasized the importance of adherence to accounting standards, such as International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP), in ensuring the proper recognition and disclosure of events occurring after the reporting period.

The key legislative document regulating the recognition of events after the reporting period is IAS 10 "Events after the Reporting Date" (IAS 10 (2023)). According to this standard, recognizing such events depends on whether they are adjusting or non-adjusting (Appendix A).

Attention should be drawn to the fact that IAS 10 (2023) prohibits an entity from preparing financial statements on a going concern basis if events after the reporting period indicate that such an assumption is inappropriate. Also, suppose the company maintains accounting not by IFRS. In that case, it can make changes to its accounting policy and reflect similar events in the reporting differently, in line with the company's internal policy on reliability and substantiation of accounting.

Identifying and analyzing events after the reporting period pose challenges for companies, auditors, and standard-setting bodies. Scholars have explored the difficulties associated with timely

information gathering, assessing the materiality of events, and determining their impact on financial statements. Various events have been identified as having the potential to influence financial statements. Changes in legislation, financial risks, lawsuits, and economic downturns are among the critical events explored in the literature (Carson & Dowling, 2012; Allegrini & Monteduro, 2018; Czerney et al., 2020). Researchers have delved into the mechanisms through which these events exert their influence, providing valuable insights for practitioners. Also, for example, Czerney et al. (2020) examine the relevance of changes in the business environment and sustainable development for enterprise development, shedding light on factors that could influence the analysis of events after the reporting period.

Chung et al. (2013) delve into socially relevant factors affecting the organizational mortality of enterprises, providing a broader context for understanding corporate sustainability. This factor could impact post-reporting period events. Vasilyeva et al. (2019) assess the dynamics of bifurcation transformations in the economy, which may provide a theoretical basis for understanding economic shifts that could affect a company's financial performance.

A summary of scientific approaches to events that may be considered in the analysis after the reporting period is provided in Appendix B, Table B1.

Understanding the perspectives of various stakeholders, including investors, analysts, and regulators, is crucial for assessing the significance of events after the reporting period. Dźwigoł and Wolniak (2018) and Alharbi and Al-Adeem (2022) have explored how different stakeholders interpret and respond to the information provided in financial reports, especially concerning subsequent events.

With the advent of advanced data analytics and artificial intelligence, scholars (Argento et al., 2020; Donatella, 2022; Bilan et al., 2022; Skrynnyk & Vasilyeva, 2020; Dzwigol, 2020, 2022; Aseeri & Kang, 2022; Boiko et al., 2023) have explored how technological tools can enhance the efficiency and accuracy of post-reporting date event analysis. These advancements hold the potential to revolutionize event analysis practices. Bilan et al. (2022) conducted a systematic bibliometric review of artificial intelligence technology in organizational management, which could be relevant for understanding technological advancements that may influence the analysis of events after the reporting period. Skrynnyk and Vasilyeva (2020) delve into neuro-genetic hybrid systems and machine learning for organizational development, potentially offering innovative approaches for analyzing the impact of events after the reporting period.

Kwilinski (2019) explored the implementation of Blockchain technology in the accounting sphere, which could affect how companies manage their financial data and reporting processes. Dzwigol (2020), Skrynnyk and Vasilyeva (2022), Dzwigol (2022), and Mandryka et al. (2023) offered insights into methodological platforms and research methodologies in management science, including the concept of triangulation, which may be relevant for developing analytical approaches in the context of events after the reporting period.

The practical implementation of events after the reporting period analysis has garnered significant attention. Bentley-Goode et al. (2017) highlighted the necessity of adjusting financial indicators and providing comprehensive disclosures in the appendixes to financial statements. Sivaruban (2023) and Herda and Lavelle (2014) explored the role of events in corporate risk management after the reporting period. Research has examined how companies can proactively identify, assess, and mitigate risks associated with unforeseen events. The literature underscores the strategic importance of event analysis in safeguarding a company's financial stability.

Scholars have proposed a range of methodologies and tools for evaluating the impact of events after the reporting period. Based on the results of thoroughly analyzed studies, methodologies for analyzing the impact of events after the reporting period can be summarized by identifying the following groups, as shown in Figure 1.

The literature emphasizes the importance of selecting appropriate methods based on the nature and complexity of the events.

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Source: Beasley et al. (2013), Tajani et al. (2022), Seguer and Hasna (2022).

