

Digital Transformation in SME HR Operations: A Conceptual Framework for Payroll and Leave Process Automation

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Abstract

Digitalisation is rapidly reshaping operational landscapes, urging Malaysian small and medium-sized enterprises (SMEs) to modernise key internal functions, particularly in human resource management (HRM). However, many SMEs continue to depend on manual, paper-based systems for payroll and leave processes, resulting in inefficiencies, human errors, and regulatory compliance risks. This paper aims to develop a conceptual framework for SMEs to transition towards digital HR operations through a structured, two-cycle intervention model: (1) digitizing core processes; (2) decentralizing approvals and integrating mobile-based attendance tracking. Guided by the Technology Acceptance Model (TAM) and Lewin's Action Research framework, the proposed framework focuses on usability, scalability, and user acceptability as a core for organizational change behaviour. This model is expected to improve accuracy, lighten manual workloads, and enhance decision-making across departments. The framework offers practical value for SME leaders, policymakers, and practitioners, while laying the groundwork for future empirical research into HR digitalisation across areas such as onboarding, performance appraisal, and employee engagement.

Keywords: Human Resources, Payroll, Leave, Digitalisation, HRMS

Introduction

As digitalisation acceleration has become one of the key national agendas under the Malaysia Digital Economy Blueprint and the MADANI Economy (Economic Planning Unit, 2021; Amar, 2024). SMEs, which constitute 97% of Business in Malaysia (SME Corp Malaysia, 2024), with limited resources, face significant pressure to modernise their internal processes, particularly *human resources (HR) functions*, which are the core of any organisation. Payroll and leave management which still heavily rely on manual spreadsheets, siloed documentation, and paper-based systems create inefficiencies, increase compliance risk, and reduce HR's ability to take on strategic value (Arnan, 2021; Lokugama, 2021). At the same time, human resource management (HRM) has become increasingly important, where HRM has shifted from a previously supporting role to strategic pillars that improve an organisation's overall

performance and productivity (Katou & Budhwar, 2015). However, not all SMEs are able to access affordable and scalable solutions that fit smaller-sized businesses and their own operations. Digital tools usually are either too costly or too complex for the majority and underutilized due to low user acceptance (Omowole et al., 2024), hence creating barriers for technology adoption (Davis, 1989; Menant, Gilibert, & Sauvezon, 2021). This outlines a critical practical gap between digital intention and actual adoption in SME environments.

Despite numerous initiatives offered by the government to encourage digitalisation for SMEs, there is a lack of structured, cost-effective frameworks to guide resource-limited SMEs through digitalizing primary HR procedures step-by-step. Theoretical models such as the Technology Acceptance Model (TAM) and Lewin's Action Research Cycle set a good foundation for HR digitalization transformation, but the application of these frameworks into SME-specific HR contexts was underutilized (Zhang & Chen, 2024). By integrating Technology Acceptance Model (TAM) and Lewin's Action Research Cycle, this paper proposed a conceptual framework for HR digitalisation in a scalable and sustainable way, by using structured and behaviour-based approach.

Problem Statement and Research Objectives

Despite a strong national drive for digitalization, many Malaysian SMEs remain dependent on legacy systems for their core HR functions - especially payroll and leave management. In the case of Company ABC - which is a 'typical' SME that is both regulated and cost averse - all HR processes are still performed manually. In terms of basic HR functions, Company ABC is still using Excel spreadsheets, printed forms, and physical approvals for overtime application and calculations, commission, and payslip distribution. These manual processes create inefficient workflows, increased risk of error, delays to salary payments, and increases risk for non-compliance with laws such as the current Personal Data Protection Act. Furthermore, the absence of automation for statutory reporting on Employees Provident Fund (EPF), Social Security Organisation (SOCSO), Employment Insurance System (EIS), and Monthly Tax Deduction (MTD) increase the administrative workload. The following comparative table highlights the inefficiencies of current traditional HR payroll workflow with proposed digital workflow.

Table 1

Comparison of Traditional vs. Digital HR Payroll Workflow

Component	Traditional Workflow	Digital Workflow
Attendance Tracking	Manual logbooks or spreadsheets	Mobile app with automated GPS tracking
Leave Application	Paper forms submitted manually	Cloud-based request and routing system
Overtime and Commission	Manually submitted and keyed in	Integrated digital submissions and approvals
Statutory Submissions	Manually calculated and submitted	Auto-generated files uploaded to statutory portals
Payslip Distribution	Printed documents	Secure access through employee portal

Moreover, SMEs that are subsidiaries of public-listed companies face additional scrutiny due to environmental, social, and governance (ESG) compliances. In this context, the absence of digitised and auditable HR systems potentially leads to operational deficiency and undermines transparency and accountability, both of which are key to ESG.

Given these conditions, the study identifies the following research objectives

RO1: To identify current challenges in HR payroll and leave processes among Malaysian SMEs.

RO2: To determine the potential of cloud-based digital transformation in improving HR processes in SME settings.

