International Journal of Multidisciplinary Research and Growth Evaluation.

Improving the efficiency of accounting information systems using the balanced scorecard and its impact on financial performance Applied - Study

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Article Info

ISSN (Online): 2582-7138
Impact Factor (RSIF): 8.04
Volume: 07
Issue: 03
May-June 2026
Received: 09-03-2026
Accepted: 07-04-2026
Published: 05-05-2026
Page No: 472-480

Abstract
This study examines the contribution of accounting information systems to enhancing operational efficiency and financial performance through the application of the balanced scorecard and data envelopment analysis as assessment tools it adopts a descriptive analytical methodology grounded in actual financial data obtained from an industrial firm the findings indicated divergence between the extent of operational expansion in the financial outcomes achieved suggesting variations in the efficiency with which resources are utilized. Do you findings reveal variations inefficiency levels while the BSC results highlight an imbalance among performance dimensions statistical analysis confirms a significant relationship between operational efficiency and financial performance with efficiency identified as the primary determinant of financial outcome the study cancludes that integrating efficiency measurement tools with performance of valuation frameworks and hands's decision making an improves financial performance it recommends developing accounting information systems and adopting advanced analytical techniques to achieve more efficient resource utilization.

Keywords: accounting information systems balanced scorecard data envelopment analysis operational efficiency financial performance.

1. Introduction

The contemporary business environment this characterized by rapid technological advancements and intensified competition which have significantly increased the pressure on organizations to enhance the efficiency and effectiveness of their operations in response to these challenges organizations are increasingly required to develop their administrative and accounting systems to ensure optimal Resource utilization and support informed decision making within this context accounting information systems ice represent a fundamental component of organizational infrastructure as they facilitate the generation of accurate timely and relevant information that enhances both operational and strategic performance despite their importance The Reliance on traditional financial indicators alone has become insufficient for evaluating organizational performance in a comprehensive manner this limitation has driven the adoption of more advanced performance measurement frameworks most notably the valence scorecard BSC which integrates financial and non-financial indicators to provide a multi-dimensional assessment of performance in parallel data in development analysis dia has emerged as a robust analytical tool for measuring operational efficiency and identifying best practice performance levels through comparative analysis accordingly this study is grounded in the need to integrate accounting information systems with modern performance measurement and Efficiency of valuation tools it seeks to examine how the efficiency of resource utilization as assessed through dia in the multi-dimensional performance perspective offered by the BSC jointly influence financial performance by doing so the study contributes to developing a comprehensive analytical framework that links operational efficiency with strategic performance outcomes furthermore the study aims to highlight the critical role of integrating efficiency measurement with performance evaluation in improving the quality of financial decision making and strengthening organizational competitiveness in an increasingly dynamic business environment.

Research Problem

the research problem lies in the existence of a disparity between growth and financial indicators in the efficiency of resource utilization within companies in many cases organizations achieve increases in revenues without corresponding improvements in operational efficiency which indicates deficiencies in accounting information systems in their inability to provide accurate and reliable information that supports effective decision making moreover The Reliance on traditional financial indicators alone does not adequately reflect the true performance of organizations particularly in the absence of integrated analytical tools that combine performance measurement with efficiency evaluation Accordingly the main research question can be formulated as follows: can the efficiency of accounting information systems be improved using the balanced scorecard and data envelopment analysis and how does this improvement reflect on financial performance.

Research Importance

scientific importance: Enreaching accounting literature through the integration of modern analytical tools.

providing a comprehensive scientific framework for measuring performance and Efficiency in an integrated manner.

contributing to the development of methods for evaluating accounting information systems.

Practical Importance: supporting decision makers with accurate and reliable performance indicators.

Enhancing the efficiency of resource utilization.

Edentifying weaknesses in organizational performance providing a practical and applicable model for improving efficiency and Performance

Research Objectives

Main Objective: to measure an improve the efficiency of accounting information systems using modern analytical tools into examine their impact on financial performance.

sub objectives: analyzing the current state of accounting information systems measuring operational efficiency using data envelopment analysis dia evaluating performance using the balanced scorecard BSC identifying the relationship between efficiency and financial performance diagnosing strengths in weaknesses in performance providing developmental recommendations

Research Hypotheses

Main Hypothesis: there is a statistically significant effect of accounting information systems on improving efficiency using data envelopment analysis dia which in turn reflects on performance when evaluated using the balance scorecard BSC.

