THE WINNING FROM WITHIN: HARNESSING THE HUMAN FACTOR FOR COMPETITIVE ADVANTAGE THROUGH ERP IMPLEMENTATION IN SMES OF THE APAC REGION: A SYSTEMATIC REVIEW

J. Wijayanayake[1], K. C. Meher[2], N. Prasad[2] and P. Herath[2*]
[1]Department of Industrial Management, University of Kelaniya, Sri Lanka
[2]School of Economics & Management, The University of Fiji, Lautoka, Fiji

Systems for enterprise resource planning (ERP) are widely used to enhance decision-making, integrate business processes, and provide a competitive advantage (CA). However, a lack of focus on human and cultural factors often causes many ERP initiatives to underperform. This study examines the people factor in ERP implementation, focusing on how strategic alignment, process optimisation, project maturity and training affect ERP use and organisational competitiveness. A Systematic Review (SR) conducted in accordance with the PRISMA 2009 and 2020 guidelines served as the foundation for the study. The PROSPERO database has the research registered under the number CRD42021243116. After a transparent screening and eligibility process, 44 studies published after 2000 were chosen from an initial pool of 502 publications. Project management training and knowledge bases, business process reengineering user interfaces, strategic alignment, industry standards and integration management were among the recurrent constructs of the review, which synthesised the evidence on people-centric determinants of ERP success. The conceptual model was developed with the assistance of the SR process, and 11 hypotheses were formulated that linked ERP use to CA. Seventy-two participants from 42 small and medium-sized businesses (SMEs) with ERP systems in the Asia-Pacific (APAC) region participated in an empirical survey to support and validate the review findings. Partial Least Squares-Structural Equation Modelling (PLS-SEM) was used to analyse the data. SmartPLS4 was employed to evaluate the conceptual model. The findings validated the hypothesised relationships, showing that the use of ERP considerably improves CA ($\beta = 0.097$, $t = 0.783$, $p < .001$) in a culturally aligned context. This paper offers both theoretical and practical contributions by integrating empirical validation with SR evidence. Theoretically, it illustrates how human factors—which are often overlooked in ERP research—are crucial to achieving CA. SMEs can benefit from its practical advice, which includes investing in change management, ongoing training, and structured project governance, redesigning processes to increase efficiency, and creating project teams that align with company culture. This dual strategy emphasises how companies can win from within by utilising the human element in ERP implementation to gain a long-term competitive edge.

Keywords: competitive advantage, ERP projects, ERP use, human factor, PLS-SEM, PRISMA 2020, systematic review

[*]*Corresponding Author: padmikaherath@gmail.com*

THE WINNING FROM WITHIN: HARNESSING THE HUMAN FACTOR FOR COMPETITIVE ADVANTAGE THROUGH ERP IMPLEMENTATION IN SMES OF THE APAC REGION: A SYSTEMATIC REVIEW

J. Wijayanayake[1], K. C. Meher[2], N. Prasad[2] and P. Herath[2*]
[1]Department of Industrial Management, University of Kelaniya, Sri Lanka
[2]School of Economics & Management, The University of Fiji, Lautoka, Fiji

INTRODUCTION

Systems for enterprise resource planning (ERP) are essential for attaining business operational efficiency and process integration. Despite technological advancements, ERP initiatives continue to face difficulties, particularly in aligning human and organisational factors with system capabilities. The people component is emphasised as this research investigates the relationship between ERP usage and competitive advantage (CA).

Objectives and Research Questions

The goals include analysing how the ERP systems affect CA strategic alignment and organisational performance from the client's human resource perspective. Important research questions focus on how human factors affect CA, as well as the connections between ERP use, cost savings, operational efficiency, and business process optimisation. The research questions are:

1. How do human factors influence ERP use in SMEs?
2. To what extent does ERP use enhance CA in SMEs?
3. Which people-related practices (training, project management, process optimisation) have the most substantial impact on ERP use?