RO3: To propose a contextualised framework for the digital transformation of HR processes tailored to resource-limited SME environments.

Through combining empirical insights with the Technology Acceptance Model and Action Research philosophies, this study intends not only to contribute to the academic literature on HR digitalisation, but also to offer an actionable framework for SMEs in Malaysia, thus enriching theoretical and practical discussions surrounding digital change within human resource management.

Theoretical Foundation

The theoretical foundations of this study were guided by two well-established theoretical frameworks: the Technology Acceptance Model (TAM) and Lewin's Action Research Cycle. Together, these two perspectives offer a dual perspective on digital HR transformation in limited resource SMEs, addressing both behavioural intention and change management.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was first introduced by Davis (1989) and is one of the most widely cited models that provides a better understanding of user adoption of technology. The model suggests that two key elements, *Perceived Usefulness (PU)* and *Perceived Ease of Use (PEOU)*, can influence an individual's intention to adopt and use a system. When user found a system is useful and easy to use, most like they will continuous to engage with it meaningfully. In the SME context, digital transformation is often hampered by low digital readiness and fear of system complexity (Menant, Gilibert, & Sauvezon, 2021). TAM provides a robust foundation for understanding and overcoming psychological barriers to system usage. Employees' resistance, stemming from limited exposure or prior negative experiences, is frequently overlooked in implementation strategies. This study uses the TAM to assess end-users' perceptions to inform the design and communication of the cloud-based HRMS solution, thus increasing user acceptance and reducing the risk of implementation. For example, user interfaces in the proposed HRMS will be evaluated against the "3-click rule" to enhance usability and reduce adoption friction. TAM was selected over models such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Diffusion of Innovation (DOI) theory due to its empirical rigor, simplicity, and ability to focus specifically on user adoption in SME contexts. Its behavioural approach ensures system acceptability throughout early digital transformation.

Lewin's Action Research Cycle

TAM emphasises on psychological aspect in HRMS adoption, and Lewin's (1946) Action Research Cycle provides a structured model of organisational change. There are three stages of Lewin's model which are Unfreezing, Change, Refreezing (Lewin, 1946). These stages correspond with the realities SMEs face in transforming a digital solution.

- *Unfreezing:* Identifying inefficiencies of manual leave and payroll procedures and revealing frustrations for employees and HR groups, creating awareness of current limitations and establishing motivation for change.

- *Change*: Rolling out pilot cloud-based HRMS, including TAM-based feedback (PU and PEOU) to inform roll-out refinement.
- *Refreezing*: institutionalise changes through SOPs, user training, and reinforcement mechanisms to ensure long term sustainability.

This cyclical methodology allows incremental change to enable gradual digital transformation for SMEs.

Integrated Conceptual Framework

By integrating TAM and Lewin's Action Research Cycle, this study creates a dynamic framework linking micro level user behavioural insight and macro-level organisational change structure. TAM is applied pre- and during implementation to guide system usability design, training, and adoption activities. Lewin's cycle, however, structures the entire change process into actionable, iterative steps. Feedback between each phase enables real-time refinement and continuous learning. This integrated model ensures behavioural readiness and operational alignment, offering a realistic roadmap for SMEs to transform HR operations as illustrated in Figure 1.

