

An Sap S/4hana and Power Bi-Based Decision-Support Framework for Financial Performance Management in Saudi Manufacturing Companies

Muhammad Yasir Bashir^{1*}

¹Independent Researcher

***Corresponding Author**
Muhammad Yasir Bashir
Independent Researcher

Article History

Received: 27.07.2026

Accepted: 19.09.2026

Published: 22.09.2026

Abstract: Financial performance management in manufacturing increasingly depends on the ability to combine transaction integrity with timely analytical interpretation. This review develops a decision-support framework that links SAP S/4HANA with Microsoft Power BI for Saudi manufacturing companies seeking stronger profitability, liquidity, cost control, working-capital discipline and investment visibility. The study uses a structured integrative review of literature published from 2020 to 2025, supplemented by recent Saudi industrial policy and technology documentation. Evidence is organized around five themes: digital ERP capabilities, business intelligence and dashboard design, data integration and governance, management-accounting decision support, and the institutional requirements of Saudi industrial transformation. The synthesis indicates that ERP value is not created by transaction automation alone. It becomes strategically useful when governed financial and operational data are transformed into decision-relevant measures, visualized at appropriate levels of granularity, and embedded in recurring planning and review routines. SAP S/4HANA provides the transactional and semantic core, while Power BI extends accessibility through interactive reporting, drill-down analysis, variance diagnostics and cross-functional views. The proposed framework therefore connects source transactions, governed data models, financial KPI logic, visual analytics, managerial interpretation and corrective action in a closed loop. For Saudi manufacturers, this architecture is particularly relevant to Vision 2030 priorities concerning industrial competitiveness, digital transformation, localization and private-sector productivity. The review concludes that successful implementation requires data ownership, metric discipline, secure integration, finance-business partnering and phased adoption rather than technology deployment in isolation.

Keywords: SAP S/4HANA; Power BI; financial performance management; business intelligence; manufacturing finance; Saudi Arabia; Vision 2030; decision support.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

1. INTRODUCTION

Managers must understand not only whether profit changed, but which operational drivers explain the change. Digitalization has therefore become

central to management accounting and control, altering the way information is captured, consolidated and used in decision routines (Möller *et al.*, 2020; Fähndrich, 2023).

Citation: Bashir, M. Y. (2026). An Sap S/4hana and Power Bi-Based Decision-Support Framework for Financial Performance Management in Saudi Manufacturing Companies; *Glob Acad J Econ Buss*, 8(5), 1323-1333.
<https://doi.org/10.36348/gajeb.2026.v08i05.024>

Enterprise resource planning systems provide a common transactional backbone, while business intelligence systems provide the analytical layer that converts transactions into management information. Evidence from management accounting shows that the quality of information systems directly affects the quality of accounting data available for analysis (Knauer *et al.*, 2020). Research also indicates that business intelligence can mediate the relationship between ERP usage and budgeting, costing and performance evaluation practices, suggesting that ERP data become more valuable when they are transformed into analytical insight (Youssef and Mahama, 2021). In manufacturing settings, the interaction of ERP and BI has likewise been associated with improved organizational performance and stronger digital capabilities (Lara-Pérez *et al.*, 2024).

SAP S/4HANA is relevant because it integrates core enterprise processes on an in-memory data platform and supports financial, controlling, procurement, production, sales and asset processes within a unified environment. The attached reference thesis demonstrates the practical logic of using SAP S/4HANA as an operational source and connecting it to Power BI for analytical reporting. It emphasizes that SAP can provide organization-wide transaction data, while Power BI can receive SAP HANA data through supported connectivity modes and transform it into interactive dashboards and measures (Bazzi, 2022). More recent Microsoft documentation confirms that SAP HANA connections support both Import and DirectQuery patterns, with different implications for model flexibility, performance and freshness (Microsoft, 2024; Microsoft, 2025).

For financial performance management, this combination is potentially important because manufacturing profitability is shaped by tightly connected operational variables. Material price changes influence production cost; yield losses change unit economics; overtime affects conversion cost; inventory policy influences cash; customer mix changes gross margin; and capital utilization affects return on assets. A reporting system that presents only aggregated financial statements may identify the outcome but not the operational pathway. A decision-support system should instead preserve traceability from financial outcomes back to business drivers.

Saudi Arabia provides a distinctive context for such a framework. The National Industrial Strategy seeks a competitive, resilient and private-sector-led industrial economy, while the National Industrial Development and Logistics Program promotes advanced manufacturing and digital transformation (Ministry of Industry and Mineral

Resources, 2022; NIDLP, 2024). Vision 2030 further places digital and knowledge-based capabilities within the wider transformation of the national economy (Saudi Vision 2030, 2025).

Despite the relevance of these developments, a gap remains between studies that discuss ERP adoption, studies that examine BI and dashboards, and finance research that focuses on management-accounting information. Saudi evidence on ERP-BI integration is emerging, but much of it addresses decision making at a general organizational level rather than a specific financial performance architecture (Jaradat *et al.*, 2024). This review addresses that gap by integrating technology, finance and Saudi manufacturing requirements into one conceptual framework. The focus is on governing existing capabilities so that transaction data become actionable financial decisions.