Theoretical Framework and Literature Review

The study examines the strategic role of ERP in CA, drawing on Porter's theories of competitive advantage and the resource-based view (RBV), as well as dynamic capabilities. Project management (PM), knowledge base and training (TK), business process reengineering (BPR), user interfaces (UI), and strategic alignment (SA) are some of the constructs used to analyse ERP adoption. Research on the people-centric aspects of ERP implementations, particularly in SMEs, and Systematic Review and meta-analysis (SR/MA) research are lacking in the literature.

METHODOLOGY

Using PRISMA-2020, a SR was carried out, and from the initial pool of 502 studies, 44 pertinent studies were chosen. We created a conceptual model with 12 constructs and 11 hypotheses emerged. It was planned to use Partial Least Squares

Structural Equation Modelling (PLS-SEM) with smartPLS4 to test hypotheses. A structured survey was administered to 60 ERP-using companies and 10 project teams in the Asia-Pacific (APAC) region to gather primary data. Ultimately, 72 valid responses were obtained from 42 different companies. This region was selected due to its relative underrepresentation in ERP research, the unique challenges faced by SMEs in adopting complex systems with limited resources, and researchers' own implementation expertise and relevance.

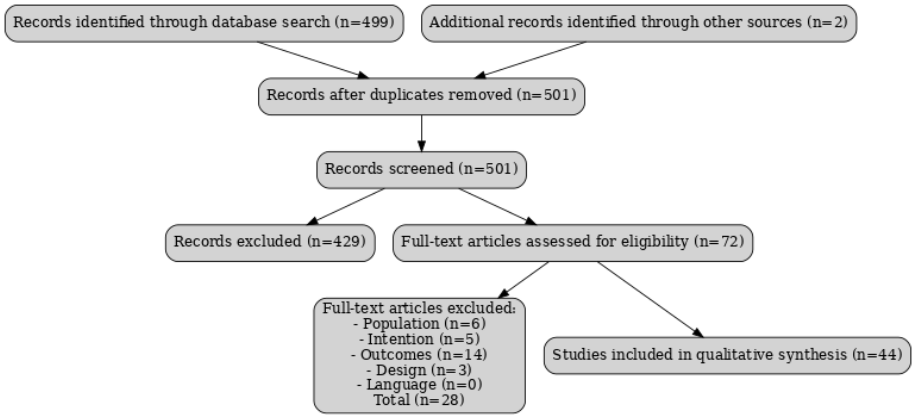

Figure 1: ***PRISMA 2020 dataflow diagram***

Conceptual Model and Hypotheses

Eleven hypotheses were formulated, as listed below, suggesting noteworthy connections between these constructs and their influence on CA and ERP use.

H1: Project management (PM) practices positively influence ERP use (EU).
H2: Training and knowledge base (TK) positively influence ERP use (EU).
H3: Business process reengineering (BPR) positively influences ERP use (EU).
H4: User-friendly interfaces (UI) positively influence ERP use (EU).
H5: Adoption of industry standards (IS) positively influences ERP use (EU).
H6: Team fit and expertise positively influence ERP use (EU).
H7: Optimised business processes (PO) positively influence ERP use (EU).
H8: Standardised systems with minimal customisation (SS) positively influence ERP use (EU).
H9: Integration management (IM) positively influences ERP use (EU).
H10: Strategic alignment (SA) positively influences ERP use (EU).
H11: ERP use (EU) positively influences competitive advantage (CA).

RESULTS AND DISCUSSION

The constructs' validity and reliability were confirmed using PLS-SEM. The higher-order constructs Project Management (PM) and Training & Knowledge (TK) demonstrated strong internal consistency. ERP use was significantly influenced by

PM, TK, Business Process Optimisation (PO), and Strategic Alignment (SA), supporting the majority of the hypotheses. Other factors, such as user interface, integration management, and industry standards, showed weaker or non-significant effects. ERP use was found to have a positive and significant impact on Competitive Advantage (CA), validating H11. These findings highlight that people-oriented practices—particularly project maturity, structured training, process redesign, and strategic alignment—are key predictors of ERP adoption and subsequent organisational competitiveness.

