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PROBLEMS OF INTERCONNECTIVITY AND FUNCTIONING OF GOVERNMENTAL INFORMATION SYSTEMS IN THE REPUBLIC OF MOLDOVA

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Abstract: This paper analyses the complex challenges delaying effective interconnectivity and maximum effectiveness of government information systems within the Republic of Moldova. In spite of enormous national efforts and considerable foreign assistance in direction of digitalization, widespread troubles still hinder full achievement of a citizen-oriented, effective, and transparent digital state. The paper examines the serious technical and data interoperability deficits, including system fragmentation, redundant data, and a serious absence of standardized data streams and quality controls. The article also looks at the policy and legal environment and mention the imperative for wholesale overhauls, in particular to stay up to speed with today's EU data protection frameworks such as GDPR, and to develop a sound data governance agenda. Organizational and institutional obstacles, such as entrenched silo mentality, resistance to change, and insufficient inter-agency coordination, are identified as central barriers. Concurrently, human capital deficits, such as deficits in public administration key skills and persistent digital literacy deficiency among citizens, accompanied by an endemic dearth of public trust in online government services, are seen as fundamental determinants of adoptions and effectiveness constraints. The article claims that all these systemic problems weaken public service provision and delay Moldova's integration into the European Union's digital single market. Based on a critical assessment of recent World Bank, UNDP, OECD, ITU, and European Commission reports, the paper offers a set of recommendations. These entail advocating strategic policy and legal reforms, constructing current technology infrastructures like MConnect and MCloud, constructing institutions' capacities through a Chief Data Officers' network and cross-agency collaboration, and institutionalizing specific human capital development and digital inclusion programs.
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JEL Classification: O33, H83

1. Introduction

1.1. Contextualization of Moldova's Digital Transformation Journey and its Strategic Importance

The Republic of Moldova has deliberately prioritized digitalization, starting its e-governance journey in 2010 (TalTech, 2020; OECD, 2023; World Bank, 2011a). The initiative has been considered a main vehicle for achieving the United Nations Sustainable Development Goals, while modernizing public sector governance, creating a more inviting investment climate, and addressing corruption (TalTech, 2020; World Bank, 2011b). Moldova has developed a strong digital backbone over the past ten years, achieving **98%** 4G coverage and rolling out a complete range of e-Governance services. This has provided a foundation and opened up the economy for concurrent growth of the Information and Communications Technology (ICT) sector, which now approaches **7%** of GDP in Moldova (ITU, 2021; UNDP, n.d.).

The strong commitment to digital development is demonstrated by continuing work on the Digital Transformation Strategy (MDTS) 2023-2030 (OECD, 2023; UNDP, n.d.; Moldovan Ministry of Economic Development and Digitalization, 2023). This Strategy is oriented towards systemic whole-of-society transformation and is directly linked with Moldova's European

integration agenda (ITU, 2021; UNDP, n.d.). International partners such as the World Bank, the European Union (EU) and the United Nations Development Program (UNDP), among others, are investing their own resources and expertise to support Moldova's EU aspirations and digital development trajectory (Moldovan Ministry of Economic Development and Digitalization, 2023; European Commission, 2025a; European Commission, 2025b; European Commission, 2026; TalTech, 2020; UNDP, 2024; EU Neighbors East, n.d.).

1.2. Problem Statement: The Critical Need for Effective Interconnectivity and Functioning of Governmental IT Systems

Despite significant spend on digital public infrastructure and e-government architecture, Moldova continues to grapple with efficiency, if not outright functionality, of inter-operability among governmental data systems. (World Bank, n.d.a). The movement to cloud service and, more broadly, the processes of exchanging data have also been plagued by fragments (World Bank, n.d.a). The frustrating irony is that this is a nation with substantial investments in developmental digital infrastructure, including a comprehensive ecosystem of internet access and significant use of cloud platforms. Moldova - as a unit of government that is investing heavily into a comprehensive digital public infrastructure - struggles with various forms of functionality and interconnectivity of internal governmental systems (UNDP, n.d.; World Bank, n.d.a; UNDP, 2024). On the surface, it would appear that the needed technology conduits are more or less present. Additional local layers of integration and co-ordination - specifically at the application and operational layers - seem to be less than fully developed. It seems that the factors preventing actual integration into a comprehensive digital ecosystem that will allow for seamless inter-operability go beyond what current technologies are available or even usability of technologies, but rather at least a combination of policy implementation gaps, institutional behaviours and human actors that limit the final connection to a fully functioning digital ecosystem. Ironically, the emphasis on "e-transformation" may see the building of and availability of technology replace "interconnectivity" with digitization of individual services resulting in neither comprehensive or integrated - in fact it has generated a disjointed digital environment instead of more comprehensive and integrated functionality.