2. Aim, Objectives and Review Questions

The aim of this review is to develop a coherent SAP S/4HANA and Power BI-based decision-support framework for financial performance management in Saudi manufacturing companies. The framework is designed to connect reliable transaction capture with managerial interpretation rather than treating ERP implementation and dashboard deployment as separate digital projects.

Five objectives guide the study. First, it evaluates recent evidence on ERP, SAP-related analytics, business intelligence and digital finance between 2020 and 2025. Second, it identifies the information requirements of manufacturing financial performance management, including profitability, cost, liquidity, working capital, asset utilization and budget control. Third, it examines how SAP HANA connectivity, data transformation, semantic modelling and dashboard design can support those requirements. Fourth, it identifies governance, data-quality, security, user-capability and organizational conditions that affect integration success. Fifth, it translates the findings into a Saudi manufacturing framework aligned with industrial competitiveness and Vision 2030.

The review is organized around three questions. RQ1 asks how integrated ERP and BI capabilities improve the timeliness, relevance and interpretability of financial performance information. RQ2 asks which technical and organizational mechanisms are necessary to convert SAP S/4HANA transactions into reliable Power BI decision views. RQ3 asks how the resulting architecture should be adapted to Saudi manufacturing priorities without sacrificing financial control, comparability or governance.

3. REVIEW METHODOLOGY

A structured integrative review was selected because the research problem crosses several literatures that use different concepts and methods. The topic includes enterprise systems, business intelligence, management accounting, data governance, manufacturing performance and Saudi industrial policy. The integrative approach therefore emphasizes conceptual synthesis and transferability while maintaining explicit inclusion criteria.

The evidence window was limited to 2020-2025. Searches combined terms such as enterprise resource planning, SAP S/4HANA, SAP HANA, Power BI, business intelligence, financial performance management, management accounting, dashboards, manufacturing, data quality, ERP-BI integration and Saudi Arabia. Priority was given to peer-reviewed journal articles with direct relevance to ERP, BI, management accounting, data quality, digital dashboards or manufacturing performance. Recent official documentation was included where it clarified current technical capabilities or the Saudi policy environment. The attached 2022 thesis was used as a structural and technical reference because it contains a concrete SAP S/4HANA-to-Power BI implementation pathway, including data sourcing, connectivity, ETL, data modelling and dashboard reporting (Bazzi, 2022).

Studies were retained when they contributed to at least one of five analytical categories: system capability, integration mechanism, information quality, decision usefulness or implementation context. Papers concerned only with unrelated ERP functions, generic visualization without organizational decision support, or technologies outside the financial and manufacturing setting were excluded from the core synthesis. The final reference set contains 30 sources published within the required period. Evidence was evaluated for relevance, transparency, recency and consistency with other sources.

The analysis used thematic coding. Findings were coded into technological and managerial themes covering integration, modelling, visualization, budgeting, cost control, profitability, working capital, information quality, governance and performance review. The two streams were then recombined into a data-to-decision chain. Instead, the synthesis distinguishes enabling infrastructure from the organizational routines that actually convert information into action.

The proposed framework is therefore diagnostic and prescriptive rather than statistically causal. It does not claim that adopting SAP S/4HANA or Power BI by itself produces a defined percentage

improvement in profitability. Empirical work shows that digital systems can support performance, but the outcome depends on integration quality, organizational resources, user competence and the way information is embedded in management practices (Romero and Abad, 2022; Chang, 2025). Accordingly, the framework specifies mechanisms and conditions that Saudi manufacturers can test in future field studies.

4. Literature Synthesis

4.1 Digital ERP and the financial data core

Modern ERP systems reduce fragmentation by recording business events within an integrated process architecture. For management accounting, the key benefit is traceability from financial results to operational events using consistent master data and accounting logic. Knauer et al. (2020) show that information-system quality is directly related to management-accounting data quality, which is a prerequisite for rational analysis. Youssef and Mahama (2021) further demonstrate that BI and analytics strengthen the link between ERP usage and management-accounting practices such as budgeting, costing and performance evaluation.

SAP S/4HANA can support this role because finance, controlling, procurement, materials, sales, production and assets share a tightly integrated transactional environment. In manufacturing, this allows cost, margin, inventory and asset measures to retain operational meaning. The practical reference architecture in Bazzi (2022) similarly treats SAP S/4HANA as the source of detailed order transactions before transforming them for BI reporting.

The literature nevertheless cautions against assuming that an ERP platform is automatically a decision-support system. Danilczuk and Gola (2020) argue that ERP systems are effective at recording economic events but may provide limited decision support unless manufacturing data are presented through suitable BI tools. Romero and Abad (2022) also find that firms integrating cloud-based analytics with established ERP platforms benefit from pre-existing technological capabilities; analytics extends an ERP foundation rather than replacing the need for that foundation. For Saudi manufacturers, the objective is an analytical extension of governed enterprise data rather than a second reporting silo.

