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Strategic–Financial Alignment in the Mining Industry Through Data-Driven Management

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ABSTRACT

In a context of uncertainty and complexity, Peruvian organizations face the challenge of achieving strategic alignment that guarantees their competitive positioning. This environment demands data-driven management, where informed decision-making is the engine that propels institutional performance. The objective of this study is to evaluate the degree of coherence between financial processes and strategic objectives in a Peruvian mining company (Andina) using a data-driven management approach. A qualitative, single-case methodology with a multimethod approach was employed, integrating semistructured interviews with experts and the application of impact and alignment matrices. The quantitative results reveal a strategic alignment index (SAI) of 9.42, indicating "high alignment" in structural terms. Results indicate a high level of alignment, suggesting coherent integration of financial planning, risk management, operational efficiency, and sustainability objectives. The findings underscore the importance of information-based management and technological tools, such as digital control systems, automated processes, and strategic dashboards, in enhancing decision-making, improving performance, and fostering innovation within the mining sector.

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1. Introduction

The mining sector is a fundamental pillar of the global economy, providing critical raw materials for key sectors (such as energy and technology) and undergoing a profound transformation (Galagedarage Don et al., 2025). These raw materials are essential across a wide range of sectors, including energy generation, construction, and advanced manufacturing, where their absence would severely compromise productivity and innovation (Philo & Webber-Youngman, 2024; Osei et al., 2023). The mining industry is also crucial for advancing low-carbon technologies, including wind turbines, solar panels, and energy storage systems, all of which rely on mined minerals (Cai et al., 2024; Ulewicz et al., 2022). Its relevance is particularly pronounced in emerging economies such as that of Peru, where mining constitutes a cornerstone of economic growth, employment generation, and international competitiveness.

Despite its economic importance, mining operations face significant environmental, social, and operational challenges. Mineral extraction and processing alone contribute approximately 4–7% of global CO_2 emissions (Vargas et al., 2022), while extensive materials consumption currently exceeds the planet's natural regenerative capacity by a factor of 1.75 (Jianing et al., 2024). These challenges are compounded by environmental degradation, including soil disturbance, water depletion, and ecosystem collapse as well as a reliance on linear economic models characterized by the extract–manufacture–dispose paradigm (Sánchez & Hartlieb, 2020; Ediriweera & Wiewiora, 2021).

The challenge lies in translating advanced strategies and technologies into effective results when there is a lack of alignment between financial goals and strategic objectives (Nassani & Aldakhil, 2021, Sarwar et al., 2025). Even if a company designs a sound corporate strategy or invests in innovative technologies, a lack of congruence with its financial objectives can undermine performance (Majhi et al., 2022). Strategic alignment is defined as the necessary congruence between the overall business strategy and the various organizational subsystems, including financial plans, to achieve the proposed objectives and optimize performance. Without such alignment, financial decisions (such as budgets, costs, and investments) may become disconnected from the strategic vision, preventing initiatives from generating solid results (Majhi et al., 2021; Nassani & Aldakhil, 2021; Sarwar et al., 2024; Shao, 2019).

From a theoretical perspective, the strategic management literature emphasizes that successful organizations achieve a coherent configuration between their environment, strategy, and internal structure (Akter et al., 2016; Gao & Sarwar, 2024). High-performing firms align their strategy with available processes and resources, while those that do not tend to underperform. In this context, strategic–financial alignment refers to ensuring that financial policies and practices (budget planning, cost control, and investments) align with the company's strategic direction (Shao, 2019; Yayla & Hu, 2012). Integrating financial management into the strategic plan means directing economic resources to support long-term objectives (Awan et al., 2021; Bhatti et al., 2024; Tallon & Pinsonneault, 2011). In the mining sector, for example, financial decisions must reflect the context of price cycles, ore quality, and profitability targets, so that planning and budgeting processes deliver efficient resource utilization in accordance with the strategy.

Within this context, strategic–financial alignment emerges as a critical determinant of competitiveness in industries characterized by uncertainty and operational complexity (Kaplan & Norton, 2006). Ensuring coherence between financial planning, strategic objectives, and operational processes strengthens risk anticipation, resource allocation, capital investment decisions, and long-term sustainability (Deloitte, 2021). Digital tools such as performance dashboards, analytics-enabled balanced scorecards, and predictive management systems further enhance transparency, responsiveness, and operational resilience.