Sub Hypotheses: there is a significant effect of accounting information systems on operational efficiency there is a significant effect of operational efficiency on financial performance there is an integrated effect between dia and BSC in improving organizational performance.

Research Methodology

The study adopts a descriptive analytical approach as it is appropriate for examining the current state of accounting information systems and applying quantitative analytical tools to measure efficiency and evaluate performance.

Population and Sample

the research population consists of industrial companies a selected industrial company Baghdad soft drinks company is used as a case study due to the availability of consistent financial data over consecutive periods.

Research boundaries

Temporal boundaries: the study covers a defined period sufficient for performance and Efficiency analysis.

spatial boundaries: the study is applied to Baghdad soft drinks company thematic boundaries: accounting information systems operational efficiency and financial performance.

First: Concept of accounting information systems.

Accounting information systems AIS are considered fundamental Pillars supporting decision-making processes in modern organizations, they represent an integrated system designed to collect financial data process it and transform it into valuable information that assists different managerial levels Romney and steinbart defined ice as a system that collects and processes data to produce useful financial information for decision makers [13] in recent developments the concept of ice has extended beyond its traditional role to incorporate digital and analytical dimensions Alo Kaley 2024 indicates that ice has evolved into a strategic component that enhances organizational performance within the context of digital transformation particularly through improving data quality and processing speed [22] similarly sudani 2024 confirms that ice can tribute directly to improving decision making quality due to its ability to provide accurate reliable and timely information [24].

Seconds: Importance of accounting information systems.

The importance of accounting information systems lies in their critical role in supporting organizational performance. I send hanses the quality of financial information and strengthens the effectiveness of decision-making processes in addition to supporting planning and control functions within organizations albumer 2023 found a positive relationship between the use of Ice and improved financial performance especially in dynamic economic environments [25] furthermore alzo be 2023 demonstrated that the quality of ice directly affects the quality of Financial Reporting by improving data accuracy and reducing errors [27] in the same context Alo Kaley 2023 showed that the digital transformation of ice contributes to improving operational efficiency in supporting strategic decision making[26].

Third: Components of Accounting information systems:

accounting information systems ice consist of a set of interrelated components including inputs processing outputs and feedback the integration among these components is considered a fundamental condition for achieving system efficiency as it ensures the effective transformation of data into meaningful information in this context recent studies indicate that the quality of ice components has a direct impact on the quality of the information produced [24] moreover contemporary literature confirms that the adoption of digital technologies enhances the efficiency of these components by accelerating processing operations and reducing errors. Thereby improving overall system performance [22].

Fourth: Characteristics of accounting information systems.

Accounting information systems are characterized by a set of key attributes that determine the quality of their outputs these characteristics include.

1. Accuracy and reliability ice provide accurate and reliable information which enhances the credibility of financial reports and support sound decision-making the quality of ice is directly linked to the accuracy of the data processed in reported 27.
2. Relevant size generate information that is relevant to the needs of decision makers ensuring that the information produced is useful for evaluating alternatives and supporting managerial decisions.
3. Timeliness ice ensure that information is available at the appropriate time enabling timely decision-making and improving responsiveness to changes in the business environment.
4. Integration and flexibility modernized or characterized by their ability to integrate with other organizational systems and adapt to changing technological and operational requirements. This is largely due to their reliance on advanced digital technologies 22.
5. Accessibility and speed of information the effectiveness of eyes also depends on the speed of access to information in the ability to retrieve an efficiently the integration of accuracy relevance and accessibility significantly enhances the overall quality of system outputs 28.

Fifth: Advantages of accounting information systems.

Accounting information systems ice are considered fundamental tools that modern organizations rely on to enhance both financial and administrative performance they provide accurate and reliable information that supports different managerial levels their role extends beyond recording accounting data to include data analysis processing and transformation into strategic information used in planning control and decision making which enhances overall organizational efficiency [13].

Improving the quality of financial reports ice contribute to improving the quality of financial reports by providing accurate relevant and timely information this enhances the reliability of financial information and reduces human bias in reporting in addition ice ensure consistency in measurement and Disclosure practices, which positively affects the credibility of Financial Reporting [24].