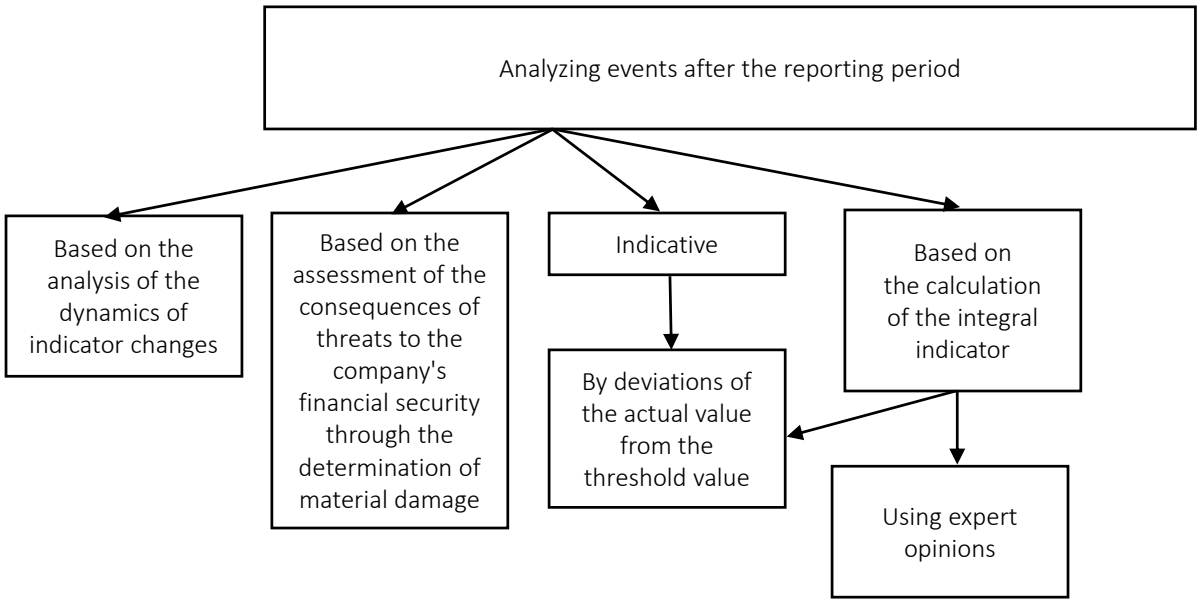

Figure 1. Areas of methodologies for analyzing events after the reporting period

As seen in Figure 1, in addition to the standard financial methods (based on the analysis of the dynamics of the indicators presented in the financial statements or notes), companies may calculate additional indicators specifically designed to assess the impact of events after the reporting period. These include sensitivity analysis, statistical models, and scenario planning. These supplementary methods are designed to capture nuances that may not be fully represented by standard financial measures, thereby providing stakeholders with a deeper understanding of the company's financial position and resilience, taking into account the impact of events after the reporting period. Appendix B, Table B2 provides methods for analyzing events after the reporting period. The choice of method depends on the nature of the event, the availability of data, and the specific objectives of the analysis. Effective management plays a crucial role in selecting and implementing these methods, ensuring that they are consistent with the company's strategic goals and objectives.

Some empirical studies have attempted to quantify the actual impact of specific types of post-accounting period events on financial statements using various non-standard methods. For example, Skrynnyk (2023) focuses on predicting convergent and divergent determinants of organizational development, offering a predictive approach that may be relevant to analyzing the impact of post-period events.

It should be noted that any of the methods listed in Table B2, Appendix B must include the following steps:

1. Identification of events: these events may include both external factors (e.g., changes in legislation or economic conditions) and events specific to the company (e.g., litigation, mergers, or significant asset impairment).

2. Assessing materiality: not all events after the reporting period will have a material impact on the financial statements. It is crucial to assess the significance of each event in relation to the overall financial position and performance of the company.

3. Recognition assessment: for events that are considered material, the next step is to determine whether they should be recognized in the financial statements. This involves assessing whether the event meets the recognition criteria, such as reliable measurement and future economic impact.

4. Disclosure requirements: even if an event is not recognized in the financial statements, it

may still need to be disclosed in footnotes or supplementary information. Such disclosures provide transparency to stakeholders about the nature and potential impact of the event.

5. Quantify the impact: for recognized events, it is important to quantify their impact on the financial statements. This may involve adjusting specific items, such as assets, liabilities, revenue, or expenses, to reflect the effects of the event.

6. Reconciliation of subsequent events: in some cases, events that occurred after the reporting period may provide additional information about conditions that existed during the reporting period. These subsequent events may require adjustments to the financial statements or additional disclosures.

7. Stakeholder communication: the results of the analysis should be effectively communicated to relevant stakeholders, including investors, analysts, regulators, and other interested parties. This communication ensures that stakeholders know the potential impact of events after the reporting period.

Figure 1 also demonstrates that one of the acceptable methodologies for analyzing the impact of events after the reporting period is to calculate an integral indicator. Researchers emphasize the far-reaching benefits of the integral indicator for various stakeholders (investors, regulators, and financial analysts receive valuable information about the current state of the company and its prospects). However, Beasley et al. (2013) and Tajani et al. (2022) only emphasize the possibility of using this indicator rather than developing it.

Despite the existing research on the importance of accounting for the impact of events after the reporting period, there is a lack of research that would summarize the theoretical and methodological information on the identification, analysis, and reporting of events after the reporting period. Therefore, the purpose of the study is to create a cohesive theoretical and methodological framework for analyzing events after the reporting period, determining their impact on business performance, and developing an integral metric to assess their aggregate impact on the company's financial results.