In response to these pressures, mining companies are increasingly adopting digital technologies, including automation, real-time monitoring, advanced analytics, and integrated information systems, to improve efficiency, sustainability, and decision-making capabilities (Bisschoff & Grobbelaar, 2022). Recent research indicates that data-driven management is fundamentally reshaping organizational performance in the mining sector, enhancing productivity, safety, and strategic responsiveness (Elragal & Elgendy, 2024). However, the value of digitalization is contingent upon its alignment with strategic objectives and financial processes. Studies emphasize that technological investments yield meaningful benefits only when embedded within coherent organizational and financial frameworks that support learning, innovation, and sustainable economic performance.

This study examines the level of strategic financial alignment within a Peruvian mining company, utilizing a data-driven analytical framework that incorporates expert interviews, impact matrices, and alignment indices. By doing so, it provides insight into the coherence between strategic objectives and financial processes while revealing opportunities to strengthen management through digital technologies and integrated information systems. In this way, the research contributes to understanding how data-driven management can enhance operational efficiency, sustainability, and economic performance in the mining sector, an industry undergoing rapid and profound transformation driven by digitalization, innovation, and the urgent demands of environmental and social responsibility.

The study advances the strategic alignment literature by explicitly distinguishing between structural and dynamic strategic–financial alignment. While prior research largely conceptualizes alignment as a static condition reflected in the coherence between objectives, processes, and control systems (Kaplan & Norton, 2006; Comas Rodríguez et al., 2021), the findings of this study demonstrate that high structural alignment does not necessarily translate into adaptive strategic behavior. The case evidence reveals that, even when financial objectives are strongly embedded in organizational processes, the absence of effective feedback mechanisms limits the organization's capacity to adjust its strategy on the basis of performance outcomes. This distinction contributes to a more nuanced understanding of alignment as a dynamic capability rather than a purely structural attribute.

From a methodological perspective, this study contributes by demonstrating both the strengths and limitations of impact and alignment matrices as analytical tools. While these matrices are effective in assessing structural coherence, the case evidence shows that they may overestimate alignment when based solely on expert perceptions. This insight encourages future research to complement alignment metrics with longitudinal, behavioral, and performance-based indicators to better capture dynamic alignment processes.

2. Literature Review

2.1 Strategic Alignment

Strategy can be understood as the overarching logic that guides how an organization competes, determines its long-term objectives, and allocates the policies and actions required to achieve them (Porter, 1980). In this sense, strategy encompasses both the goals a firm seeks to attain and the means through which those goals are pursued. By providing a coherent direction for decision-making, strategy fosters consistency across organizational objectives and serves as a foundation for aligning actions and processes throughout the firm (Mintzberg, 1987).

Strategic alignment is a continuous process that manages coordination factors, enabling senior management to establish and strengthen cooperative relationships among the resources, capabilities, processes, and stakeholders involved in the strategy, to achieve synergistic effects that allow the organization to achieve added value (Majhi et al., 2021; Nassani & Aldakhil, 2021). In industries characterized by high uncertainty and operational complexity (Bag et al., 2023), such as mining, such alignment is widely recognized as a critical determinant of competitiveness, sustainability, and organizational efficiency (Sarwar et al., 2024; Shao, 2019).

The concept of strategic alignment has been extensively discussed in the fields of strategic management and organizational theory. Traditionally, it has been understood as the degree of congruence among the core components of an organization, including its structure, processes, systems, resources, and capabilities (Panda, 2021; Sarwar et al., 2024).

Shao (2019) argue that strategic fit is an essential element of normative strategy formulation models, while emphasizing that successful implementation depends on the coordinated integration of activities, functions, and resources throughout the organization.

The fundamental objective of strategic alignment is to ensure that processes are consistent with both business objectives and the organization's vision, mission, and goals (Gao & Sarwar, 2024; Shao, 2019; Yayla & Hu, 2012). Achieving this alignment is a key element in fostering adaptability, innovation, organizational performance, and the attainment of sustainable competitive advantages (Gao & Sarwar, 2024; Gerow et al., 2014; Sarwar et al., 2024). The literature agrees that, in a market environment characterized by uncertainty and volatility, strategic alignment has become a central priority for organizations. In this sense, strategic alignment is critical at both the operational and strategic levels, as it allows organizations to capture and maximize their strategic value (Henderson & Venkatraman, 1999).

External alignment refers to the extent to which an organization adapts its strategy, resources, and capabilities to the conditions and demands of its environment. Siggelkow (2001) describes this form of fit as the correspondence between the organization's internal configuration and the characteristics of the competitive context in which it operates. According to Naman and Slevin (1993), the ability to adjust to environmental fluctuations enhances competitiveness, particularly in industries where instability is common, such as extractive activities.