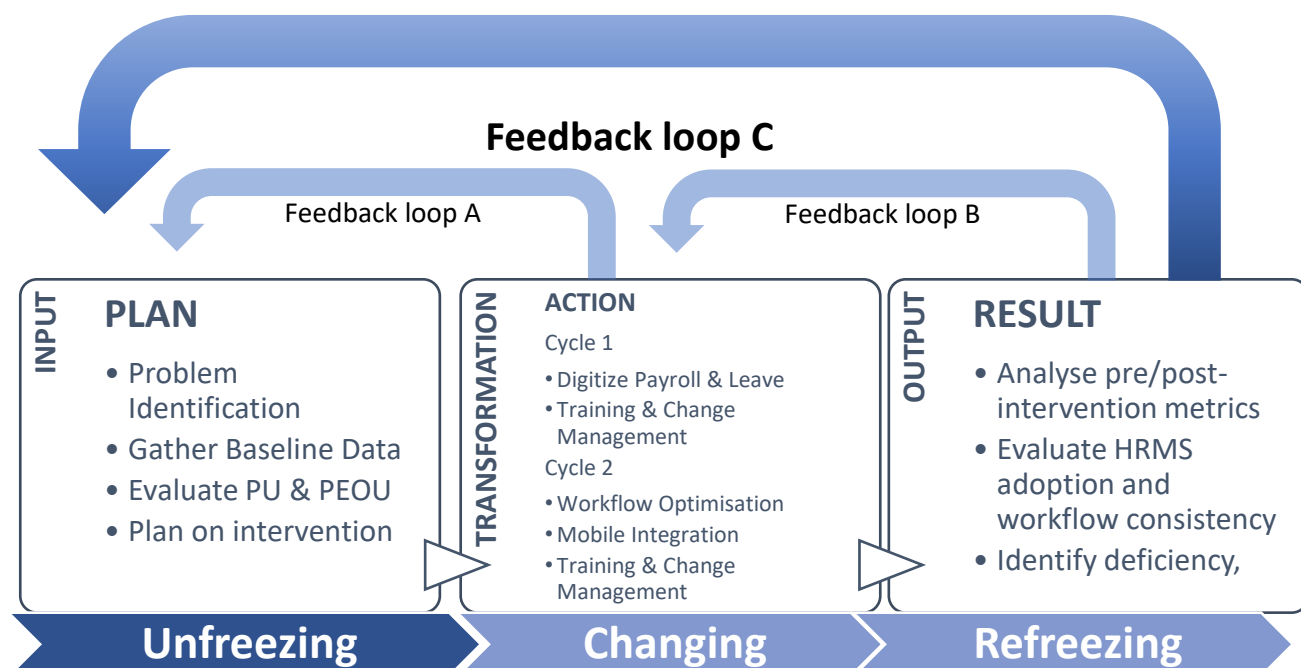


Figure 1 Integrated Framework for HR Digitalisation in SMEs

Methodological Approach (Planned)

Research Design

Underpinned by pragmatism research philosophy, this research focuses on solving real world practical problems by integrating both objective and subjective viewpoints (Saunders, 2019). The research adopts a mixed-method action research design that is suitable in addressing context-specific challenges within resource-limited SMEs (Avison, Lau, Myers, & Nielsen, 1999).

The research is structured into a two-cycle built on Lewin's action research cycle of unfreezing, change, and refreezing (Kumar, 2018). Such structuring allows step-by-step

change ensuring that HR process changes are sustainable and contextually suitable for SMEs (Mitrofanova & Konovalova, 2019) (Okoronkwo, 2021). Combining both qualitative observations and quantitative measurements, this research is able to assess organisational behavioural and operational impact. *Qualitative* observations are drawn from primary stakeholders via semi-structured interviews to determine the bottlenecks and develop tailored solutions. While *quantitative* measurements are organisational statistics, including payroll processing and leave sanction time, error frequency and paper usage to calculate impact over period (Tashakkori & Teddlie, 2010) (Marler, 2013).

Setting or Organisation

Company ABC, a Malaysian SME that operates in the creative and multimedia industry, is chosen. Its HR process is conducted manually, coupled with low digital readiness, making it an ideal choice for HR digital transformation research.

Target Participants or Stakeholders

Participants are selected through purposive and convenience sampling. The participants are chosen for direct involvement in payroll and leave processes to ensure the interventions are relevant and usable. Ethical approval and informed consent will be obtained before data collection. The following table shows the key participants and their respective roles in this study

Table 2

Target Participants and Their Roles in the Study

Participant Group	Roles in This Study
Top Management	To provide insights into strategic vision, organisational goals, and company-level challenges affecting HR digitalisation.
HR Executive	To offer operational knowledge of existing HR workflows, identify pain points, and share feedback from employees.
Employees	To share first-hand experiences of manual HR processes, highlight user-level issues, and assess usability of digital solutions.

Proposed Intervention or Conceptual Framework

Digital Transformation Strategy

The digital transformation strategy that is used in this research focuses on streamlining and automating HR operations (payroll and leave management) through a cost-effective cloud-based HRMS solution. Guided by Lewin's Action Research Cycle (Unfreezing → Changing → Refreezing) (Lewin, 1946) and informed by the Technology Acceptance Model (Davis, 1989) (to assess user adoption and readiness at each stage), the model of this study is founded based on three core pillars which are process digitisation, behavioural integration and group-level data integration.

Process Digitisation including replace manual payroll and leave procedures with fully digital, rule-based automation. This reduces human error, shortens processing time, and reduce statutory compliance risk (EPF, SOCSO, EIS, and MTD).

Behavioural Integration - From the perspective of the Technology Acceptance Model, we aspire to achieve user acceptance by focusing on Perceived Usefulness and Perceived Ease of

Use. Our approach is based on the commitment of employees and HR personnel for the objective of achieving a confident and sustainable usage of the system (Abdalla , Sankar, Ramayah, Hidaytalla, & John, 2024).

Group-Level Data Integration - The chosen HRMS solution interoperates with existing applications employed in the Group to enable real-time access to data for Group HR without creating system silos and keeping subsidiaries away from additional software for similar features. It also allows for future integration with accounting software at the Group level, enabling seamless payroll-to-financial reporting for investor and regulatory (e.g., Bursa Malaysia) transparency.

This transformation is beyond technical. It is an organisation shift. By following a structured, iterative model and grounding it in employee behaviour and system usability, the strategy enables progressive change that is measurable, scalable, and sustainable across SMEs in the creative and multimedia sector.