2. RESULTS

2.1. Index development

It is crucial to consider and reflect in the financial statements the impact of each event after the reporting period. However, for effective management and operational decision-making, sometimes a company needs to assess the overall impact of these events on the company's financial position rather than focusing solely on one event, such as war or international economic sanctions. An integral indicator is a comprehensive approach to assessing the cumulative impact of events after the reporting period on the overall financial condition of an enterprise, taking into account their interdependence and synergy. The value of the integral indicator varies from 0 to 1. Accordingly, the value of the integral indicator is close to 1, indicating the need for an immediate reaction from the company's management, taking tactical actions to stabilize its financial stability. In general, the algorithm for determining and analyzing an integral indicator is proposed in Figure 2.

Based on Figure 2, developing an integral index for post-reporting period events would involve several steps:

- identification of events: this would entail a thorough examination of events occurring after the reporting period;

- categorization and prioritization: events would need to be categorized based on their nature and potential impact; some events might have a larger influence on the company's financials and prospects than others, so they would receive higher weighting;

- data collection and analysis: relevant data about each identified event would be collected and analyzed. This could involve financial data, market research, regulatory documents, and other sources;

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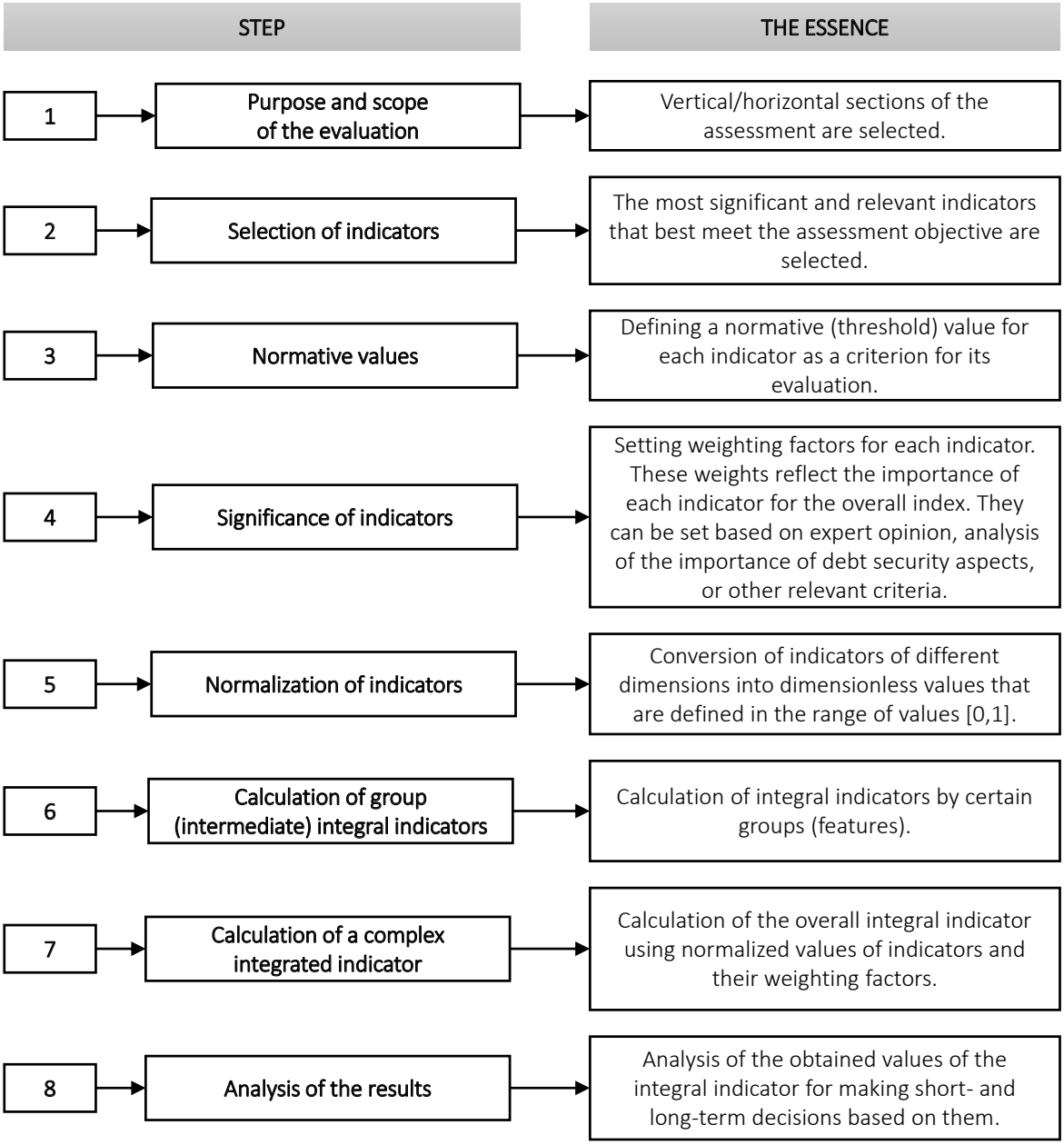

Figure 2. Steps of determining an integral indicator

- weight assignment: assigning appropriate weights to each category of events based on their perceived significance;
- normalization and aggregation: normalizing the data to ensure comparability and then aggregating it to compute the integral index;
- interpretation and reporting: the computed index would then be interpreted and reported. This might involve providing context, explaining methodology, and offering insights into the implications of the index;
- feedback and iteration: stakeholder feedback would be necessary for refining the index over time. This could involve adjusting the weights assigned to different event categories or modifying the criteria for inclusion.

