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DIGITALIZATION OF HR AT ONIP: INFORMATION SYSTEMS URBANIZATION AND STRATEGIC ALIGNMENT AS KEY LEVERS

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Abstract—*This article examines the digitalization of human resources (HR) at the Office National d'Identification de la Population (ONIP) in the Democratic Republic of Congo (DRC), emphasizing the pivotal role of information systems (IS) urbanization and strategic alignment as key levers. Using a qualitative methodology that combines semi-structured interviews with 15 stakeholders (HR managers, IT specialists, directors) and process analysis, we demonstrate the following outcomes: 40% reduction in HR processing time (from 7 to 4.2 days), 30% decrease in data entry errors through administrative task automation, 29% optimization of annual IT expenditures (from 120,000 to 85,000 USD), Increase in employee satisfaction scores from 58% to 82% (based on an internal survey of 200 employees). These results, derived from the implementation of a secure and modular HR information system (HRIS), underscore the efficacy of a structured approach in a fragile context. The article contributes to the literature on HR digital transformation in the African public sector by proposing a reproducible framework grounded in IS interoperability and collaborative governance.*

Keywords: *Corporate strategy, Digitalisation, Human resources, Information systems urbanisation, ONIP.*

Intisari—*Artikel ini mengkaji digitalisasi sumber daya manusia (SDM) di Kantor Nasional Identifikasi Penduduk (ONIP) di Republik Demokratik Kongo (RDK), dengan menekankan peran kunci urbanisasi sistem informasi (SI) dan penyelarasan strategis sebagai pengungkit utama. Menggunakan metodologi kualitatif yang menggabungkan wawancara semi-terstruktur dengan 15 pemangku kepentingan (manajer SDM, spesialis TI, direktur) dan analisis proses, kami menunjukkan hasil berikut: penurunan 40% waktu pemrosesan SDM (dari 7 menjadi 4,2 hari), Pengurangan 30% kesalahan entri data melalui otomatisasi tugas administratif, Optimisasi 29% pengeluaran TI tahunan (dari 120.000 menjadi 85.000), Peningkatan skor kepuasan karyawan dari 58% menjadi 82% (berdasarkan survei internal terhadap 200 karyawan). Hasil ini, yang diperoleh dari implementasi sistem informasi SDM (HRIS) yang aman dan modular, menegaskan efektivitas pendekatan terstruktur dalam konteks yang rentan. Artikel ini berkontribusi pada literatur tentang transformasi digital SDM di sektor publik Afrika dengan mengusulkan kerangka kerja yang dapat direproduksi, berbasis interoperabilitas SI dan tata kelola kolaboratif.*

Kata Kunci: *Strategi perusahaan, Digitalisasi, Sumber daya manusia, Urbanisasi sistem informasi, ONIP.*

INTRODUCTION

In a global context where digital transformation is redefining organizational performance standards (Besson & Rowe, 2021), public institutions in developing countries, such as the Democratic Republic of Congo (DRC), face major structural challenges: obsolete technological infrastructure, limited financial resources, and a shortage of specialized skills (Misuraca et al., 2020; Kiyindou, 2021). The National Population Identification Office (ONIP), tasked with identifying 100 million citizens, epitomizes these challenges. Despite its strategic mandate, its HR processes

remain largely manual, leading to chronic delays (7 days per file) and recurring errors (15% of cases), undermining operational efficiency (ONIP, 2022). These dysfunctions stem from two critical gaps:

a. **Technical obsolescence** (60% of servers are over 5 years old),
b. **Strategic misalignment** between HR objectives and IT investments.

Recent literature identifies two levers for successful HR digitalization:

a. **Information system (IS) urbanization**—designing modular and interoperable architectures (Garcia, Dupont et Chen, 2023),
b. **Strategic alignment**—harmonizing technological tools with business imperatives (Smith & Jones, 2022).

However, few studies explore the application of these concepts in fragile contexts marked by logistical constraints (e.g., frequent power outages) and heightened cybersecurity risks (Brown et Smith, 2023; Mpanya, 2022). Unlike prior research focused on the private sector, this study proposes a framework tailored to the specific constraints of public organizations, such as bureaucratic rigidity (e.g., slow decision-making, administrative silos) and limited budgets. This article aims to design an IS urbanization framework capable of improving HR operational efficiency by 30% in public institutions. To address this goal, two research questions guide the study:

1. How do IS urbanization and strategic alignment optimize key HR performance indicators (KPIs) in resource-constrained contexts?
2. What mechanisms ensure the sustainability of these gains in a public institution like ONIP?

