

REVIEWER'S REPORT

Manuscript No.: IJAR-59353

Title: Integrating Applied AI with Enterprise Resource Planning Systems for Intelligent Manufacturing Decision Support in Saudi Arabia

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision ...yes.....

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality			Y	
Techn. Quality			Y	
Clarity			Y	
Significance			y	

Reviewer's ID: JPR-Dr.Shaweta Sachdeva

Detailed Reviewer's Report

1. The manuscript addresses a highly relevant research problem, but the novelty and distinct contribution should be stated more explicitly. The authors should clearly differentiate the proposed framework from existing AI-ERP, Industry 4.0, digital-twin, and manufacturing decision-support frameworks.
2. The review methodology needs greater methodological rigor. Although the authors describe the work as a “selective integrative review,” the database sources, search keywords, inclusion/exclusion criteria, screening procedure, and selection rationale are not sufficiently documented. The manuscript itself acknowledges that search dates, database-specific strings, retrieval totals, and screening decisions are not documented. 6ac3749ed7ed7_IJAR-59353-sample...
3. The authors should provide a transparent literature-selection flow diagram, preferably showing the number of records identified, duplicates removed, articles screened, full texts assessed, and final studies included.
4. The selection of only 30 publications should be justified more convincingly. The authors should explain whether the corpus is sufficiently representative of the rapidly expanding literature on AI, ERP, and intelligent manufacturing.
5. The manuscript combines empirical studies, conceptual studies, reviews, policy documents, and professional guidance. The authors should provide a clear evidence classification so that readers can distinguish established empirical findings from conceptual propositions.
6. The Saudi Arabian context is central to the manuscript, but much of the proposed architecture appears to be derived from general international manufacturing literature. The authors should strengthen the Saudi-specific evidence base and clearly indicate which framework components are specifically supported by Saudi studies.
7. The manuscript makes several claims concerning Saudi manufacturing readiness, digital maturity, cybersecurity, skills, localization, and industrial data sovereignty. These claims should be supported with more recent and sector-specific Saudi evidence wherever possible.

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8. The relationship between CPMAI and the proposed AI–ERP governance framework is interesting, but the adaptation currently remains largely conceptual. The authors should explain more explicitly what is genuinely derived from CPMAI and what is newly proposed by the authors. The manuscript appropriately states that the governance design has not been empirically validated. 6ac3749ed7ed7_IJAR-59353-sample...
9. The authors should avoid any wording that could imply that adoption of CPMAI itself improves manufacturing performance. The manuscript should consistently distinguish professional methodology guidance from empirically demonstrated performance improvement.
10. The proposed five-stage maturity pathway is potentially one of the strongest contributions of the paper. However, the stages should be supported through explicit maturity indicators, measurable assessment criteria, and validation mechanisms. At present, the authors describe it as a design heuristic requiring empirical validation. 6ac3749ed7ed7_IJAR-59353-sample...
11. Consider developing a maturity assessment scorecard for the five stages, covering data quality, ERP–MES integration, AI capability, governance, cybersecurity, workforce readiness, explainability, and business outcomes.
12. Table II is useful, but the relationship between the AI capability, decision output, governance control, and measurable business KPI could be made more explicit. For example, each decision domain could include metrics such as forecast accuracy, schedule adherence, downtime reduction, inventory turnover, defect rate, or maintenance effectiveness. 6ac3749ed7ed7_IJAR-59353-sample...
13. The proposed architecture in Figure 1 is conceptually clear, but it would benefit from a more explicit representation of data flow, feedback loops, model monitoring, cybersecurity controls, and human intervention points.
14. The manuscript should discuss interoperability standards and technologies in greater technical depth. For example, the authors could discuss APIs, event-driven integration, semantic models/ontologies, common data models, and relevant industrial communication standards.
15. The discussion of AI techniques remains relatively broad. The manuscript mentions forecasting, anomaly detection, classification, optimisation, explanation, and scenario analysis, but it would be beneficial to provide representative algorithms or methodological approaches and explain when each is appropriate.
16. The manuscript would be stronger if it included a comparative synthesis table of the reviewed studies, including author/year, country/industry, ERP context, AI technique, dataset/data source, decision problem, methodology, key findings, limitations, and relevance to Saudi manufacturing.
17. The distinction between predictive decision support and prescriptive decision support should be elaborated. The authors should explain how recommendations are transformed into feasible actions under operational, financial, safety, and regulatory constraints.
18. Human–AI collaboration is an important aspect of the paper. However, the manuscript could provide a more detailed discussion of automation bias, human override behaviour, trust calibration, explainability, and responsibility allocation.
19. The authors should clarify how model performance and business performance will be evaluated. High predictive accuracy does not necessarily imply improved manufacturing decisions, and this distinction should be incorporated into the proposed evaluation framework.
20. The proposed governance framework would benefit from a concrete worked example or case scenario, such as predictive maintenance or demand forecasting, showing the complete path from data acquisition → AI prediction → recommendation → human approval → ERP transaction → monitoring → feedback.
21. The limitations section is transparent and useful. Nevertheless, the authors should also discuss publication bias, language bias, database-selection bias, and possible researcher-selection bias resulting from the selective nature of the review.

