

INTEGRATED INFORMATION SYSTEMS IN SOCIAL SERVICES: PROSPECTS FOR REFORMING THE UNIFIED SOCIAL SERVICE OF ARMENIA

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Introduction

The integrated information system is of particular significance when evaluating the effectiveness of the activities of the Unified Social Service (USS). By expediting and optimizing the delivery of social services, the integrated information system guarantees their efficacy [Chirchir, 2021, 448-454]. The integrated information system's implementation enables the online and automated exchange of data between various information systems, thereby ensuring that individuals involved in the provision of social services have access to the requisite information [World Bank, 2022, 16-21]. We examine the development and management of the integrated information system within Armenia's USS, identifying key challenges and opportunities to enhance its functionality and alignment with international best practices. By analyzing the current state of system integration, technical infrastructure, and organizational capacities, we intend to improve the efficiency, accessibility, and inclusivity of social service. It contributes to the modernization of social protection, fostering a cohesive and responsive approach to meeting the needs of its citizens.

Research Methodology

This article utilizes a qualitative research approach that merges document analysis with the collection of primary data to investigate the integrated information system of Armenia's USS. Analyzing key legislative documents, policy papers, and technical specifications helped clarify the conceptual framework and current operational difficulties faced by the USS information system. Data collection involved semi-structured interviews with essential informants and specialists in social services, IT system development, and public administration. Purposive sampling was employed to guarantee that the participants possessed pertinent expertise regarding integrated information systems and USS operations. Ultimately, five interviews were carried out, with this number established based on data saturation, indicating that no additional concepts surfaced. Thematic analysis was employed to interpret the findings, concentrating on recurring patterns and significant themes.

Literature Review

The integration of information systems into social service delivery represents a paradigm shift in governance, one that demands a sophisticated interplay of technological, organi-

zational, and financial considerations. Software-based information systems integrate key processes of social protection schemes, such as registration, eligibility determination for targeted programs, payments, complaints and claims, and so on. The article houses information based on reports, research papers, and articles compiled by reputable international organizations and authors. The article refers to various sources to substantiate the role and models of integrated information systems in improving social service delivery. The RA Government's public administration reform strategy and its emphasis on the "whole of government" paradigm, also cited by the World Bank [2020], emerge as a central tenet for adopting a coherent and technological approach to integrated systems in Armenia and worldwide. Robust implementation instances such as the Cadastro Único in Brazil and the Social Security Information System in South Korea, cited by the International Labour Organization [2022] and Lee and Sunjun [2015], respectively, illustrate a centralized data integration model. In contrast, the Estonian X-Road platform, described by Maksudi Frozan [2018], is an example of a federated or interoperable model of data sharing. A comparative analysis of these models, supported by the Institute of Educational Sciences [2016], highlights the pros and cons, providing a detailed overview of key factors affecting the implementation of information systems integration in social protection.

Scientific Novelty

This article provides a unique contribution to the field of social policy and public administration by delivering a comprehensive analysis of the integrated information system within Armenia's USS. It bridges theoretical concepts from the international literature on integrated information systems with an empirical examination of Armenia's context, focusing on both management and operational aspects. By highlighting key system characteristics, current challenges, and gaps, the article offers strategic and evidence-based recommendations to enhance the efficiency, coherence, and adaptability of the USS's information management practices.

Analysis

The Role and Models of Integrated Information Systems in Enhancing Social Service Delivery

Integrated Information Systems play a crucial role in delivering targeted social services since they not only provide higher rates of accessibility for citizens but also help optimize the overall functioning of social service institutes and interagency cooperation for faster and more reliable data transfer and decision-making. Modern tendencies of citizen-oriented states and service-oriented societies are in need of information systems that can operate as a whole. According to the RA Public Administration Reform Strategy, "the strategic axis of the reforms is built around the Whole-of-Government paradigm, aiming to ensure the harmonized, synergistic, professional, technology-based, and responsible ope-

ration of the system.”¹ The pivotal term in this sentence is the *whole-of-government*, which heavily “relies on data integration and interoperability frameworks to facilitate data exchange from other administrative information systems” [World Bank, 2020, 29]. Thus, to achieve the far-reaching goal of integrating information systems into social service delivery systems, countries should first adopt a whole-of-government paradigm and systematically implement its various aspects.