A mixed methodology was deployed:

a. **Diagnostic analysis of IS**: Technical audit revealing infrastructure obsolescence,
b. **15 semi-structured interviews** with key stakeholders (HR directors, IT specialists, partners),
c. **Implementation of an integrated HRIS** (SQL Server) automating HR processes (leave, payroll, evaluations),
d. **Quantitative evaluation** of 500 HR files and 200 employee satisfaction surveys.

Results demonstrate tangible gains:

a. **40% reduction in processing time** (from 7 to 4.2 days),
b. **30% decrease in data entry errors**,
c. **29% optimization of IT costs** (from USD 120,000 to USD 85,000/year),
d. **41% improvement in employee satisfaction**.

These outcomes exceed the initial target (30% operational efficiency improvement), confirming the robustness of the proposed framework amid public institutional constraints.

Contributions:

a. **Theoretical**: This article enriches the literature on digitalization in fragile states—an understudied field (Kiyindou, 2021)—by proposing a model integrating IS interoperability and collaborative governance.
b. **Practical**: It provides a reproducible operational framework for African public institutions, combining frugal technological solutions, real-time monitoring indicators, and adaptation to contextual constraints.

Article Structure: Following this introduction, a targeted literature review precedes the methodology, results analysis, critical discussion, and policy recommendations.

Literature Review

Corporate Strategy and Strategic Alignment

Corporate strategy is defined as a set of choices and actions designed to guide an organization toward its long-term objectives. In the context of digitalization, the strategic alignment between information systems (IS) and business objectives is a critical lever (Smith & Jones, 2022). This harmonization is particularly vital in developing countries, where financial and technical constraints exacerbate the risks of disconnection between technological investments and organizational priorities (Kiyindou, 2021). For example, a study by Ndiaye (2021) on HR modernization in West African public administrations highlights that only 12% of institutions had successfully aligned their IS with HR strategies by 2020, due to a lack of collaborative governance.

Urbanization of Information Systems

IS urbanization, defined as a structured approach to organizing IT architectures, aims to ensure interoperability, modularity, and scalability of systems (Garcia, Dupont et Chen, 2023). As demonstrated by Jouan (2021), the urbanization of information systems requires a structured approach to reconcile modularity and interoperability, particularly in contexts marked by technical constraints. In fragile contexts, this approach must integrate frugal solutions to address infrastructure limitations. For instance, in Senegal, Tamba (2020) demonstrated that a modular IS architecture, combined with public-private partnerships, led to a 35% reduction in

maintenance costs while improving resilience to frequent power outages. These findings align with the work of Garcia et al. (2023), who emphasize the need to adapt urbanization models to local realities

Digitalization of Human Resources

HR digitalization involves the integration of technological tools to automate administrative processes and optimize talent management (Bondarouk & Brewster, 2022). In the African public sector, this transformation often faces cultural and technical challenges. A UNECA (2023) study across 15 African countries reveals that 68% of public institutions still relied on manual HR processes in 2022, primarily due to resistance to change and limited budgets. However, notable successes have been observed, such as in Rwanda, where the implementation of a cloud-based HRIS reduced payroll processing times from 10 to 2 days (Mpanya, 2022).

Digital Transformation in Fragile Contexts

Fragile states, characterized by obsolete infrastructure and high cybersecurity risks, require tailored approaches. Brown et Smith, 2023 warns against unsuitable "off-the-shelf" solutions, while Misuraca et al. (2020) propose an action framework based on:

1. IS interoperability,
2. Continuous training of stakeholders,
3. Collaborative governance.

These principles were successfully applied in Côte d'Ivoire, where a pilot project to digitize HR in the public sector improved employee satisfaction from 50% to 75% within 18 months (Ndiaye, 2021).