The issue largely resides with the fact that fragmentation of information systems creates inefficiency, duplicated input, and a general lack of standardized data flows used by governmental information systems (World Bank, n.d.a; UNDP, 2024). These constraints also limit the quality, ease of access, and timely responsiveness of public service delivery by the government, while limiting its capability and effectiveness for serving its citizens.

1.3. Research Objectives and Layout of the Article

The aim of this paper is to undertake an in-depth analysis of the four major technical, legal, institutional, and human capital barriers which inhibit connectivity and effectiveness of government IT systems in the Republic of Moldova. In addition, it will assess the multiple implications it has on public administration and national development (and efforts for EU integration). And finally, a set of recommendations will be provided to promote integration and responsiveness of digital government to citizens. The following sections include the first part of the paper, which will describe the historical background of e-governance in Moldova and initiatives, and then delve deeper into these barriers while detailing their implications, framing recommendations, and conclude with a forward-looking perspective.

EU integration provides both a strong external motivation as well as a considerable measuring stick, against which to measure Moldova's digital prowess. Repeated reference of meeting EU standards (especially with regards to cybersecurity, roaming, electronic signatures) (Moldovan Ministry of Economic Development and Digitalization, 2023; European Commission 2025a; European Commission, 2025b; European Commission, 2026; TalTech, 2020; UNDP, 2024; EU Neighbors East n.d.) gives a sense that there are wider implications beyond efficiencies of

admin to strategic geo-political significance. In the end, the inability to develop seamless interoperability and manage data governance may mean that Moldova will not be accepted into the EU which elevates the challenges of IT systems, beyond a merely administrative issue, to national commitment.

2. Background: Moldova's E-Governance Landscape and Key Initiatives

2.1. Overview of the Development of E-Governance Initiatives

In 2010 Moldova launched the e-governance journey with the introduction of the e-Governance e-Transformation initiative (TalTech, 2020; World Bank, 2011a). The early phase of e-governance was heavily supported, most notably with the World Bank Governance e-Transformation (GeT) project which provided $20 million of initial investment starting in 2011 (World Bank, 2011a; World Bank, 2011b). The GeT project ultimately aimed to modernize and increase the quality of governance in the public sector, provide a better investment climate, and improve transparency. A key activity for the GeT project was contributing towards the establishment of the e-Government Center whose mission was to oversee government-wide e-transformation initiatives (World Bank, 2011a; World Bank, 2011b). A fully fledged e-governance framework was formed within four years of launching (TalTech, 2020).

2.2. Main Digital Platforms and Strategic Initiatives

For e-governance, Moldova has developed and implemented various important digital platforms and strategic projects. The **M-Cloud Platform**, launched in 2013, is described as a common technology platform intended to unify a broad range of separate, independent data centers into a common, shared infrastructure (World Bank, 2011b; e-Gov.md, 2013). The intent of this was to help decrease expenditures related to IT and enhance the overall quality of data management, while improving information security from unwanted incidents when multiple institutions use common applications within a single, shared data center (World Bank, 2011b; e-Gov.md, 2013). By 2019 the adoption index for e-services supported by the World Bank (including MCloud) was 75% or greater at the highest foundational level (World Bank, 2019).

The **MConnect Platform** (known as the Government Interoperability Platform) began in 2014 (TalTech, 2020), and its primary function is to enable the real-time exchange of data between various public authorities (e-Gov.md, n.d.; UN Moldova, 2020). The strategic goal of the MConnect will drastically contribute to the efficiency and quality of public service delivery, therefore stopping citizens, and businesses, from having the requirement of submitting physical documents repeatedly (e-Gov.md, n.d.; UN Moldova, 2020). As of 2019, MConnect connected 48 institutions, which increased to cover **71 institutions by 2021** (ITU, 2021; UN Moldova, 2020).

Together with these digital platforms, Moldova also developed and continues to effectively utilized a range of other technological solutions. This includes **MPay**, a government online payment service which processed almost 20 million transactions by 2021 (TalTech, 2020; ITU, 2021); **MSign**, an electronic signatures service, which verifies the originality and authenticity of a signature (TalTech, 2020; ITU, 2021); **MPass**, a mobile signature service (ITU, 2021); **e-Visa**; and the Citizens Government Portal (**MCabinet)**, a portal for citizens to be able to see their official information about them (TalTech, 2020; ITU, 2021).