Phased Intervention Plan

This intervention will involve two action research cycles based on Lewin's Unfreezing, Change and Refreezing framework to achieve an incremental and sustainable transformation of HR processes. Each phase consists of a behavioural, technical and operational component, and incorporates user-oriented adoption based on the Technology Acceptance Model (TAM).

Proposed Intervention Cycle One: Core HR Digitalisation and Foundation Setup

Cycle One focuses on identifying current process inefficiencies and implementing tailored solutions to address key HR challenges faced by organisations particularly in payroll and leave management processes. The initial process includes having semi-structured interviews with key stakeholders including top management, HR executives and employees. This is aimed to gain the understanding of the strategic view of the organisation, to understand current practices and bottlenecks, and uncover opportunities for operational improvement. These conversations help surface issues such as delay in approval, inconsistent data entries and errors that led to compliance risk.

To solve these issues, it begins with consolidating all employee records from various sources including gathering employee master data and aligning key information such as job roles, departments, compensation structures, and leave balances. This consolidation ensured a clean and complete foundation for cloud HRMS's setup. The selected cloud-based HRMS was configured to accommodate the organisation's structural hierarchy and policies. This included setting up digital approval workflows for payroll processing and leave applications, mapping them to respective reporting lines to enable real-time routing and visibility. Rooted in Technology Acceptance Model (TAM), the configuration and user interface will be pre-evaluated for Perceived Ease of Use (PEOU) before deployment (Venkatesh & Davis, 2000). For example, the Employee Self-Service (ESS) portal adhered to the "3-click rule", common essential tasks such as viewing payslips or leave balance could be completed in three clicks or fewer. This is critical in anticipating and reducing user friction and boosting confidence among staff members (Abdalla , Sankar, Ramayah, Hidaytalla, & John, 2024).

Meanwhile, structured hands-on training sessions will be developed and implemented. By having a guided walkthrough and scenario-based simulation, employees become familiar and

more confident in using the system, which directly contributed to higher adoption rates and smoother transition (Hung, Chang, & Yu, 2006). This will serve as a change management mechanism, reducing technological resistance, improving perceived ease of use, and strengthening overall system adoption. The training sessions also facilitated real-time feedback collection, which will be used to adjust communication strategies and support mechanisms as needed. By the end of Cycle One, payroll and leave operations had been successfully digitised, with automated routing of requests and central visibility of HR data. Key metrics such as processing time, approval speed and error rate will be tracked and deficiency from cycle one will be used as refinements in the next cycle.

Proposed Intervention Cycle Two: Process Optimisation and System Enhancement

Building on the success from Cycle One, Cycle Two focuses on addressing the process deficiency and operational bottlenecks observed from Cycle One.

The intervention began with strengthening the payroll module by automating variable pay components such as overtime, unpaid leave deductions, and performance-based commissions. These improvements were aimed at reducing manual intervention, decreasing payroll errors, and improving month-end processing timelines. Simultaneously, mobile attendance was introduced to enable flexible work and enhance the accuracy of working hours data, which will be integrated into payroll calculations.

One of the most significant improvements will be decentralising the leave approval workflow. The original multilevel approval workflow created unnecessary delays and placed an administrative burden on senior executives. The new workflow enables the leave approval to be directed to the supervisor only. This not only reduced turnaround time for leave approvals but also empowered departmental heads with clearer decision-making authority and accountability. By the end of Cycle Two, the system will evolve from a digitisation instrument to an integrated, versatile platform, which could be adapted to meet shifting requirements for operations. The following table summarises the key differences and progression across the two intervention cycles in terms of their objectives, actions, application of TAM, and expected outcomes.

Table 3

Comparison of Intervention Cycles

Component	Cycle 1: Digitisation	Cycle 2: Optimisation & Integration
Objectives	Establish digital foundation	Refine and enhance system performance
Key Activities	HRMS setup, data consolidation, assess UI design, training	Pay automation, decentralised approvals, mobile tracking
TAM Application	PEOU/PU inform interface & training	TAM feedback informs refinements
Outcomes	Error reduction, real-time visibility	Faster processing, scalable HR platform

Tools and Technologies to be Applied

The intervention employs a cloud-based Human Resource Management System (HRMS) chosen through internal tool-mapping exercises which would be compatible with existing systems, and minimise costs on the subsidiary side. The deployment will focus on usability,

functionality and Technology Acceptance Model (TAM), focusing on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Key features and technologies applied are:

- *Centralised Employee Database*, Consolidate all employee's data into a single cloud-based platform. This enables convenient accessibility, real-time updates, and enhanced data management.
- *Automated Payroll Engine* automates payroll calculation, including basic salary, statutory deductions (EPF, SOCSO, EIS, and PCB), overtime, unpaid leave, and commission payments, based on rules and requirements. This functionality significantly reduces manual calculation errors and compliance risks.
- *Digital Leave Management* with decentralise workflow enable real-time digital processing by replacing previous manual paper-based . This is realising by configurable leave policies and stream-lined processes for approval workflows tailored with company structure.
- *Mobile Attendance* Integration enabled GPS check-in/out attendance functionality to enhance accuracy and accountability especially for those employees with remote or flexible working arrangements.
- *Employee Self-Service (ESS) portal* will be accessed and ensuring it follow the "3-click rule", key functions will be access within 3 clicks. This improves Perceived Ease Of Use (PEOU) and adoption speed.
- *Custom Workflow Engine* enables HR to configure multi-level routing of requests based on organisation structure, adding in automated notifications with approval tracking and audit reporting.
- *Future Integrations Capability*: HRMS architecture is structured to integrate into the group-level accounting software in the next financial year and will provide seamless payroll-to-financial reporting and increased transparency for statutory and investor reporting.

