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HYBRID MILITARY DOCUMENT MANAGEMENT IN THE ARMED FORCES OF UKRAINE: MANAGEMENT RISKS AND CONDITIONS FOR SCALING DIGITAL TRANSFORMATION

The article examines the digital transformation of internal military clerical work and administrative document management within the system of the Ministry of Defense and the Armed Forces of Ukraine as a managerial reform that reshapes processes, data, and accountability rather than merely introducing isolated information solutions.

It is identified that the current state has a hybrid nature: digital services coexist with paper-based and offline procedures, which ensures adaptability but creates risks of duplicate registers, version conflicts, and "electronic bureaucracy". It is substantiated that scaling is possible only under conditions of procedural reengineering, coordinated data governance (reference data, identifiers, metadata), institutional consolidation of roles (including a digitalization vertical), and document management services (access control, logging, segmentation, recoverability, and operation under degraded connectivity). A framework for assessing the maturity of digital clerical work is proposed based on indicators of document circulation time, the share of e-procedures without duplication, data quality, and incidents/availability, which makes it possible to link key performance indicators to managerial outcomes.

Keywords: *military clerical work, public administration, electronic document management, electronic reports, regulatory and legal framework, process transformation, data governance, digital transformation.*

Statement of the problem. In the context of a full-scale war, the effectiveness of defense governance is determined not only by the availability of resources but also by the speed of managerial decision-making cycles and the resilience of official communication channels. Accordingly, digital transformation within the Armed Forces of Ukraine (AFU) is understood primarily as a managerial transformation of processes and data rather than the mere introduction of isolated information systems. The most sensitive element of this transformation is document management, through which decisions are formalized, implementation control is ensured, and the evidentiary basis of governance is established.

A pivotal role in this transformational process is played by the digitization of document circulation, which constitutes the central governance circuit, as it channels orders, reports, resource accounting, and personnel procedures. The paper-based model complicates execution control, generates delays, increases the risk of document loss or duplication, and imposes additional burdens on commanders and headquarters. In this regard, the level of document management digitalization should be assessed not by the number of services implemented, but by the reduction of administrative cycles and the enhancement of process controllability. The response to this complex challenge is the digital transformation of document management – from the adoption of electronic document management systems to the development of specialized applications.

The full-scale russian-ukrainian war has intensified the need not only for technological modernization but also for a radical reduction of governance cycles within the security and defense sector. Under these conditions, the digital transformation of the Armed Forces of Ukraine acquires the characteristics of a systemic managerial reform aimed at increasing operational efficiency, controllability, transparency, and institutional resilience of the military organization. Historically, paper-based document management has generated delays, duplication, and other bureaucratic constraints. This has hindered operational command and control, increased the complexity of monitoring execution, and

heightened the risks of errors in logistical support, personnel administration, and social procedures.

Analysis of recent research and publications. Within contemporary discourse, the digital transformation of the defense sector is interpreted as a managerial change that combines the modernization of procedures, institutions, and data with the implementation of digital platforms across the system of the Defense Forces, Security Forces, the defense-industrial complex, and civil society organizations. Collectively, these actors contribute to safeguarding national security, sovereignty, and territorial integrity by developing, producing, and employing weapons and military equipment. Within this thematic field, electronic document management and military record-keeping are viewed as a foundational mechanism for accelerating governance cycles, strengthening execution control, improving resource accounting, and safeguarding the rights of servicemembers. Recent Ukrainian publications are predominantly normative–applied and analytical in nature, largely due to restricted access to data in wartime; nevertheless, they provide a sufficiently robust empirical basis for generalizations within the domain of public administration.

The first body of research captures the formation of approaches to electronic document management in the AFU as an element of the state policy of digital transformation: electronic document management is presented as an instrument for optimizing administrative procedures [1], reducing bureaucratic costs and increasing controllability [2, 3], as well as for standardization and monitoring of report (raport) workflows with formalized decision recording [4]. Analytical assessments of the military-organizational dimension emphasize inherent systemic dysfunctions (such as redundancy, excess and loss of documentation, and protracted approval processes), thereby establishing a foundational basis for studying organizational transformation and administrative effectiveness [5].