In the computation of the integral index, a normalization procedure is implemented, as all indicators have different dimensions and may even have different directions: there are indicators where an increase is desirable (S – stimulators), while others are preferred to decrease (D – de-stimulators). Normalization transforms in-

dicators of various dimensions into dimensionless quantities, which are determined within the range of values [0,1].

There are ranges of change for integral indicators: small, medium, and critical. The proposed ranges of change of the integral indicator, characteristics of changes, and the company's response to such changes are shown in Table 1.

By categorizing changes in this manner, companies can prioritize their responses based on the magnitude of the impact. This approach allows for a more efficient allocation of resources and ensures that the most critical changes receive the highest level of scrutiny and disclosure. It also provides stakeholders with a clear understanding of the relative significance of each change, aiding in their decision-making processes.

2.2. Hypothetical example

Embarking on a hypothetical scenario, the study provides formulations and algorithm are employed to assess the influence of events occurring after the reporting period on the financial stability of a company. Four indicators (x1, x2, x3, x4) relevant to the evaluation have been identified (Table 2). The objective is to compute an integral index (I) to quantify the overall impact.

Objective specification $O(t)$ – involves clearly defining the specific goals and scope of the evaluation, considering both direct and indirect consequences of events. This step lays the foundation for the entire evaluation process.

$$O(t) = \int_{t_0}^{t} \frac{f(t)}{t} \cdot dt + \sum_{i=1}^{n} \frac{a_i}{t^2} \cdot e^{-b_i \cdot t}. \quad (1)$$

In formula 1, t represents time, or more precisely, the point in time at which the estimate is made. t = 5, which means that the evaluation is performed at the fifth moment (after the reporting period) after the known initial moment $t = 0$.

It is important to note that the value of t may vary depending on the specific study or analysis. In this case, since this is only a conditional example, one has chosen the value $t = 5$ to illustrate the calculations. In the real analysis, t will be chosen according to the specific context and data.

dt – represents an indefinite integral with respect to variable t. In this context, it means that one is computing a quantity, which is an accumulation of a certain function $f(t)$ over the variable t from an initial time t_0 up to a specific moment t. The integral allows for the calculation of the accumulated change of this function over this time interval.

$e^{-b_i t}$ – this is an exponential function, where e is the Euler's number, approximately equal to 2.71828.

Table 1. Characteristics of the obtained values of the integral index of events after the reporting period

Change/Value of the integral index	Characteristics	Response
Small change [0–0.30]	A small change signifies a relatively minor alteration in the indicator's value. The change is within an acceptable threshold and is not expected to significantly impact financial reporting. It may represent normal fluctuations or minor adjustments that do not materially affect the company's financial position or performance.	Companies may make minimal adjustments to account for this change if necessary. However, it may not warrant extensive disclosure.
Medium change [0.31–0.74]	A medium change indicates a noticeable but not drastic alteration in the indicator's value. The change is substantial enough to warrant attention and consideration in financial reporting. It may result from a moderate impact event that could influence the company's financial position or performance to a notable extent.	Companies should conduct a thorough analysis to understand the implications of this change. This may involve adjustments to financial statements and additional disclosures.
Critical change [0.75–1]	The change is substantial and has the potential to materially affect the company's financial position or performance. It may result from a major event or circumstance that requires immediate attention and thorough assessment.	Companies should undertake a comprehensive analysis to fully understand the impact of this change. Significant adjustments to financial statements and extensive disclosures are likely warranted.

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b_i – is a parameter that can be specified for each individual case. This function accounts for the exponential decrease in the impact of a specific event over time *t*.

Therefore, in this case, $e^{-b_i t}$ determines how significant the impact of a specific event that occurred in the past at time *t*, where b_i defines the effectiveness of this exponential decay.

For this example, $f(t) = 0.1 \cdot t$, $n = 2$ with $a_1 = 1$, $b_1 = 0.1$, $a_2 = 2$ $b_2 = 0.2$, $t_0 = 0$, $t = 5$.

Plugging in the values:

$$O(5) = \int_{to}^{5} \frac{0.1t}{t} \cdot dt + \frac{1}{25} \cdot e^{-0,5} + \\ + \left(\frac{2}{16}\right) \cdot e^{-1} \approx 1.26, \quad (2)$$

1. Indicator Selection and Validation; it was assumed that all indicators pass the validation process and are deemed appropriate for inclusion.

2. Normative value estimation (formula 3):

$$N(x_i) = Q_{1-a}(x_1) - a \cdot \frac{Q_{3-a}(x_i) - Q_{1-a}(x_i)}{c}, \quad (3)$$

- For $x_1 = 100$

$$N(x_1) = 80 - 0.1 \cdot (100 - 120) \approx 82, \quad (4)$$

- For $x_2 = 50$

$$N(x_2) = 60 - 0.1 \cdot (70 - 60) \approx 59, \quad (5)$$

- For $x_3 = 10$

$$N(x_3) = 5 - 0 \cdot 1 \cdot (8 - 5) \approx 4.7, \quad (6)$$

- For $x_4 = 0.05$

$$N(x_4) = 0.03 - 0.1 \cdot (0 \cdot 04 - 0 \cdot 03) \approx 0.029. \quad (7)$$

3. Multidimensional integral calculation:

For this step, $f(x) = x_1 \cdot x_1 + x_3^2 + x_4^3$ and a defined volume V in the (x_1, x_2, x_3, x_4) space. The integral can be computed based on the chosen function and volume.