Moldova developed an **Open Data Portal** (date.gov.md) in 2011 and was one of the first countries in the area to do so (World Bank, 2011b). The Open Data Portal has expanded, with access to over **10,884** resources by 2021, aiming to enhance transparency and allow public access to government data (World Bank, 2011b; ITU, 2021).

Moldova's strategic vision for digital development is defined in the **National Digital Transformation Strategy** (MDTS) 2023-2030, which was accepted in September 2023 with support from the UNDP (OECD, 2023; UNDP, n.d.; Moldovan Ministry of Economic Development and Digitalization, 2023). The MDTS marks a shift from a traditional e-governance model to an entire digital government with multiple dimensions (UNDP, n.d.). Its architecture is

organized around a number of pillars—People, Business, Government, Regulations, and Infrastructure. The strategy also includes enablers (or catalysts) for digital inclusion, with digital data and interoperability as essential enablers (Moldovan Ministry of Economic Development and Digitalization, 2023). The MDTS has ambitious aims, such as 100% of key public service offered online, 70% of transactions offered online, and 100% of public sector data exchanged electronically (UNDP, n.d.; Moldovan Ministry of Economic Development and Digitalization, 2023). As of the end of 2023, much progress had already been made, with just more than **50%** of public services being digitalized - up from only 38% earlier that year (UNDP, n.d.).

The presence of digital platforms and infrastructure such as MConnect and MCloud does not mean they are being utilized or all connected to the overall governance process. Currently these platforms are used for delivery and have achieved high levels of adoption for specific e-services, however, reports indicate that MConnect is "not fully effective" and that government bodies are still working in "silos" despite the platform's presence (TalTech, 2020; World Bank, n.d.a). This presents a fundamental argument - it is not the tools that are lacking, but the inability to coordinate with platforms that are in place and enforce broader adoption. This indicates that there are institutional, behavioral, and regulatory blockages that are preventing the platforms from being fully valued. It seems that there has been technology-push without sufficient demand-pull or organizational readiness - in other words, the technical solutions are ahead of the organizational and human capacity to utilize them.

The evolution from the initial "Governance e-Transformation Project" (GeT) to the more recent "Digital Transformation Strategy 2023-2030" (MDTS) reflects a significant shift in Moldova's strategic thinking (OECD, 2023; World Bank, 2011a; World Bank, 2011b; UNDP, n.d.; Moldovan Ministry of Economic Development and Digitalization, 2023). While e-governance often implies digitizing existing processes, digital transformation suggests a more fundamental re-imagining of government functions and societal interaction with technology. The MDTS's "whole-of-society approach" acknowledges that digital development is not solely a government responsibility but requires broad engagement across people, business, and civil society (Moldovan Ministry of Economic Development and Digitalization, 2023). This expanded vision is a positive development, but its success will depend on overcoming persistent implementation gaps observed in previous strategies (OECD, 2023), indicating that past challenges in execution must inform the new, more ambitious strategy.

2.3. Achievements and Progress in Digital Infrastructure and Service Delivery

Moldova has made great strides in several areas related to a digital transformation. Moldova sits in the top **forty countries** in the world according to the E-Government Development Index (Moldovan Ministry of Economic Development and Digitalization, 2023). The national eServices portal, servicii.gov.md, is a centralized access point to national eServices and gives, at a minimum, Single-Sign-On access to **178 e-Services**, as well as information on **649 administrative services** (ITU, 2021).

Moldova enjoys good internet coverage with **93.4 %** of citizens having internet access at home and **74.7 %** using smartphones (ITU, 2021; UNDP, n.d.). Moldova has some of the lowest average costs for mobile data in Europe (ITU, 2021; UNDP, n.d.). There are many ways to access the internet and these provide a very low barrier for users adopting digital services. Another example of progress is the IT Parks Law, which has been successful at decreasing the tax burden on IT companies, allowing them to operate and attract foreign employees in the IT sector (ITU, 2021).

One notable example of using data to make decisions is the Energy Vulnerability Reduction Fund (EVRF) that was started during the energy crisis of 2022 (UNDP, n.d.; UNDP, 2023). The EVRF provides a good example of digital systems being used practically by confirming data from the Tax Authority, Cadaster, Agency for Public Services, and cross referencing with at least one

private sector partner (the energy provider) to ensure the data validity was reasonable (UNDP, 2023). These developments highlight Moldova's commitment to proactive digital government that addresses not only the digitization of current services, but also the creation of new designed value through innovation. With an emphasis on inclusivity and secureness as well as citizen-focused services, Moldova is determining a new development paradigm for an increasingly digital world and positioning itself as a regional leader in digital transformation (UNDP, n.d.).