Supporting decision-making ice play a vital role in supporting managerial decision making by providing analytical information that enables decision makers to evaluate different alternatives and reduce uncertainty associated with financial decisions this contributes to improving the effectiveness of Strategic decisions particularly in dynamic economic environments [25].

Reducing accounting errors ice reduced accounting errors resulting from manual processing through the use of automated systems for data entry and processing moreover built-in control mechanisms help detect and correct errors in a timely manner, which enhances the accuracy and reliability of accounting information [8].

Increasing processing speed and operational efficiency ice or characterized by their ability to process large volumes of data at high speed which accelerates the preparation of financial reports and improves operational efficiency they also reduce the time required to complete accounting processes allowing management to focus on analytical and strategic activities [29].

Enhancing transparency and internal control ice enhanced transparency by providing clear and integrated financial information which strengthens the confidence of both internal and external users they also improve the effectiveness of internal control systems through continuous documentation and monitoring of financial transactions, thereby reducing the risk of manipulation or fraud [13].

Achieving system integration ice facilitate integration among different organizational systems such as production inventory and human resources systems this integration improves information flow and supports the creation of unified databases which enhances overall organizational efficiency [10].

Sixth: Disadvantages of accounting information systems despite the numerous advantages of accounting information systems AIS, they are not without limitations and challenges that may affect their efficiency and effectiveness particularly in environments that lack adequate organizational and technological infrastructure these disadvantages become more evident during the initial stages of system implementation are in organizations that do not possess the necessary readiness for adopting such systems [13]

1. High implementation costs the high cost of designing and implementing ice represents one of the most significant challenges facing organizations these systems require substantial investments in technological infrastructure software and continuous maintenance and updates this creates a financial burden particularly for small and medium-sized Enterprises which may limit their ability to adopt ice effectively [30].
2. Heavy dependence on technology ice rely heavily on technological systems making them vulnerable to risks associated with information technology such as security breaches cyber attacks and data loss additionally any technical failure in the system may disrupt a counting processes in negatively affect operational continuity [10]
3. Technical failure risk size are exposed to risks related to technical malfunctions arising from issues in hardware software or network systems such failures may lead to system interruptions are loss of data especially in the absence of effective backup systems and contingency plans this can negatively impact the accuracy and timeliness of Financial Reporting [8]
4. Need for training and qualification the effective use of ice requires qualified personnel with the necessary technical skills to operate these systems inadequate training may result in improper system user inaccurate data entry which negatively affects the quality of outputs in reduces system efficiency [25]
5. Poor data quality the efficiency of ice largely depends on the quality of input data an accurate or incomplete data entry leads to misleading information and weak decisions support studies confirm that poor data quality is one of the main factors that reduce system effectiveness and limit its ability to support decision making processes [25].

Seventh: Contemporary Challenges of Accounting Information Systems.

Technological change accounting information systems are confronted with contemporary challenges that require ongoing adaptation to an increasingly dynamic digital

environment their role has moved beyond Mere data processing to include more advanced and integrated functions that align with the complex demands of the digital era.They have become integral components of a broader digital ecosystem influenced by technological human and organizational factors this transformation necessitates ongoing development to maintain system efficiency in effectiveness [13].

1. Digital transformation digital transformation represents one of the most significant challenges confronting ice the shift from traditional accounting practices to digital systems requires the restructuring of accounting processes and the upgrading of technological infrastructure it also involves the adoption of Advanced technology such as cloud computing and artificial intelligence which increases the complexity of the accounting environment this transition requires substantial investments and continuous system development to achieve the desired level of efficiency [26].
2. Cyber security with the growing reliance on digital platforms ice have become increasingly vulnerable to cybersecurity risks including hacking data breaches and information manipulation protecting financial data has become a critical concern due to its sensitivity and its Direct impact on financial decision making cyber security is therefore considered a key Factor influencing the reliability and Efficiency of ice as any security breach may undermine confidence in financial information [22].
3. Shortage of qualified human resources many organizations face challenges related to the shortage of qualified personnel capable of operating in managing modern ice the rapid pace of technological development requires advanced technical analytical and accounting skills the lack of such expertise limits the effective implementation and utilization of ice thereby reducing their potential contribution to organizational performance [31].
4. Systems integration the integration of ice with other organizational systems such as production inventory and human resource systems represents a significant challenge effective integration requires compatibility between systems and seamless data exchange week integration may result in data duplication inconsistencies and reduced information quality which negatively affects decision making in limits the overall effectiveness of information systems [10].

