

Reinventing social security through technology: the role of icts in performance improvement

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Abstract:

This research explores how managers within the social security sector perceive the digital transformation of internal management practices. The objective is to examine their perspectives, concerns, and experiences regarding the digitisation of administrative workflows and personnel-related activities specific to social security institutions. To achieve this, a semi-structured interview guide was developed to gather in-depth qualitative data. The insights gained will contribute to a better understanding of how employees in this sector respond to digital change, and will inform targeted recommendations to facilitate a more effective and inclusive transition. Ultimately, this study aims to support social security organisations in implementing digital tools that enhance efficiency and service quality, while also addressing the expectations and challenges faced by their managerial staff.

Keywords : Digitalisation, management, social security, organisational transformation, public sector innovation.

JEL Classification Code : M15, H55, O33.

1. Introduction :

In recent years, digital transformation has become a central strategic objective across various sectors, driven largely by the rapid and ongoing development of Information and Communication Technologies (ICTs). These technologies have significantly accelerated digitalisation processes, transforming how organisations operate and deliver services. This evolution is particularly relevant to the social security sector, where the integration of digital tools has the potential to enhance administrative efficiency, transparency, and service quality for beneficiaries.

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Against this backdrop, the present study seeks to explore how managers within a public social security institution perceive and respond to digital transformation. It focuses specifically on how digitalisation impacts their managerial practices and, by extension, the performance of the organisation as a whole.

To guide this investigation, the following central research question has been formulated :

How do digital technologies influence managerial practices within a social security organisation, and what impact does this have on both managerial performance and overall organisational outcomes ?

This main question is further supported by two secondary research questions :

- What are the key factors motivating organisations to engage in digital transformation ?
- What are the main challenges and barriers encountered during the implementation of digitalisation strategies ?

Based on these questions, the study proposes the following research hypotheses :

- **H1** : Digital transformation strengthens interactions with users and institutional partners, contributing to improved organisational performance.
- **H2** : Organisational resistance to change is the primary barrier to the effective adoption and implementation of digital technologies.

Methodologically, the study adopts a quantitative research approach was used, based on a structured questionnaire targeting key managerial staff , focusing on the *Caisse Nationale des Assurances Sociales des Travailleurs Salariés* (CNAS), a public social security agency headquartered in Algiers. Data were collected through semi-structured interviews with managers occupying strategic positions across several CNAS branches.

To ensure a structured and coherent analysis, the study is divided into two main parts :

- The first presents a theoretical framework for understanding digital transformation in managerial contexts, supported by relevant academic literature.
- The second offers an empirical analysis based on the CNAS case, examining how its managers interpret and adapt their practices in response to digitalisation.

2. Theoretical framework: ICTs and managerial practices:

The emergence of information and communication technologies in the business world has changed managers' practices. However, most studies linking manager's practices to organisational performance have not taken into account the environmental context (especially the technological environment). Many studies call for the inclusion of the external context in a study linking HRM practices to organisational performance.

2.1 Understanding information and communication technologies: definitions and classifications

Defining information and communication technologies (ICTs) remains a complex undertaking due to the vast and constantly evolving nature of the field. While no single, universally accepted definition exists, most experts agree that ICT encompasses the full spectrum of hardware, software, and IT-related services, whether managed internally or outsourced (UNESCO, 2009 ; OECD, 2011).

Although the term "ICT" is widely used, alternative terminologies have emerged to highlight different dimensions of the concept. For instance, "New Information and Communication Technologies" (NICTs or NTICs) emphasizes the innovative and transformative nature of recent technological advancements, particularly since the digital revolution of the 1990s (Wolton, 2000). Other variations include "Information Technologies" (IT), which focus solely on information processing without addressing communication aspects, and "New Information Technologies" (NIT), which similarly overlook communication. The term "New Technologies" (NT), on the other hand, is broader and lacks specificity regarding application areas. This diversity in terminology reflects the conceptual complexity and multi-dimensional nature of ICTs (Breton, 1992 ; Flichy, 1995).

Historically, the introduction of computers in the late 1970s, along with peripherals like printers, floppy disk drives, and scanners, blurred the lines between "computing" and "information technologies." As Internet access and online communication tools became widespread, the broader term "ICT" emerged (Mastafi, 2019, p.4).

Several scholars have attempted to define and classify ICTs. Dieuzeide (1994, p.11) describes ICTs as all instruments capable of transmitting immaterial messages – images, sounds, and character strings – and categorizes them into three groups: audiovisual technologies (sound and images), computing technologies (coding and information processing), and telecommunications (Internet and networks). He succinctly summarises their functions: "Audiovisuals present, computing organizes, telecommunications connect" (p.36).