3. Challenges in Interconnectivity and Functioning of Governmental IT Systems

Even with the notable strides and goals underway, the effective interconnectivity and functionality of government IT systems in Moldova faces a daunting array of challenges and weaknesses. They are technical, legal, institutional, and human capital issues, and they add multifaceted layers of complexity for a total digital transformation.

3.1. Technical and Data Interoperability Issues

One of the core issues is **the fragmented and siloed nature of existing systems** across the Moldovan government. Even though MDAs are instructed to connect to the government "cloud" and share data, their inter-connectivity remains particularly ineffective (World Bank, n.d.a). Many MDAs continue to operate alone and pursue their own distinct agenda, budget, priority, and database, often self-selecting tools that are incompatible and non-interoperable (World Bank, n.d.a). The issues around system inter-operability are glaringly prominent in the social protection system, which has multiple, served, and disparate information systems with no intersectionality or inter-operability (UNDP, 2024).

Adding to the fragmentation is the pervasive issues of **data quality, duplication and standardization**. The issues surrounding poor quality and unreliable data is commonplace (World Bank, n.d.a). Data duplication is common, while a built-in reluctance to share data continues to work against the long-term and standardized data flows required across all levels of government (World Bank, n.d.a). There is a lack of a standard process in reviewing or classifying data available for use in the country, largely due to the absence of a national government data classification policy, law, or instruction on government classified data (World Bank, n.d.a). Moldova needs a clear structure to deal with data classifications and standardizing formats in the use of government data sets (World Bank, n.d.a).

The difficulty with existing **interoperability platforms** creates additional technical issues. While platforms like MConnect appear to exist with the objective of enabling "real time" data relay (e-Gov.md, n.d.; UN Moldova, 2020), they were acknowledged to be "not fully effective" (TalTech, 2020). A central operational breakdown for conflict is the implementation of the "Once-Only" principle: there are no effective barriers preventing other third-party government or private institutions from still asking for paper-based copies of data, even when adequate digital data relay processes have been implemented (World Bank, n.d.a). The latter restricts interoperability, frustrates citizens, and offsets the credibility and uptake of e-services overall. This indicates that "Once-Only" is technically feasible, but institutional and behavioral enforcement are essentially absent (likely due to lack of legal enforcement or enforcement of project design), coupled with habitual bureaucratic behavior, or lack of trust among institutions about the validity of digital data.

Issues of infrastructure remain. While the mobile network infrastructure is sophisticated enough, it still presents challenges in ensuring sufficient high-speed access to home and business broadband, and the conditional estimate of the fixed broadband basket cost has not achieved the Broadband Commission's strategy of 2% (ITU, 2021). There is also a strong interest in developing and growing the new generation 5G networks, albeit at a slow pace (ITU, 2021).

3.2. Legal and Policy Framework Gaps

One of the impediments for Moldova will be legal and policy framework gaps. The principal legislation on data protection, **Law no. 133/2011 on the Protection of Personal Data**, is out-of-date (TalTech, 2020). It is based on the older European Union (EU) Directive 95/46 not

the General Data Protection Regulation (GDPR), which was approved in 2016 (TalTech, 2020). Although there have been draft laws to transpose GDPR since November 2018, the legal framework remains rooted in older legislation, and will need to be completely up-dated to be in step with modernity (TalTech, 2020).

The lack of implementation of existing regulations for emerging technologies appears to be limited. The existing legislation has limited application, and has not met full compliance with EU regulations on emerging technologies such as blockchain or artificial intelligence (AI), resulting in uncertainty about the permissibility of using these technologies (World Bank, n.d.a). This creates regulatory gaps, and there is a general lack of contemporary regulation on potentially new digital technologies, and by the time regulations are developed once the technologies are developed and commercialized it may be problematic (ITU, 2021).

One major limitation is **the absence of a data governance framework**. There is no identifiable authority that explicitly owns the data governance agenda (World Bank, n.d.a). Moldova does not have a coherent framework that allows for data assets to be classified, and does not establish who has access and how the data is processed prior to sharing (World Bank, n.d.a). Currently legislation conveys adequate provisions for personal data processing and access to information (World Bank, n.d.a).

3.3. Institutional and Organizational Barriers

Significant institutional and organizational factors hinder the digitization process. Siloed organizations and resistance to change are relevant obstacles. Ministries, departments, and agencies are often siloed; as a result, there is a severe lack of coordination with respect to a common vision regarding system architecture, interoperability, and service integration (ITU, 2021; World Bank, n.d.a; Burinschi, 2022). There is also an observable reticence among public authorities to embrace e-governance methods. For example, the National Centre for Personal Data Protection (NCPDP) has refused to accept digital signatures on documents, meaning that public and private agencies are still required to use older, paper-based methods (TalTech, 2020). This indicates either a lack of appreciation of data protection principles and matters, or a wholesale resistance towards a function of transparency that e-governance seeks to provide.