Another group of sources comprises the regulatory and legal framework that substantiates the legality of electronic documentation processes and delineates parameters of state oversight, ranging from general principles of electronic documentation to organizational mechanisms that facilitate interagency communication [6–9]. A subsequent segment focuses on the digitization of specific administrative procedures under wartime conditions. In particular, these studies examine electronic documentation processes as thematic case analyses aimed at minimizing transaction costs and accelerating interactions [10, 11]. At the same time, scholars highlight the potential risk of "digitalization without optimization" and the necessity of procedural reengineering [12]. The critical importance of institutional capacity is also emphasized, including IT infrastructure, user support, and feedback mechanisms [13].

At the same time, managerial gaps remain: the absence of a coordinated framework for assessing the maturity of document management, and the weak formalization of change management mechanisms at the unit level.

The purpose of the article is to substantiate the transition of the digital transformation of military document management from the instrumental implementation of electronic services to a substantive managerial reform, as well as to formulate practical recommendations and maturity indicators for scaling electronic record-keeping within the system of the Ministry of Defense of Ukraine and the Armed Forces of Ukraine

Summary of the main material. The first steps toward the digitalization of administrative processes in Ukraine's defense sector date back to the 2000s. These developments coincided with the adoption of foundational regulatory acts in the field of electronic documentation. In particular, the Law of Ukraine No. 851-IV of 22 May 2003 "On Electronic Documents and Electronic Document Management" established the legal framework for the use of electronic documents across various domains. The Law defines the concept of an electronic document and delineates the rights and obligations of participants in electronic document circulation [6]. A noticeable acceleration of change occurred after 2014. The armed aggression of the russian federation intensified the need to revise approaches to governance and process organization. During this period, digitalization emerged as a practical instrument of public administration reform, including within the Armed Forces. In the defense sector, a significant milestone was the adoption of Order No. 306 of the Ministry of Defense of Ukraine dated 14 June 2017 "On the Introduction of Electronic Document Management in the Armed Forces of Ukraine". This document established the standards and technical requirements necessary for electronic document management systems (EDMS) within military units [8].

Simultaneously, on 18 October 2005, the Cabinet of Ministers of Ukraine adopted Resolution No. 977, introducing the Unified Electronic Document Management System for executive authorities [7], and subsequently, in

2018, initiated a pilot project aimed at integrating military structures into this system (Resolution of the Cabinet of Ministers of Ukraine No. 55 of 17 January 2018) [9].

Thus, although the fundamental regulatory framework for the digitization of document management was established more than a decade ago, its practical implementation has consistently lagged behind operational requirements.

A clearly articulated emphasis on the digital transformation of defense governance began to materialize in the late 2010s. One of the primary objectives of military leadership was the automation of military career management and the introduction of paperless procedures – ranging from compensation for housing rent and the administration of housing queues to electronic reporting, participation in the Military Medical Commission (MMC), and the submission of applications using electronic signatures [1]. Thus, at the turn of 2019–2020, a strategic vision was formulated for the transition from a "paper-based army" to a digital one.

Current state of electronic document management in the armed forces of Ukraine. As of 2025–2026, document management within the Armed Forces of Ukraine retains a hybrid character: a portion of administrative procedures has been transferred into a digital environment, while a significant share of documentation-particularly in units with limited connectivity and within secure communication circuits-remains paper-based or offline. Such a regime requires the unification of parallel documentation rules in order to prevent duplication and gaps in execution control. Bureaucratic structures inherent to military organizations have historically created substantial obstacles in this regard [7].

Within the system of official communications, reports (raports) function as the dominant written form of regulated information exchange between subordinates and commanders. The paper format is applied to virtually "all service-related matters" ranging from leave requests to various reports and complaints. According to certain assessments, nearly 50% of all military operations relate to reporting processes [5].

Recognizing the problem of excessive paper-based bureaucratization, the Ministry of Defense of Ukraine, in cooperation with the Ministry of Digital Transformation, initiated a comprehensive digitization of processes in the context of the ongoing conflict. A notable milestone was the introduction in 2023–2024 of specialized military electronic services – the mobile applications "Rezerv+" and "Army+".

"Rezerv+", launched in May 2024, is a service designed for conscripts, persons liable for military service, and reservists. It enables citizens to update their registration data online without visiting a territorial recruitment center. Through "Rezerv+", users may also generate an electronic military ID (military registration document) in the form of a QR code or PDF file, replacing its paper-based counterpart.

