

Development of an Android and Cloud-Based Human Resource Information System: A Case Study at PT Sari Ater

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Abstract

Human resource operations in many Indonesian companies still rely heavily on manual systems, leading to inefficiencies, data inaccuracies, and delays. This study examines the development and implementation of an Android and cloud-based Human Resource Information System (HRIS) at PT Sari Ater, a hospitality company facing such operational challenges. The objective is to reduce processing time, improve data accuracy, and enhance employee satisfaction by digitizing core HR functions such as leave requests, reimbursement claims, attendance tracking, and training records. The study adopts a qualitative descriptive method, including interviews, observations, and document analysis, and applies the Trees Rapid Track Cloud Implementation Methodology. A four-week pilot involving 35 employees showed significant improvements: leave approval times dropped from over 4 days to under 1 day, reimbursement processing was reduced by 65%, and form entry errors declined by over 80%. Employee satisfaction with HR services also increased substantially. These findings demonstrate that integrating mobile and cloud technologies can transform HR operations in SMEs, increase transparency, and support digital transformation. The system offers a scalable model for similar organizations seeking to modernize their HR management and foster a culture of accountability and efficiency.

Keywords: human resource information system, android application, cloud computing, employee management, digital transformation.

INTRODUCTION

In today's digital economy, effective human resource (HR) management is a key determinant of organizational success. Traditional HR practices, particularly in developing economies like Indonesia, still rely on manual and semi-automated processes that are often inefficient, time consuming, and error-prone (Mangkunegara, 2001; Handoko, 2000). According to O'Brien (2003), a management information system should support timely, relevant, and accurate decision-making yet many organizations continue to lack such infrastructure in their HR departments.

One such case is PT Sari Ater, a hospitality company operating across multiple locations in West Java. Despite managing hundreds of employees, the company still conducts critical HR functions such as leave applications, reimbursement processes, and employee evaluations

using Microsoft Excel and paper-based documentation. These methods frequently result in data mismatches, document loss, and significant delays in processing routine HR activities. For example, submitting a leave request often requires several physical handoffs, which may be delayed due to the unavailability of supervisors or HR personnel. Such inefficiencies hinder employee productivity and contribute to operational bottlenecks.

The rapid development of mobile and cloud technologies offers a potential solution. Android, as a widely adopted mobile operating system, provides an open-source platform that enables real-time application access for employees via smartphones (Safaat, 2011). Combined with cloud computing, which allows for centralized and secure data storage accessible from anywhere, organizations can redesign their HR operations to be more responsive and data-driven (IEEE Internet Computing, 2008; Nazrudin, 2011).

Despite growing academic interest in HR information systems (HRIS), limited studies have focused on practical implementations in small-to-medium enterprises within the Indonesian tourism sector. This research addresses that gap by proposing a model for an Android and cloud-based HRIS tailored to PT Sari Ater. The model is built using the Trees Rapid Track Cloud Implementation Methodology, which includes planning, design, development, transition, and review phases.

The objective of this article is to analyze the current state of HR systems at PT Sari Ater, identify the core inefficiencies, and present a novel model HRIS solution that can streamline operations, improve data accuracy, and enhance employee satisfaction through mobile and cloud technologies. Theoretically, this study stands out by bridging a research gap in digital HR transformation for Indonesian SMEs, providing new empirical validation of mobile-cloud architectures and confirming key technology acceptance models in this specific context. Practically, this research offers a pioneering HRIS implementation roadmap with demonstrable improvements in efficiency, transparency, and workforce engagement, validated through measurable pilot outcomes. By doing so, the study not only advances the scholarly dialog on HRIS adoption and digital transformation, but also delivers actionable insights and a future-ready, scalable model for other organizations experiencing similar challenges.

METHOD

This study employed a qualitative descriptive research method, with the objective of developing a model for an Android and cloud-based Human Resource Information System (HRIS) tailored to the operational needs of PT Sari Ater. The qualitative approach was chosen to deeply explore the existing issues in HR operations and to design a system model that aligns with the practical requirements of the company.

Research Instruments

The primary research instruments used in this study were semi-structured interviews, observations, and documentation analysis. The interviews were conducted with key personnel in the company, including the HR department, IT staff, and executive management. Observation was also carried out on the current workflow processes in the HR department, particularly in employee leave management, reimbursement claims, and training documentation.

Data Collection Process

Data collection was conducted through focused group discussions (FGDs) and one-on-one interviews with stakeholders. The data gathered included both verbal responses and physical documentation such as leave forms, reimbursement forms, and spreadsheets used by HR staff. Additionally, secondary data such as organizational structure, job descriptions, and performance appraisal templates were reviewed to ensure the system design addressed all functional requirements.

Data Analysis Process

Data were analyzed using content analysis and flowchart modeling. The qualitative data from interviews were categorized based on common themes related to HR inefficiencies and user needs. The analysis also included a comparison of current manual processes with the proposed digital alternatives. A SWOT analysis of implementing a Software as a Service (SaaS)-based system was conducted to assess the system's feasibility. Based on this analysis, a system model was designed, consisting of menu structures, access control layers, and process flows.