4.2 Power BI, dashboards and managerial interpretation

Business intelligence adds value by reducing the distance between stored data and managerial interpretation. Niu et al. (2021) describe BI as a means of converting heterogeneous data into actionable information for organizational decision making. Reinking et al. (2020) show that digital

dashboards can support strategy alignment when the information and dashboard design are closely connected to managerial objectives. More recent experimental evidence demonstrates that dashboard format, completeness and information presentation affect decision quality by changing perceived task complexity and information satisfaction (Hjelle *et al.*, 2024).

Power BI is relevant because it combines connectivity, transformation, semantic measures and visualization. The attached thesis describes the use of Power Query for integration, DAX for measure construction and Power BI dashboards for reporting and collaboration (Bazzi, 2022). Current connector documentation confirms that Power BI can access SAP HANA through Import or DirectQuery, while the modelling approach determines the balance among performance, real-time access, flexibility and source-side aggregation (Microsoft, 2024; Microsoft, 2025).

For example, a monthly profitability model that requires complex allocations, extensive

historical comparisons and many calculated measures may be better served by a curated import or composite architecture. A plant controller monitoring a limited set of near-real-time production-finance indicators may benefit from DirectQuery to governed HANA views. Stable business logic should sit in governed source or semantic layers, reducing duplicate calculations and improving auditability.

Dashboard adoption also depends on users. Rieg (2025) identifies information quality, decision quality and facilitating conditions as important factors in management accountants' dashboard use. AICPA and CIMA (2025) similarly report that management accountants use BI and analytics for budgeting, performance evaluation and revenue planning, while advanced tools remain unevenly adopted. These findings imply that dashboard sophistication should be matched by finance capability development. Visual appeal cannot compensate for weak definitions or poor data lineage.

Integrated SAP S/4HANA-Power BI Financial Decision Flow

From controlled enterprise transactions to governed financial action

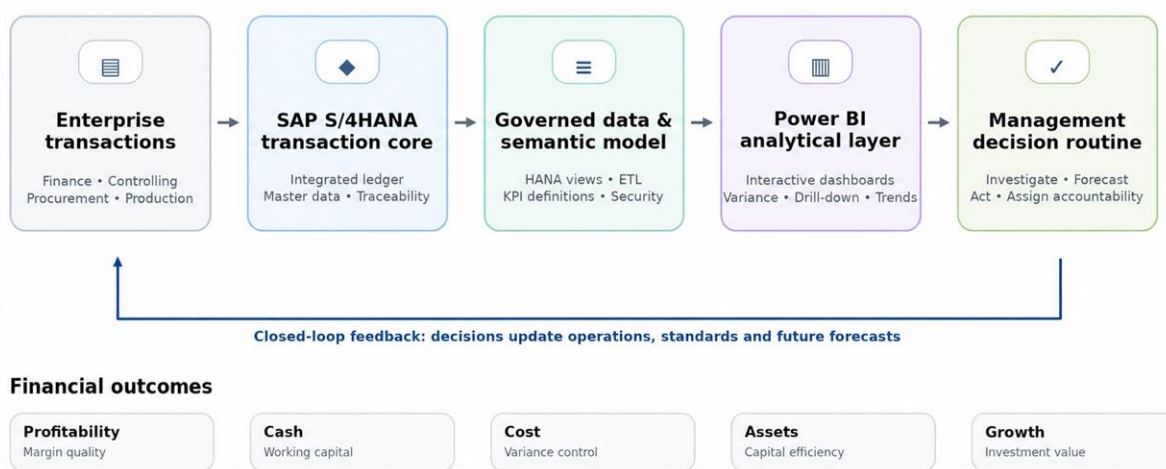


Figure 1: Integrated SAP S/4HANA-Power BI financial decision flow

Table 1: Selected recent evidence informing the integrated framework

Source	Context	Principal contribution	Framework implication
Knauer <i>et al.</i> , (2020)	Management accounting	IS quality influences accounting-data quality	Treat data quality as a financial control
Youssef and Mahama (2021)	ERP, BI and management accounting	BI strengthens ERP support for budgeting, costing and evaluation	Integrate ERP with reusable analytical measures
Romero and Abad (2022)	SAP and cloud analytics	Analytics value builds on established ERP capability	Build analytics on a governed ERP foundation
Jaradat <i>et al.</i> , (2024)	Saudi industrial firms	Readiness, data quality, security and training support ERP-BI integration	Combine technical design with organizational readiness

Source	Context	Principal contribution	Framework implication
Lara-Pérez <i>et al.</i> , (2024)	Manufacturing companies	ERP and BI interaction is associated with firm performance	Link transaction integration to decision-oriented BI
Hjelle <i>et al.</i> , (2024)	Dashboard experiment	Information format and completeness influence decision quality	Design dashboards for interpretation, not display
Bedford <i>et al.</i> , (2025)	Finance functions	Automation and analytics require strategic alignment	Preserve finance judgement and business partnering
Chang (2025)	ERP-BI integration	Integration success affects balanced business performance	Govern both system and organizational integration

4.3 Integration, data quality and governance

The SAP-to-Power BI pathway is a data-governance problem as much as a connectivity problem. The reference thesis correctly places extraction, transformation and loading between the source system and the reporting layer, noting that errors in transformation can propagate into misleading analytical results (Bazzi, 2022). That observation is consistent with recent research showing that data quality and system quality affect the reliability of accounting information (Abu Afifa *et al.*, 2023). Bernardo *et al.* (2024) likewise emphasize governance and quality management as cross-functional requirements for trustworthy data use.