Internal alignment, in contrast, involves the coherence among the internal resources, structures, and processes that enable the effective execution of strategy. Since Chandler's (1962) classic proposition that structure should follow strategy, a substantial body of research has emphasized the importance of organizational design, management systems, and functional integration as foundational elements for efficient strategic implementation. This line of work includes the contributions of Stepanovich and Mueller (2002), who examined the organizational barriers that can hinder execution. The balanced scorecard, proposed by Kaplan and Norton (1992) and further developed by Kaplan (2009), also played an influential role by offering a framework that links strategic objectives with operational and financial indicators.

Within this broader theoretical landscape, strategic–financial alignment refers specifically to the coherence between corporate objectives and the financial processes that support planning, decision-making, and execution. This relationship is particularly crucial in the mining sector, where investment decisions entail substantial capital commitments, volatile commodity prices, and substantial environmental and social risks. Under these conditions, financial processes such as budgeting, cost analysis, risk assessment, management control, cash flow planning, and performance measurement must remain closely aligned with the company's strategic priorities (Comas Rodríguez et al., 2021).

When such alignment is absent, the organization becomes more vulnerable to inefficiencies, resource misallocation, cost overruns, and a gradual erosion of competitiveness. Research by Pongatichat and Johnston (2008) shows that misalignment between strategy and financial measurement systems tends to distort decision-making and weaken execution discipline. Strong alignment, on the other hand, enables the anticipation of operational and financial risks, optimizes resource allocation, and enhances both economic and environmental performance.

From a strategic analysis perspective, financial alignment provides the quantitative foundation necessary for evaluating alternatives, prioritizing initiatives, and identifying the areas that have the greatest impact on performance. This perspective is reinforced by methodological tools such as impact and alignment matrices, strategic coherence indices, and integrated measurement systems (Comas Rodríguez et al., 2021), which allow organizations to assess the consistency between financial processes and strategic objectives through systematic and evidence-based analysis.

2.2 Data-Driven Management for Strategic Alignment

Recent literature highlights that data-driven management has evolved from descriptive approaches to integrated decision support systems. In this sense, advanced data analytics enables the anticipation of behaviors, optimization of resources, and reduction of inefficiencies in various contexts (Shadid et al., 2025). Furthermore, it underscores that the use of techniques such as machine learning, artificial intelligence, and predictive analytics facilitates the transformation of operational data into relevant strategic information, contributing to more informed and proactive decisions (Shadid et al., 2025). Data-driven management implies that data no longer fulfill a merely informative function but become a central input into the management process, supporting coherence between organizational objectives and operational actions (Shadid et al., 2025).

The effectiveness of data-driven management depends largely on the integration and interoperability of information systems throughout the organization (Shadid et al., 2025; Elragal & Elgendy, 2024). The reviewed evidence indicates that data fragmentation and limited coordination between functional areas hinder the capacity of analytical systems to provide a comprehensive strategic vision (Li et al., 2022). In this sense, the absence of strategic alignment can lead to misalignments between available information and strategic priorities, limiting the impact of advanced analytics on strategy formulation and execution (Elragal & Elgendy, 2024; Janssen et al., 2017).

Data-driven management can act as a key enabler of continuous strategic alignment by allowing real-time adjustments in response to operational, environmental, or market changes (Shadid et al., 2025; Elragal & Elgendy, 2024; Korherr et al., 2022). The use of real-time data and predictive models fosters the creation of feedback loops that connect observed

performance with the reformulation of strategic decisions, strengthening the adaptive capacity of organizations (Shadid et al., 2025). However, the authors caution that this potential only materializes when data-driven systems are integrated into clear governance structures and strategic routines, preventing analytics from being restricted to a purely technical or operational use without real strategic impact (Brynjolfsson & McElheran, 2016)

The alignment between an organization's strategic and financial objectives is sustained by the availability and proper management of relevant data (Akter et al., 2016). Data-driven decision-making (DDDM) allows for the collection, organization, and analysis of strategic information, facilitating the identification of areas where objectives mutually reinforce each other or present misalignments (Elragal & Elgendy, 2024; Stinson & Mohammadian, 2025). In this way, organizational decisions can be based on reliable evidence rather than on intuition alone, ensuring that resource allocation and strategic planning are aligned with financial and operational goals (Korherr et al., 2022).

In this sense, data management becomes a crucial element in ensuring that the organizational strategy is effective and coherent at all levels, because data quality and governance are fundamental predictors of success in strategic execution (Janssen et al., 2017). Finally, evidence suggests that organizations that successfully integrate interoperable information systems can transform raw data into strategic assets that drive superior performance (Li et al., 2022; Elragal & Elgendy, 2024).