The role of accounting information systems in improving organizational performance.

Accounting information systems are regarded as strategic instruments that play a vital role in enhancing organizational performance they empower management to utilize available resources more effectively by delivering accurate reliable and timely information thereby supporting informed efficient and effective decision-making.I support planning and controlled processes which enhances the organizations of ability to achieve its objectives effectively and efficiently [13].

1. Improving resource utilization efficiency ice contribute to improving resource utilization efficiency by providing analytical information that supports performance of valuation and identifies areas of inefficiency or waste they enable management to make data-driven decisions leading to optimal use of financial and human resources empirical evidence indicates that organizations adopting advanced highs achieve higher levels of operational efficiency and financial performance compared to those that do not [25]
2. Enhancing the quality of managerial decisions ice provide both financial and non-financial information that supports decision makers in selecting appropriate alternatives and reducing uncertainty associated with strategic decisions, they also facilitate forecasting based on historical data analysis thereby improving the quality of managerial decisions and reducing potential risks [8].
3. Improving the quality of Financial Reporting AIS play a significant role in enhancing the quality of Financial Reporting by ensuring data accuracy and consistency which increases the reliability of financial information this in turn strengthens the confidence of internal and external users and positively reflects on overall organizational performance studies confirm that AIS significantly improve the accuracy of financial reports and enhanced transparency [27].
4. Strengthening internal control and risk reduction ice enhance internal control systems by enabling continuous documentation and monitoring the financial transactions this reduces errors in the likelihood of manipulation or fraud furthermore AIS allow management to detect deviations in a timely manner and implement corrective actions which contributes to improving performance and reducing operational risks [13].
5. Supporting competitive advantage I support organizations in achieving competitive advantage by improving responsiveness to changes in the business environment and providing accurate information for Strategic decision making they also contribute to improving operational efficiency and reducing costs thereby enhancing the organizations ability to compete effectively in the market [10].

Fifth: contemporary challenges of accounting information systems despite the significant development of accounting information systems ice, they can continue to face a range of contemporary challenges that require organizations to continuously adapt to the dynamic digital business environment the importance of these challenges has increased with the growing reliance on technology in processing financial data making it essential to continuously develop ice to ensure their efficiency in effectiveness[13].

1. Rapid digital transformation rapid digital transformation is one of the most prominent challenges facing ice the transition to modern digital systems requires upgrading technological infrastructure and adopting advanced technologies such as cloud computing and big data Analytics this transformation also necessitates the REdesign of accounting Processes to align with the digital environment which may post significant challenges for organizations lacking sufficient technological capabilities [22].
2. Cyber security risks with the increasing dependence on electronic systems ice have become more vulnerable to cyber security threats including breaches data theft and manipulation of financial information protecting financial data has become a critical challenge as any security failure may lead to a loss of trust in financial information and negatively affect decision making

processes [22].

3. lack of human competencies many organizations face difficulties in providing qualified human resources capable of effectively operating modern accounting information systems ice particularly in light of rapid technological advancements the use of ice requires advanced skills in both accounting and information technology making the shortage of qualified personnel a major obstacle to the effective implementation and utilization of these systems [31].
4. Systems integration and organizational challenges achieving integration between ice and other organizational systems represents a significant challenge as it requires both technical compatibility and organizational alignment across different systems weak integration may lead to data duplication or inconsistencies, which negatively affect information quality and limit the systems effectiveness in supporting decisions [10]

Section Balanced Scorecards

First: Concept and theoretical development of the balanced scorecard.

The balance scorecard, BSC is considered one of the most prominent modern tools in strategic management it represents an integrated framework aimed at translating the organizations Vision and strategy into a set of interconnected objectives and Performance indicators across multiple dimensions including both financial and non-financial aspects this tool was introduced to address the limitations of relying solely on financial indicators in performance of valuation, Kaplan and Norton emphasize that effective performance evaluation requires a comprehensive perspective that integrates financial outcomes with the drivers of future performance[14].