The selected technologies supporting long-term scalability while enhancing daily HR operations and employee experience. By integrating the technologies, it sets the foundation for both internal process refinement and group-level visibility of information and compliance reporting.

Expected Findings and Implications

Anticipated Outcomes

The digitalisation of HR processes is expected to achieve measurable operational, financial, and strategic outcomes as follows:

- **Enhanced Operational Efficiency**

Payroll and leave processes will be automated after the intervention, which will significantly reduce the overall processing time and HR workload. According to Sirangula, 2025, this transformation is expected to increase efficiency in HR operation, reducing turnaround time for approvals by more than 60% and decrease payroll processing duration by more than 80%.

- **Reduction in Human Errors and Paper-Based Inefficiencies**

The move from manual procedures to a cloud HRMS reduces data entry errors, missing records, and compliance tracking. Elimination of physical payslips and forms allows paperless working and reduces administrative workload (Chitambala & Marvin, 2025).

- **Cost Savings on HR Operations**

This transformation will reduce HR operational hours which can be translate into measurable HR cost, elimination of stationery and printing expenses, and minimised regulatory penalties.

Automated statutory reporting also prevents late submission fees and reduces regulatory risk exposure. (Sirangula, 2025)

- Improved Regulatory and Statutory Compliance

Statutory contribution will be calculated automatically, and statutory-compliant text files will be autogenerated. Without the need for manual data entry, these files will be uploaded to each statutory contribution portal directly. This significantly reduces the compliance risk and improves operational efficiency (Mangipudi & Vaidya, 2018).

- Improved Leave Workflow Accountability and Employee Empowerment

To reduce the administrative burden of top management and fostering team-level accountability, the leave approval workflow will be decentralised from multilevel (employee → line manager → GM → CEO) to direct line manager only. This will empower direct line manager to make decisions timely and accelerate the approval (Tamkin, Barber, & Dench, 1998) (Tavares, Vale, & Costa, 2024).

- ESG Alignment

The project promotes ESG outcomes by reducing paper waste (environmental), increasing employee satisfaction (social), and standardised compliance driven workflows (governance).

- Scalability and Future Integration Potential

The cloud-based HRMS infrastructure establishes a scalable basis for future digital enterprise initiatives, including integration into accounting systems, improving financial report quality, and supports more strategic HR decision-making at group level.

Potential impact on organizational HR practices

This study intended to reshape the way HR functions being managed, monitored and engaged with throughout the organisation. Key areas of impact are:

- Transition from Administrative to Strategic HR

Automation will reduce payroll processing and leave management time, enabling HR to reallocate time to higher value-added activities such as developing employee engagement, workforce planning, and capability. This realignment is consistent with current HRM best practices. (Vatnani, 2024) (Tiffin, 2025).

- Greater Accountability and Decentralisation

Decentralising the leave approval workflow empowers the line manager to have greater ownership of his team attendance and performance. This will shift HR's role from being a gatekeeper to system enabler, enhancing responsiveness and localised decision-making (Tamkin, Barber, & Dench, 1998) (Tavares, Vale, & Costa, 2024).

- Improved Compliance and Audit Readiness

Automated documentation and the audit trail facilitate better compliance with Malaysian labour regulations and statutory bodies, given reduced regulatory risk but ensuring that there is better readiness when it comes to audits, particularly for entities that have publicly listed parent companies.

- Cultural Shift Toward Digital HR Adoption

As the employees and line managers get used to the self-service facility and simplified procedures, organisational culture will undergo a shift in the direction of greater acceptance of digital tools. This transformation serves as a foundation for future digitalisation efforts within the organisation .

- Enhanced Employee Experience and Trust

HR processes will become faster, more transparent, and more traceable, improving employee engagement. For younger and tech-savvy employees, self-service portals enable employees to access their leave application status, leave balance, and payslip in real time; increase perceived fairness; reduce frustration due to delay; and raise confidence in the HR function (McQuillen, 2024) (Modi & Lad, 2025).