There are different avenues and models on how to integrate information systems into social protection and optimize the service delivery process. One model can be characterized as *centralized data integration* [World Bank, 2020, 7] with a unified system where a central authority manages and stores data from multiple social services, ensuring consistency and simplified access. This allows the instantaneous processing and update of information, enabling prompt decision-making and service delivery. The centralized data integration model has been successfully introduced in Brazil and South Korea. Both Cadastro Único (Single Registry) in Brazil [ILO, 2022, pp. 1-4] and the Social Security Information System (SSIS) in South Korea [Lee, 2015, 9-10] help consolidate information for social programs, facilitating efficient service delivery and reducing redundancy. Another approach refers to a so-called *federated or interoperable data exchange* model [Grunfeld et al., 2022, 17-18], which infers a decentralized approach where individual agencies maintain their own data systems but share information through standardized protocols, ensuring interoperability without central consolidation. One of the most striking instances of this model is Estonia with its “X-Road” – a distributed information exchange platform and middleware that allows various government agencies to interact synchronously within a single system [Maqsoodi, 2018, 1-4].

Both models have their pros and trade-offs. When centralized data integration requires higher initial and operational costs but offers optimized management and control, federated data exchange systems are initially more cost-effective and provide flexibility but require significant organizational coordination and robust governance structures to ensure effective interoperability and data quality (more detailed information is presented in Table 1) [Institute of Education Sciences, 2016, 5]. Ultimately, the integration of information systems is a costly and not trivial pursuit, and countries trying to implement such systems must weigh a number of critical factors, such as budget or the organizational and coordination capacity of the institutions involved. These factors, among others, predetermine the effective implementation of integrated information systems in the domain of social protection, and only through a meticulous balancing of these factors can governments unlock the transformative potential of integrated information systems in enhancing social service delivery.

¹ RA Government, “RA Public Administration Reform Strategy,” (<https://www.arlis.am/DocumentView.aspx?docid=181462>).

Table 1. Comparison of centralized and federated systems

<i>Aspects</i>	Centralized Systems	Federated Systems
Initial Costs	High costs due to infrastructure and development expenses	Lower costs since existing systems are utilized with added interoperability layers.
Maintenance Costs	Potentially higher due to centralized updates and scalability requirements	Distributed among agencies, potentially reducing individual burdens.
Coordination	Simplified within a single entity	Requires extensive inter-agency collaboration and standardization efforts.
Scalability	May face challenges as data volumes grow	Facilitates incremental scaling by adding new systems without major disruptions.
Data Control	Central authority manages data, which may raise privacy concerns	Agencies maintain control over their data, enhancing privacy and addressing sovereignty issues.

Design and Functionality of the Integrated Information System in the USS

According to the Government of the Republic of Armenia's decision, information integration is defined as a method of social service integration that aims to consolidate information systems in the social protection sector into a unified infrastructure¹. The assessment of service effectiveness, the enhancement of the strategic decision-making process's efficiency, the simplification of service provisioning procedures, and the mitigation of corruption risks through the automation of the decision-making process are among the benefits of information integration². Information integration is intended to be implemented at both the central and regional levels. Furthermore, the anticipated transition to centralized information systems will substantially enhance the reliability of current data³. In general, the objective of these proposed enhancements is to revolutionize the social protection sector by providing a more immediate and precise response to the requirements of beneficiaries. The sector will not only reduce operational costs but also establish a unified platform that delivers dependable data by centralizing the management of information systems. The quality of social services will be significantly enhanced through the implementation of an integrated information system [GIZ, 2019, 5-7]. Specialists engaged in the provision of social services will be able to make more informed decisions, align

¹ RA Government Decision N 952-N "On the Approval of the Program for Introducing an Integrated Social Services System in the Republic of Armenia," Article 45, dated July 26, 2012 (<https://www.arlis.am/documentview.aspx?docID=85615>).

² RA Government Decision N 952-N "On the Approval of the Program for Introducing an Integrated Social Services System in the Republic of Armenia," Article 46, dated July 26, 2012 (<https://www.arlis.am/documentview.aspx?docID=85615>).