The balance scorecard has evolved gradually since its inception passing through several stages the reflect its transformation from a performance measurement tool into an integrated management system initially if focused on measuring for formants using a combination of financial and non-financial indicators it then developed into a strategic management system named at linking objectives with strategic initiatives this evolution culminated in the development of strategy Maps which highlight causal relationships among different dimensions and enhance the integration required for effective strategy implementation [15]

In the context of modern developments the balanced scorecard is no longer viewed as a traditional measurement tool rather it has evolved into a dynamic system that relies on advanced technologies in Analytics it is increasingly integrated with big data and business intelligence systems Which enhances its ability to support strategic decision making in real-time in this regard recent literature indicates that the balance scorecard has become part of an integrated digital performance management system that improves predictive capabilities and strengthens organizational efficiency[3[2].

Second Section Balanced Scorecards

First: Concept and theoretical development of the balanced scorecard

The balance scorecard, BSC is considered one of the most prominent modern tools in strategic management it represents an integrated framework aimed at translating the organizations Vision and strategy into a set of interconnected objectives and Performance indicators across multiple dimensions including both financial and non-financial aspects this tool was introduced to address the limitations of relying solely on financial indicators in performance of valuation[14], Kaplan and Norton emphasize that effective performance evaluation requires a comprehensive perspective that integrates financial outcomes with the drivers of future performance for team the balance scorecard has evolved gradually since its inception passing through several stages the reflect its transformation from a performance measurement tool into an integrated management system initially if focused on measuring for formants using a combination of financial and non-financial indicators it then developed into a strategic management system named at linking objectives with strategic initiatives this evolution culminated in the development of strategy Maps which highlight causal relationships among different dimensions and enhance the integration required for effective strategy implementation [15] in the context of modern developments the balanced scorecard is no longer viewed as a traditional measurement tool rather it has evolved into a dynamic system that relies on advanced technologies in Analytics it is increasingly integrated with big data and business intelligence systems Which enhances its ability to support strategic decision making in real-time in this regard recent literature indicates that the balance scorecard has become part of an integrated digital performance management system that improves predictive capabilities and strengthens organizational efficiency [32].Castle relationships among dimensions the balance scorecard is characterized by clear causal relationships among its dimensions the sequence typically begins with the learning and Growth perspective which develops skills and capabilities leading to improve deficiency in internal processes this in turn enhances the quality of products and services delivered to customers increasing their satisfaction and ultimately resulting in improved financial performance the clarity of these causal relationships contribute to enhancing the accuracy of performance of valuation in supports more effective strategy implementation [34].

Third: strategy map strategy:

Maps are considered fundamental tools within the balanced scorecard as they are used to represent the causal relationships between strategic objectives across different dimensions in a structured and systematic manner [15] strategy Maps are based on the principle of cause and effect relationships typically following this sequence.

- Learning and Growth perspective development of skills and technology.
- Internal process perspective improvement of operations.
- Customer perspective enhancement of customer value.
- Financial perspective achievement of financial outcomes.

Strategy Maps enable management too

- Understand How value is created within the organization
- Tdentify critical activities that influence performance.
- Transform strategy from a theoretical concept into a practical visual model that facilitates implementation [15].

They also contribute to improving coordination among

different organizational units by aligning them around a unified strategic Vision

Fourth: Key performance indicators kips.
The balanced scorecard BSC uses kpis to measure the achievement of strategic objectives quantitatively [14]
kpis should be, specific, measurable, link to strategy, achievable time bound,
they support performance monitoring and corrective actions poor selection reduces effectiveness [5]
used indicators: Row, profit margin, operational efficiency [3]

Fifth: BSC implementation steps to find strategic vision translate into objective's design strategy map select KPI set targets link to initiatives monitor performance these steps insure effective implementation [15]

Sixth: advantages
BSC integrates financial and non-financial indicators 14 and helps align strategy with operations improved decisions support monitoring link present with future digital integration enhances accuracy and prediction [2].

Seventh: limitations difficulty selecting kpis dependence on data quality implementation complexity difficulty measuring non-financial aspects causal links, may be imprecise in complex environments [4].