For Castells (1998), information technology encompasses computers, microelectronics, and telecommunications. Similarly, Anderson (2010) views ICTs as the set of technologies that facilitate the processing, exchange, and sharing of information, emphasizing that our environment is increasingly saturated with signals transmitting various forms of data.

ICTs can also be classified based on their usage. One simple classification distinguishes between transactional ICTs – used for data acquisition, processing, and communication to support organizational transactions – and analytical ICTs, which include decision-support tools built on mathematical models (Mebarki, 2013, p.113). Examples include :

- **Descriptive models** (such as forecasting, cost analysis, and simulation models), which enhance understanding of organizational relationships;
- **Normative or managerial models**, which are designed to help managers achieve quantified objectives.

In short, while ICTs are a vast and evolving domain, their core purpose remains centered on enhancing information processing, communication, and decision-making processes within organizations.

2 .2 The use of information and communication technologies in social security institutions

The rapid evolution of digital technologies has fundamentally reshaped how organisations operate, including those in the field of social security. By strategically integrating Information and Communication Technologies (ICTs), social security institutions have significantly improved their overall productivity and service quality – a shift often described as achieving "hyper-productivity" (OECD, 2019). This digital transformation supports process automation, reduces delays in benefit processing, and enhances communication with beneficiaries, ultimately increasing organisational efficiency (UNDP, 2020).

Contrary to concerns that rapid technological advancement might overwhelm administrative bodies, social security institutions have adopted digital tools gradually and deliberately, maintaining their relevance and reliability (ILO, 2021). Given their responsibility for handling sensitive personal data, maintaining user trust is vital. Institutions must demonstrate strong data protection measures as awareness of data privacy – including user behaviours and preferences – continues to rise (World Bank, 2018).

ICTs also streamline workflows by allowing staff to shift from repetitive tasks to higher-value functions. This skill reallocation requires robust knowledge in management systems to drive

innovation and support organisational change (ESCWA, 2022). Integration is most effective when technology is embedded into daily routines, enabling staff to work more efficiently without disrupting established processes (Lépine, 2000).

However, as Gramaccia (2004) pointed out, digitalisation does not automatically lead to better learning or information environments. The goal remains to “deliver the right information to the right person,” which is especially critical in managing contributions, benefits, and client services with accuracy.

ICTs also open new avenues for institutional transformation. They support the diversification of service delivery methods – such as online claims, teleconsultations, and remote advisory support – and facilitate teleworking and seamless coordination across geographically dispersed branches (Benghozi, 2000; ESCWA, 2022). That said, research into front-line staff highlights that workloads have intensified due to the constant need to update intranet systems and produce real-time reports (ILO, 2021). This constant data flow, however, empowers departments such as actuarial services and policy design to respond more effectively to shifting demographics and needs.

The deployment of ICTs has greatly improved organisational responsiveness. Benefits include greater flexibility, simplified administrative processes, quicker decision-making, and enhanced internal transparency. Employees have shifted from purely operational roles to more strategic and advisory responsibilities. Internal tools like intranets boost autonomy and responsiveness, while external platforms – such as websites and online portals – improve service accessibility (OECD, 2019).

Moreover, digitisation allows social security institutions to broaden their reach by offering multilingual services (e.g., Arabic and English) and extending coverage at both national and international levels. Internally, digital messaging systems, knowledge-sharing platforms, and collaborative tools strengthen communication and encourage staff engagement in service innovation (Lépine, 2000).

In conclusion, although the adoption of ICTs across administrative, healthcare, and financial functions has not altered the core mission of social protection, it has provided vital technological support to existing expertise. Once the organisation has adapted, reductions in repetitive tasks, fewer processing errors, and lower stress levels can be observed – all contributing to a more resilient and productive workforce (UNDP, 2020; World Bank, 2018).

Thus, the automation of processes and the integration of information systems are gradually redefining the structure, competencies, and service quality within social security institutions.

2.3 Impact of information and communication technologies on performance in social security companies

The adoption of Information and Communication Technologies (ICTs) within social security institutions has significantly reshaped internal operations, leading to marked improvements in both efficiency and the quality of service provision. ICTs facilitate more rapid benefit processing, real-time tracking of contributions, and enhanced engagement with beneficiaries. As noted by the OECD (2019), digitisation allows these organisations to manage growing demands without a proportional increase in staffing or costs, thereby enhancing overall productivity.