4. Composite integral index computation (formula 8):

$$\ddot{I} = Z_i^n (x \ (\ _i) \cdot \omega_i)^{\frac{1}{n}}. \quad (8)$$

In this context, the formula means that the product (multiply) of the values $Z(x_i) \cdot \omega_i$ for each indicator *i* from 1 to n is the number of considered indicators.

In this case, it is used to compute the composite integral index, where each indicator has its normalized weight (expressed as $Z(x_i) \cdot \omega_i$). These products are then raised to the power of $1/n$ and multiplied together.

$$I = \begin{pmatrix} (0.67 \cdot 0.4) \cdot (-0.33 \cdot 0.33) \times \\ \times (0.67 \cdot 0.2) \cdot (0.5 \cdot 0.1) \end{pmatrix}^{\frac{1}{4}} \approx 0.367. \quad (9)$$

This process allows for the weighting of indicators and considers their impact on the composite index, which reflects an overall assessment of the influence of events after the reporting period.

This example demonstrates a hypothetical evaluation process using the provided algorithm and formulas. Each step involves complex calculations based on the specified context, weights, normative values, and indicator data. The composite integral index (I) is computed to provide an overall assessment of the impact of events after the reporting period on the company's financial stability.

Value of the composite integral index (formula 9) – 0.367 – indicates that, based on the considered model and provided parameters, the impact of events after the reporting period on the company's financial stability is moderate. Given that the index is in the range from 0 to 1, where 0 signifies minimal impact, and 1 signifies maximum (Table 3), a value of 0.367 may suggest that the influence of events after the reporting period is moderate, and there may be some positive or negative dynamics occurring.

It is important to remember that the specific value of 0.367 in the context of a particular study may require further analysis and comparison with other indicators or data to determine its true significance and relevance to a specific situation or company.

An uncertainty and sensitivity analysis was performed as an example of further analysis. With the uncertainty assessment, it could now evaluate how sensitive the composite integral index is to changes in the weights assigned to each indicator. This additional step provides insights into the stability and reliability of the assessment process. A similar approach to considering the sensitivity of the obtained indicator was used in the studies of Lyeonov et al. (2023) and Brychko et al. (2023).

In this step, the assumption involves evaluating the robustness of the composite integral index (I) in response to variations in the weights assigned to each indicator. Conducting a Monte Carlo simulation involves 1,000 iterations, with weights randomly sampled from a specified distribution. Monte Carlo simulation is a powerful technique for assessing the impact of uncertainty in model inputs on model outputs. In this case, the aim is to understand how variations in weights impact the robustness of the composite index.

Monte Carlo simulation allows accounting for uncertainty by repeatedly sampling from a specified distribution. It provides a range of possible outcomes and insights into the model's sensitivity to changes in inputs.

Randomly sampling weights for each indicator from a normal distribution:

$$\begin{aligned}\omega_1 &\sim N\left(0.5,1^2\right),\\ \omega_2 &\sim N\left(0.5,1^2\right),\\ \omega_3 &\sim N\left(0.5,1^2\right),\\ \omega_4 &\sim N\left(0.5,1^2\right).\end{aligned} \tag{10}$$

Using the previously calculated normalized indicators and normative values, it is computed the Integral Index (I) for each set of randomly sampled weights using the formula:

$$I=\left(\begin{matrix}\left(Z(x_1)\cdot\omega_1^i\right)\cdot\left(Z(x_2)\cdot\omega_2^i\right)\times\\ \times\left(Z(x_3)\cdot\omega_3^i\right)\cdot\left(Z(x_4)\cdot\omega_4^i\right)\end{matrix}\right)^{\frac{1}{4}}, \tag{11}$$

where ω_j^i, represents the randomly sampled weight for indicator x_j in the i-th iteration.

For example, assuming the weights for the first iteration are: $\omega_1 = 0.47$, $\omega_2 = 0.52$, $\omega_3 = 0.45$, $\omega_4 = 0.55$.

$$I_1 \approx \left(\begin{matrix}\left(-0.67\cdot 0.47\right)\cdot\left(-1.33\cdot 0.52\right)\times\\ \times\left(0.67\cdot 0.45\right)\cdot\left(0.5\cdot 0.55\right)\end{matrix}\right)^{\frac{1}{4}} \approx \tag{12}$$

$$\approx 0.387.$$

Similarly, all values of the integral indices are computed for each iteration

The final step is to calculate the average integral index uncertainty $I_{uncertainty}$ over all iterations:

$$I_{\text{uncertainty}} = \frac{1}{1000}\sum_{i=1}^{1000} I_i. \tag{13}$$

This provides an estimate of the robustness of the integral index to variations in the assigned weights.