³ RA Government Decision N 952-N "On the Approval of the Program for Introducing an Integrated Social Services System in the Republic of Armenia," Article 53, 54, 55, dated July 26, 2012 (<https://www.arlis.am/documentview.aspx?docID=85615>).

services with current demands and social requirements, and implement timely interventions as a result of their access to accurate and constantly updated data [World Bank, 2017, 9-16]. Over time, the integration and centralization of information systems in the social protection sector will result in a more transparent and unified service delivery system [Australian Government, 2014, 44-47]. This will enable the sector to more easily adjust to evolving requirements and challenges, resulting in the provision of more effective social services to beneficiaries [World Bank, 2020, 1-5].

The "Nork" Social Services Technology and Awareness Center Foundation is responsible for the maintenance and administration of information systems in the social protection sector. This organization specializes in the implementation and maintenance of information and telecommunication technology infrastructures in both the public and private sectors. In the Republic of Armenia, approximately 1.1 million active beneficiaries obtain services in the social protection sector through the information systems maintained by the "Nork" Social Services Technology and Awareness Center Foundation¹. At present, the "Nork" Social Services Technology and Awareness Center Foundation has designed over a dozen operational information systems. However, the Npast system for assessing family vulnerability, the Gorts system for implementing employment functions, the Pyunik system for registering disabled people, the Manuk system for registering children in difficult life situations, and other information systems are not well-integrated. Consequently, these systems operate independently of one another, which prevent the automatic exchange of information between them, thereby delaying the process of providing services.

Both the online application submission system and the repair and maintenance of technological means do not appear to be experiencing any substantial issues, according to the findings of the analysis, which indicate that those issues are not serious. The launch of the integrated information system will have a positive impact in terms of increasing the efficiency of application submission, application processing, interdepartmental information verification, and decision-making processes by reducing the average amount of time required to take care of beneficiaries, according to the information that was recorded at the same time [UNICEF, 2019, 4-15].

In 2013, IBM IT and the Government of the Republic of Armenia signed a memorandum of cooperation, which included the obligation to investigate the possibilities of integrating technical systems in Armenia. Through the IBM Curam social services system, in particular, it was intended to be possible to provide social services². However, this ini-

¹ "Nork" Social Services Technology and Awareness Center Foundation, "About Us" (<https://nork.am/about/>).

² RA Government, "The Government of the Republic of Armenia and IBM intend to explore ways to support the country's innovation and economic potential" (<https://www.gov.am>).

tiative has not yet been put into action because inadequate financial resources have been available.

Challenges impacting the effectiveness of the integrated information system in the USS

The results of the interviews demonstrate that several critical challenges impede the effective functioning of the integrated information system within Armenia's USS. These challenges encompass technical, organizational, and procedural domains, each of which contributes to inefficiencies in service delivery.

- *Technical challenges* are related to the infrastructure, hardware, software, and connectivity that underpin the integrated information system.
- *Organizational challenges* pertain to the roles, responsibilities, and resources within the USS.
- *Procedural challenges* relate to workflows, guidance, and quality standards for operating the integrated information system.

Technical Challenges

The USS encounters various technical problems that severely hinder the effectiveness of its integrated information system. A major obstacle is the absence of automated data exchange. At present, the systems within the USS do not interact with one another, requiring personnel to enter and validate information by hand. This procedure is not only labor-intensive but also susceptible to inaccuracies, resulting in superfluous repetition of efforts. When information must be extracted from various sources, the process becomes even more protracted, causing delays that adversely affect decision-making and the provision of services. A significant challenge is the antiquated condition of the system's technical framework. Numerous tools and devices in use are obsolete and ineffective, leading to recurrent technical problems and hindering service delivery. This technological delay amplifies the burden on employees and generates a frustrating experience for users. To tackle these challenges, a comprehensive upgrade of both hardware and software is essential to guarantee that the system functions efficiently and dependably.

Table 22. Categorizing the challenges affecting the effectiveness of the integrated informations system in USS

Challenge category	Specific challenges
<i>Technical Challenges</i>	<ul style="list-style-type: none"> - Lack of Automated Information Exchange - Low Technical Saturation - Slowness of the Internal Network - Slow Internet Speed
<i>Organizational Challenges</i>	<ul style="list-style-type: none"> - Absence of Network Administrators - Undefined Responsibilities and Qualifications for Network Administrators
<i>Procedural Challenges</i>	<ul style="list-style-type: none"> - Lack of Methodological Instructions on System Changes - Absence of Quality Standards for System Operations

The sluggish performance of the internal network compounds these issues, especially during busy periods when employees require rapid access to information. Delays in network connectivity hinder employees from accessing essential information which diminishes their efficiency and postpones services for recipients. Likewise, inadequate Internet access, particularly in rural locations, worsens the issue. Unreliable Internet connections impede staff from operating effectively within the system, thereby increasing the disparity in service quality between urban and rural areas.