In addition, ICTs enhance data integrity and operational transparency. Automated systems minimise human error in essential processes such as calculating benefits, registering members, and executing payments. These enhancements promote fairness and consistency in service delivery, which strengthens public trust in social protection systems (ILO, 2021). Furthermore, digital systems offer better traceability and improve compliance monitoring, which is crucial for sustaining the credibility of public institutions.

From a strategic standpoint, digital tools boost institutional decision-making capacity. The use of Management Information Systems (MIS) and data analytics enables social security agencies to monitor expenditure patterns, forecast funding needs, identify potential fraud, and adjust to demographic or economic shifts (World Bank, 2018). Internal communication tools like intranets, as well as digital collaboration platforms, help reduce departmental fragmentation and improve coordination with external stakeholders.

ICTs also expand the delivery of social protection services. Mobile apps, online portals, and remote advisory tools offer beneficiaries more accessible channels for submitting claims, receiving guidance, and navigating the system in multiple languages. This digital expansion is especially beneficial in rural or marginalised areas, promoting broader social inclusion (UNDP, 2020).

However, integrating ICTs is not without difficulties. It requires substantial investments in digital infrastructure, comprehensive staff training, and the implementation of robust cybersecurity protocols to safeguard sensitive information (ESCWA, 2022). Moreover, this shift necessitates a transformation in employee roles—from routine administrative tasks to more analytical and client-focused activities—posing challenges in terms of workforce adaptation and skill development (Gramaccia, 2004).

We can say that ICTs serve as powerful enablers of organisational performance and innovation in the social security sector. Yet, their potential can only be realised through well-managed change strategies, sustained capacity-building efforts, and a commitment to aligning technology with the core mission of delivering fair, efficient, and reliable social protection (Castells, 1998; Anderson, 2010).

3. Empirical study

The methodology and results of the empirical study are presented below.

3.1 Survey methodology

Our study was conducted among five CNAS agencies. We adopted a quantitative approach based on a structured questionnaire, specifically designed to obtain clear and precise responses in line with our research objectives. The questionnaire was divided into two main sections :

- An identification sheet, aimed at collecting essential information for identifying each target agency;
- The main body of the questionnaire, which included questions related to the analysis of the reasons for ICT use, the main users, the effects of ICTs on agency/partner relations, and the impact of ICTs on overall agency performance.

To evaluate the internal consistency of the questionnaire, a Cronbach's alpha test was conducted across three key dimensions : ICT resources, organisational performance, and partnership contribution. The results yielded a Cronbach's alpha of 0.75 for the ICT dimension, and 0.80 for both the performance and partnership dimensions. Since all values exceed the commonly accepted threshold of 0.70, the instrument can be considered reliable and valid for the purposes of this study.

The survey was carried out across several CNAS agencies located in Algiers, specifically in El Biar, Didouche Mourad, Zeralda, Dar El Beida, Eucalyptus, Bab El Oued, and Ain Naadja. A total of 50 structured questionnaires were distributed to managerial personnel at these agencies to collect relevant data. Once the completed questionnaires were collected and verified, the responses were entered into a customized data entry interface using SPSS software for subsequent analysis.

3.2. Results of the study

After presenting a literature review of ICTs and their uses in the social security companies, we will devote this section to highlighting the correlation between ICTs and the competitiveness of the companies surveyed.

3.2.1. Reasons for using ICTs and their effects on relations between social security companies and their users/ partners:

The following analysis presents the main reasons why social security companies use information and communication technologies (ICTs), as well as their effects on relationships with users and institutional partners, in order to test our first hypothesis.

Table 1. Reasons for Using ICT Tools in Social Security Companies

Use of ICTs	Frequencies	Percentage (%)
Searching for administrative information	32	63.0
Managing interactions with users	24	48.1
Email communication	23	44.4
Disseminating information about social benefits	22	42.6
Securely sharing personal data	17	34.0
Institutional communication	17	33.3

Source: Compiled by us via SPSS.

The results show that the main motivations for using ICTs in social security companies are:

- Facilitating the search for administrative information (63.0%), particularly regarding rights and benefits,
- Improving communication with users (48.1%) through online platforms,
- Developing electronic communication to streamline administrative procedures (44.4%),
- Enhancing the dissemination of information about social benefits (42.6%),
- Ensuring the secure sharing of sensitive personal data (34.0%),
- Strengthening institutional communication with public partners (33.3%).