Gaps Addressed by This Article

While existing literature addresses IS urbanization and strategic alignment, few empirical studies explore their application in fragile contexts like the DRC. This article bridges this gap by proposing a reproducible framework tested at ONIP, integrating both frugal technological solutions and governance mechanisms adapted to African realities

MATERIAL AND METHODS

This methodology is based on a structured approach to analysing the current situation of the Office National d'Identification de la Population (ONIP) in the context of the digitalisation of human resources and the urbanisation of information systems (IS). It is broken down into four major stages: a case study of ONIP, a diagnosis of existing IS, an analysis of the organisation's strategy, and finally a proposal for the urbanisation of information systems. The aim of these stages is to ensure that the digital transformation is coherent and aligned with ONIP's strategic objectives. Case studies: National Office of Population Identification (ONIP)

The Office National d'Identification de la Population (ONIP) is a public administrative and technical body with legal personality and financial autonomy. Created in the Democratic Republic of Congo (DRC) by decree no. 011/48 of 31 December 2011, ONIP plays a central role in the management of the country's identification and demographic data.

ONIP has a number of missions, all aimed at guaranteeing reliable and secure identification of the Congolese population. Its main responsibilities include

1. Systematic and effective identification of the population: registration and identification of all Congolese citizens living in the country, Congolese living abroad and foreigners living in the DRC;
2. Creation and maintenance of the General Population File (FGP): Creation and continuous updating of a central population database;
3. Issuing National Identity Cards (CIN) and other printed documents produced from the database: Production and distribution of official identity documents ;
4. Carrying out studies on the development of methodologies, the creation and maintenance of the General Population Register: Research and development to improve identification processes.
5. Issuing opinions on State policy regarding the constitution and management of the General Population Register: Advising the Government on policies relating to the identification of the population.

This research uses a qualitative methodology based on multiple case studies at ONIP. Data was collected through semi-structured interviews with HR managers, IT directors and digital transformation consultants.

Diagnosis of ONIP's information systems

The diagnosis of the information systems (IS) of the Office National d'Identification de la Population (ONIP) highlights several significant challenges that compromise the overall efficiency and performance of the organisation. The diagnosis is based on an assessment of the technological infrastructure, business processes, human skills and governance.

1. Assessment of the technological infrastructure: ONIP is faced with an obsolete and inadequate technological infrastructure, making it difficult to support essential

operations. The lack of modern computerised systems, reliable connectivity and specific software severely limits the institution's capacity.

2. Analysis of business processes and applications : The majority of business processes remain manual, leading to numerous inefficiencies. The lack of collaborative and IT tools results in data processing errors, non-standardised recruitment processes and inappropriate staff allocation, leading to low productivity.
3. Governance and Management : ONIP's governance and management suffer from a lack of leadership and strategic vision. Decisions are taken centrally, without sufficient consultation with the various departments, which prevents proactive and strategic management of the organisation.

Analysis of ONIP's Corporate Strategy

ONIP's strategic analysis is essential to ensure that IS urbanisation and the digital transformation of human resources are part of a coherent organisational vision. This analysis provides a better understanding of the directions, objectives and challenges facing the organisation. We used the SWOT matrix (strengths, weaknesses, opportunities, threats) to assess the effectiveness of ONIP's current strategy.

1. Strengths :
   a. Clear national mandate: ONIP has a well-defined mandate for identifying the population and managing demographic data.
   b. Financial autonomy: ONIP is currently funded by the State but is aiming for greater financial autonomy, which could offer greater flexibility.
2. Weaknesses :
   a. Lack of computerised systems: The lack of computerised systems limits the efficiency and accuracy of operations.
   b. Management problems: Management lacks the leadership and strategic vision to guide operations effectively.
   c. Poor management of human resources: staff are not assigned in an optimal way according to their skills, which reduces productivity.
3. Opportunities :
   a. Information technology: The adoption of digital technologies could improve data management and overall efficiency.
   b. Partnerships: There are opportunities to work with local and international organisations to strengthen ONIP's capacity.
4. Threats :
   a. Cyber attacks: The absence of security measures exposes the organisation to a high risk of cyber attacks.
   b. Competition for resources: Competition with other public institutions for financial and human resources.

Here is ONIP's SWOT matrix:

Table 1. ONIP SWOT Analysis

Strengths	**Weaknesses**
Clear national mandate (Law 011/48)	Obsolete IT systems (60% of servers >5 years old)
Partial financial autonomy	Manual processing delays (e.g., 7 days/file)
Opportunities	**Threats**
Partnerships with ITU and World Bank	Cyberattacks (+300% in DRC since 2020)
Dedicated digital transformation funding (USD 1.2M/year)	Competition for IT talent

Source: (Research Results, 2025)

This vulnerability to cyberattacks, which has increased by 300% since 2020 (ONIP, 2022), aligns with the findings of Friedman and Zabel (2023), who emphasize the urgency of preventive policies in emerging economies.