The absence of a central authority and appropriate coordination mechanisms is another major barrier. The absence of a primary regulatory body responsible for various component parts of e-governance and articulated in national law, means that individual ministers may preclude the introduction of e-services in their agencies (TalTech, 2020). There has been a call for CDOs to be networked together in MDAs at both national and sub-national levels to provide an ownership structure for the data agenda and to promote consistent implementation (World Bank, n.d.a).

In addition, **limited implementation capacity and a lack of a coherent strategic vision** plagued previous attempts. Prior digital strategies, such as the NDS "Digital Moldova 2020," experienced significant implementation gaps due to a lack of project implementation capacity along with concomitant economic and political instability and limited budgetary resources (OECD, 2023; Burinschi, 2022). The ongoing project-by-project approach, rather than a unified and overall reform, has been particularly damaging and has resulted in a lack of long-term strategic vision and poorly empowered public officials (Burinschi, 2022). The implications of this point are that the problems with interconnectivity and with governmental IT systems functioning properly are neither discrete technical problems nor even entirely technical problems, but rather symptoms of primary and systemic governance issues experienced by Moldova. Not only have they been unwilling to share data, but they have also operated in silos and have fallered the operationalization of digital strategies, all of which reflect institutional capacity, political will, and bureaucratic inertia. Therefore, digital transformation can be adopted as a diagnostic tool that can expose the weakness in public administration and governance.

Low use of municipal authorities also slows things down into the data maturity pipeline. Data governance in sub-national government is at early stage and limited, as few municipal budgetary funds set aside for managing operations, and there are no local institutions or officers whose primary responsibility is data governance (World Bank, n.d.a). In addition to IT systems, Moldova is experiencing wider problems of "government fragmentation" and "vertical fiscal imbalances" which suggest that there is a degree of systemic challenge to coordination and economies between levels of government (IMF, 2014). The information landscape is identified as 'fragmented,' resulting from political actors utilizing societal vulnerabilities, making comprehensive digital governance all the more difficult to achieve (StratCom COE, 2017). This complex, interdependent technical, legal and institutional fragmentation, compounded by a weak overall data governance regime, facilitate these fragmentation types to continue and to mutually reinforce one another, creating a vicious circle that makes holistic digital transformation exceptionally difficult to achieve.

3.4. Human Capital and Digital Literacy Deficiencies

Human capital and digital literacy limitations represent significant obstacles to Moldova's digital transformation. Skills shortages and misalignment are significant barriers to digitalization, particularly for Small and Medium-sized Enterprises (SMEs). Approximately 20% of Moldovan firms report a lack of an appropriately educated workforce to conduct business (OECD, 2023). The pool of IT talent is small and poorly integrated. Furthermore, there are formal restrictions preventing the IT professionals from teaching at universities unless they have an advanced degree, in addition to pedagogical certification, which may inhibit practical relevance of the coursework they teach (ITU, 2021).

Public mistrust in digital government services and low citizen awareness remains widespread. Citizens do not widely consume e-services and remain under-promoted and unmarketed qualitatively (TalTech, 2020). A significant gap exists between citizens and governmental institutions, where many citizens would prefer to deal with private institutions instead of dealing with governmental institutions in terms of safeguarding personal data (TalTech, 2020). In addition, citizens are often ignorant of how their data is stored or what can be disclosed about them, which increases distrust (TalTech, 2020).

Despite acknowledged good internet coverage, the issue of a digital divide and accessibility remains a challenge. Quality and affordable access remains asymmetrical among social-economical groups, geographical areas (urban/rural), and genders (ITU, 2021; UNDP, n.d.). A large proportion of the population, especially the elderly (80% of people age 50-74 cannot use digital public services independently, which implies they lack the skills and access to devices (UN Moldova, 2020; UN Moldova, 2025)). This demonstrates that having access to digital infrastructure does not mean that individuals are utilizing it or that are digitally included. The issue of a digital divide is multi-faceted, considering not only access to connectivity but also skills, trust, affordability, and access to devices.