A robust architecture therefore needs explicit ownership of master data, financial dimensions, mappings and KPI definitions. Manufacturing organizations face recurring problems when hierarchies, mappings, exchange rates or allocation rules are inconsistent across time and functions. The semantic layer must preserve agreed definitions for core profitability, cash, inventory and asset measures. This separation helps finance distinguish data-preparation errors from genuine economic deterioration when managers challenge unexpected movements in reported financial results.

Security and access control are equally important. Saudi research on ERP-BI integration identifies infrastructure readiness, data quality, security, user capabilities and training as factors associated with successful integration and improved decision making (Jaradat *et al.*, 2024). Financial dashboards contain commercially sensitive profitability, cost and investment information. Role-based access should be designed around management responsibility, not merely technical convenience. Row-level security, source authorization, workspace governance and controlled distribution are therefore part of the decision-support framework.

Butarbutar *et al.* (2023) show that ERP success factors remain important after go-live, so governance must continue after the first dashboard is published. KPI owners should review definitions,

data stewards should monitor exceptions, and finance should maintain a reconciliation process between analytical outputs and the general ledger. This turns governance from a project activity into a recurring control process.

4.4 Financial performance management in manufacturing

Financial performance management converts accounting information into decisions about profitability, liquidity, efficiency, growth and risk. In manufacturing, those outcomes depend on both financial and non-financial drivers. A useful model should therefore connect income-statement and balance-sheet outcomes to operational causes rather than present ratios in isolation. Saleh and Al-Nimer (2022) show that management-accounting information systems can play a material role in the relationship between innovation choices and financial performance in industrial companies. The implication is that information architecture affects how effectively managerial actions are translated into financial outcomes.

Profitability analysis should move from company-level margin to product, plant, customer and channel views. Gross margin can conceal mix, scrap, yield, freight, overtime or absorption effects. SAP S/4HANA can provide the accounting and operational dimensions, while Power BI can display bridge analyses that explain movement from prior period or budget. A controller should be able to start with an EBITDA variance, drill to contribution margin, identify a plant or product family, and then test whether the cause lies in volume, price, material cost, conversion efficiency or fixed-cost absorption.

Working capital requires similar integration. Inventory is both an operating buffer and a financial commitment. A dashboard should therefore combine inventory value with turnover, days on hand, aging, slow-moving stock and production requirements. Receivables and payables should be assessed against overdue balances, concentration, collection patterns, supplier terms and cash planning. These metrics become more useful when they are placed in one cash-conversion view rather than separate departmental reports.

Capital efficiency is especially important in asset-intensive manufacturing. Return on assets and asset turnover should be interpreted with utilization, downtime and investment pipeline information. Different combinations of depreciation, utilization and margin require different managerial responses. Dynamic integration of ERP and BI has already been demonstrated in manufacturing applications where transaction data support real-time monitoring beyond purely financial objectives (Ferrari *et al.*, 2021).

Digitalization also changes the finance function itself. Hadid and Al-Sayed (2021) show that

information-system quality can enable strategic management-accounting practices in manufacturing. Bedford *et al.* (2025) distinguish automation from analytics and show that their effectiveness depends on strategic and organizational conditions. The finance function should therefore avoid treating Power BI as an automation substitute. Routine extraction should be automated, while interpretation and business partnering remain managerial tasks. A dashboard becomes valuable when it shortens the time spent collecting data and increases the time spent understanding causes, testing alternatives and agreeing actions.

Table 2: Financial KPI architecture for Saudi manufacturing decision support

Performance area	Illustrative KPI	Calculation / analytical logic	Likely enterprise source	Decision use
Profitability	Gross and contribution margin	Revenue less product and variable cost at product/plant/customer grain	Finance, controlling, sales, materials	Price, mix and cost action
Cost control	Budget / forecast variance	Actual minus budget or latest forecast, with driver bridge	Finance, cost centers, production	Root-cause and corrective action
Working capital	Inventory days; DSO	Inventory or receivables relative to cost/sales over defined period	Materials, sales, finance	Cash release and exposure management
Capital efficiency	ROA; asset turnover	Operating return or revenue relative to asset base	Finance, asset accounting, production	Utilization and investment decisions
Growth	Revenue and volume trend	Period-on-period and budget comparisons by product/market	Sales, finance, production	Capacity and market prioritization
Execution	Action closure / benefit realization	Tracked variance action and realized financial outcome	Workflow, project, finance	Accountability and learning

4.5 Saudi manufacturing and the institutional context

Saudi manufacturing policy strengthens the case for integrated financial decision support because the national industrial agenda emphasizes competitiveness, resilience, technology adoption and private-sector growth. The National Industrial Strategy identifies advanced manufacturing, supply-chain development, industrial finance and innovation as enabling objectives for a more competitive industrial economy (Ministry of Industry and Mineral Resources, 2022). The 2024 NIDLP report also highlights Fourth Industrial Revolution initiatives and factory digital-transformation programs (NIDLP, 2024).

