

Conceptual Foundation: Balanced Scorecard in the Educational Context (A Study of the Theory Underlying the Instrument's Creation)

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Abstract

Digital transformation has encouraged educational institutions to create more comprehensive, flexible, and data-driven performance assessment systems. This article aims to analyze the implementation of the Digital Balanced Scorecard (DBSC) as a school performance assessment model that supports data-driven education management in the digital era. This study uses a literature review method with a conceptual-critical approach to various national and international studies on the Balanced Scorecard, digital transformation in education, and school information management systems. The results of the study indicate that the implementation of the Balanced Scorecard is able to integrate four main perspectives: financial, customer, internal processes, and learning and growth in one measurable and sustainable evaluation system. From a financial perspective, the study shows that approximately 72.5% of schools are able to manage BOS funds effectively through participatory planning, the use of digital applications such as ARKAS, and strengthening internal audits. From a customer perspective, the quality of educational services, school culture, and institutional image have been shown to have a positive influence of 60.7% on the level of parent and student satisfaction. An internal process perspective shows that the integration of e-learning, monitoring dashboards, and technology-based curriculum innovations can improve the effectiveness of teaching and learning activities and the quality of school administrative services. Meanwhile, from a learning and growth perspective, digital-based teacher learning community (Kombel) management has been shown to improve teachers' pedagogical competence by up to 85%. The integration of digital technology through interactive dashboards, e-performance systems, and school management platforms enables direct, clear, and precise monitoring and decision-making. However, the implementation of the DBSC still faces several challenges, such as limited technological infrastructure, low digital literacy skills, organizational cultural resilience, and the risk of managerialism, which can simplify educational complexity into mere numbers.

Keywords

Data-Driven Governance, Digital Balanced Scorecard, Digital Transformation, Education Management, School Performance Evaluation.



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INTRODUCTION

Performance measurement in an organization plays a crucial role because it allows staff to assess their own achievements, conduct regular audits, and improve future outcomes. Novitasari, n.d. (2023) revealed that in Indonesia, school performance assessment methods still focus solely on meeting administrative requirements and academic achievement, such as accreditation and exam results. For example, a school may receive an A accreditation, indicating high administrative quality, but this indicator is insufficient to reflect the school's overall performance. Conventional evaluation methods also tend to rely solely on quantitative measures of academic aspects and are unable to connect one perspective with another. To address the rapidly changing dynamics of the environment and limited resources, educational institutions are required to seek more comprehensive, planned, and data-driven managerial solutions. One holistic approach adopted from the business world and successfully implemented in non-profit organizations is the Balanced Scorecard (BSC). As an interconnected strategic management system, the BSC enables educational institutions to evaluate performance not only from a financial perspective but also from a non-financial perspective through comprehensive cause-and-effect relationships. In the context of educational institutions, the basic structure of the BSC is modified to accommodate core educational activities (such as teaching, research, and community service) as well as stakeholder needs. This evaluation is conducted through four main perspectives:

- Financial Perspective: Refers to the management, transparency, accountability, and sustainability of the school budget (e.g., BOS/BOSDA funds).
- Internal Process Perspective: Refers to the quality of teaching, standardized process management, and the effectiveness of daily school operations.
- Growth and Learning Perspective: Prioritizes teacher skill development, staff satisfaction, and innovation in the teaching and learning process.
- Customer (Stakeholder) Perspective: Measures the satisfaction of students, parents, alumni, and the community as consumers of educational services.

This aligns with Deming's (1986) argument that organizational quality cannot be achieved solely through monitoring end results but must be built through a management system oriented toward continuous improvement.

However, school performance evaluation practices in Indonesia are still dominated by conventional approaches that focus on administrative and academic indicators such as exam results, accreditation, and school budget absorption rates (Bustomi et al., 2021). This approach is considered incapable of providing a comprehensive picture of the quality of educational institutions because it ignores crucial non-financial dimensions, such as student satisfaction, service quality, internal process effectiveness, teacher competency, and school organizational culture. Susanti et al., (2025); Biesta, (2023) refer to this phenomenon as the measurement trap, which is the tendency of educational institutions to prioritize only aspects that are easily measured quantitatively, neglecting the humanistic, ethical, and pedagogical dimensions of

education. As a result, evaluation often becomes an administrative formality and fails to foster substantive organizational learning.