3. Methodology

This study employs a qualitative single-case study design, which is particularly suitable for exploring complex organizational phenomena, such as strategic–financial alignment, within real-life contexts (Yin, 2009). The mining industry is characterized by high capital intensity, operational uncertainty, and significant environmental and social constraints, making it an appropriate setting for in-depth exploratory analysis.

The methodological consistency of this study is rooted in a sequential multimethod approach. First, semistructured interviews provided the qualitative basis for identifying critical variables. These variables were then structured into impact and alignment matrices, following the logic of multicriteria decision-making (MCDM) frameworks (García-Melón et al., 2015). To ensure rigor, a modified Delphi-like process was employed, where expert judgments were iteratively refined to achieve consensus. The selection of experts followed a purposive sampling strategy, requiring a minimum of 10 years of experience in senior management within the mining sector to guarantee the validity of strategic insights.

By opting for a structured impact and alignment matrix, this study ensures that the strategic evaluation remains highly reproducible and accessible to decision-makers. This approach aligns with the contemporary requirements for transparency and efficiency in decision frameworks (Wei, 2025). In the mining industry, where real-time data integration is crucial, a less computationally intensive method enables faster diagnostic cycles and easier updates, thereby bridging the gap between sophisticated academic theory and the pragmatic needs of corporate management.

The case selected for this research is Andina (a pseudonym), a Peruvian mining company established in 2013 and specializing in the extraction of nonmetallic minerals. All identifying information has been anonymized to protect the company's privacy. The company operates with an installed production capacity of approximately 120 tons per day and relies on a geographically dispersed supplier base across multiple regions of Peru. The case was selected on the basis of theoretical relevance, as Andina has formally implemented strategic planning, financial control systems, and sustainability objectives, making it a suitable context for examining strategic–financial alignment.

3.1 Data Collection

Primary data were collected through semistructured, in-depth interviews with senior managers and financial experts directly involved in strategic planning, financial management, and operational control. A total of five experts participated in the study, each with extensive professional experience in the mining sector and direct knowledge of the company's financial and strategic processes. In case studies, the number of participants is guided by the depth and relevance of information rather than statistical requirements; thus, five interviews with key actors provide sufficient insight (Yin, 2009).

The interview protocol was designed to capture both formal structures (strategic objectives, financial processes, and performance indicators) and informal practices (decision-making routines, data utilization, and strategic feedback mechanisms). Semistructured interviews were conducted between January and June 2024, each lasting approximately 40 minutes, and were transcribed verbatim to ensure accuracy.

The analysis followed a two-step process: first, a strategic alignment matrix was applied to identify correspondences between financial and strategic objectives; second, the findings were interpreted to extract insights on decision-making and data utilization.

A strategy is considered effective when strategic objectives are tangibly reflected in the relevant processes, and when these operational processes respond coherently to the established strategy. To assess this alignment, a specific procedure is established, illustrated in Fig. 1, with the steps described below.

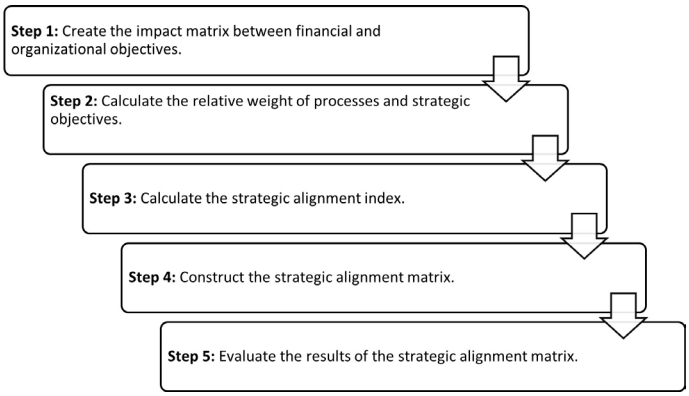

Fig. 1. ***Procedure for assessing strategic–process alignment***

To evaluate the alignment between financial objectives and organizational objectives, it is essential first to define the basic categories of the strategy and the organization's key goals. The effectiveness of the strategy is assessed on the basis of the extent to which organizational objectives influence financial objectives and the degree to which these financial objectives are consistent with the overall strategy. Subsequently, an impact matrix is constructed to map the relationship between financial and organizational objectives.