Contributions to academic and practical knowledge

This research contributes to academic discourse on digital transformation in agile, fast-moving industries, with a focus on the digital creative media industry where ease of operation and user adaptability is essential (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013) (Kane, Palmer, Phillips, Kiron, & Buckley, 2015). The study provides a dynamic structure of integrating Lewin's Action Research Cycle with the Technology Acceptance Model (TAM) to provide descriptions of behavioural change and iterative adaptation over the course of an intervention period, of technological and operational implementation. It makes an addition to current literature by situating HR digitalisation in a real-life Malaysian SME undergoing strategic transformation, thus filling a gap in applied research in creative-based industries in Southeast Asia (Ardito, Raby, Albino, & Bertoldi, 2021). The study also theorises an extended TAM view as a longitudinal guide through the life cycle of transformation, rather than a point-of-adoption snapshot.

In practice, this research offers a pathway for SMEs, particularly those being acquired by a public listed company, to digitise HR practices in order to meet increased expectations for governance and ESG (Chalmers, Cox, & Picard, 2021), while keeping costs of new implementation low. It focuses on strategic integration rather than replacement by mapping existing in-house digital tools in use at group level, providing for instant cost savings and easier group-wide data management. The decentralised leave approval processes and integrating staff self-service capability, the intervention facilitates empowerment, faster decision cycles, and business accountability. Moreover, automated statutory reporting and audit trails enhance HR compliance and data integrity—aligning HR processes with the ESG measures increasingly required of subsidiaries within listed groups. The conceptual model offers HR and business leaders a proven structure to elevate levels of operational excellence, employee engagement, and regulatory compliance in a rapidly changing and creativity-based environment.

Conclusion

Grounded in Lewin's Action Research Cycle and the Technology Acceptance Model (TAM), this conceptual paper proposes a practical yet theory-driven digital transformation strategy to improve SME's HR processes in payroll processing and leave management. Through process digitalisation, behaviour realignment, and integration of systems, the proposed two-cycle intervention model addresses typical operational inefficiencies and adoption challenges in resource-limited contexts of SMEs. The study demonstrates how structured, iterative change driven by user-focussed system design can drive both operational efficiency and cultural acceptance of digital HR practices.

Theoretical Contribution

Theoretically, this research will extend the TAM's application from the traditional point-of-adoption scope to a longitudinal framework in guiding the organisation's behavioural change

throughout the transformation lifecycle. By embedding TAM in Lewin's cyclical Action Research Cycle, it bridges conceptual adoption drivers with operational change processes and demonstrates how the dynamic interaction of perceived usefulness, ease of use, and iterative feedback can be employed to guide sustainable digital transformation in SMEs. This theorised positioning contributes to the literature by intersecting technology acceptance theory with current change management models within a context-dependent setting.

Practical and Contextual Contribution

Contextually, it will bridge the gap between academic and practitioner literature on SME digital transformation by proposing a digital transformation framework that has been contextualised within a real-world SME focusing on the creative industry. This framework offers a structured, scalable, and compliance-ready blueprint for SMEs, especially for those embedded in corporate groups. The decentralised leave approval workflow not only empowers line managers but also expedites decision-making and builds accountability. The employee self-service portal and automated statutory compliance support operational transparency, audit readiness, and regulatory compliance. These results are particularly important to creative-industry SMEs, where fastness, low overhead costs, and quick decision cycles are essential to competitiveness.

Limitations and Future Research

Nonetheless, the theoretical nature of the research and sole example case represent *limitations* to generalisability of results. Future work may seek to use this framework to test the proposed model in an empirical way across a series of SMEs, in different environments and industries, including comparative analysis between stand-alone SMEs, SMEs in Corporate Groups. Alternatively, it might focus on future studies exploring HR cross-functional integration, for example, HR accounting data or HR Sustainability/environmental, social and governance (ESG) reporting, to better understand HR digitalisation and the extent to which it can scale and improve governance ultimately.

References

- Abdalla, R. A., Ramayah, T., Sankar, J. P., Hidaytalla, L. A., & John, J. A. (2024). Enhancing efficiency: The impact of cloud computing adoption on small and medium enterprises performance. *Emerging Science Journal*, 8(6), 2431–2448. <https://doi.org/10.28991/esj-2024-08-06-017>
- Amar, M. (2024). Malaysia's Madani economy framework aims for sustainable and inclusive growth. *Biztech Community*. <https://biztechcommunity.com/news/malaysias-madani-economy-framework-aims-for-sustainable-and-inclusive-growth/>
- Ardito, L., Raby, S., Albino, V., & Bertoldi, B. (2021). The duality of digital and environmental orientations in the context of SMEs: Implications for innovation performance. *Journal of Business Research*, 123, 44–56. <https://doi.org/10.1016/j.jbusres.2020.09.022>
- Arnan, S., Oki, I., Brata, D., & Mulyati, Y. (2021). Designing Of Payroll Accounting System Information: A Geographical Setting on Tantina Jatiluhur Foundation. *Review of International Geographical Education Online*, 11(1). <https://doi.org/10.48047/rigeo.11.1.52>
- Avison, D. E., Lau, F., Myers, M. D., & Nielsen, P. A. (1999). Action research. *Communications of the ACM*, 42(1), 94–97. <https://doi.org/10.1145/291469.291479>
- Ballamudi, V. K. R., Desamsetti, H., & Mandapuram, M. (2022). Influence of Digitization on