In the context of strategic management, the Balanced Scorecard (BSC) developed by Kaplan and Norton presents a more comprehensive evaluation approach because it integrates financial and non-financial indicators into four main perspectives: financial, customer, internal business processes, and learning and growth. According to Saksono & Bernardus (2023), the Balanced Scorecard is not simply a performance measurement tool, but rather a strategic management system capable of translating an organization's vision and mission into measurable operational goals. In the education sector, this approach enables schools to evaluate the quality of their institutions more holistically, not only in terms of academic results but also in terms of the quality of educational services, learning effectiveness, curriculum innovation, and teacher competency development.

The implementation of the Balanced Scorecard in education has demonstrated various positive impacts on improving school quality. Research by Bustomi et al. (2021) shows that the use of the Balanced Scorecard can help schools conduct more objective and comprehensive performance evaluations. Furthermore, Nashrullah et al., n.d. (2023) explain that implementing the Balanced Scorecard in educational institutions can strengthen transparency, accountability, and the effectiveness of managerial decision-making. However, manual implementation of the Balanced Scorecard still faces various obstacles, such as limited data integration, low validity of non-financial indicators, and high subjectivity in the evaluation process.

Digital transformation then presents new opportunities through the integration of the Balanced Scorecard with information technology in the form of the Digital Balanced Scorecard (DBSC). The digitalization process enables automated, integrated, and real-time data collection, processing, and visualization through digital dashboards and educational information management systems. According to Schildkamp et al. (2017), data utilization in education can improve the quality of decision-making when supported by adequate interpretation capabilities. With a digital dashboard, principals and management can monitor performance metrics quickly, accurately, and transparently, thus supporting the creation of data-driven educational governance.

In addition to improving school management, implementing DBSC also helps strengthen a culture of quality and public accountability. The use of digital applications such as ARKAS in managing School Operational Assistance (BOS) funds has been shown to increase the effectiveness of financial reporting and transparency of school budgets. Research shows that approximately 72.5% of schools successfully manage BOS funds effectively through multi-stakeholder planning and the use of integrated digital systems. From a customer perspective, the quality of educational services, school culture, and institutional reputation have a positive impact of 60.7% on parent and student satisfaction (Rini Setyaningsih et al., 2025). Meanwhile, digital-based teacher learning community management has been shown to improve teachers' pedagogical competence by up to 85%. However, the

implementation of the Digital Balanced Scorecard also faces several serious challenges. Williamson (2020) explains that the digitalization of education has the potential to create datafication, namely the dominance of data- and algorithm-based decision-making that can reduce the space for teachers' professional reflection. Furthermore, technological infrastructure gaps, low digital literacy among educators, resistance to organizational culture, and limited resources remain major obstacles to the implementation of digital-based evaluation systems, particularly in areas with limited access to technology (Verger et al., 2019). They even warn that a performance-based evaluation approach can shift the goal of education from human development to merely producing performance indicators.

METHODS

This study uses a qualitative approach with a literature review or library research method to analyze the implementation of the Digital Balanced Scorecard (DBSC) in evaluating school performance in the digital era. The literature review approach was chosen because this study focuses on examining concepts, theories, previous research findings, and various scientific perspectives related to digital transformation in education management, school performance evaluation, and the implementation of the Balanced Scorecard in educational institutions.

Abdurrahman (2024) defines library research as a research method conducted through the collection and analysis of various scientific sources, such as books, journals, documents, and research reports relevant to the study topic. This approach aims to gain an in-depth theoretical understanding of a phenomenon through critical interpretation of the available literature. Similarly, Creswell, n.d. (2018) explains that a literature review serves to build a conceptual framework, identify research gaps, and compile a scientific synthesis based on previous findings.

This study uses primary and secondary data sources. Primary data was obtained from national and international journal articles published in 2020–2025 that discussed the Balanced Scorecard, digital transformation in education, data-driven governance, school management information systems, and educational performance evaluation. The articles were obtained through scientific databases such as Google Scholar, Scopus, DOAJ, and SINTA with the keywords "Digital Balanced Scorecard," "school performance evaluation," "educational governance," "data-driven education," and "digital transformation in education." Secondary data was obtained from reference books, educational policy documents, research reports, and official government publications relevant to the research topic.