Step 1. Development of the Impact Matrix between Processes and Strategic Objectives

To assess the relationship between organizational processes and strategic objectives, an impact matrix is constructed (Table 1). In this matrix:

- Rows represent the key processes within the organization;
- Columns correspond to the strategic objectives established in the company's strategy;
- Each process (*i*) is evaluated in terms of its influence on achieving each strategic objective (*j*), using a scale from 1 (minimal impact) to 10 (maximum impact), based on input from a collaborative work team;
- Finally, the average scores for each process (Pr_m) and each strategic objective (Oe_m) are calculated to summarize their contribution and influence.

Step 2: Calculation of the Relative Weight of Financial and Organizational Objectives

The relative weight of each financial and organizational objective is determined to assess its importance within the organization. This calculation can be performed using the analytic hierarchy process (AHP). The AHP is suggested as a method for calculating the relative weight of financial and organizational objectives, as it enables the systematic conversion of qualitative judgments into quantitative values, thereby supporting decision-making in complex strategic settings. In cases where specific comparisons are not feasible, assuming equal weights for all objectives (e.g., 0.2 for each of five objectives) provides a balanced assessment of their contribution to overall strategic alignment.

Step 3: Computation of the Financial–Organizational Alignment Index

The financial organizational alignment index is derived from the impact matrix that links financial objectives with organizational objectives. This index measures the extent to which financial objectives are effectively aligned with the organization's overall objectives.

As a prerequisite for calculating the index, the values in the impact matrix are analyzed to ensure that each financial objective attains a high impact score (9 or 10) on at least one organizational objective. This step helps identify potential misalignments.

To assess this indicator, experts in the working group employ the Delphi method to determine alignment capability levels (Table 2).

Table 1. *Evaluation scale for the financial–organizational alignment indicator*

Alignment level	Scale
High	6.50–10
Acceptable	5–6.49
Low	4.00–4.99
Very low	0–3.99

Note: The table presents a description of the scales according to the level of alignment between financial and organizational objectives. Adapted from Strategic Alignment and Its Impact on Management Control in Organizations by Rodríguez et al. (2021).

Step 4: Constructing the Financial–Organizational Alignment Matrix

The financial organizational alignment matrix is developed by first calculating the alignment index between the financial objectives and the organizational objectives. This index evaluates the extent to which the organizational objectives effectively align with the company's financial strategy. The calculation of the index follows the formula presented in Eq. 1.

$$Ipr = \sum_{i=1}^{m} (\mathrm{Pr}_i * \omega p_j) \quad (1)$$

The matrix is constructed using the objective alignment index (OAI) and the relative alignment index (IPR), resulting in a two-dimensional table that divides the axes into threshold lines, forming a four-quadrant framework. This type of matrix is particularly useful for highlighting areas where organizational processes may not fully support strategic objectives, helping to identify opportunities for improvement and ensuring that activities are effectively aligned with the company's overall strategy (Comas Rodríguez et al., 2021).

Step 4: Evaluating the Results of the Strategic Alignment Matrix

On the basis of the analysis of the strategic alignment matrix, two fundamental hypotheses can be established:

- **Hypothesis 1:** Strategic objectives are effectively reflected in the organization's key processes.
- **Hypothesis 2:** The organization's key processes actively contribute to the achievement of strategic objectives.

To evaluate these hypotheses, potential strategies are formulated according to the position of processes and objectives within each quadrant of the alignment matrix (Table 2).

Table 2. *Potential strategies based on the strategic alignment matrix.*

Interpretation	Strategy
Quadrant I: Strategic objectives are fully aligned and clearly manifested in the processes	Establish a control system and implement the formulated strategy
Quadrant II: Not all strategic objectives are reflected in the processes	Review strategic objectives to identify those that are not contributing to organizational processes and adjust accordingly
Quadrant III: Not all key processes are contributing to strategic objectives	Identify distinctive competencies or markets that are not aligned with strategic objectives and redesign the strategy to enhance contribution
Quadrant IV: There is no alignment between strategic objectives and processes	Redesign the strategy and consider the need for comprehensive process reengineering to ensure alignment

This approach provides a structured framework for assessing the degree of alignment between strategic objectives and organizational processes, allowing organizations to identify gaps, optimize resource allocation, and implement corrective actions to improve overall strategic coherence.

Quantitative alignment results were complemented by a qualitative thematic analysis of the interview data. Particular attention was paid to discrepancies between high alignment scores and reported managerial practices, especially regarding strategic feedback, sustainability integration, and the use of performance data for decision-making.