- Human Resources (HR) Services and Processes. *ABC Research Alert*, 10(3), 32–36. <https://doi.org/10.18034/ra.v10i3.653>
- Baykal, E. (2020). Digitalization of Human Resources. In *Tools and Techniques for Implementing International E-Trading Tactics for Competitive Advantage* (pp. 268–286). IGI Global Scientific Publishing. <https://doi.org/10.4018/978-1-7998-0035-4.ch013>
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/misq/2013/37:2.3>
- Bondarouk, T., & Brewster, C. (2016). Conceptualising the future of HRM and technology research. *The International Journal of Human Resource Management*, 27(21), 2652–2671. <https://doi.org/10.1080/09585192.2016.1232296>
- Chalmers, J., Cox, E., & Picard, N. (2021, October 28). *ESG Investor Survey: The economic realities of ESG*. PwC. <https://www.pwc.com/gx/en/services/audit-assurance/corporate-reporting/esg-investor-survey.html>
- Chitambala, C., & Marvin, K. M. (2025). Analyzing the Effectiveness of Electronic Human Resource Management Systems on Human Resource Performance (e-HRM): A Case Study of the Kalumbila Mining Sector. *Journal of Exceptional Multidisciplinary Research.*, 2(1), 23–46. <https://doi.org/10.69739/jemr.v2i1.301>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Economic Planning Unit, Prime Minister’s Department. (2021). Malaysia Digital Economy Blueprint. Ministry of Economy Malaysia. <https://ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>
- Hung, S.-Y., Chang, C.-M., & Yu, T.-J. (2006). Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. *Government Information Quarterly*, 23(1), 97–122. <https://doi.org/10.1016/j.giq.2005.11.005>
- Katou, A. A., & Budhwar, P. (2015). Human resource management and organisational productivity. *Journal of Organizational Effectiveness: People and Performance*, 2(3), 244–266. <https://doi.org/10.1108/joepp-06-2015-0021>
- Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners* (5th ed.). SAGE Publications.
- Lewin, K. (1946). Action Research and Minority Problems. *Journal of Social Issues*, 2(4), 34–46. <https://doi.org/10.1111/j.1540-4560.1946.tb02295.x>
- Lokugama, K. J. (2021). Management Information System - Human Resource & Payroll System for Sri Lanka Ports Authority. *International Journal of Engineering and Management Research*, 11(2), 212–217. <https://doi.org/10.31033/ijemr.11.2.30>
- Mangipudi, M. R. (2018). A Study of Digitalization in HRM and its Effectiveness in Execution of HR Strategies and Policies. *HELIX*, 8(6), 4220–4222. <https://doi.org/10.29042/2018-4220-4222>
- Marler, J. H., & Fisher, S. L. (2013). An evidence-based review of e-HRM and strategic human resource management. *Human Resource Management Review*, 23(1), 18–36. <https://doi.org/10.1016/j.hrmr.2012.06.002>
- Marler, J. H., & Parry, E. (2016). Human resource management, strategic involvement and e-HRM technology. *The International Journal of Human Resource Management*, 27(19), 2233–2253. <https://doi.org/10.1080/09585192.2015.1091980>