Eighth: contemporary challenges big data real-time information system integration cyber security require advanced infrastructure and Analytics [8]
3-3 BSC application.
3 BSC Application

Perspective	Indicator
Financial	ROA, Profit
Internal	Sales
Efficiency	Assets
Sustainability	Cash Flows

Table 1: Basic Financial Data

cash flows	Sales	Assets	Net Profit	Year
52.7B	331B	350B	43.4B	2018
110B	367B	403B	50.7B	2019
102B	415B	479B	61.1B	2020
44B	530B	558B	53.3B	2021
67B	678B	559B	54.1B	2022
133B	743B	642B	102B	2023
118B	832B	716B	15.1B	2024

Table one illustrates the progression of key financial indicators for the entities under examination over the study period the findings reveal a steady increase in total assets and net sales indicating an expansion in operational activities and an improvement in productive capacity in contrast net profit did not Exhibit A consistent upward trend rather if fluctuated reaching a peak in one period before declining notably in the subsequent period this divergence points to a disconnect between operational growth and profitability suggesting inefficiencies in the utilization of available resources it also underscores the need to enhance accounting information systems to better support effective and efficient financial and operational decision making

Table 2: Profitability Indicators

Profit margin	ROA	Year
0.131	0.124	2018
0.138	0.126	2019
0.147	0.127	2020
0.100	0.095	2021
0.080	0.097	2022
0.138	0.159	2023
0.018	0.021	2024

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Efficiency	Year
0.88	2018
0.90	2019
0.92	2020
0.85	2021
0.87	2022
1.00	2023
0.89	2024

Table 3 presents the results of efficiency measurement using data envelopment analysis dia the findings indicate that 2023 achieved full efficiency 1.00 representing a benchmark for optimal performance in contrast the remaining years recorded efficiency scores below unity suggesting the presence of inefficiencies in resource utilization this variation highlights that growth in activity does not necessarily imply efficient performance and indicates potential for improving operational efficiency :

Table 4: Slack Analysis

Slack Sales	Slack Profit	Slack Assets	Year
+412B	+58B	-292B	2018
+375B	+51B	-239B	2019
+328B	+41B	-163B	2020
+213B	+49B	-83B	2021
+65B	+48B	-82B	2022
0	0	0	2023
-89B	+87B	+74B	2024

Presents the results of the gap slack analysis negative values on the input side indicate accessor underutilized resources particularly assets while positive values on the output side reflect the need to improve profitability in sales to reach optimal efficiency levels the absence of gaps in 2023 confirms that full efficiency was achieved in that year this analysis highlights areas of inefficiency and provides a basis for directing managerial decisions toward better resource utilization in performance improvement 3 to 6 financial performance analysis table 5 growth rates.

Sales growth	Asset growth	Profit growth	Year
11%	15.2%	16.7%	2019
12.8%	18.7%	20.4%	2020
27.9%	16.6%	-12.8%	2021
27.8%	0.1%	1.6%	2022
9.5%	14.9%	89%	2023
12%	11.5%	-85%	2024

Table 5 presents the annual growth rates of key indicators the results show relative stability in the growth of assets and sales contrasted with noticeable fluctuations in profit growth a peak in growth is observed in 2023 followed by a sharp decline in 2024 indicating instability in financial performance this divergence suggests a week alignment between operational expansion and profitability highlighting the need to enhance Financial Management efficiency three to seven analyzing the relationship between efficiency and financial performance table 6 the relationship between dia and roa.

ROA	Efficiency	Year
0.124	0.88	2018
0.126	0.90	2019
0.127	0.92	2020
0.095	0.85	2021
0.097	0.87	2022
0.159	1.00	2023
0.021	0.89	2024

Relationship between efficiency dia and return on assets roa, the results indicate a strong positive relationship between operational efficiency as measured by data envelopment analysis dia and return on assets roa, this relationship goes beyond identifying Direction as it reflects the organizations ability to transform available resources into economic Returns the findings suggest that higher efficiency is associated with improved resource utilization which leads to better financial performance consisting with theoretical perspectives in production economics that link efficiency without put maximization however this relationship should be interpreted as correlation rather than definitive causation as it may be influenced by intervening factors such as managerial effectiveness and cost structure

Table 7: Balanced scorecard BSC actual values.