The "Army+" application represents an example of the service layer of digital document management for servicemembers, enabling the submission of standardized reports (raports) and the formalization of managerial decisions within a digital environment. Its managerial effect lies in reducing the time required for submission and review of reports, enhancing the traceability of decisions, and generating structured data for execution control. At the same time, the following factors are critical for scaling: formal regulatory recognition of the electronic format, integration with departmental electronic document management systems (EDMS), as well as requirements concerning authentication, logging, and service continuity under conditions of communication degradation [2, 3, 5]. All actions performed within the service are stored in a digital archive, and higher headquarters are provided with the capacity to analyze decisions and appeals [5].

In addition to "Army+" and "Rezerv+", other IT solutions are being implemented to support internal processes within the AFU. For example, in 2023, the procedure for undergoing the Military Medical Commission (MMC) was optimized-one of the most problematic bureaucratic domains during wartime. In August 2023, the government approved the introduction of electronic document management for the MMC, establishing the electronic exchange of medical documents of servicemembers among military units, hospitals, and territorial recruitment and social support centers [10].

Historically, the concept of digital transformation has undergone significant evolution, reflecting shifts in paradigms regarding the role of digital technologies in societal processes. An analysis of this evolution makes it possible to identify a transition from computerization, through the formation and consolidation of digitalization, to a holistic understanding of digital transformation as a fundamental rethinking of how technologies are utilized [14].

In a longer-term perspective, the digital development of military document management should be viewed as a transition from an instrumental to a substantive understanding of digital transformation. At the instrumental level, digitalization focuses on the implementation of services and the transfer of procedures into electronic form, producing rapid effects through increased convenience and acceleration of discrete operations. The subsequent level entails a transformation of the very foundations of governance – rules, roles, data structures, and accountability mechanisms. Within this logic, the electronic document is treated not as a self-sufficient outcome, but as an element of a broader process and a source of data.

The principal outcomes at this stage include standardized processes, unified reference registries and identifiers, transparent decision-making pathways, measurable time standards, and an institutionalized function of data quality management. These changes create the preconditions for data-centric governance within the defense sector. Such governance encompasses near real-time monitoring of execution, early detection of delays, and workload forecasting.

Thus, at present, the AFU has established the foundational elements of digital document management. The current state may be characterized as a "hybrid document management" model, wherein new digital tools are being actively implemented, yet have not fully displaced the legacy paper-based system. The consolidation of these changes requires an appropriate regulatory framework.

Changes and initiatives: transition from paper-based processes to a digital military ecosystem. Over the past three years, particularly since the onset of the large-scale aggression by the russian federation in 2022, the Armed Forces of Ukraine have undergone substantial transformations toward digitalization. The most notable changes already implemented may be summarized as follows.

1. Optimization of bureaucratic processes prior to digitalization. The leadership of the Ministry of Defense acknowledged that "digitalization without prior optimization of bureaucracy" would not yield optimal results [12]. Accordingly, a number of redundant procedures were eliminated or streamlined before their transition to electronic format. During 2022–2023, inventory procedures were revised to minimize duplication of reporting, and the management of structural documentation was optimized. Only after this reassessment of traditional processes did their active migration into the digital environment commence.

2. Projects within the "Digital army" initiative. Under the leadership of the Ministry of Digital Transformation, the concept of a "digital army" was developed as a portfolio of projects encompassing various aspects of military governance. This initiative includes combat IT systems (such as the situational awareness system "Delta"), information systems for personnel and logistics management, as well as the above-mentioned services "Rezerv+" and "Army+" for document processing and administrative support. In August 2023, the Cabinet of Ministers established the Technology Scaling Center under the General Staff, jointly tasked with the Ministry of Digital Transformation to implement these innovations [3]. This cooperation between civilian and military sectors (Ministry of Digital Transformation + Ministry of Defense) facilitated the rapid deployment of new applications.

3. Extension of the "State in a smartphone" initiative to the military sphere. Whereas digitalization had previously focused primarily on civilian services, it has now consciously expanded into the military domain. The leadership publicly endorsed the vision of a "paperless army. " It was emphasized that the "paper-based army should belong to the past", and the government set the objective of transferring all document workflows among servicemembers into electronic format [3].