These priorities create a practical requirement for firms to measure whether digital investment is producing economic value. Modernization can increase cost before productivity benefits are realized. Management therefore needs measures that connect transformation expenditure with throughput, labor productivity, waste, quality,

inventory, maintenance and margin. A financial dashboard can pair project spending with operating outcomes and benefits tracking.

Saudi industrial growth also increases the scale and complexity of performance management. Official statistics reported a 6.3 percent year-on-year increase in manufacturing activity in December 2024, supported by growth in major industrial subsectors (General Authority for Statistics, 2024). As firms expand, spreadsheet-based consolidation becomes increasingly fragile. Standardized ERP dimensions and governed BI models can provide comparable plant-level views while preserving enterprise-level financial control.

Vision 2030 adds a strategic layer. The 2025 annual report emphasizes the scaling of digital and innovation-driven economic capabilities (Saudi Vision 2030, 2025). For companies, alignment should not mean placing a generic Vision 2030 label on a dashboard. It should mean translating national priorities into measurable corporate outcomes: local-

content contribution, productivity, export competitiveness, capital efficiency, workforce capability and sustainable growth. The proposed framework therefore treats Vision 2030 as a strategic context for selecting and interpreting measures, while the financial definitions themselves remain grounded in corporate accounting and management-control discipline.

5. Proposed Decision-Support Framework

The proposed framework has six connected layers: transaction capture, governed extraction, semantic financial modelling, interactive analytics, managerial decision routines and performance feedback. Each layer has a distinct responsibility; blurring them creates duplicate logic and weak auditability.

Layer 1 is the SAP S/4HANA transaction core. Finance, controlling, procurement, production, sales, inventory and asset transactions should be captured with controlled master data and organizational dimensions. This layer prioritizes integrity and traceability. Source processes should enforce coding discipline for key organizational and master-data dimensions.

Layer 2 is governed extraction and transformation. Data should be exposed through approved HANA views, APIs, extracts or other enterprise integration services. Import and DirectQuery decisions should reflect data volume, freshness, calculation complexity and source performance rather than fashion (Microsoft, 2024; Microsoft, 2025). Transformations should be documented, reconciled and owned, especially account groupings, cost classifications and currency rules.

Layer 3 is the semantic financial model. This is the analytical contract between data and users. Measures should be defined once and reused across reports. Profitability measures may include revenue, gross margin, contribution margin, EBITDA and net operating profit. Efficiency measures may include inventory turnover, days inventory outstanding, days sales outstanding, asset turnover and cash-conversion indicators. Control measures should include budget variance, forecast variance and cost-center deviation. Every KPI should have a definition, formula, grain, owner and refresh frequency.

Layer 4 is the Power BI analytical experience. Dashboards should be role-specific. Executives need

a compact view of profitability, cash, capital efficiency and strategic trends. CFOs and finance directors need deeper variance, forecast and balance-sheet analysis. Plant controllers need cost, yield, labor, overhead and inventory drivers. Sales managers may need customer profitability and receivables exposure. Procurement leaders may need purchase-price variance, supplier concentration and working-capital effects. The same semantic measures can serve different audiences without duplicating logic.

Layer 5 is the managerial decision routine. Information becomes decision support only when reports are connected to recurring actions. Monthly and weekly reviews should use the same measures at appropriate granularity. Material adverse variances should trigger assigned investigation, quantified corrective action and a target date. Forecast changes should be documented with assumptions. Investment dashboards should compare approved benefits with realized outcomes. This layer converts visualization into accountability.

Layer 6 closes the loop through performance feedback. Actions alter operations, and the resulting transactions return to SAP S/4HANA. Subsequent Power BI refreshes show whether the intervention worked. This creates a learning mechanism in which decisions are evaluated against later outcomes.

The framework also addresses the risk of metric proliferation. Chang (2025) shows that ERP-BI integration affects multiple balanced dimensions of business performance, but organizations can lose clarity if every available field becomes a KPI. A manufacturing finance dashboard should therefore separate outcome measures from driver measures, helping managers interpret performance without implying that the dashboard proves causality.

Finally, the architecture should be phased. A first release might cover management P&L, margin, expenses and working capital; later releases can add plant profitability, scenario analysis and predictive features. Saraswat and Choudhari (2025) emphasize that manufacturers obtain greater value from advanced analytics when technology is integrated with existing capabilities rather than imposed as a disconnected initiative. The same principle applies here: maturity should progress from trusted data to integrated insight, then to advanced decision support.