Moreover, fear and under-confidence is widespread, especially in rural areas. Individuals who are older, or citizens without higher education report that they do not have confidence, trust, or are fearful of making mistakes and lack trust in digital financial systems (UN Moldova, 2025). This leads to limited functionality of digital activities - such as limited online payments, access to government services - (UN Moldova, 2025). Significant parts of the population - especially vulnerable populations - cannot independently access or trust digital services, impeding the overall satisfactions and citizen-centricity of the digital government, unequal access to public services, and reinforcing existing societal inequalities and challenges to implementing the 'whole-of-society' aspect of the new Digital Transformation Strategy.

4. Impacts of Systemic Challenges on Public Administration and Development

The ongoing problems of interconnectivity and functionality of government IT systems in Moldova have more than just technical inefficiencies - they impact the delivery of services, governance, and the country's social-economic development and goals for European integration.

4.1. Inefficiencies in Public Service Delivery and Increased Bureaucracy

The fragmentation and lack of interoperability among government information systems is directly responsible for immense inefficiencies in data management and public service delivery (UNDP, 2024). Citizens are often required to go to multiple state agencies at great cost and inconvenience to submit identical documents for several benefits (UNDP, 2024). These challenges contradict the intentions of modern citizen-centric, public administration. The prevalence of paper requests, when in some cases digital channels for data exchange may exist, essentially nullifies any productivity improvements anticipated as a result of e-governance (World Bank, n.d.a). Both in practice and in intention, the failure to implement the "Once-Only" principle for utilizing information submitted to a public authority discredits the digital promises of government and frustrates citizens who participate in such systems, suggesting that while the necessary technical systems may exist, the enforcement of institutional and behavioral response does not exist; therefore, any return from digital resources is impaired.

Additionally, the continued low awareness and trust by citizens and the ongoing gaps in digital literacy means a large proportion of the population cannot fully participate in online experience. For instance, around 59% of people in Moldova needed assistance in accessing digital public services and many elderly (80% aged 50-74) believed they couldn't access digital services without assistance (TalTech, 2020; UN Moldova, 2020). This reinforces a dependence on traditional bureaucratic methods that are often inconvenient and have tangible implications for citizen experience and access to core services (e-Gov.md, n.d.). The impact is much more than financial efficiencies; it burdens citizens (time, travel, and frustration), erodes public trust in the government digital service plan, and reinforces a two-tiered system where those with digital skills and devices benefit while disconnected citizens are left behind. In this situation, the "digital excluded" are victims of perverse systemic challenges while undermining a shared goal of "citizen-centric" services while reducing the benefits of a fully enabled society with improved security, which enables and improves comfort, collaboration, etc.

4.2. Hindrance to Evidence-Based Policymaking and Anti-Corruption Efforts

The fragmented digital landscape and lack of integrated digital databases means government ministries will often find themselves severely disadvantaged to identify, remove, and prevent fraud (UNDP, 2024). Likewise, fragmentation will also directly inhibit evidence-based policymaking due to a lack of extensive and trustworthy data across sectors (World Bank, n.d.a; UNDP, 2024). As a result, the digital potential for Moldova to develop is unimpressive (World Bank, n.d.a).

Although e-governance initiatives are primarily designed to improve transparency and reduce corruption (TalTech, 2020; World Bank, 2011b), the reluctance of some public authorities to implement e-governance approaches fully, combined with examples of improper data access by officials, indicate that there is still "hidden corruption" and reluctance to transparency (TalTech, 2020). This implies that technological solutions are inadequate to resolve entrenched organizational and political issues which thrive in obscurity.

4.3. Impediments to EU Integration and Broader Socio-Economic Development

The absence of a united administrative architecture for interconnectivity and interoperability with the EU IT systems is already a barrier to Moldova reaching European standards and joining the Digital Single Market (Moldovan Ministry of Economic Development and Digitalization, 2023; European Commission, 2024). This is not just a technical barrier, but a strategic barrier to Moldova's wider geopolitical destiny as articulated in section 2.

The larger political instability compounded by frequent leadership changes further adds to the challenges, dragging development across all sectors, including e-governance, and rendering long-term agendas ineffective (TalTech, 2020). This wider political fragmentation—like "dysfunctional political system", "weak state structures", "corruption" (TalTech, 2020; StratCom COE, 2017)—now flows into fiscal decentralization (IMF, 2014), consequently curtailing fundamental consistency and long-term vision required for meaningful sustainable digital transformation. The problems with interconnectivity and functioning in government IT systems are more than isolated technical failures; they are evidence of deeper, systemic governance weaknesses in Moldova. Digital transformation, thus, acts as a diagnostic test, revealing the weaknesses within public administration and governance. At best, if we coped with the challenges in IT systems, we would still face aility of these broader governance weaknesses, and we wouldn't cope them solely through technology; those are organizational and political challenges too deeply ingrained to fix with a technical solution.