These findings are similar to those of Von Burg (1999) and Gadille and Iribarne (2000b), who observed that the use of ICTs, particularly email, is aimed at optimizing productivity, interactivity, and responsiveness in exchanges with partners.

Table 2. Effects of ICTs on Relations with Users and Institutional Partners

Our Users/Partners	Frequencies	Percentage (%)
Users (insured individuals, beneficiaries)	49	97.3
Healthcare professionals and service providers	48	94.3
Financial partner institutions	33	64.7
Public administrations	23	45.8

Source: Compiled by us via SPSS.

Regarding the effects, the surveyed managers reported that the use of ICTs has significantly improved relationships:

- With users (97.3%), by making access to services easier, speeding up procedures, and reducing processing times,
- With healthcare providers and professionals (94.3%), by facilitating the exchange of medical and administrative data,
- With financial partner institutions (64.7%), particularly in terms of payment and contribution management,
- With public administrations (45.8%), through smoother coordination and better information flow.

3.2.2 Measuring the impact of information and communication technologies on business performance:

Table 4 presents these questions, which indicate a possible approach for measuring the beneficial effects of ICT use on business performance. In this respect, we have used four anchor points enabling respondents to assess the different criteria for the beneficial effects of ICT. These anchor points are as follows: (a) Strongly agree, (b) Somewhat agree, (c) Somewhat disagree, (d) Strongly disagree.

Table 4. Evaluation of the effects of information and communication technologies on performance indicators in a social security company

Performance Indicator	Question	Answer (a)	Answer (b)	Answer (c)	Answer (d)
Operational Efficiency	Have ICTs improved the speed and accuracy of processing claims and contributions?	40%	5%	5%	0%

Performance Indicator	Question	Answer (a)	Answer (b)	Answer (c)	Answer (d)
Access to Information	Do ICTs allow faster and easier access to member and contributor information?	45%	3%	2%	0%
Service Quality	Have ICTs helped to improve the quality of services provided to insured persons?	25%	20%	5%	0%
Internal Communication	Have ICTs improved communication and collaboration between departments?	32%	15%	3%	0%
Achievement of Strategic Objectives	Have ICTs helped to achieve the company's strategic goals more efficiently?	30%	—	—	—

Source : Compiled by us

Table 4 highlights the positive impact of information and communication technologies (ICTs) on key performance indicators within the social security company. The results show that ICTs are perceived as a significant lever for improving **operational efficiency**, with 40% of respondents confirming faster and more accurate processing of claims and contributions. Similarly, **access to information** is considerably enhanced, as evidenced by the 45% positive response, indicating that ICT tools facilitate quicker and easier retrieval of member data, which is essential for providing timely services.

The impact of ICTs on **service quality** is also notable: 25% of respondents affirm that services offered to insured persons have improved, although 20% still perceive moderate progress, suggesting room for further digital optimisation, especially in user experience and service accessibility.

Regarding **internal communication**, 32% of respondents feel that ICTs have improved collaboration between departments. However, the relatively significant share of neutral or moderate responses (15% and 3%) suggests that some barriers to communication and coordination remain, despite technological advancements.

Finally, in terms of **achieving strategic objectives**, 30% of respondents believe that ICTs have helped move closer to organisational goals. While positive, this score also indicates that ICT alone is not sufficient; strategic vision, management commitment, and employee engagement are crucial complementary factors for success.

Overall, the table shows that ICTs have a **positive but still partial impact** on organisational performance in social security companies. It suggests that while digital tools are effective enablers, they must be accompanied by changes in management practices, continuous training, and a clear strategic alignment to fully realise their potential.

4. Conclusion

This study aims to evaluate the extent of Information and Communication Technology (ICT) usage within companies and its relationship to their overall performance. The key drivers behind ICT adoption include information searching, business operations, email communication, marketing, data exchange, and institutional communication, which enhances business relations with partners. These factors confirm the first hypothesis. The results also demonstrate that performance is significantly improved when ICT tools are actively used by company leaders or managers, supporting the second hypothesis.

It is well-established that integrating Information and Communication Technologies (ICTs) into business operations significantly improves overall performance. In the social security sector, access to accurate, timely information enhances operational efficiency and decision-making. To maximise ICT benefits, managers must ensure the flow of reliable, relevant information both internally and externally. In social security organisations, this approach improves administrative, financial, and service delivery performance, such as faster claims processing and accurate benefit calculations, ensuring efficient, equitable service.

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