This triangulation revealed a critical distinction between formal alignment (as captured by matrices and indices) and effective dynamic alignment, which is defined as the organization's ability to adjust its strategies in response to performance evaluations and environmental changes. This interpretive step was essential for avoiding purely mechanistic conclusions and for strengthening the explanatory power of the case study.

4. Results and Discussion

An impact matrix was developed to examine the alignment between financial and strategic objectives within the organization. The analysis focused on five strategic objectives: maximizing profitability, enhancing operational efficiency, ensuring environmental sustainability, strengthening financial risk management, and optimizing working capital.

These objectives were evaluated against the organization's core processes, including cost analysis, budgeting and forecasting, investment evaluation, cash flow management, and financial reporting and analysis. Each process was assessed in terms of its contribution to achieving the strategic objectives, using a scoring system that reflects the level of impact.

The results, calculated as the average impact value for each strategic process, provide a clear view of the organizational activities most closely aligned with financial goals. This analysis highlights areas of strong alignment while also identifying potential gaps where strategic objectives are not fully supported by operational processes (Table 3).

Table 3. *Average results based on interview data.*

Process/objective	Maximize profitability	Increase operational efficiency	Ensure sustainability	Strengthen risk management	Optimize working capital	Average
Cost analysis	9.83	9.67	9.00	9.50	9.50	**9.10**
Budgeting and forecasting	9.67	9.33	8.67	9.17	9.50	9.27
Investment evaluation	8.83	8.83	8.83	9.50	9.33	**8.86**
Cash flow management	8.67	8.67	8.17	9.17	9.00	**8.47**
Financial reporting and analysis	9.00	9.17	9.50	9.33	9.67	**9.13**
Average	9.00	9.17	9.50	9.33	9.67	

The impact matrix provides a structured and quantitative basis for understanding how well the organization's financial and operational actions contribute to strategic goals, serving as a foundation for targeted improvement and more informed decision-making.

Step 2: Calculating the Relative Weight of Processes and Strategic Objectives

In cases where specific weights for the strategic objectives are not defined, it is reasonable to assume equal weighting for all objectives. Given that there are five objectives, each

is assigned a relative weight of 1/5, or 0.2. This assumption allows for a balanced assessment of each objective's contribution to the overall strategic alignment.

Step 3: Calculating the Strategic Alignment Index

The strategic alignment index measures the extent to which an organization's strategic objectives are reflected in its key processes. As a preliminary assessment, the values in the impact matrix are analyzed to verify that each strategic objective achieves a high impact (value of 9 or 10) in at least one process. While this is not a definitive criterion, it serves as an initial check to identify potential misalignments between processes and strategic objectives.

The strategic alignment index is calculated using Eq. (2):

$$\text{Strategic Alignment Index} = \sum_{j=1}^{n} Oe_j \cdot \omega_j \tag{2}$$

where:

- Oe_j is the mean value obtained for each strategic objective;
- ω_j is the relative weight of each objective (in this case, 0.2 for each objective).

Table 4. *Calculation of the strategic alignment index.*

Strategic objective	Mean	Relative weight	Weighted value
Maximize profitability	9.00	0.2	1.80
Increase operational efficiency	9.17	0.2	1.83
Ensure environmental sustainability	9.50	0.2	1.90
Strengthen financial risk management	9.83	0.2	1.96
Optimize working capital	9.67	0.2	1.93
Strategic alignment index (SAI)			9.42

The resulting SAI value of 9.42 indicates a high level of strategic alignment, falling within the 6.50–10 range as defined by the evaluation scale. This suggests that the organization's key processes are strongly aligned with its strategic objectives, reflecting effective integration between operational activities and the overall strategic direction.

Step 4: Construction of the Strategic Alignment Matrix

The alignment of organizational processes with strategic objectives is assessed to determine whether the company's key processes effectively contribute to the defined corporate strategy. This evaluation is carried out using the strategic alignment index for processes, calculated according to Eq. (3).

$$Ipr = \sum_{i=1}^{m} (\overline{\text{Pr}}_i * \omega p_i) \tag{3}$$

The strategic alignment matrix is constructed using both the strategic alignment index (SAI) and the relative alignment index (RAI). A demarcation line is established on each axis, resulting in a four-quadrant matrix that allows visualization of alignment levels. The process alignment values used in this study are presented in Table 5,

Table 5. *Calculation of the strategic alignment index for processes.*

Process	Mean	Relative weight	Weighted value
Cost analysis	9.10	0.2	1.82
Budgeting and forecasting	9.27	0.2	1.85
Investment evaluation	8.66	0.2	1.73
Cash flow management	8.47	0.2	1.69
Financial reporting and analysis	9.13	0.2	1.82
Strategic alignment index (processes)			8.91

The resulting index vaue of 8.91 indicates a high level of alignment between the company's key processes and its strategic objectives. This suggests that the organization's operational activities are well integrated with its strategic goals, ensuring that each process contributes effectively to achieving the corporate strategy.