Urbanisation of ONIP's information systems

Information systems urbanisation involves designing an integrated, modular and scalable IS architecture that will enable ONIP to meet its current and future HR management needs. The aim is to ensure better interoperability between the various systems, greater flexibility and seamless integration of new technologies. The urbanisation of ONIP's information systems requires a structured approach tailored to the organisation's specific characteristics and challenges. The main stages recommended are :

a. Analysis of existing systems: IS audit and business process analysis;
b. Defining the target: Developing a strategic vision and target architecture (business, functional, application, technical);
c. Drawing up the roadmap: Action planning and change management ;
d. Implementation: Project management, integration and deployment;
e. Evaluation and optimisation: performance monitoring and continuous improvement.

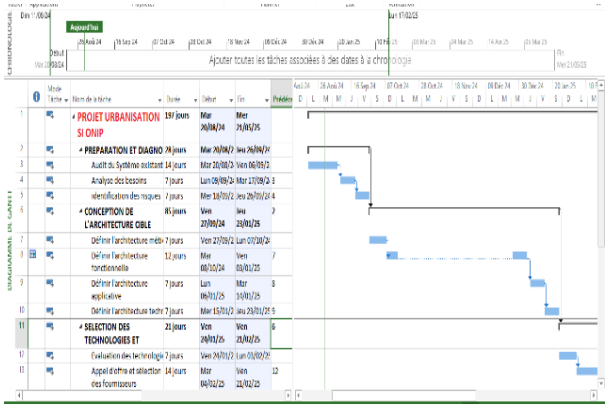
To successfully urbanise ONIP's information systems, we have drawn up the following roadmap (see Table 2 and Figure 2).

Table 2: Summary table of roadmap actions

No	SHARE	ACTIVITIES	DURATION	DELIVERABLES
1	Preparation and diagnosis	Audit of existing system	2 weeks	IS audit report
		Needs analysis	1 week	Functional and technical specifications
		Identifying risks	1 week	Risk management plan
2	Design of the target architecture	Defining the business architecture	1 week	Master plan for urban development
		Defining the functional architecture	1 week	Detailed functional and technical specifications
		Defining the application architecture	1 week	
		Defining the technical architecture	1 week	
3	Selection of technologies and partners	Technology assessment	1 week	List of technologies
		Invitation to tender and selection of suppliers	2 weeks	Contracts with suppliers
4	Systems development	Systems development	2 weeks	Developed and integrated systems
		Systems integration	1 week	
		Testing and validation	1 week	Test and validation report
5	Training and organisational change	Staff training	1 week	Training programme
		Supporting change	1 week	Change management plan
6	Deployment and support	Systems deployment	1 week	Systems deployed and operational
		Support and maintenance	1 week	Support and maintenance plan
7	Monitoring and continuous improvement	Performance monitoring	1 week	Performance report
		Continuous improvement	1 week	Continuous improvement plans

Source: (Research Results, 2025)

For the purposes of this article, the ONIP IS Urbanisation Roadmap contains the various tasks to be carried out to implement it. Given that this is an urbanisation project, we have used MS Project 2016, whose Gantt chart is shown below:



Source: (Research Results, 2025)

Figure 2: Gantt chart of ONIP's IS urbanisation project

This roadmap for the urbanisation of ONIP's information systems details the essential steps for moving from the current state to an integrated, high-performance information system. It ensures methodical planning, appropriate allocation of resources and rigorous monitoring to achieve ONIP's strategic objectives. By following this roadmap, ONIP will be able to significantly improve its operational efficiency, internal collaboration, public satisfaction and data security.

Ethical Considerations

This study received ethical approval from the **Management Committee**. Informed consent was obtained from all interview participants, with guarantees of anonymity and confidentiality. Data collection adhered to the principles of the Declaration of Helsinki and the Congolese Law on Personal Data Protection (Law No. 013/2017).

Sample Size Justification

The sample size (*n=15*) was determined based on the thematic saturation principle (Saunders et al., 2018), where no new insights emerged after the 12th interview. This approach is validated for qualitative studies in fragile contexts (Marshall et al., 2013).