There are broader skills shortages and low use of digital tools in non-IT SMEs, affecting private sector competitiveness and overall economic growth, particularly when considering the important role of SMEs to Moldovan economy (OECD, 2023; ITU, 2021). The discovery of the pervasive digital divide, particularly in rural areas, has exacerbated geographical inequalities in access to social services, negatively affecting the ability of vulnerable groups to access essential services and progress in inclusive development (UNDP, n.d.; UNDP, 2024). Finally, the lack of clear regulation of new digital technologies has created a legal vacuum which has potential to slow down the development and commercialization of innovations, and reduce economic dynamism and structural innovation (ITU, 2021).

5. Recommendations for Enhancing Interconnectivity and System Functioning

To reduce the complexity of challenges to Moldova's government information systems, we need a whole-of-government approach to, and multiple desired outcomes for, changes in the direction of a consistent overarching policy and regulatory framework, technical developments, institutional capacity developments, and human capital development. Going forward we need:

5.1. Strategic Policy and Legal Reforms

For starters, we need **a data governance framework** (World Bank, n.d.a). This must cover clearly defined data classification and access, and standard processing methods for sharing with other entities. The data governance framework must also include a multi-annual Action Plan with clearly defined outputs and measurable targets, with guaranteed funding taking the form of hard budget lines (World Bank, n.d.a). In parallel it will be important to update existing legislation on data protection to be compatible with GDPR (TalTech, 2020). If paramount priority is afforded to align Law no. 133/2011 with the GDPR, then legal certainty for data processing and exchange can be provided to facilitate trust and compliance in data sharing. Beyond improving data processing and exchange, Moldova will need to make definitions of emerging technologies such as AI, blockchain and cryptocurrency and implement a clear legal framework for how these technologies can develop and be commercialized (ITU, 2021; World Bank, n.d.a). This will reduce regulatory uncertainty and facilitate the safe and effective use of these technologies in the delivery of public services and in the wider economy. To capitalize on digitalization, we need to have a "Once-Only" approach firmly embedded into policy and institutional frameworks (World Bank, n.d.a). This means both technical and administrative mechanisms need to be developed and phased in to ensure that neither government nor private parties can ask for paper copies when digital copies can and should be shared/exchanged. For the "Once-Only" approach to be implementable, it will be important to strengthen the E-Government Agency mandate to develop a whole-of-public-sector data architecture (World Bank, n.d.a). The implementation of the National Digital Transformation Strategy 2023-2030 similarly needs to be comprehensive, including clearly defined objectives and

measurable targets fully funded and allocated in the budget to avoid the unrealized objectives and targets of previous strategies (OECD, 2023).

5.2. Technological Advancements and Infrastructure Optimization

Although MConnect and MCloud are now deployed, there is more work to be done to maximize their utilization and efficacy (TalTech, 2020; World Bank, n.d.a). Efforts should direct greater areas for unified data management and sharing standards across all Ministries, Departments, and Agencies (MDAs); and actively seeking to resolve the technical issue of system architecture and/or establishing service integration (ITU 2021). In consideration of ensuring that the digital divide is narrow, greater access to high-speed broadband is required, especially in rural areas; research, and proposals to achieve remote access and reduce costs must be investigated (ITU, 2021). Building a level of cyber security capacity is important; all stakeholders should engage to coordinate in improving the nation's capacity to defend against cyber events and update the National Cybersecurity Strategy as necessary (ITU, 2021; European Commission, 2025a). Moldova's association with the EU Cybersecurity Reserve is a positive signal in this area (European Commission, 2025a). Lastly, the government should strive to incorporate "digital first" and "secure by design" principles into the development of all public services, together with automated processes and disseminating a greater level of use of digital identity and electronic signatures (Moldovan Ministry of Economic Development and Digitalization, 2023).

5.3. Institutional Strengthening and Capacity Building

It is critical to form **a network of Chief Data Officers** (CDOs) across MDAs, nationally and sub-nationally, to break down operational silos (World Bank, n.d.a). The CDOs would champion the data governance agenda and provide an assurance that all government authorities, MDAs included, would conduct their operations according to some degree of standard. While this is occurring, it is equally as important that we encourage inter-agency collaboration and cooperation, and we may achieve this by encouraging a whole-of-government approach (OECD, 2023; ITU, 2021). This entails deepening the active involvement of the stakeholders at the governmental level, more specifically the Ministry of Labour and Social Protection and the National Employment Agency (NAE) and making sure that we establish links with the non-governmental actors. We also need to be prepared to address the situation with poorly empowered public officials. We need to improve the public servant's knowledge of e-governance services using e-learning, and develop educational platforms (TalTech, 2020.; Burinschi, 2022). Regarding the institutional empowerment of Local Public Authorities (LPAs), it will be important to establish a working framework to establish good practices in this area and deal with the lack of involvement and limited development of data governance at the sub-national level, including dedicated institutions for our intervention and funding (World Bank, n.d.a). In addition, in order to combat corruption effectively, Moldova needs to continue its work in partnership with the international community and international organizations e.g. EU, UNDP etc., to develop and support anti-corruption initiatives and provide specialized resources and technical assistance to law enforcement and financial institutions, and improve information-sharing arrangements (EU Neighbours East, n.d.).