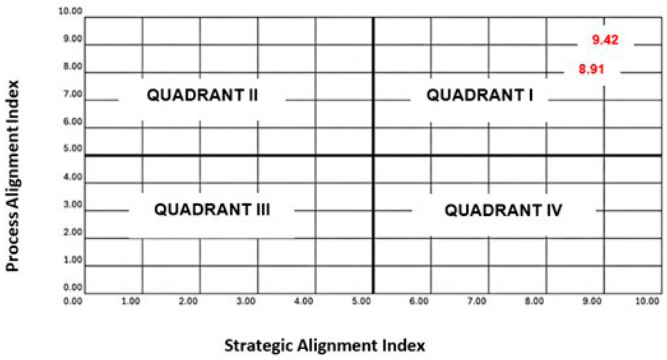

Fig. 2. *Strategic alignment matrix.*

The analysis of the interviews conducted with six experts from Andina enabled the identification of general trends in the management of strategic and financial objectives, as well as critical areas for improving strategic alignment. The findings reveal both consensus and significant differences among participants, allowing for the formulation of well-founded recommendations.

The quantitative and qualitative results of this study reveal a critical paradox in Andina's management, which is essential for understanding the challenges of strategic management in the modern mining industry.

4.1 High Structural Alignment versus Operational Rigidity

The quantitative analysis of the impact matrix (Fig. 2) reveals a high level of strategic alignment (9.42) and a high level of process alignment (8.91). This result positions the company in quadrant I of the alignment matrix, suggesting that strategic objectives are effectively reflected in key processes and that these processes contribute coherently to corporate objectives. The strategy proposed for this quadrant is to establish a control system and continue implementing the formulated strategy.

However, the qualitative findings reveal a fundamental limitation to this conclusion: none of the interviewees reported that effective adjustments were made to the financial strategy on the basis of performance evaluations. This finding points to organizational rigidity in the strategic feedback loop or cycle.

This dissonance demonstrates that structural alignment (the coherent design of processes and objectives) is a necessary, but not sufficient, condition to ensure competitiveness and adaptability. Although coherence in design is high, the organization's capacity for dynamic alignment (the ability to adjust strategy in response to performance and environmental changes) is severely limited.

4.2. Gaps in Strategic Feedback and Data-Driven Control

The high structural alignment is supported by a solid operational process, including cost analysis, budgeting, and cash flow management. These processes are strongly linked to maximizing profitability and financial risk management.

Nevertheless, the company's inability to make strategic adjustments on the basis of performance reveals a failure in applying data-driven management. Although financial objectives are reviewed monthly, this review is limited to monitoring results without translating them into corrective actions or timely strategic adjustments. Automated control systems and dashboards, key tools in mining, must go beyond monitoring to anticipate deviations and adjust processes in a timely manner.

This gap justifies the need to:

- Integrate the balanced scorecard (BSC): Familiarity with the BSC and the consensus on its benefits suggest that its formal implementation could be the mechanism to transform performance information into strategic action. The BSC enables the simultaneous monitoring of financial, customer, internal process, and learning/growth dimensions.

- Formalize the review cycle: A continuous review system is required, such as a formal quarterly key performance indicator (KPI) review cycle, to ensure interdepartmental participation and the implementation of agile adjustments.

The observed discrepancy between high alignment indices and qualitative expert concerns can be theorized through the lens of organizational decoupling (Bromley & Powell, 2012). The high quantitative results suggest a strong structural alignment, where the company's formal planning and financial frameworks are logically integrated. However, the expert feedback reveals a means–ends decoupling, where formal processes are followed but fail to achieve strategic flexibility owing to operational rigidity and the absence of dynamic feedback loops.

As Wei (2025) and Teece (2018) argue, strategic success in volatile sectors such as mining requires more than a "static" fit; it demands dynamic capabilities to translate formal alignment into practical agility. Therefore, the high indices reported in the matrices represent a "necessary but insufficient" foundation, highlighting a gap between the organization's formal strategic design and its actual adaptive capacity

Although the experts rated environmental sustainability with a high average impact (9.50) in the quantitative matrix, the conclusion identifies a lack of integration of these aspects into financial planning.