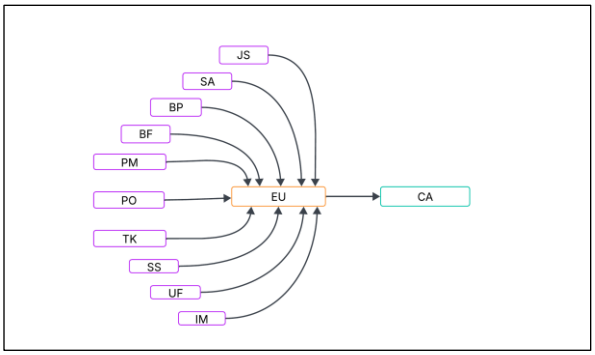

Figure 2: ***Conceptual Model***

	β Values	t Statistics	p Value
H1: PM -> EU	0.291	0.944	0.000
H2: TK -> EU	0.159	0.682	0.001
H7: PO -> EU	0.097	0.783	0.001
H11: EU -> CA	0.163	2.963	0.003

Table 1: ***Path Coefficient, p Values***

The results highlight the fact that human and cultural factors, which influence the use of ERP, are more critical for its success than technology alone. Adoption is enhanced, resistance is decreased, and strong training infrastructures and project management maturity promote efficient system use. Similar to this, ensuring that ERP projects align with business strategy and that processes are redesigned for efficiency guarantees that the system produces significant business results. Although earlier research frequently emphasises cost effectiveness or technology fit, this study demonstrates that the people factor is essential to gaining a competitive edge. From a practical perspective, to optimise ERP value, SMEs in the Asia-Pacific (APAC) region should invest in cultural alignment, ongoing employee development, and structured project governance. The empirical validation and SR evidence make a theoretical contribution by confirming that human-centred practices significantly influence the use of ERP and ultimately gain ERP competitiveness.

CONCLUSIONS/RECOMMENDATIONS

When strategic objectives and human factors are in harmony, ERP systems greatly enhance competitive advantage. For long-term organisational success, utilising ERP capabilities requires the "people factor", which can be achieved through team fit, training, and structured project governance.

Implications and Recommendations

Through structured, people-focused practices, this study validates the use of ERP as a pathway to CA, thereby advancing the theory of ERP as a means to achieve CA. In practice, businesses should allocate funds for knowledge base development, change management, ongoing training, and project maturity. Nowadays, a well-suited and experienced team is one of the key elements of minimal customisation; business processes should be redesigned to improve usability and performance.

Limitations and Future Research

The study focuses solely on competitive advantage as a business outcome and is limited to SMEs in the APAC region. In line with Hair et al. (2019, 2021), the survey sample size (72 responses) is small, but it is methodologically adequate for PLS-SEM and associated recommendations for medium-complexity models (2019, 2021). The additional dataset is also adequate, meeting the minimum 10-rule criteria. However, larger data gathering, a more geographical scope, and additional results, such as ROI and operational agility, should be the goals of future research.

Acknowledgements

The authors would like to thank the researchers for their contribution, which contributed to build our conceptual model. Without the participants' contributions to the data survey, this would not have been realistic.

Funding

This research was a self-funded project, and no grants were received.

Authors' contributions

Authors are responsible for the idea, concepts and design. The figures were generated using SmartPLS 4 and MS Visio. All authors contributed to the manuscript writing and approval of the final version.

Competing interests

The authors declare that they have no competing interests.

REFERENCES

1. Ahmed, M. A., & Molla, A. (2013). The Impact of ERP Systems on the Competitive Advantage of Firms. *[Journal/Conference details missing]*.
2. Mints, A., & Kamyshnykova, E. (2019). Methods of stakeholder prioritisation in the context of stakeholder management. *Proceedings of the International Scientific Conference*.
3. Aljawarneh, N., & Alomari, Z. (2018). The role of enterprise resource planning systems (ERP) in improving customer relationship management (CRM): An empirical study of Safeway Company of Jordan. *International Journal of Business and Management, 13*(8), 86–100. https://doi.org/10.5539/ijbm.v13n8p86
4. Andresen, K., & Gronau, N. (2005). An approach to increase adaptability in ERP systems. *[Conference/Journal details missing]*.