- Masyitah, E., Liswanty, I., & Muda, I. (2022). Implication impact of human resource management on digital-based in pharmaceutical corporation. *Journal of Pharmaceutical Negative Results*, 13(7), 3542–3548. <https://doi.org/10.47750/pnr.2022.13.s07.454>
- McQuillen, B. (2024). *Empowering Your Workforce: The Game-Changing Benefits of Employee Self-Service Portals (and How to Implement Them Like a Pro)*. Ignitehcm.com; Ignite HCM LLC. <https://www.ignitehcm.com/blog/empowering-your-workforce-the-game-changing-benefits-of-employee-self-service-portals-and-how-to-implement-them-like-a-pro>
- Menant, L., Gilibert, D., & Sauvezon, C. (2021). The Application of Acceptance Models to Human Resource Information Systems: A Literature Review. *Frontiers in Psychology*, 12, 659421. <https://doi.org/10.3389/fpsyg.2021.659421>
- Mitrofanova, E. A., Konovalova, V. G., & Mitrofanova, A. E. (2019). Opportunities, Problems And Limitations Of Digital Transformation Of Hr Management. *The European Proceedings of Social and Behavioural Sciences*, 57, 1717–1727. <https://doi.org/10.15405/epsbs.2019.03.174>
- Modi, R. K., & Lad, H. (2025). Implications of Work Automation for Human Resource Management. *Proceedings of the IRE*, 8(9), 33–36. https://www.researchgate.net/publication/389636354_Implications_of_Work_Automation_for_Human_Resource_Management
- Mohylova, M., & Holosenko, D. (2024). Technological Transformation of HR Management: Digital Solutions and Opportunities. *Empirio*, 1(2), 106–115. <https://doi.org/10.18523/3041-1718.2024.1.2.106-115>
- Okoronkwo, G. (2021). Digitization of Human Resource Practices: The Realities in the New Normal. *International Journal of Business Systems and Economics*, 13(4), 243–261. <https://arcnjournals.org/images/ARCN-IJBSE-13-4-16.pdf>
- Omowole, B. M., Olufemi-Phillips, A. Q., Ofodile, O. C., Eyo-Udo, N. L., & Ewim, S. E. (2024). Barriers and drivers of digital transformation in SMEs: A conceptual analysis. *International Journal of Scholarly Research in Science and Technology*, 5(2), 019–036. <https://doi.org/10.56781/ijrst.2024.5.2.0037>
- Pejabat Perdana Menteri. (2023). *Malaysia MADANI – Kemampanan, Ihsan, Nilai Hormat, Daya Cipta, Kesejahteraan dan Keyakinan*. Malaysia Madani. <https://malaysiamadani.gov.my/>
- Roque, R. A. C., Praga, D. J., & Intal, G. L. D. (2023). Employee Reimbursement System for a Manufacturing Company - Volume 14, No. 2, 2023 - JAIT-Journal of Advances in Information Technology. *Journal of Advances in Information Technology*, 14(2). <https://doi.org/10.12720/jait.14.2.350-354>
- Salim, T. I. S., Susanto, Y. B., & Jimmy, S. (2021). Digitalization of Payroll System in PT XYZ to Improve Employee Performance. *Proceedings of the First International Conference of Economics, Business & Entrepreneurship, ICEBE 2020*. <https://doi.org/10.4108/eai.1-10-2020.2305520>
- Sandhya, D., & Chaithra, N. (2023). Predictive HR Analytics- A Game Changer. *Futuristic Trends in Management*, 2(8), 103–110. <https://doi.org/10.58532/v2bs8p1ch11>
- Saunders, M. N., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education Limited. https://www.researchgate.net/publication/240218229_Research_Methods_for_Business_Students
- Sirangula, V. (2025). SAP HCM time management and payroll integration: streamlining payroll

- processing. *International Journal of Science and Research Archive*, 14(1), 1107–1115.
<https://doi.org/10.30574/ijrsra.2025.14.1.0150>
- SME Corp Malaysia. (2016). *Profile of MSMEs in 2015-2024*. Smecorp.gov.my.
<https://smecorp.gov.my/index.php/en/policies/2020-02-11-08-01-24/profile-and-importance-to-the-economy>
- Tamkin, P., Barber, L., & Dench, S. (1998). From Admin to Strategy: The Changing Face of the HR Function. *Managerial Auditing Journal*, 13(2), 139–141.
<https://doi.org/10.1108/maj.1998.13.2.139.2>
- Tashakkori, A., & Teddlie, C. (2010). *SAGE Handbook of Mixed Methods in Social & Behavioral Research* (2nd ed.). SAGE Publications, Inc. <https://doi.org/10.4135/9781506335193>
- Tavares, M. C., Vale, J., & Costa, A. (2024). The Role of Decentralised Managers in Decision-Making in a Large Industrial Company. *Administrative Sciences*, 14(9), 202–202.
<https://doi.org/10.3390/admsci14090202>
- Tiffin, J. (2025). *HR Meets AI: How Automation is Changing the Game*. Just-Hr.ca.
<https://www.just-hr.ca/hr-meets-ai-how-automation-is-changing-the-game>
- Vatnani, K. (2025). *AI in HR: What to Expect in 2025 and Beyond*. LinkedIn.com.
<https://www.linkedin.com/pulse/ai-hr-what-expect-2025-beyond-kamal-vatnani-ugbnf>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
<http://dx.doi.org/10.1287/mnsc.46.2.186.11926>
- Vijai, C., & Mariyappan, M. S. R. (2023). Robotic Process Automation (RPA) in Human Resource Functions. *Advances in Management*, 16(3), 30–37.
<https://doi.org/10.25303/1603aim030037>
- Votto, A. M., Valecha, R., Najafirad, P., & Rao, H. R. (2021). Artificial Intelligence in Tactical Human Resource Management: a Systematic Literature Review. *International Journal of Information Management Data Insights*, 1(2), 100047. sciencedirect.
<https://doi.org/10.1016/j.jjime.2021.100047>
- Wahdaniah, Sucianti, R., Ambalele, E., & Tellu, A. H. (2023). Human Resource Management Transformation in the Digital Age: Recent Trends and Implications. *International Journal of Applied Research and Sustainable Sciences*, 1(3), 239–258.
<https://doi.org/10.59890/ijarss.v1i3.902>
- Zhang, J., & Chen, Z. (2023). Exploring Human Resource Management Digital Transformation in the Digital Age. *Journal of the Knowledge Economy*, 15(1), 1482–1498.
<https://doi.org/10.1007/s13132-023-01214-y>