This discrepancy suggests that, while the sustainability objective has a high perceived importance (as indicated by a high score in the matrix), its practical implementation at the level of daily financial indicators and decisions is insufficient. For a sector under intense environmental and social pressure, it is imperative that sustainability indicators be integrated into the control system to effectively link operational and financial decisions to long-term strategic objectives.

5. Conclusions

This study examined strategic–financial alignment in a mining company operating in an environment characterized by high uncertainty, capital intensity, and increasing environmental and social pressures. In line with the general objective, the findings reveal a high level of structural alignment between Andina's core financial processes and its strategic objectives, particularly in terms of profitability maximization and operational efficiency. This result is consistent with the strategic alignment literature, which emphasizes that coherence between strategy, processes, and control systems is a critical determinant of organizational performance in complex and volatile industries such as mining (Sarwar et al., 2024; Shao, 2019; Kaplan & Norton, 2006).

Regarding the first specific objective, the analysis confirms that Andina's key financial processes, cost analysis, budgeting and forecasting, investment evaluation, cash flow management, and financial reporting, are strongly aligned with the company's strategic priorities. These processes contribute directly to efficient resource allocation, financial risk management, and execution discipline, supporting prior evidence that internal strategic–financial alignment enhances operational effectiveness and mitigates inefficiencies (Comas Rodríguez et al., 2021; Pongatichat & Johnston, 2008). However,

despite the formal inclusion of environmental sustainability as a strategic objective, its integration into financial planning and control systems remains limited. This finding reinforces the argument that sustainability alignment may remain symbolic unless it is embedded in financial indicators, incentives, and decision-making routines (Comas Rodríguez et al., 2021; Sarwar et al., 2024).

With respect to the second specific objective, this study developed and applied a structured, data-driven methodology to assess strategic–financial alignment, combining expert interviews with impact and alignment matrices. The results demonstrate that such tools are effective for capturing structural coherence between financial processes and strategic objectives, in line with prior methodological contributions in the alignment literature (Comas Rodríguez et al., 2021). Furthermore, the complementary use of the balanced scorecard strengthens this approach by linking financial performance with broader strategic dimensions, thereby facilitating integrated strategic analysis and decision-making (Kaplan & Norton, 1992, 1996).

The third specific objective yields a more critical insight. While structural strategic–financial alignment is high, the company exhibits limited dynamic alignment. Although financial objectives and performance indicators are periodically reviewed, the findings show that these evaluations are primarily used for monitoring rather than for triggering strategic or financial adjustments. This limitation constrains the organization's adaptive capacity and confirms the distinction between alignment as a static configuration and alignment as a dynamic capability (Henderson & Venkatraman, 1999; Sarwar et al., 2024). In line with the data-driven management literature, this result suggests that the strategic value of analytics only materializes when feedback loops are embedded in governance structures and strategic routines, enabling continuous learning and adjustment (Shadid et al., 2025; Brynjolfsson & McElheran, 2016).

From a managerial perspective, the findings indicate that Andina would benefit from strengthening its data-driven governance mechanisms through the formalization of continuous review cycles, the strategic use of performance dashboards, and the implementation of early warning systems. Such mechanisms are particularly relevant in the mining sector, where volatile markets, environmental constraints, and high capital exposure require agile and evidence-based strategic responses (Sarwar et al., 2024; Elragal & Elgendy, 2024). A deeper integration of the balanced scorecard across organizational levels could further support the translation of strategic objectives into actionable financial decisions, enhancing both adaptability and long-term sustainability (Kaplan & Norton, 2006).

5.1. Methodological Limitations and Future Research

As a single-case study based on expert perceptions, the findings are not statistically generalizable. The reliance on subjective assessments may introduce perceptual bias, and the cross-sectional nature of the analysis limits the observation of alignment dynamics over time. Nevertheless, the combination of qualitative insights with structured analytical tools provides strong analytical generalization and aligns with prior case-based research in strategic alignment (Comas Rodríguez et al., 2021). Future research should adopt longitudinal and multi-case designs to further explore how data-driven management supports the transition from structural to dynamic strategic–financial alignment, particularly in capital-intensive and environmentally sensitive industries (Shadid et al., 2025; Janssen et al., 2017).

Overall, this study contributes to the strategic alignment literature by demonstrating that, in the mining sector, the effectiveness of digitalization and data-driven management depends not merely on technological investment but also on the organization's capacity to embed financial data into adaptive strategic decision-making processes. By explicitly distinguishing between structural and dynamic strategic–financial alignment, the study advances a more nuanced understanding of how alignment can be achieved and sustained under conditions of complexity, volatility, and increasing sustainability demands.

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