5. Handoko, B. L., Aryanto, R., & So, I. G. (2015). The Impact of Enterprise Resource Systems and Supply Chain Practices on Competitive Advantage and Firm Performance: A Case Study of Indonesian Companies. *Procedia Computer Science, 72*, 122–128. https://doi.org/10.1016/j.procs.2015.12.113
6. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108
7. Barney, J., & Hesterly, W. S. (2010). *Strategic management and competitive advantage: Concepts and cases*. Pearson.
8. Davenport, T. H. (1998). Putting the enterprise into the enterprise system. *Harvard Business Review, 76*(4), 121–131.
9. Day, G. S. (1994). The capabilities of market-driven organisations. *Journal of Marketing, 58*(4), 37–52. https://doi.org/10.1177/002224299405800404
10. Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review, 33*(3), 114–135. https://doi.org/10.2307/41166664
11. Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2012). *Strategic management: Concepts and cases: Competitiveness and globalisation* (10th ed.). Cengage Learning.
12. Jatty, G. (2017). Enterprise resource planning can streamline business operations and play a key role in achieving success: A study. *[Journal/Conference details missing]*.
13. Mundy, J., & Owen, C. (2013). The use of an ERP system to facilitate regulatory compliance. *Information Systems Management, 30*(3), 196–211. https://doi.org/10.1080/10580530.2013.794601
14. Ali, M., Edghiem, F., & Alkhalifah, E. S. (2022). Cultural challenges of ERP implementation in the Middle Eastern oil & gas sector: An action research approach. *Springer*. https://doi.org/10.1007/978-3-031-15919-8_9
15. Poser, M., & Bittner, E. (2020). Hybrid teamwork: Consideration of teamwork concepts to reach naturalistic interaction between humans and conversational agents. *Proceedings of [Conference]*.
16. Poli, M., & Shenhar, A. (2014). Project Strategy: The Key to Project Success. *Proceedings of the IEEE International Conference on Management of Engineering and Technology (PICMET)*, 3490–3499. https://doi.org/10.1109/PICMET.2014.6931918
17. Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal, 14*(3), 179–191. https://doi.org/10.1002/smj.4250140303
18. Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. Free Press.
19. Porter, M. E. (1996). What is strategy? *Harvard Business Review, 74*(6), 61–78.
20. Ram, J., Wu, M.L., & Tagg, R. (2014). Competitive advantage from ERP projects: Examining the role of key implementation drivers. *International Journal of Project Management, 32*(4), 663–675. https://doi.org/10.1016/j.ijproman.2013.08.004
21. AlMuhayfith, S., & Shaiti, H. (2020). The Impact of Enterprise Resource Planning on Business Performance: A Discussion on Its Relationship with Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity, 6*(3), 87. https://doi.org/10.3390/joitmc6030087
22. Spathis, C., & Constantinides, S. (2003). The usefulness of ERP systems for effective management. *Industrial Management & Data Systems, 103*(9), 677–685. https://doi.org/10.1108/02635570310506098
23. Teece, D. J. (2007). Explicating dynamic capabilities: The nature and micro-foundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640
24. Vemuri, V., & Palvia, S. C. (2006). Improvement in operational efficiency due to ERP systems implementation: Truth or myth? *Information Resources Management Journal, 19*(2), 18–36. https://doi.org/10.4018/irmj.2006040102

Web Resources (reviewed in Jan 2025 to June 2025)

1. Panorama Consulting. (n.d.). *ERP and competitive advantage*. Panorama Consulting. https://www.panorama-consulting.com/erp-and-competitive-advantage/
2. Abas ERP. (n.d.). *How can ERP improve a company's business performance?* Abas ERP. https://abas-erp.com/en/resources/faq/how-can-erp-improve-companys-business-performance
3. Adynamics. (2022, March 15). *Top 4 reasons why you need ERP with real-time insights*. Adynamics. https://adynamics.com.my/blog/top-4-reasons-why-you-need-erp-with-real-time-insights/
4. NetSuite. (n.d.). *Supply chain management with ERP*. Oracle NetSuite. https://www.netsuite.com/portal/resource/articles/erp/supply-chain-management-erp.shtml
5. Deloitte. (2018). *ERP top 10 challenges*. Deloitte Human Capital. https://www2.deloitte.com/content/dam/Deloitte/mx/Documents/human-capital/01_ERP_Top10_Challenges.pdf