System Development Methodology

The system was designed using the Trees Rapid Track Cloud Implementation Methodology. This approach includes five key phases:

1. Planning Phase – Identification of user needs, technical feasibility, and project scope.
2. Design and Confirmation Phase – Creation of interface mockups, flowcharts, and entity-relationship diagrams; validation with stakeholders.
3. Development and Validation Phase – Construction of system prototypes using Android API and cloud-based databases.
4. Transition Phase – Pilot testing with selected users; training and adaptation.
5. Post-Implementation Review Phase – Evaluation of system performance and user feedback for continuous improvement.

Data Display Process

The final outputs of the system design were presented using visual diagrams such as flowcharts (to illustrate existing vs. proposed processes), mock-up user interfaces (for Android-based applications), and database schema models. These visualizations were validated through iterative feedback sessions with PT Sari Ater staff to ensure the system met functional expectations and usability standards.

RESULT AND DISCUSSION

Baseline Analysis of Current HR Operations

A comprehensive observation of daily routines, combined with interviews and document inspection, confirmed that PT Sari Ater's human resource activities still hinge on paper forms and Excel spreadsheets. Leave requests commence with hand written applications that must circulate physically among supervisors before reaching HR, a process that frequently stalls when line managers are away on duty or off site. Reimbursement claims display similar fragility, with employees attaching paper receipts to claim sheets, then waiting while HR staff reconcile figures manually and forward them to Finance. Training records are logged in disparate Excel files maintained by individual HR officers, rendering it impossible for either managers or employees to verify course completions in real time. Attendance data, although captured by a fingerprint device, are exported to spreadsheets for overtime

calculation, a manual stage vulnerable to import errors. Such fragmentation leads to repeated data entry, misplaced documents, and an overall turnaround that can stretch from several days for routine leave approval to nearly two weeks for reimbursement processing. These findings echo O'Brien's (2003) critique that manual systems rarely satisfy the MIS imperatives of timeliness, accuracy, and completeness, and they mirror bottlenecks previously reported in Indonesian SMEs by Handoko (2000) and Mangkunegara (2001).

HRIS Prototype Design Outcomes

Guided by the shortcomings identified above and refined through successive focus group sessions, the prototype was built around five fully integrated modules, e Leave, e Reimbursement, Training & Development, Attendance & Overtime, and a Performance Dashboard. Each module was engineered to operate on a Software as a Service back end, ensuring that data captured through Android smartphones synchronize instantly with a central cloud database. The design phase placed particular emphasis on role-based access, encrypted storage, and intuitive screens that minimize typing. Usability heuristics were applied to present employees with drop down lists, auto filled profile information, and real time status indicators, thereby reducing input errors and enhancing transparency. From a technical standpoint, the micro services architecture permits each module to evolve independently, a feature that resonates with the scalability principles recommended by IEEE Internet Computing (2008). By translating administrative chores into mobile interactions, the prototype deliberately shifts HR participation from a desk bound activity to a process that can occur anywhere and at any time, in line with Safaat's (2011) characterization of Android as an enabler of ubiquitous enterprise applications.

Pilot Testing and Performance Metrics

A four-week pilot test was conducted involving 35 employees from different departments. Quantitative metrics were collected before and after the implementation to assess system performance.

Table 1. Comparative Performance Before and After HRIS Implementation

No	Indicator	Before HRIS (Manual)	After HRIS (Digital)	Change (%)
1	Average leave approval time	4.2 days	0.9 day	↓ 78.6%
2	Average reimbursement processing time	9.8 days	3.4 days	↓ 65.3%
3	Form data entry error rate	11%	2%	↓ 81.8%
4	User satisfaction score (scale 1–5)	2.4	4.3	↑ 79.1%

The table shows a significant performance boost in terms of processing speed and accuracy. The digital leave approval workflow allowed supervisors to review requests via their mobile devices, eliminating the physical delays in traditional signature routing. Similarly, the ability to upload receipts and track reimbursement status online reduced time spent by both employees and HR personnel. Automated field validation prevented incomplete or inconsistent form submissions, leading to a notable drop in form errors.

The user satisfaction score, gathered through post-pilot surveys, indicated a high level of acceptance among staff. Respondents praised the system's transparency, accessibility, and

real-time feedback features. These results align with Davis's Technology Acceptance Model (1989), in which perceived usefulness and ease of use are key factors influencing technology adoption.

Alignment with Theory and Previous Studies

The findings reaffirm Nash's (1995) claim that information systems enhance decision quality when they deliver accurate data in a timely manner: cloud synchronization ensured that supervisors and HR personnel accessed identical, up to date records. They also extend earlier Indonesian studies by demonstrating that mobile cloud convergence can overcome the geographic dispersion typical of multi-site hospitality firms. The empirical gains in processing speed and data accuracy parallel those documented by Bohlander and Snell (2010) in U.S. contexts, suggesting cross cultural generalizability. Finally, the employee satisfaction uplift corroborates the Technology Acceptance Model, indicating that functional benefits translate into higher behavioral intention to use when systems are intuitive and visibly shorten routine tasks.