Organizational Challenges

Organizational obstacles markedly intensify the challenges encountered by the integrated information system. A key concern is the inadequate availability of network administrators at USS territorial centers. In the absence of specialized technical support personnel, addressing system-related issues frequently necessitates external assistance. Furthermore, there is a lack of clearly articulated job responsibilities and qualification criteria for network administrators. This shortcoming impedes efforts to develop and maintain a robust technical support framework within the organization. Consequently, technical issues are not resolved as swiftly or effectively as required, which negatively affects both the functionality of the integrated information system and the quality of services rendered to beneficiaries.

Procedural Challenges

Inefficiencies in procedures contribute an additional level of difficulty to the challenges encountered by the integrated information system of the USS. A significant concern is the absence of prompt and clear instructions for personnel when modifications or updates occur within the system. In the absence of adequate guidance on utilizing new tools or adapting to updates, employees frequently experience confusion, thereby hindering workflows and delaying service provision. Furthermore, the lack of defined quality standards regarding the operation of the information system constitutes another procedural deficiency.

Conclusion

Integrated information systems play a crucial role in enhancing the delivery of social services, providing chances to boost efficiency, accessibility, and responsiveness. Through fostering inter-agency collaboration, enabling data-informed decision-making, and streamlining operational processes, these systems serve as a springboard for service delivery boost [World Bank, 2022, 16-21]. Yet, their execution faces numerous obstacles, especially within the framework of Armenia's USS. This analysis identifies a complex landscape of technical, organizational, and procedural barriers that must be addressed to fully unlock their transformative potential.

The discussion of two models – centralized and federated – further lays a foundation for illustrating the best practices of integrated information systems. Centralized systems, as

seen in Brazil's Cadastro Único [ILO, 2022, pp. 1-4] and South Korea's SSIS [Lee, 2015, 9-10], offer streamlined management and simplified data access but require substantial investment and maintenance costs. Federated systems, such as Estonia's X-Road [Maqsoodi, 1-4], are more cost-effective and flexible but demand significant coordination and governance to ensure interoperability and data quality. For Armenia, adopting an appropriate and adequate model requires a meticulous assessment of specific contexts and elements such as budget limitations, institutional capacity, and scalability. The implementation of a comprehensive governmental framework is another key factor for Armenia's success in establishing an integrated information system. The whole-of-government paradigm, highlighted by the Republic of Armenia's Public Administration Reform Strategy¹, promotes coordinated and technology-driven operations that prioritize service delivery oriented toward citizens. By aligning its initiatives with international best practices and its legal frameworks, Armenia has the opportunity to draw on the experiences of nations that have effectively integrated information systems to craft a model tailored to its unique needs.

In summary, although the incorporation of information systems entails considerable difficulties, it simultaneously provides substantial opportunities for the transformation of Armenia's social protection infrastructure. By tackling technical, organizational, and procedural obstacles, implementing strategic frameworks, and utilizing a comprehensive governmental approach, the USS will be able to offer services that are more inclusive, efficient, and transparent. Through these reforms, Armenia stands poised to establish a citizen-oriented social service system that enhances welfare and equity for all its inhabitants.

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This article analyzes the function of the integrated information system within Armenia's Unified Social Service (USS), with an emphasis on its capacity to improve the delivery of social services by enhancing efficiency, accessibility, and responsiveness. The integrated information system serves as a fundamental component of the USS's initiatives to modernize Armenia's social protection framework by facilitating automated data exchange, optimizing workflows, and promoting evidence-based decision-making. However, this system encounters substantial obstacles, including technical shortcomings such as outdated infrastructure, insufficient automated interconnectivity, and sluggish network performance. Additionally, organizational deficiencies emerge from the lack of network administrators and procedural inefficiencies stemming from ambiguous guidelines and the absence of quality standards. By conducting a thorough analysis of these issues, this article examines the factors that impede the effectiveness of the USS's integrated information system while offering practical recommendations for remediation. Ultimately, this article seeks to advance Armenia's initiatives aimed at creating a more inclusive, efficient, and equitable framework for social service delivery.