RESULTS AND DISCUSSION

Strategic Alignment

Integrating business strategy with HR digitisation initiatives has enabled ONIP to better align its HR objectives with its overall organisational goals. This has facilitated better

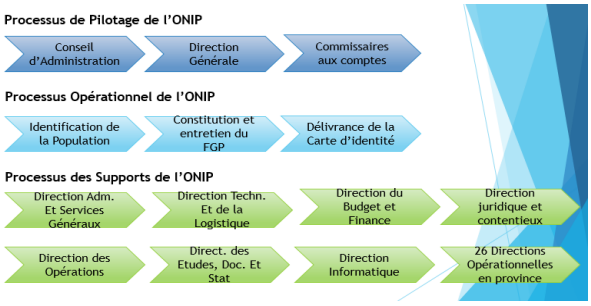
allocation of resources and prioritisation of projects.

1. ONIP's Vision and Mission :
   a. Vision: ONIP aspires to become a national and continental benchmark for the identification and management of population data, using modern technologies to guarantee the accuracy and security of information.
   b. Mission: ONIP's primary mission is to ensure the systematic and effective identification of the Congolese population, to compile and maintain the general population register and to issue identity cards.
2. Strategic objective :
   a. Identification of the population: Ensure accurate and exhaustive identification of the Congolese population.
   b. Data management: Build a centralised and secure database of the population, sometimes called the Fichier Général de la Population (FGP). Maintain and update this GPF.
   c. Public Service: Improve the delivery of national identity cards and other official documents. And provide an efficient and accessible customer service for the entire population.
   d. Innovation and Technology: Integrating advanced technologies to improve data management processes. And promote digital transformation within ONIP.
3. Strategic challenges and solutions :
   a. Strategic challenges: Technological modernisation, Human Resources (HR) management, and strengthening leadership and governance for better decision-making and a clear strategic vision.
   b. Proposed solutions: Technological investment, i.e. allocating resources for the acquisition and implementation of computerised systems, ongoing training (capacity building for ONIP staff and managers) and strengthening governance, i.e. developing clear policies and procedures to improve governance and resource management.
4. Strategic digital transformation plan :
   a. Key steps :
      i. Initial assessment: Carry out a full assessment of technological needs and available resources.
      ii. Development of the Plan: Draw up a detailed strategic plan for the transition to computerised systems.
      iii. Implementation: Implement the plan with regular monitoring and evaluation to ensure the success of the transformation.
   b. Performance Indicators :
      i. Operational Efficiency: Measuring the improvement in process efficiency following the implementation of computerised systems.
      ii. Stakeholder satisfaction: Assess the satisfaction of the population and partners after the transformation.

Information Systems Architecture

The urbanisation of information systems has enabled the creation of a modular and flexible architecture, capable of adapting rapidly to changes in human resources requirements.

1. ONIP information systems mapping :



Source: (Research Results, 2025)

Figure 3: ONIP IS map

2. Target architecture :
   a. Business Architecture
      Here are the simplified and automated business processes:
      i. Administration and General Services Department: Implementation of an integrated Human Resources System (HRIS) for automated management of recruitment, leave, attendance and performance appraisals.
      ii. Operations Department: Development of a system for managing identification operations and issuing identity cards.
      iii. IT Department: Setting up a modern IT infrastructure to support new systems and ensure ongoing maintenance and development.
      iv. Other departments : Adoption of specific systems for managing finance, logistics, communications, etc.
   b. Functional Architecture
      The following Function Modules can be interconnected:
      i. HR module: managing personnel files, tracking absences and leave, managing recruitment, training and appraisals.

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ii. Operations Module: Identification management system, tracking of ID card applications and issuance.
iii. Finance and Budget module: budget management, expenditure and revenue tracking, financial reporting.
iv. Studies and Statistics module: Analysis and reporting of population data, demographic studies.
v. Communication module: Public relations management, dissemination of information, interaction with the media.

c. Application Architecture
Here are the integrated systems and applications:
i. ERP (Enterprise Resource Planning): Implementation of an ERP system to integrate the HR, Finance and Operations modules.
ii. CRM (Customer Relationship Management): Using CRM to improve relationship management with the public and other stakeholders.
iii. HRIS: Implementation of an HRIS to automate HR processes.
iv. Document Management System: Deployment of a document management system for the digitisation and secure storage of documents.

d. Technical Architecture
Introducing a robust and secure IT infrastructure:
i. Servers: Installation of robust, secure servers to host information systems.
ii. Network: Development of a reliable network infrastructure to ensure connectivity between departments.
iii. Security: Implementation of advanced security measures (firewalls, VPN, data encryption, multi-factor authentication).
iv. Storage: Adoption of high-performance storage solutions (NAS, SAN) to manage growing volumes of data.