Financial Performance Management Maturity Roadmap

A phased path for Saudi manufacturing finance transformation

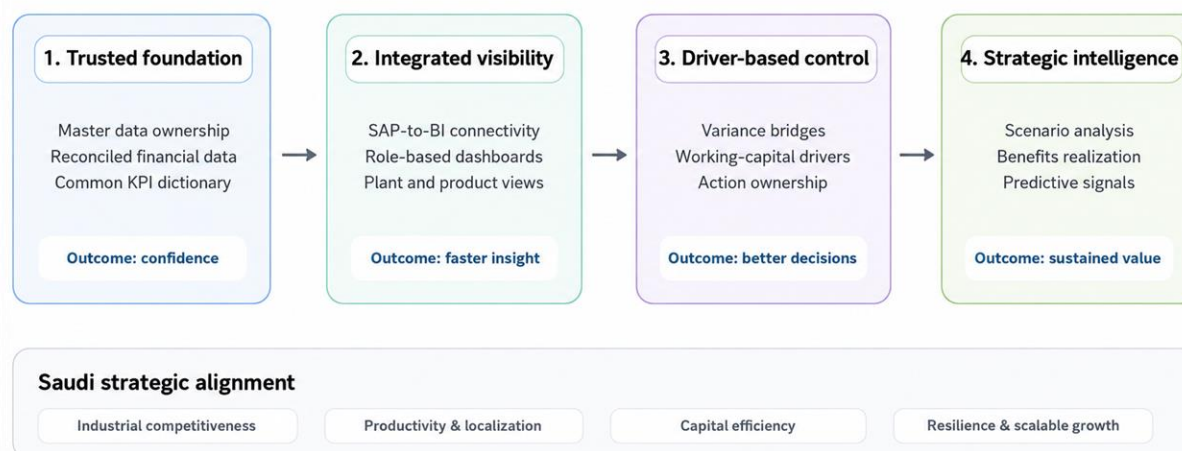


Figure 2: Financial performance management maturity roadmap for Saudi manufacturing

6. Implementation, Governance and Control

Implementation should begin with a finance-led use-case portfolio rather than a technology catalogue. The highest-value use cases are those where managers currently spend substantial time reconciling data, where decisions are delayed by reporting latency, or where financial outcomes cannot be traced to operational causes. Each use case should have a business owner, target decision, KPI set, data sources and acceptance criteria.

Data governance is the first control. A master-data council should define ownership for accounts, cost centers, profit centers, plants, products, customers and reporting hierarchies. A KPI register should record formulas and decision purpose. Technical teams should document lineage from SAP source fields through transformations to Power BI measures. Finance should validate totals against the general ledger before users rely on detailed drill-down. Bernardo *et al.* (2024) reinforce the importance of governance and quality management when data are reused across functions.

Access governance is the second control. Financial information should be distributed according to role, entity and managerial responsibility. Sensitive margin, customer, payroll and investment data require explicit authorization. DirectQuery does not remove this obligation; it changes where some query processing occurs. Audit trails, workspace permissions, row-level security and controlled publishing should be part of the design.

Capability development is the third control. Jaradat *et al.*, (2024) identify user capabilities and training among the conditions linked with ERP-BI

integration success in Saudi industry. Finance users therefore need more than dashboard navigation training. They must understand data grain, filter context, allocation logic, variance interpretation and the limits of each metric. IT and analytics teams, in turn, need enough financial knowledge to recognize when a technically valid calculation is economically misleading.

The rollout should use a controlled pilot in a representative plant or business unit. Success should be measured through reporting-cycle time, reconciliation effort, data exceptions, dashboard adoption, decision turnaround and selected financial outcomes. The system can then scale with common semantic models and controlled local extensions. Pilot ownership should remain explicit throughout.

7. DISCUSSION

This is consistent with evidence that BI strengthens the usefulness of ERP for management accounting and organizational performance (Youssef and Mahama, 2021; Lara-Pérez *et al.*, 2024). It is also consistent with Saudi evidence that integration success depends on infrastructure, data quality, security, user capability and training rather than software availability alone (Jaradat *et al.*, 2024).

A second implication is that financial performance management should remain driver-based. Dashboards can encourage managers to focus excessively on visible metrics, especially when measures are detached from strategy. Reinking *et al.* (2020) show that dashboard quality and strategy alignment influence how operational managers use digital dashboards. The framework responds by

distinguishing outcome KPIs from drivers and embedding dashboards in review routines. This prevents the visual layer from becoming a decorative reporting endpoint.

A third implication concerns the finance function. Digital systems can remove reconciliation work and improve transparency, but they also change expectations of controllers and management accountants. Carlsson-Wall et al. (2022) show that cloud ERP can reduce manual work while also creating tensions when standardized systems do not fit local information needs. Bedford et al. (2025) similarly indicate that automation and analytics must be aligned with finance-function objectives and available resources. Saudi manufacturers should therefore design a controlled balance between standard enterprise definitions and the flexibility needed for plant-level analysis.