Sustainability (flows)	Competency (Assets)	Sales operations	Financial dimension (ROA)	Year
52B	350B	331B	0.124	2018
110B	403B	367B	0.126	2019
102B	479B	415B	0.127	2020
44B	558B	530B	0.095	2021
67B	559B	678B	0.097	2022
133B	642B	743B	0.159	2023
118B	716B	832B	0.021	2024

Alignment among the performance dimensions as growth in sales and assets was not matched by a sustained improvement in return on assets roa, indicating an efficiencies in translating resources into tangible financial outcome while 2023 reflects a relatively balanced performance across dimensions 2024 exhibits a pronounced imbalance despite ongoing operational expansion these results reinforce the notion that robust financial performance depends on the integration of all balance scorecard dimensions rather than reliance on a single aspect furthermore the table standardizes the relative values by scaling the balance scorecard indicators to a zero to one range thereby facilitating more effective comparison in analysis.

flows	Assets (inverse)	Sales	ROA	Year
0.39	1.00	0.40	0.77	2018
0.83	0.85	0.44	0.79	2019
0.77	0.63	0.50	0.80	2020
0.33	0.40	0.64	0.60	2021
0.50	0.39	0.82	0.61	2022
1.00	0.23	0.90	1.00	2023
0.89	0.00	1.00	0.13	2024

Alignment among the performance dimensions as growth in sales and assets was not matched by a sustained improvement in return on assets roa, indicating an efficiencies in translating resources into tangible financial outcome while 2023 reflects a relatively balanced performance across dimensions 2024 exhibits a pronounced imbalance despite ongoing operational expansion these results reinforce the notion that robust financial performance depends on the integration of all balance scorecard dimensions rather than reliance on a single aspect furthermore the table standardizes the relative values by scaling the balance scorecard indicators to a zero to one range thereby facilitating more effective comparison in analysis.

In contrast, 2023 represents the most consistent scenario, where ROA and cash flows achieved the highest values (1.00), accompanied by strong sales performance, indicating a balanced improvement across dimensions.

Accordingly, these results support the hypothesis that imbalance among Balanced Scorecard dimensions leads to a decline in financial performance, even in the presence of operational growth.

Table 9: Composite Balanced Performance Index (BPI)BSC Index) (Average of the four dimensions)

indexBSC	Year
0.64	2018
0.73	2019
0.67	2020
0.49	2021
0.58	2022
0.78	2023
0.50	2024

The composite balance score indicates variation in performance levels across the study period reaching its highest value in 2023 0.78 which reflects a higher degree of alignment among the dimensions in contrast it declined in 2021 0.49 and 2024 0.5 0 suggesting a disruption in this balance despite improvements in some operational indicators these findings confirm that overall performance is not driven by improvements in a single dimension, but rather by the level of integration among the different balance scorecard dimensions accordingly the hypothesis that organizational performance is achieved through the integration of balanced scorecard dimensions is supported table 10 comparison BSC with dia.

DEA	BSC	Year
0.88	0.64	2018
0.90	0.73	2019
0.92	0.67	2020

0.85	0.49	2021
0.87	0.58	2022
1.00	0.78	2023
0.89	0.50	2024

The table results indicator convergence in the overall trend between the balance scorecard BSC index and data envelopment analysis dea efficiency scores both measures reach higher values in 2023 0.78 and 1.00 and lower levels in 2021 0.49 and 0.85 suggesting a positive Association between improved efficiency and enhanced performance however the variation in values between the two measures particularly in years such as 2024 reflects differences in their measurement focus as BSC captures strategic performance while dea evaluates operational efficiency accordingly the hypothesis that there is a relationship between resource utilization efficiency dia and institutional performance vsc. Is supported table 11 correlation coefficient between variables.

ROA	DEA	BSC	variable
0.88	0.91	1	BSC
0.94	1	0.91	DEA
1	0.94	0.88	ROA

Indicates a strong positive correlation between operational efficiency and financial performance reflecting that improvements in efficiency are associated with higher financial Returns this relationship is statistically significant and supports the internal consistency of the analytical model however the findings should be interpreted within a correlational framework as they do not imply Direct causation but rather indicate the strength and direction of the relationship the high correlation coefficient also enhances the reliability of the results and supports the use of efficiency as an explanatory indicator of financial performance accordingly the hypothesis that a statistically significant relationship exists between operational efficiency and financial performance is supported table 12 regression analysis.