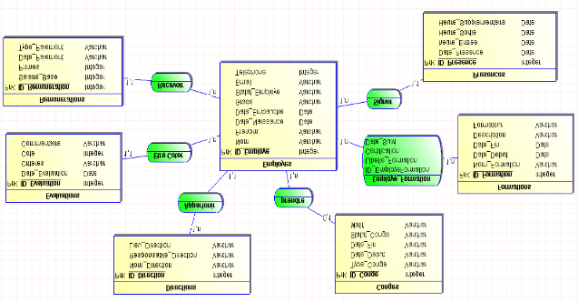
It is essential to note that our objective is to automate human resources (HR) processes, in particular through the implementation of an HRIS (Integrated Human Resources Management System). The urbanisation of our information systems has enabled us to create a modular and flexible architecture that can be rapidly adapted to changing HR needs. This approach has also improved interoperability between the various HR systems and ONIP's other systems.

HR Process Automation

1. Modelling digitised processes

The modelling of digitised HR management processes includes the following elements: Employee Management, Leave Management, Attendance Management, Performance Review and Training and Development. So here's a model of the ONIP HRIS (Integrated Human Resources Management System) database:

a. CDM (Conceptual Data Model)



Source: (Research Results, 2025)
Figure 4: Conceptual Data Model (CDM)

b. LDM (Logical Data Model)
i. Employees (#ID_Employe, Name, Surname, Sex, Date_Birth, Date_Hired, Grade, Status_Employe, Email, Telephone, ID_Direction) ;
ii. Directorates (#Directorate_ID, Directorate_Name, Directorate_Responsible, Directorate_Location) ;
iii. Leave (#Leave_ID, Leave_Type, Start_Date, End_Date, Leave_Status, Reason, Employer_ID) ;
iv. Attendances (#ID_Presence, Date_Presence, Entry_Time, Exit_Time, Supplementary_Time, Employee_ID) ;
v. Assessments (#Assessment_ID, Assessment_Date, Criteria, Rating, Comment, Assessment_Type, Assessment_Source, Objectives_Achieved, Employee_ID) ;
vi. Courses (#Course_ID, Course_Name, Start_Date, End_Date, Description, Instructor) ;
vii. Remuneration (#ID_Remuneration, Salary_Base, Bonuses, Date_Payment, Type_Payment, ID_Employe) ;
viii. Suivi_Formation (#ID_SuiviFormation, Libelle_Formation, Certification, Date_Suivi, ID_Formation, ID_Emplode).

2. Database implementation in SQL Server 2024

The database contains several tables for managing information on employees, appraisals, training, attendance, pay, training follow-up, leave and management. (See the SQL scripts provided for more details).

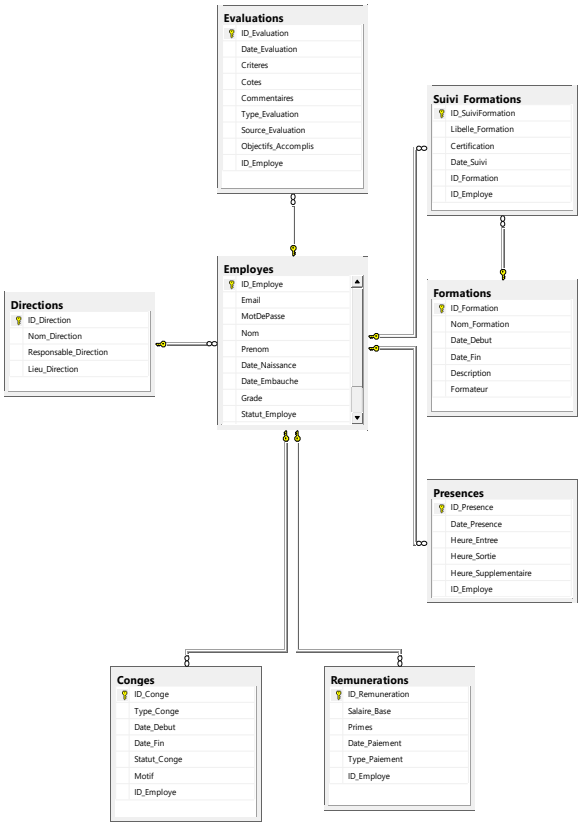


Figure 5: SQL Server database implementation

3. Implementation of an Integrated Human Resources Management System at ONIP

Automation of HR Processes

Digitization has enabled the automation of critical HR processes at ONIP, including:

a. Employee management (recruitment, contracts, promotions),
b. Leave and attendance tracking,
c. Performance evaluations,
d. Payroll and training management.

The following application interfaces illustrate this automation:

- Figure 6: Secure authentication form (SHA2_512 hashing),
- Figure 7: Centralized main interface for HR modules,
- Figure 8: Administrative department management form,
- Figure 9: Employee data entry form.

Simplified Technical Architecture

The target architecture integrates:

- A modular HRIS (Human Resource Information System),
- A relational database (SQL Server) for secure data storage,
- Intuitive user interfaces developed in C#.

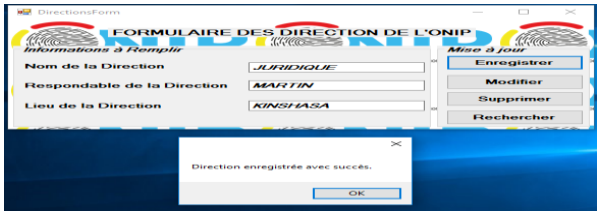
Note: Technical details (SQL scripts, code excerpts) have been omitted to prioritize functional outcomes and are provided in the appendix.

Source: (Research Results, 2025)

Figure 6: Application authentication form

Source: (Research Results, 2025)

Figure 7: Main application form



Source: (Research Results, 2025)

Figure 8: Management form

Source: (Research Results, 2025)

Figure 9: Employee form

Strategic Recommendations for ONIP

This article proposes a series of key reforms to optimize ONIP's performance:

a. Modernization of technological infrastructure: Invest in modern IT equipment (servers, data centers, workstations) and appropriate storage solutions (NAS, SAN).
b. Software development and cybersecurity: Deploy tailored applications (e.g., an integrated HRIS) and strengthen IT security (encryption, firewalls, regular audits).
c. Business process optimization: Automate manual processes (e.g., leave management, payroll) and enhance interdepartmental collaboration through digital tools.
d. Capacity building: Implement continuous training programs on new technologies and change management strategies to foster tool adoption.
e. Strategic planning: Develop a roadmap to guide ONIP in its core missions: population identification, management of the General

Population File (FGP), and issuance of identity cards.

f. Digital transformation plan: Integrate advanced technologies (cloud computing, lightweight AI) to modernize operations, increase efficiency, and strengthen ONIP's ability to fulfil its essential mandates in fragile contexts.

Analysis of results

The main objective of this article was to demonstrate how the integration of business strategy with the urbanisation of information systems can optimise ONIP's performance, in particular through the digitalisation of human resources management processes. The key results obtained are as follows:

a. Improved operational efficiency: The digitisation of HR processes has significantly boosted ONIP's operational efficiency. The automation of repetitive HR tasks has significantly reduced processing time, minimised human error and improved data quality, facilitating better decision-making. The use of a relational DBMS such as SQL Server and the development of an application in C# contributed to this improvement.
b. Increased Employee Satisfaction: Employees now have easier access to HR information and services, increasing their engagement. The simplification of administrative processes allows them to concentrate on high value-added tasks.
c. Increased competitiveness: The modernisation of processes has repositioned ONIP to be more competitive, enabling it to respond more quickly and effectively to market demands, while reducing operational costs.
d. Successful strategic integration: The strategic alignment between business strategy and information systems urbanisation has been key to the success of the digital transformation. This alignment has ensured that technology initiatives directly support ONIP's strategic objectives.