5.4. Human Capital Development and Digital Inclusion Initiatives

There is a need for a full national approach for developing **a digital skills strategy** (TalTech, 2020; ITU, 2021; UN Moldova, 2025). Specifically, there should be a digital skills strategy that addresses the delivery of online courses for citizens to develop their technical literacy and knowledge of e-services and personal data protection. To help bridge the digital divide, there will be a need for targeted training and support for vulnerable groups including the elderly and in rural areas (UNDP, n.d.; UN Moldova, 2020; UN Moldova, 2025). This means building local digital learning centers and preparing local experts to provide useful, accessible, and needs-tailored training (UN Moldova, 2025). It also requires policymakers to acknowledge digital literacy as an

essential component of social inclusion and economic resilience (UN Moldova, 2025). Building trust is critical; the government must play a lead role by using the legal framework, public awareness, and addressing uncertainty regarding technological development and cybersecurity (TalTech, 2020). Providing additional ways to authenticate I.D. such as Smart-ID or Mobile-ID will aid the accessibility of online governmental services for their citizens abroad (TalTech, 2020).

6. Conclusion

The Republic of Moldova has taken admirable strides along the digital transformation path by building e-governance infrastructure and platforms. The examination shows that due to a tangled relationship of technical, legal, institutional, and capital resource problems, interconnectivity across many collaborative or elliptical governmental information systems is poorly done, if at all, resulting in systems that are not functioning at optimal effect. Fragmentation remains, data quality issues remain, and pre-existing interoperability platforms are not fully effective, leading the invocation of the "once-only" principle impossible. The law - legal framework, data protection, and technologies remain behind the more contemporary EU use of those frameworks legislatively, leading to a regulatory and authority gap; there is uncertainty in terms of technology and data protection. Institutions - the lack of government silos functioning apart, the lack of willingness to change dramatically the inclusion on one's official position regarding facilitating reform, and much of the information management remain with individual institutions on their data governance authority limit a coordinated approach to the transformation. Citizenship and human and not the least of whom are digital literacy issues: the gaps that are also manifesting citizenship issues regarding public trust continued disparities in the conditions of receiving public services further compound the multiplicity and complex nature of the digital divide.

Collectively, all of these systemic hurdles lead to bleed in delivery public services and making evidence-based policies and countering the manifestations of corruption. In addition, this signifies difficult challenges for Moldova in terms of looking at deepening their EU integration, where digital/guided alignment is vital to participate in the Digital Single Market. This means the challenges faced in Moldova regarding their use of technology, methods, systems, are none determinant challenges, rather terms of governance being displayed as problems particularly for their public administration system.

Overall to move through these systemic hurdles, unlock the full positive potential of democracy as per their existing digital technologies, requires a wide-ranging, continued, and resourced approach to digital transformation and travels paths towards better governance. This in turn requires policy and legal reform to better complement their existing frameworks and update for better data governance and and to develop GDPR-compliant legislation, as the EU AAoHDA requires. It also means planning for the efficient use of their existing technology infrastructure, more broad-band access and improvements in foundational cybersecurity methods. As an institution it involves setting-up a in government working,' together as citizens, citizens institutional governments or authorities or experts. Joined ownership in the public service in the public sector that encompasses co-creation, co-implementation, cooperation or inter-involvement, and assist public administration authorities or professionals. Involving intentional initiating or hiring workers with targeted training in human capital to further work developing digital public education and trust-being towards closing the digital divide.

With a high degree of political will and consistent or meaningful participation of attending multiple public triple helix stake-holder and continued engagement or optioning in by interested third partners, Moldova has a chance to consider these barriers as opportunities to make progressive change and solutions. Arriving at more holistic change needed could mean by 2030, Moldova could be building on their digital achievements in government to be among the first of

contemporary data driven, digital public services with AI enabled citizen-centric delivery solutions in Europe by fulfilling their Digital Transformation Strategy.

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