The framework has a further strategic benefit in capital allocation. As Saudi manufacturers invest in automation, advanced manufacturing and localization, finance must evaluate whether projects are creating sustainable returns. Integrating project, asset, production and profitability data makes benefits realization visible after investment approval. This supports the National Industrial Strategy's focus on competitiveness, resilience and advanced manufacturing rather than measuring transformation only by technology adoption (Ministry of Industry and Mineral Resources, 2022).

However, the framework should not be interpreted as a universal architecture for every manufacturer. Firms differ in SAP configuration, chart of accounts, manufacturing model, data maturity and security requirements. Physical architectures may include a data warehouse, additional analytics platforms or curated extracts. The conceptual contribution is therefore the separation of responsibilities and decision logic, not a mandatory physical topology. The essential requirement is that integration preserves traceability, consistent definitions and governed access from transaction to action.

8. Limitations and Future Research

This review has three limitations. First, the evidence base spans empirical studies, technical documentation, a thesis and Saudi policy material; these sources answer different questions and cannot be treated as statistically equivalent. Second, direct peer-reviewed research on SAP S/4HANA and Power BI specifically for financial performance management in Saudi manufacturing remains limited. The framework therefore combines evidence from adjacent ERP, BI, management-accounting and manufacturing studies. Third, the review is

conceptual and does not estimate causal financial returns from implementation.

Future research should test the framework through longitudinal case studies in Saudi plants. Studies could compare reporting-cycle time, forecast accuracy, working-capital outcomes, margin variance resolution and decision turnaround before and after implementation. Multi-company research could examine whether data maturity, plant complexity, ownership structure or digital readiness moderates performance effects. Further work should also assess the governance of predictive models and the boundary between embedded ERP analytics and external BI platforms as enterprise architectures continue to evolve.

9. CONCLUSION

An SAP S/4HANA and Power BI-based decision-support framework can strengthen financial performance management when it is designed as an integrated management system rather than a reporting project. SAP S/4HANA provides controlled transactions, organizational dimensions and cross-functional traceability; Power BI provides semantic measures, interactive analysis and role-specific visualization. Their combined value depends on data quality, consistent KPI definitions, secure integration, capable users and recurring decision routines.

For Saudi manufacturing companies, the framework is relevant to a period of rapid industrial expansion and digital transformation. It supports Vision 2030 not by replacing financial discipline with strategic slogans, but by making competitiveness, productivity, localization and investment outcomes measurable through governed financial and operational evidence. The most defensible implementation path is phased: establish trusted data, define decision-relevant measures, connect dashboards to accountability, and then add more advanced analytics. In that sequence, digital finance becomes a mechanism for learning and performance improvement rather than another layer of technology.

REFERENCES

- Abu Afifa, M.A., Saleh, I. and Van, H.V. (2023). Accounting information quality in the digital era - a perspective from ERP system adoption? Global Knowledge, Memory and Communication. <https://doi.org/10.1108/GKMC-03-2023-0101>
- AICPA and CIMA (2025). How Management Accountants Use Business Intelligence & Analytics: The Road to Improved Decision-Making. AICPA & CIMA Research Report.
- Bazzi, N. (2022). Supply-Chain Network Monitoring System using Power BI: Information-