FINDINGS AND DISCUSSION

The findings of this study indicate that the Digital Balanced Scorecard (DBSC) represents a transformative approach to educational evaluation by shifting the focus from traditional administrative assessment toward a strategic, data-driven evaluation system. Previously, school evaluations primarily served administrative reporting purposes; however, DBSC integrates evaluation into the school's strategic management framework, enabling data to

become the foundation for decision-making. The adoption of digital dashboards and school information systems has transformed evaluation from a periodic and manual activity into a dynamic, continuous monitoring process, reflecting the evolution of schools toward modern, data-oriented organizations.

From the financial perspective, DBSC redefines financial management beyond budget administration by emphasizing transparency and public accountability. Digital technologies enable schools to minimize administrative errors, accelerate financial reporting, and strengthen oversight of educational fund utilization. Nevertheless, the literature highlights that successful implementation remains constrained by school leaders' managerial capabilities and the availability of adequate digital infrastructure, particularly in regions with limited technological access.

Regarding the customer perspective, contemporary educational management increasingly recognizes students and parents as the primary stakeholders and beneficiaries of educational services. This reflects a paradigm shift toward service quality and stakeholder satisfaction. However, the literature also cautions that such an approach may inadvertently commercialize education by adopting market-oriented principles. Consequently, customer satisfaction indicators should be carefully balanced with the broader humanitarian and pedagogical objectives of education to preserve its essential social mission.

The study further identifies the potential risk of digital managerialism in DBSC implementation. Excessive reliance on quantitative indicators and digital performance systems may encourage schools to prioritize numerical targets over meaningful educational processes. Such conditions may reduce opportunities for teachers' professional reflection, promote a "teaching-to-the-test" culture, and oversimplify the complexity of education into statistical performance measures. Therefore, DBSC implementation should remain grounded in ethical, pedagogical, and contextual considerations to ensure that technology enhances rather than replaces the human values embedded in education.

Strategically, the findings demonstrate that the Digital Balanced Scorecard has substantial potential to become a future-oriented framework for educational evaluation. It supports data-driven school governance, enhances transparency and accountability, strengthens a culture of quality, accelerates decision-making processes, and promotes continuous school improvement. However, its successful implementation depends on several critical factors, including the readiness of technological infrastructure, educators' digital competencies, effective school leadership, adaptive organizational culture, and an appropriate balance between technological innovation and pedagogical values. Consequently, DBSC should not be viewed merely as a technological tool but rather as a comprehensive framework for transforming educational management in a contextual, reflective, and sustainable manner.

Discussion

The review of sixteen scholarly articles demonstrates that the implementation of the Digital Balanced Scorecard (DBSC) constitutes an integral component of the broader digital transformation of educational management. Traditional evaluation systems, which primarily

emphasize academic achievement and administrative compliance, are increasingly considered insufficient for measuring overall school performance. In contrast, the Balanced Scorecard provides a comprehensive strategic framework by integrating financial and non-financial indicators across four key perspectives: financial performance, customer satisfaction, internal business processes, and learning and growth.

Previous studies reveal that the Balanced Scorecard significantly broadens the dimensions of school evaluation by recognizing that institutional success depends not only on academic outcomes but also on service quality, internal governance, stakeholder satisfaction, and continuous human resource development. Within this framework, the Balanced Scorecard functions not merely as a performance measurement tool but as a strategic management system capable of translating institutional vision and mission into measurable operational objectives. Nevertheless, several studies also acknowledge that manual implementation of the Balanced Scorecard encounters significant challenges in handling complex datasets and providing timely performance monitoring. Consequently, digital transformation has become an inevitable necessity. Research further emphasizes that sophisticated digital systems alone cannot guarantee organizational success without adequate digital literacy among users. Therefore, indicators of digital competency and technology training should become essential Key Performance Indicators (KPIs), while digital-based management simplifies bureaucratic processes, shortens evaluation cycles, and supports continuous organizational improvement through rapid feedback mechanisms.

From the financial perspective, the implementation of digital systems such as ARKAS significantly improves transparency and accountability in managing School Operational Assistance (BOS) funds. Digital applications facilitate faster financial reporting, reduce administrative errors, and strengthen budget oversight, thereby supporting the principles of value for money through enhanced effectiveness, efficiency, and accountability in educational resource management.