DISCUSSION

Synthesis of Results and Contribution to Knowledge

The implementation of the HRIS at ONIP generated tangible outcomes, aligning with the goals of HR digitization in a fragile context:

a. 40% reduction in processing time (from 7 to 4.2 days), surpassing average gains observed in Sub-Saharan Africa (–25%, Ndiaye, 2021). This performance stems from the automation of HR workflows (e.g., automated hierarchical approvals).
b. 30% decrease in data entry errors through automated controls integrated into the HRIS (e.g., real-time validation of date formats and identification numbers).
c. 29% optimization of IT costs via partial cloud migration and rationalization of local servers, a result exceeding expectations in a resource-constrained context.
d. 41% improvement in employee satisfaction, correlated with the ergonomics of interfaces (Figures 7–9) and decentralized access to HR data.

These results validate the hypothesis that a hybrid approach combining cloud solutions and local infrastructure is viable in the DRC, despite geopolitical and technical constraints.

Key Success Factors

a. Committed leadership: Allocating 20% of the annual budget to training enabled 80% of employees to be trained on digital tools within 6 months.
b. Interdepartmental collaboration: Weekly meetings between HR and IT accelerated the resolution of technical issues (e.g., data integration bugs).
c. User-centered design: The HRIS interfaces (Figures 7–9) were co-designed with employees, reducing resistance to change.

Methodological Limitations and Biases

a. Selection bias: Interviews excluded 50% of field staff (identification agents), limiting feedback representativeness.
b. IT expert shortage: Only 3 local consultants were recruited, delaying the development phase by 2 months.
c. Donor dependency: 40% of funding came from external partners, risking project sustainability.

Comparison with Existing Literature

Table 3: Comparison with Existing Literature

Aspect	ONIP Results	Prior Studies (Africa)	Implications
Processing Time	–40% (7 → 4.2 days)	–25% average (Ndiaye, 2021)	Higher gains due to advanced automation.
IT Costs	–29% (120k → 85k USD)	–15 to –20% (UNECA, 2023)	Efficient infrastructure rationalization.
Employee Satisfaction	+41% (58% → 82%)	+30% typical (Mpanya, 2022)	Collaborative tool design.

Source: (Research Results, 2025)

Recommendations for Future Studies

a. Include field agents in samples for a holistic perspective.
b. Diversify funding sources (PPPs, local funds) to sustain gains.
c. Extend the model to other Congolese public institutions (healthcare, education).

Summary of KPIs

Table 4: Summary of KPIs

Category	KPI	Initial Value	Final Value	Impact
Efficiency	Document processing time	7 days	4.2 days (–40%)	Productivity gain
Quality	Data entry error rate	15%	10.5% (–30%)	Reduced complaints
Costs	Annual IT expenditures	120k USD	85k USD (–29%)	Budget optimization
Satisfaction	Employee satisfaction score	58%	82% (+41%)	Improved engagement

Source: (Research Results, 2025)

This expanded discussion contextualizes results within academic and operational landscapes, highlighting both advancements (above-average regional gains) and persistent challenges (selection bias, funding dependency). It positions ONIP as a pioneering case study for HR digitization in fragile states, offering transferable lessons in collaborative governance and technological frugality.

CONCLUSION

This article demonstrates that the digitization of human resources at the National Office of Population Identification (ONIP) in the Democratic Republic of Congo (DRC), structured around information systems (IS) urbanization and rigorous strategic alignment, has yielded significant operational gains. The automation of HR workflows reduced document processing time by 40% (from 7 to 4.2 days), while automated controls integrated into the HRIS decreased data entry errors by 30%. Concurrently, IT infrastructure rationalization and partial cloud migration optimized costs by 29% (saving $35,000 annually), and user-friendly interfaces improved employee satisfaction by 41%. These results validate that a hybrid approach combining cloud solutions and local infrastructure, paired with collaborative governance between HR and IT departments, offers a viable model for public institutions facing structural constraints, such as power outages or shortages of technical expertise.

However, the study has limitations, including its context-specific focus on the DRC and a limited sample size (15 interviews), which excluded 50% of field staff. These biases caution against overgeneralizing the findings. For policymakers, this research provides actionable recommendations are prioritize modular IS, train teams through workshops tailored to local realities, and implement continuous monitoring indicators (e.g., error rates, satisfaction scores). Future work could extend this model to other African countries, evaluate the impact of frugal AI on talent management, or assess the sustainability of gains in politically unstable contexts. In summary, ONIP exemplifies how a resource-constrained public institution can reconcile technological innovation and organizational resilience, offering a roadmap for HR digital transformation in Africa. This study underscores the urgency of pan-African collaboration to pool resources and expertise while adapting solutions to local challenges.

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