3. DISCUSSION

Comparing this paper to other academic studies in the field, it is evident that the proposed integral indicator goes beyond traditional metrics used for assessing the impact of events after the reporting period. While existing research often focuses on specific event categories or individual financial indicators, this approach provides a holistic, management-driven framework for synthesizing multiple data points. This study stands out from the work conducted by Lyeonov et al. (2023) in several key aspects. Lyeonov et al. (2023) focus on exploring information openness as a factor in business leadership within the digital environment. In contrast, this study takes a different and specialized approach by concentrating on developing and applying an integral metric specifically designed to comprehensively evaluate the overall impact of events after the reporting period. Lyeonov et al. (2023) may contribute to a theoretical understanding of factors influencing business leadership. In contrast, this paper provides a directly applicable decision support tool. The integral metric is designed to empower management with the necessary information to respond effectively to financial challenges stemming from events occurring after the reporting period.

This innovative approach aligns with the evolving financial reporting landscape and strategic management practices, offering stakeholders a more comprehensive and actionable tool.

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The study significantly distinguishes itself from Michels (2017) and Filatova et al. (2022), who primarily focus on changes in the business environment and the impact of sustainable development on enterprise development. While these studies contribute valuable insights into the broader context of business evolution and sustainability, this work serves as a complementary and crucial addition by offering a more precise and refined methodology for assessing the specific impact of these changes on a company's financial stability. Scholars explore the overarching trends and effects of changes in the business environment, providing a macro-level understanding of the challenges and opportunities companies may face. In contrast, this study hones in on the financial implications of these changes, presenting a granular and detailed assessment framework. Going beyond the generalities of environmental and sustainable impacts, the focus is on providing a tool that precisely measures and evaluates how these factors influence a company's financial standing.

Also, this study provides an additional layer of analysis to Mursalov et al. (2023) for assessing a company's financial stability and management responses in digitalization. While the integral indicator holds great promise, it is essential to acknowledge potential limitations and considerations for its application. Factors such as the accuracy of event impact assessments and the need for clear communication regarding the methodology used in its calculation should be considered. Additionally, ongoing research and refinement of this framework will be crucial to ensure its effectiveness in providing valuable insights for decision-makers in corporate management and investment analysis.

Agreeing with Tajani et al. (2022) and Skrynnyk (2023), it is noted that calculating the integral index may be less effective for several reasons. One such consideration is the potential scarcity or inaccessibility of data about events after the reporting period, making it challenging to conduct a thorough analysis. Additionally, the subjective nature of assessing the impact of these events can introduce variability in the results, as different evaluators may have varying perspectives on their significance. Furthermore, there may be a lag in obtaining pertinent information, causing delays in the evaluation process and potentially reducing the timeliness and relevance of the integral index. Collectively, these factors underscore the need for cautious interpretation and utilization of the integral index in the context of events occurring after the reporting period.

CONCLUSION

The purpose of the study was to investigate the theoretical and methodological foundations of the analysis of events after the reporting period and to develop an integral index used to assess the consolidated impact of such events on the company's financial results to make effective management decisions based on it.

Using the example of a hypothetical scenario, the study demonstrated the acceptability of using the methodology for calculating an integral index to assess the consolidated impact of events after the reporting period on the financial stability of a company. Based on the proposed methodology and the specified parameters, the value of the integral index was obtained at 0.367. Using the proposed gradation of the integral indicator, it was determined that its value is within the acceptable threshold and is not expected to significantly impact the financial statements. These are normal fluctuations or minor adjustments that do not significantly affect the company's financial position or performance. The index's sensitivity to changes in the input parameters and assumptions was assessed using the Monte Carlo method. The results demonstrate the ability of the index to provide valuable information about the financial stability of companies after events that occurred after the reporting period.

Thus, the developed methodology for calculating the integral impact of events after the reporting period can be a universal tool for stakeholders, company management, and financial analysts seeking a comprehensive understanding of a company's resilience to changing economic conditions. Its adaptability to different contexts makes it a valuable financial analysis and risk assessment tool.

AUTHOR CONTRIBUTIONS

Conceptualization: Mehriban Aliyeva.
Data curation: Mehriban Aliyeva.
Formal analysis: Mehriban Aliyeva.
Funding acquisition: Mehriban Aliyeva.
Investigation: Mehriban Aliyeva.
Methodology: Mehriban Aliyeva.
Project administration: Mehriban Aliyeva.
Resources: Mehriban Aliyeva.
Software: Mehriban Aliyeva.
Supervision: Mehriban Aliyeva.
Validation: Mehriban Aliyeva.
Visualization: Mehriban Aliyeva.
Writing – original draft: Mehriban Aliyeva.
Writing – review & editing: Mehriban Aliyeva.

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APPENDIX A

Source: IAS 10 (2023).