- Collaboration Based. Master thesis, University of Applied Sciences Neu-Ulm.
- Bedford, D.S., Derichs, D., Hoozée, S., Malmi, T., Messner, M., Sinha, V.K., Van der Kolk, B. and Verbeeten, F. (2025). Digitalization of the finance function: Automation, analytics, and finance function effectiveness. *Management Accounting Research*, 67, 100942. <https://doi.org/10.1016/j.mar.2025.100942>
 - Bernardo, B.M.V., Mamede, H.S., Barroso, J.M.P. and Santos, V.M.P.D. (2024). Data governance & quality management - Innovation and breakthroughs across different fields. *Journal of Innovation & Knowledge*, 9(4), 100598. <https://doi.org/10.1016/j.jik.2024.100598>
 - Butarbutar, Z.T., Handayani, P.W., Suryono, R.R. and Wibowo, W.S. (2023). Systematic literature review of critical success factors on enterprise resource planning post implementation. *Cogent Business & Management*, 10(3), 2264001. <https://doi.org/10.1080/23311975.2023.2264001>
 - Carlsson-Wall, M., Goretzki, L., Hofstedt, J., Kraus, K. and Nilsson, C.-J. (2022). Exploring the implications of cloud-based enterprise resource planning systems for public sector management accountants. *Financial Accountability & Management*, 38(2), 177-201. <https://doi.org/10.1111/faam.12300>
 - Chang, Y.-W. (2025). Analyzing the impact of ERP and BI integration on business performance: The technology-organization-environment framework and balanced scorecard perspective. *Journal of Global Information Management*, 33(1), 1-25. <https://doi.org/10.4018/JGIM.389254>
 - Danilczuk, W. and Gola, A. (2020). Computer-aided material demand planning using ERP systems and business intelligence technology. *Applied Computer Science*, 16(3), 42-55. <https://doi.org/10.23743/acs-2020-20>
 - Fähndrich, J. (2023). A literature review on the impact of digitalisation on management control. *Journal of Management Control*, 34, 9-65. <https://doi.org/10.1007/s00187-022-00349-4>
 - Ferrari, A.M., Volpi, L., Settembre-Blundo, D. and García-Muiña, F.E. (2021). Dynamic life cycle assessment integrating life cycle inventory and enterprise resource planning in an Industry 4.0 environment. *Journal of Cleaner Production*, 286, 125314. <https://doi.org/10.1016/j.jclepro.2020.125314>
 - General Authority for Statistics (2024). Industrial Production Index - December 2024. Riyadh, Saudi Arabia.
 - Hadid, W. and Al-Sayed, M. (2021). Management accountants and strategic management accounting: The role of organizational culture and information systems. *Management Accounting Research*, 50, 100725. <https://doi.org/10.1016/j.mar.2020.100725>
 - Hjelle, S., Mikalef, P., Altwaijry, N. and Parida, V. (2024). Organizational decision making and analytics: An experimental study on dashboard visualizations. *Information & Management*, 61(6), 104011. <https://doi.org/10.1016/j.im.2024.104011>
 - Jaradat, Z., Al-Hawamleh, A. and Hamdan, A. (2024). Examining the integration of ERP and BI in the industrial sector and its impact on decision-making processes in KSA. *Digital Policy, Regulation and Governance*, 27(2), 117-144. <https://doi.org/10.1108/DPRG-04-2024-0077>
 - Knauer, T., Nikiforow, N. and Wagener, S. (2020). Determinants of information system quality and data quality in management accounting. *Journal of Management Control*, 31, 97-121. <https://doi.org/10.1007/s00187-020-00296-y>
 - Lara-Pérez, J.A., Duréndez, A. and Canibe Cruz, F. (2024). How the interaction of innovation and ERP systems on business intelligence affects the performance of Mexican manufacturing companies. *Information Technology & People*, 38(3), 1403-1429. <https://doi.org/10.1108/ITP-04-2022-0262>
 - Microsoft (2024). Connect to SAP HANA data sources by using DirectQuery in Power BI. Microsoft Learn, updated 10 December 2024.
 - Microsoft (2025). SAP HANA database connector for Power Query and Power BI. Microsoft Learn, updated 2025.
 - Ministry of Industry and Mineral Resources (2022). National Industrial Strategy. Riyadh, Saudi Arabia.
 - Möller, K., Schäffer, U. and Verbeeten, F. (2020). Digitalization in management accounting and control: an editorial. *Journal of Management Control*, 31, 1-8. <https://doi.org/10.1007/s00187-020-00300-5>
 - National Industrial Development and Logistics Program (NIDLP) (2024). Annual Report 2024. Riyadh, Saudi Arabia.
 - Niu, Y., Ying, L., Yang, J., Bao, M. and Sivaparthipan, C.B. (2021). Organizational business intelligence and decision making using big data analytics. *Information Processing & Management*, 58(6), 102725. <https://doi.org/10.1016/j.ipm.2021.102725>
 - Reinking, J., Arnold, V. and Sutton, S.G. (2020). Synthesizing enterprise data through digital dashboards to strategically align performance: Why do operational managers use dashboards? *International Journal of Accounting Information Systems*, 37, 100452. <https://doi.org/10.1016/j.accinf.2020.100452>
 - Rieg, R. (2025). Exploring the determinants and performance effects of digital dashboard use by

- management accountants. Journal of Management Control, advance online publication. <https://doi.org/10.1007/s00187-025-00400-0>
- Romero, J.A. and Abad, C. (2022). Cloud-based big data analytics integration with ERP platforms. Management Decision, 60(12), 3416-3437. <https://doi.org/10.1108/MD-07-2021-0872>
 - Saleh, Q.Y. and Al-Nimer, M.B. (2022). The mediating role of the management accounting information system in the relationship between innovation strategy and financial performance in the Jordanian industrial companies. Cogent Business & Management, 9(1), 2135206. <https://doi.org/10.1080/23311975.2022.2135206>
 - Saraswat, J.K. and Choudhari, S. (2025). Integrating big data and cloud computing into the existing system and performance impact: A case study in manufacturing. Technological Forecasting and Social Change, 210, 123883. <https://doi.org/10.1016/j.techfore.2024.123883>
 - Saudi Vision 2030 (2025). Annual Report 2025. Riyadh, Saudi Arabia.
 - Youssef, M.A.E.A. and Mahama, H. (2021). Does business intelligence mediate the relationship between ERP and management accounting practices? Journal of Accounting & Organizational Change, 17(5), 686-703. <https://doi.org/10.1108/JAOC-02-2020-0026>