The customer perspective reflects a substantial paradigm shift in educational management. Research indicates that educational service quality, school culture, and institutional reputation contribute significantly to student and parent satisfaction. These findings suggest that schools are expected not only to produce academically successful graduates but also to provide meaningful learning experiences and responsive educational services. Consequently, school evaluation increasingly embraces a service-oriented education model in which students and parents are recognized as essential partners in quality improvement.

Within the internal process perspective, numerous studies emphasize that technology-based instructional innovation substantially enhances teaching and learning effectiveness. The integration of digital technologies, interdisciplinary collaboration, and social skill development has been shown to improve educational outcomes. Moreover, the adoption of e-learning platforms, learning dashboards, and digital evaluation systems enables systematic

curriculum monitoring and continuous improvement, illustrating that digital transformation extends beyond school administration to fundamentally reshape pedagogical practices.

The learning and growth perspective highlights that teachers' professional competence and organizational culture are essential determinants of successful DBSC implementation. Digital professional learning communities have been shown to improve teachers' pedagogical competencies significantly, while collaborative organizational cultures foster innovation, strengthen work motivation, and enhance schools' adaptability to technological change. In this context, school principals play a strategic leadership role by cultivating reflective practices and sustaining continuous organizational learning.

Despite these advantages, the literature also raises critical concerns regarding the increasing dependence on data-driven evaluation systems. The dominance of quantitative indicators and performance-oriented accountability may oversimplify educational complexity by reducing educational quality to measurable statistics and administrative targets. This phenomenon, commonly referred to as the "measurement trap" or "datafication," risks overlooking important educational dimensions that cannot be adequately captured through numerical indicators alone.

Overall, the discussion demonstrates that the Digital Balanced Scorecard possesses considerable potential to transform educational evaluation in the digital era. However, its implementation should extend beyond technical adoption and instead be understood as a comprehensive strategic management system that integrates pedagogical values, organizational culture, and the unique context of each educational institution. The effectiveness of DBSC ultimately depends on technological readiness, educators' digital competencies, visionary school leadership, and an organizational culture that continuously promotes innovation and reflective practice. Therefore, the transition toward Digital Balanced Scorecard-based school performance evaluation represents not merely the adoption of a new evaluation instrument but a fundamental paradigm shift toward a more transparent, responsive, participatory, and sustainable model of educational management.

CONCLUSION

Based on a literature review of 16 scientific articles examining the implementation of the Digital Balanced Scorecard (DBSC) in school performance evaluation, it can be concluded that this approach has emerged as a highly relevant strategic model for supporting educational management transformation in the digital era. The Balanced Scorecard is no longer viewed merely as a performance measurement tool but has evolved into a comprehensive strategic management system that integrates both financial and non-financial indicators through four key perspectives: financial, customer, internal business processes, and learning and growth. The review reveals that conventional school evaluation systems, which primarily focus on academic achievement and administrative compliance, are insufficient to capture overall school quality. In contrast, DBSC offers a more holistic evaluation framework by incorporating financial transparency, educational service quality, instructional effectiveness, curriculum

innovation, teacher competence, organizational culture, and the satisfaction of students and parents. Furthermore, the integration of digital technologies into the Balanced Scorecard has significantly enhanced the effectiveness of school performance management through interactive dashboards, e-performance systems, and data-driven school management applications. These digital tools enable real-time monitoring, greater transparency, objective assessment, and evidence-based decision-making while accelerating strategic decision-making processes and strengthening public accountability in educational governance. Nevertheless, the implementation of DBSC continues to face several challenges, including limited technological infrastructure, inadequate digital competencies among educators, resistance to organizational change, and the risk of overemphasizing quantitative performance indicators that may oversimplify the complex and humanistic nature of education into statistical measures. Critical findings from the reviewed studies suggest that an excessively technocratic, data-driven evaluation approach may shift the focus of education from holistic human development toward administrative target achievement. Therefore, the successful implementation of the Digital Balanced Scorecard depends not only on technological sophistication but also on organizational readiness, effective school leadership, human resource capacity, and the institution's ability to balance data-driven management with pedagogical and humanistic values. Overall, the Digital Balanced Scorecard demonstrates considerable potential as a future-oriented educational evaluation model capable of promoting more transparent, adaptive, participatory, and sustainable school governance while continuously improving educational quality in the context of digital transformation.

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