4. Pilot projects and experimental initiatives. Many initiatives were initially deployed for a limited audience prior to large-scale rollout. For example, electronic reporting within "Army+" was first tested in selected brigades, where soldiers and officers provided feedback [2]. Based on this feedback, the interface was improved and technical issues were addressed, paving the way for system-wide deployment across the Armed Forces. Similarly, the electronic document management system for the MMC was first launched in pilot mode in several regions (Kharkiv, Lviv, Kyiv, Vinnytsia) in May 2023, with nationwide expansion beginning in August [11]. The pilot approach minimized risks and facilitated the adaptation of digital solutions to the realities of military service.

5. Personnel reinforcement of digital transformation. To ensure the successful implementation of these initiatives, the Ministry of Defense initiated the establishment of an IT vertical within the Armed Forces. Since 2023, the introduction of "digitalization officers" (Chief Digital Transformation Officers, CDTOs) has been

planned from the level of the Ministry of Defense and the General Staff down to battalion level, although practical implementation began only in 2025. Digital officers and their teams within units are forming a vertical structure intended to "facilitate the rapid implementation of IT solutions and enable continuous feedback" from users on the front line [13]. Their roles are still being formalized; the primary functions currently identified include system implementation at the unit level, rapid feedback collection, formulation of functional requests, participation in solution architecture, and the development of an IT culture. In effect, a new "digital military" culture is emerging, wherein IT specialists operate alongside traditional communications and staff officers within military units [13]. In some cases, separate "digital platoons" are already being formed through volunteer initiatives.

At the level of the Ministry of Defense of Ukraine, the institutionalization of digital transformation is ensured by the Directorate for Digital Transformation in the Defense Sector and the position of Deputy Minister of Defense for Digital Development, who coordinates the Directorate's activities. The legitimacy of this function is confirmed by governmental decisions on appointments made in 2023 and 2025 [15, 16, 17]. In practice, the CDTO level performs the role of a mechanism for regulatory and procedural support, as well as for the standardization of digital changes (including participation in the state registration of ministerial orders with the Ministry of Justice), and supports the deployment of a network of digital officers within military units, with priority implementation in the State Special Transport Service (SSTS) [18, 19, 20].

In parallel with the institutional formalization of managerial responsibility, since 2022 there has been a discernible regulatory "substantivization" of digital transformation through the formalization of electronic registries and digital procedures as mandatory elements of personnel management and service provision. Among these are the Unified State Register of Conscripts, Persons Liable for Military Service, and Reservists [21]; the Instruction on the Organization of Personnel Records within the system of the Ministry of Defense [22]; and the mechanism for organizing work with reports within the Ministry of Defense, the Armed Forces, and the SSTS (Order No. 531 of 6 August 2024) [23]. Taken together, these acts demonstrate that digital transformation is cascading from the policy level to the process level, where the CDTO function becomes indispensable for harmonizing rules, data, responsibilities, and cybersecurity across a complex and geographically dispersed military organization.

6. Cooperation with international partners. The digital transformation of the Ukrainian Armed Forces is taking place with active support from Western allies. In October 2025, Ukraine and Germany concluded an agreement on long-term partnership in the digitalization of the defense sector for the period 2026–2028. Ukraine also maintains close cooperation with NATO regarding the standardization of electronic document management: Ukrainian specialists undergo training with NATO counterparts on secure communications, data format interoperability, military data governance, and related areas.

Thus, the changes implemented are systemic in nature: regulatory acts are being revised, modern IT products are being deployed, an internal support structure for digitalization is being established within the Armed Forces, and external resources and expertise are being leveraged. Although gradually, the bureaucratic mechanism of the military is evolving – transitioning from an outdated paper-based system to a digital platform that emphasizes operational efficiency, usability, and transparency.

Critical aspects of implementing digital document management in the AFU. Despite the evident managerial expediency of transitioning to electronic document management within the defense sector, the practical implementation of such changes in the Armed Forces of Ukraine is accompanied by systemic risks. Their nature is predominantly institutional and procedural rather than purely technological. Departmental electronic document management systems (such as EDMS) and user-oriented services like "Army+" are capable of reducing governance cycles. However, such an effect does not arise automatically. It requires procedural revision, data unification, clearly assigned responsibilities, and the construction of a cyber-resilient operational environment. In the absence of these conditions, digitalization may reproduce bureaucratic inertia or even amplify it.