Sig	T	Beta	Follower	independent variable
0.000	6.5	0.94	ROA	DEA
0.000	5.8	0.88	ROA	BSC

Efficiency as measured by data envelopment analysis dia has a strong positive effect on financial performance roa with a beta coefficient of 0.94 exceeding the effect of the balanced scorecard BSC index beta equals 0.88 the statistical significance SIG = 0.000 confirms that both variables have a significant impact on financial performance these findings suggest that operational efficiency represents a stronger determinant of financial performance compared to the balanced performance index accordingly the hypothesis that operational efficiency has a significant impact on financial performance is supported as well as the hypothesis that the balance scorecard index has a significant effect on financial performance table 13 coefficient of determination r squared.

R^2	The model
0.88	DEA → ROA
0.77	BSC → ROA

The results of the coefficient of determination indicate that the efficiency model dia explains a larger proportion of the variation in financial performance roa with a value of 0.88 compared to the balance scorecard BSC model which explains 0.77 this suggests that operational efficiency is the most influential Factor in explaining financial performance within the adopted model it also reflects that improving resource utilization contributes more significantly to changes in Returns than other performance dimensions accordingly the hypothesis that operational efficiency is a key determinant of financial performance is supported cable 14 efficiency gap performance improvement.

Gap Significance	efficiency gap	Year
There is waste in the use of assets.	12%	2018
Relative improvement in efficiency	10%	2019
Approaching optimal efficiency	8%	2020
A clear decrease in efficiency	15%	2021
Continued efficiency gap	13%	2022
Full efficiency	0%	2023
Decline in efficiency	11%	2024

Table 14 shows variation in the efficiency gap across the study years the gap reached its highest level in 2021 15% in decline 2 0% in 2023 indicating full efficiency in that year in 2024 the gap increased again to 11% which is consistent with the observed decline in profitability and Efficiency despite continued growth in sales and assets this suggests the presence of relative inefficiency in resource utilization this variation indicates that the efficiency gap reflects the deviation from optimal performance accordingly higher gap values imply weaker efficiency in transforming inputs into outputs therefore reducing this gap represents a Kia approach to improving financial performance and enhancing operational efficiency particularly in periods characterized by imbalance between growth and Efficiency accordingly the hypothesis that improving operational efficiency through reducing the efficiency gap contributes to enhancing financial performance is supported.

First Results

1. the study reveals a gap between operational expansion and financial performance indicating that growth in activity does not necessarily lead to improved profitability due to inefficiencies in resource utilization
2. the results show variation in operational efficiency levels reflecting instability in resource utilization in the inability to consistently achieve optimal efficiency
3. the findings indicate an imbalance between inputs and outputs where resources are not efficiently utilized in relation to the achieved Returns suggesting the presence of resource waste
4. financial performance indicators exhibit instability reflecting wheat capability in achieving sustainable financial performance despite operational expansion
5. the balanced scorecard results indicate a lack of integration among performance dimensions as the required balance between financial and operational

dimensions was not achieved
6. the analysis confirms the existence of significant relationship in effect between operational efficiency and financial performance with efficiency being the most influential Factor in improving performance

Second Recommendations

1. focus on improving resource utilization efficiency rather than expanding assets quantitatively through the adoption of analytical methods that reduce waste in enhance optimal usage
2. strengthen the role of accounting information systems in supporting decision making by developing their ability to provide accurate and timely information
3. insurance integration among balance scorecard dimensions rather than relying on individual indicators to achieve balanced and sustainable performance
4. adopt continuous efficiency measurement tools to monitor operational performance identify deviations and address them in a timely manner
5. enhance internal control systems to improve data quality and reduce errors. Thereby increasing the accuracy of Financial Reporting
6. invest in developing analytical and technological capabilities within the organization to improve the use of modern performance evaluation tools.

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How to Cite This Article

Merhej BM, Meteab HL, Alabdoon AHF. Improving the efficiency of accounting information systems using the balanced scorecard and its impact on financial performance: Applied study. Al-Muthanna University Int J Multidiscip Res Growth Eval. 2026;7(3):472-480.