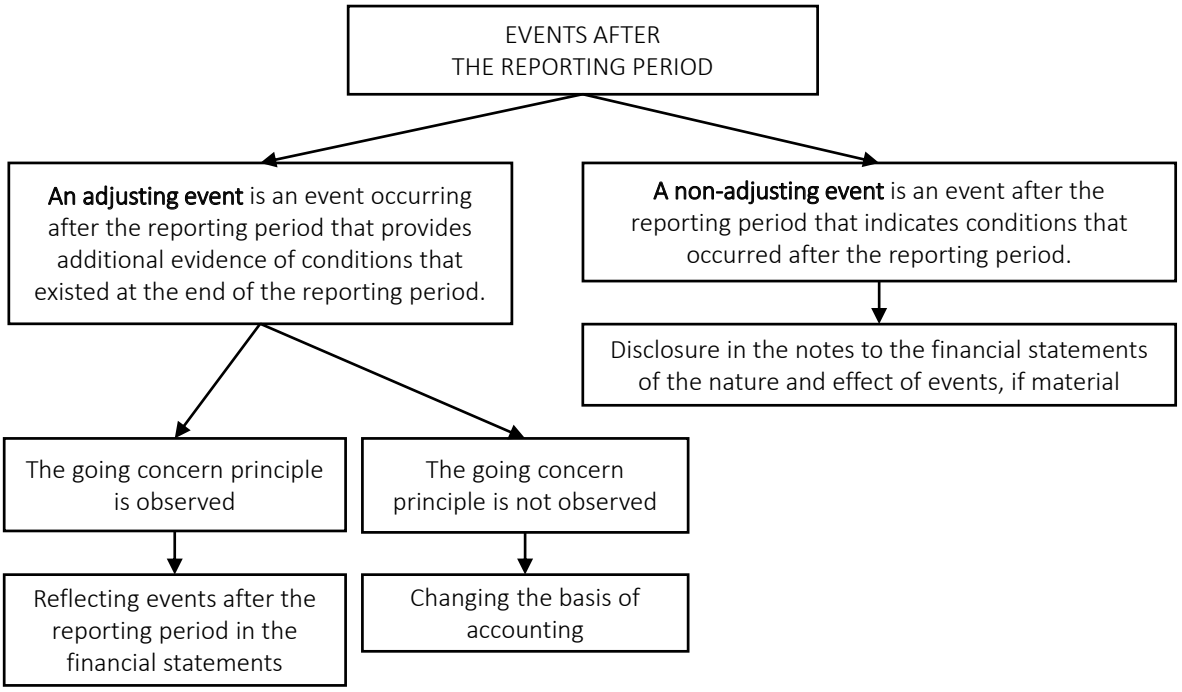

Figure A1. The procedure for reflecting events after the reporting period

APPENDIX B

Table B1. Examples of favorable and unfavorable events after the reporting period

Source: Dźwigoł and Wolniak (2018), Alharbi and Al-Adeem (2022), Dotsenko et al. (2023), Dzwigol et al. (2019).

	Examples	Importance
FAVORABLE EVENTS		
Business developments	Securing a significant contract, successful product launches, or entering into strategic partnerships, egal settlements, intellectual property gains, successful mergers, government grants, increased demand, favorable currency exchange rates, asset sales, investment returns ets.	These planed events and financial windfalls can significantly enhance a company's financial performance, market position, and long-term sustainability. These events not only contribute to improved investor confidence and stakeholder relations but also offer opportunities for strategic growth, increased profitability, and a stronger competitive position in the market. Managing these events wisely is crucial for maximizing their positive effects and ensuring sustained success.
	Unexpected gains, asset sales, or favorable legal settlements.	These events can boost financial reserves, improve liquidity, and provide additional resources for strategic initiatives. Properly accounting for such windfalls is crucial for accurate financial reporting.
	Key executive changes	A change in leadership can lead to shifts in strategic direction, which can impact a company's financials.
Market opportunities	Identifying and capitalizing on emerging market trends, changing consumer preferences, or global economic conditions.	Seizing market opportunities can contribute to revenue growth, profitability, and competitiveness. Companies need to assess and incorporate these developments for effective strategic planning.
UNFAVORABLE EVENTS		
Operational challenges	Supply chain disruptions, production issues, or regulatory hurdles.	These challenges can negatively impact operational efficiency, decreasing revenues and increasing costs. Companies must address such issues promptly to mitigate their adverse effects on financial performance.
	Unexpected expenses, losses on investments, or adverse currency fluctuations.	Financial setbacks can erode profitability and financial stability. It is crucial to promptly assess and disclose such events to give stakeholders a realistic picture of the company's financial health.
Legal and regulatory issues	Lawsuits, compliance violations, or changes in regulations affecting the industry.	Legal and regulatory challenges can result in financial penalties, reputational damage, and operational disruptions. Managing and disclosing such events is vital for maintaining compliance and minimizing negative consequences.
Political instability	Events like political unrest, coup d'états, or major geopolitical shifts can affect a company's operations, especially in global markets.	These events can affect a company's operations, especially in global markets.
Labor strikes or disputes	Labor-related events.	Recognizing labor-related events, such as strikes or disputes, as events after the reporting period is crucial for ensuring the accuracy and completeness of financial reporting. These events can significantly impact a company's operations, leading to disruptions, production delays, and increased costs. By acknowledging these events, financial statements can provide a more comprehensive and realistic view of the company's financial position, allowing stakeholders to make informed decisions based on the most up-to-date information.
Environmental incidents	Events like oil spills or chemical leaks.	These challenges can have substantial financial implications in terms of clean-up costs and legal liabilities. By considering these events after the reporting period, companies can accurately reflect the potential financial impact in their financial statements, providing transparency to stakeholders regarding potential future expenses.
Pandemics or health crises	Events like the Covid-19 pandemic.	These events can cause wide-ranging impacts on operations, supply chains, and demand. Recognizing these events after the reporting period allows companies to disclose the financial consequences of the crisis, helping stakeholders understand the potential risks and uncertainties associated with the pandemic's aftermath.