Practical Implications for PT Sari Ater

The pilot confirms that digitalizing HR via an Android and cloud based HRIS releases managerial capacity by slashing approval latency and virtually eliminating paperwork backlogs. Centralized, real time records also strengthen governance, making audit trails immediately available and reducing compliance risk. Perhaps most significantly, the system cultivates a sense of empowerment and transparency among employees, thereby reinforcing the psychological contract and potentially mitigating turnover, an outcome particularly valuable in the labor-intensive hospitality sector. Because the architecture is modular, additional functions such as payroll, recruitment tracking, or predictive analytics can be integrated without disrupting existing services, ensuring that the platform remains future proof as corporate needs evolve.

Limitations and Directions for Future Work

Notwithstanding its promising results, the pilot was confined to a single branch and a limited timeframe. Organizational culture and infrastructure at other PT Sari Ater sites may expose unanticipated technical or behavioral barriers. Longitudinal studies over twelve to eighteen months are therefore necessary to evaluate sustained productivity gains and return on investment. Future research might also explore the system's capacity for advanced analytics such as forecasting absenteeism or turnover risk which could elevate HR from an administrative function to a strategic partner in decision making. Comparative studies with other Indonesian SMEs would further illuminate contextual variables that influence successful HRIS adoption.

CONCLUSION

This study set out to investigate two inter related questions: first, how the existing human resource processes at PT Sari Ater function in practice, and second, whether and how an Android and cloud based Human Resource Information System can resolve the operational delays and data quality issues revealed in those processes. The baseline assessment confirmed that a heavy dependence on paper forms and spreadsheet files had created a fragmented information environment in which leave approvals, reimbursement claims, training records, and attendance data were routinely delayed, duplicated, or lost. Such findings resonate with the broader literature on small and medium sized enterprises in developing economies, where

manual workflows typically fail to meet the information system imperatives of timeliness, accuracy, and completeness.

The design and pilot implementation of the proposed HRIS demonstrated that mobilizing HR functions through an Android front end, synchronized to a central cloud database, can radically compress administrative cycle times while improving data validity. Empirically, median leave approval duration fell from more than four days to under one, reimbursement turnaround was cut by roughly two thirds, and form entry errors declined from double to low single digit percentages. These quantitative gains were accompanied by a marked rise in employee satisfaction, a qualitative indicator that the system's perceived usefulness and ease of use, key constructs in the Technology Acceptance Model were substantially enhanced. In theoretical terms, the results validate Nash's proposition that information systems generate managerial value when they deliver accurate data in real time, and they extend recent cloud computing research by confirming that SaaS architectures can be scaled effectively within an Indonesian hospitality context.

Beyond efficiency metrics, the pilot suggests deeper organizational benefits. By collapsing the spatial and temporal barriers that once separated employees from supervisors and HR officers, the HRIS introduces a culture of transparency and self-service that strengthens the psychological contract between staff and employer. Real time dashboards equip managers with reliable data for faster, evidence-based decisions, while the modular architecture leaves ample room for future integration of payroll, recruitment, or predictive analytics. From a governance perspective, the system's centralized audit trails and role-based access controls lay a stronger foundation for compliance with emerging data protection regulations.

To translate these pilot gains into lasting organizational value, PT Sari Ater should embed the HRIS as the default platform for all HR transactions and invest consistently in user training, data security reinforcement, and change management communication. Continuous monitoring of usage patterns and periodic system audits will be critical to sustaining data integrity and employee trust. Because the platform is designed as a constellation of micro services, the company can incrementally introduce new features, such as electronic pay slips, succession planning tools, or AI driven attrition alerts, without disrupting existing services, thereby future proofing its human capital infrastructure.

While the study offers robust evidence of short-term efficiency and satisfaction gains, its scope was limited to a single branch and a four-week observation window. Subsequent research should therefore extend the evaluation over a longer horizon and across multiple sites to capture longitudinal effects on productivity, cost savings, and employee retention. Comparative studies involving similar enterprises in other sectors or regions would help clarify contextual factors that mediate HRIS success, while experimental work on advanced analytics could explore how predictive modelling further elevates HR from an administrative to a strategic function.

In sum, the findings show that an Android and cloud based HRIS is not merely a technological upgrade but a catalyst for organizational transformation at PT Sari Ater. By replacing manual routines with mobile, data driven workflows, the company positions itself to meet the agility, transparency, and employee experience standards increasingly demanded in the era of digital business. The research thereby contributes both a practical roadmap for enterprises confronting similar challenges and a theoretical confirmation that mobile cloud convergence can deliver measurable value in emerging market settings.

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