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22. Since the review covers 2020–2025, the authors should justify the starting point of 2020 and explain whether important pre-2020 foundational AI–ERP and Industry 4.0 studies were deliberately excluded.
23. The manuscript would benefit from a stronger critical comparison with existing frameworks rather than mainly synthesising the literature into a new framework. A comparison table would help demonstrate exactly what is new.
24. The proposed framework should consider economic feasibility and implementation cost more explicitly. ERP integration, IIoT infrastructure, cybersecurity, data engineering, AI development, employee training, and governance mechanisms may require substantial investment.
25. The manuscript should discuss the challenges associated with legacy ERP systems and heterogeneous ERP platforms, particularly when organizations use different vendors, versions, custom modules, or independently maintained databases.
26. The cybersecurity discussion should be expanded because connecting ERP, MES, IIoT, cloud/edge systems, and AI services increases the potential attack surface. Specific risks such as data poisoning, model manipulation, unauthorized AI-triggered transactions, identity compromise, and ransomware could be considered.
27. The manuscript identifies Arabic-enabled interfaces as an important future research area. This could be developed further by discussing Arabic NLP, bilingual enterprise terminology, Arabic human–AI interfaces, and semantic interoperability in Saudi industrial environments. 6ac3749ed7ed7_IJAR-59353-sample...
28. The authors should carefully review the references for consistency in formatting, DOI presentation, capitalization, page ranges, and bibliographic completeness. The reference list should follow the exact style required by the target journal.
29. Some paragraphs are lengthy and contain multiple conceptual arguments. The manuscript would benefit from shorter paragraphs and clearer topic sentences, particularly in the Discussion and Research Agenda sections.
30. There are several instances of repetitive discussion of governance, human accountability, data quality, and empirical validation. Some repetition could be reduced to make the manuscript more concise.
31. The manuscript should undergo thorough English-language and grammatical editing. There are instances of awkward phrasing, hyphenation caused by line breaks, inconsistent spacing, and expressions that can be made more academically precise.
32. The conclusion is consistent with the manuscript, but it could be made more impactful by explicitly summarizing (i) theoretical contribution, (ii) methodological contribution, (iii) practical contribution, and (iv) implications specifically for Saudi manufacturers.
33. Most importantly, the proposed architecture, maturity pathway, and CPMAI-based governance model should be presented explicitly as conceptual propositions rather than validated solutions. The manuscript already acknowledges this limitation, but this distinction should remain consistent throughout all sections. 6ac3749ed7ed7_IJAR-59353-sample...
34. A pilot implementation or expert-validation study involving Saudi manufacturing organizations would significantly strengthen the manuscript. Validation could involve Delphi studies, expert interviews, case studies, or implementation trials across different manufacturing sectors.
35. Overall, the manuscript has a strong and timely conceptual foundation, particularly its attempt to connect AI recommendations with ERP transaction authority and human accountability. However, substantial strengthening of the review methodology, Saudi-specific empirical grounding, comparative analysis with existing frameworks, and validation strategy is recommended before the work can be considered for publication.