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Table B2. Methods and approaches to assess events after the reporting period

Source: Czerney et al. (2020), Lee and Boynton (2017), Ghosh and Olsen (2009).

Method name	Characteristics	Calculation methodology
Sensitivity analysis	Adjusting key financial variables to simulate the potential impact of events after the reporting period. It helps understand the risk and uncertainty associated with events after the reporting period.	Sensitivity analysis assesses how sensitive the output (e.g., financial metrics) is to changes in input variables (events after the reporting period) (formula 1): $$S = CFM / CA, \quad (1)$$ where CFM – change in financial metric (is the difference between the recalculated financial metric and the base financial metric); CA – change in assumption (is the difference between the modified assumption value and the base assumption value).
Scenario analysis	Considers multiple potential future scenarios. Each scenario represents a different set of assumptions regarding how events might unfold, allowing for a more comprehensive evaluation of possible outcomes.	N/A It does not have a specific formula but relies on constructing plausible scenarios and evaluating their impact on the company.
Historical analysis	Examining past similar events can provide valuable insights into how they may impact financial statements. By reviewing historical data and outcomes, analysts can make more informed predictions about the potential effects of current events.	Historical analysis involves dynamic analysis, including formulas such as growth rates, etc.
Regression analysis	This statistical method involves analyzing the relationship between various variables and financial outcomes. It can help quantify the impact of specific events on financial indicators.	Simple linear regression (formula 2): $$Y = \delta_0 + \delta_1 \cdot E + \varepsilon \quad (2)$$ And multiple linear regression (formula 3): $$Y = \delta_0 + \delta_1 \cdot E_1 + \delta_2 \cdot E_2 + \ldots + \delta_n \cdot E_n + \varepsilon, \quad (3)$$ where Y – is the dependent variable (e.g., financial performance after the reporting period); E – event or factor after the reporting period; δ_0 – is the intercept (the value of Y when E is 0); δ_n – is the slope (the change in Y for a one-unit change in E); ε is the error term (captures unobserved factors affecting Y).
Monte Carlo simulation	This technique involves generating a large number of random scenarios based on specified parameters. By running simulations, analysts can assess the range of possible outcomes and the probability of occurrence for each.	$$I = \left(Z\left(x_1\right) \cdot \omega_1^3\right) \cdot \left(Z\left(x_2\right) \cdot \omega_2^3\right) \cdot \left(Z\left(x_3\right) \cdot \omega_3^i\right) \cdot \ldots \cdot \left(Z\left(x_n\right) \cdot \omega_n^i\right)^{\frac{1}{n}}, \quad (4)$$ where ω_j^3, represents the randomly sampled weight for indicator (event after the reporting period) x_j in the i-th iteration. $Z\left(x_1\right) \cdot \omega_i$ – normalized weight.
Expert judgment	Seeking input from subject matter experts or industry professionals can provide qualitative insights into the potential impact of events. Expert opinions can complement quantitative analyses.	N/A No specific formula exists, but expert insights contribute to the overall analysis.
Financial modelling	Creating complex financial models allows for a detailed assessment of how events may affect different aspects of a company's financial statements. These models often incorporate multiple variables and assumptions.	An example of estimating the impact of an event on revenue after the reporting period. This analysis uses a basic formula to adjust the projected revenue: $$AI = PS + EI, \quad (5)$$ where AI – adjusted indicator; PS – projected indicator; EI – event impact. Varying degrees of impact: $$AI = PS \cdot \left(1 + IP\right), \quad (6)$$ where, IP – impact percentage.

Table B2 (cont.). Methods and approaches to assess events after the reporting period

Method name	Characteristics	Calculation methodology
Market reaction analysis	This method involves studying how financial markets respond to the disclosure of events after the reporting period. Changes in stock prices, trading volumes, and other market indicators can provide valuable information about investor sentiment.	$MR = CSP / MIC,$ (7) where MR – market reaction; CSP – change in stock price; MIC – market index change. This analysis measures the market's reaction to events after the reporting period, assessing how a company's stock price changes relative to overall market movements.
Qualitative assessment	This approach relies on expert judgment and industry knowledge.	N/A Qualitative assessment for events after the reporting period involves subjective judgment, considering factors such as the nature of the event, industry trends, and expert opinions to evaluate potential impacts.
Stress testing	Subjecting financial models to extreme scenarios to assess how resilient a company's financial position is to adverse events. It helps identify vulnerabilities and potential areas of concern.	There is no specific formula; Stress testing generally focuses on assessing the company's performance in difficult conditions after the reporting period.

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