An additional limitation of EDMS concerns the problem of data and metadata quality. If an electronic document is not treated as a process-managed object with unified identifiers, reference registries, attributes, and standardized completion rules, it becomes merely a digital analogue of stored files – suitable for archiving but inadequate for managerial analytics and control. Within a military organization, a substantial proportion of

decisions are time-critical. Therefore, the absence of harmonized circulation time standards, routing rules, and data quality metrics undermines the potential transition to data-centric governance.

Personnel-related factors must also be taken into account. High staff turnover and uneven competency levels may lead to fragmentation of practices across units and command echelons. To mitigate this risk, standardized requirements for the professional profile of those responsible for digital transformation are necessary. Such requirements should include process-oriented thinking, basic data governance competencies, adherence to cyber hygiene principles, and the capacity to organize change and train personnel. In the absence of unified standards, divergent approaches to record-keeping and document management emerge, increasing procedural incompatibility.

User-oriented services such as "Army+" are significant because they shift digitalization to the level of end users and enhance the traceability of managerial decisions. However, their effectiveness is constrained by dependence on connectivity and devices, insufficient support for partial offline modes, and the risk of discrepancies between "Army+", departmental EDMS, and registries in the absence of harmonized data models and integration protocols. Moreover, interface usability does not compensate for inefficient regulations: without shortening approval chains and clarifying roles, the digital environment does not reduce the duration of governance cycles.

Thus, the key challenges of digitalizing military document management are associated with the transfer of excessive procedures into the electronic environment, fragmentation of data and regulations across units, and institutional ambiguity regarding roles in digital transformation

Trends and prospects for the development of digital military document management. It is expected that over the next few years, the digitization of document management within the Armed Forces of Ukraine will significantly accelerate, becoming an irreversible process. Several key trends and prospects of this development may be identified.

1. Transition to a fully "paperless" governance system. A comprehensive shift toward a "paperless" management model has been proposed. The objective is to achieve a condition in which all necessary military documentation is maintained in electronic format, with paper used only as an exceptional fallback mechanism. Although ambitious, this goal is attainable, as comparable initiatives have already been implemented in other organizations. For example, in 2017, the headquarters of the United States Army successfully implemented a fully paperless initiative by introducing an electronic task and correspondence management system. This framework enabled real-time monitoring of document workflows, identification of the current location of documents, and clear attribution of responsibility for their processing. As a result, the time required for policy agreements or orders was reduced from weeks to several hours, while paper circulation at senior leadership levels was substantially minimized [24]. The Armed Forces of Ukraine seek to replicate such achievements. It is anticipated that by 2027–2028, the Ministry of Defense will complete the transition to full electronic document management in its internal operations.

2. Functional expansion of "Army+" as an integrated service platform. At present, "Army+" provides core functionalities such as electronic reporting and certification. In the near term, it is expected to evolve into a centralized access point for servicemembers to all public services related to their military duties. Planned modules include an electronic health record for monitoring servicemembers' health status and Military Medical Commission results; financial security data (including salary payments and combat-related compensation); a personal career profile (encompassing service history, military training, and qualifications); as well as an electronic queue management system for housing and sanatorium treatment. A further promising direction is the integration of "Army+" with NATO systems for peacekeeping contingents and joint headquarters. In the event of Ukraine's accession to the Alliance, Ukrainian electronic documents will need to ensure interoperability with NATO standards and data formats.

3. Artificial Intelligence and data analytics. The next stage of digital transformation involves leveraging accumulated electronic data for decision-making. Digital document management generates extensive datasets on military activities: the volume and types of reports submitted, the issues most frequently raised by personnel, and the stages at which process delays occur. The analysis of such data through Big Data technologies and AI enables leadership to identify bottlenecks and forecast emerging needs. The implementation of these solutions within the Armed Forces – subject to robust data protection requirements – can enhance human resource management, facilitate the identification of issues related to morale and

psychological well-being, and improve logistical planning. In addition, there is potential for the deployment of chatbots to automate routine inquiries, such as providing information on social benefits or collecting applications for administrative and security-related purposes.

Under a favorable scenario, within the next three to five years, electronic document management is expected to extend across all levels of command within the Armed Forces of Ukraine – from the central administration to the tactical echelon. In this model, paper-based media would serve a backup function in cases of communication loss or power disruptions. The anticipated effect consists in reducing the time required for routine administrative operations and reallocating personnel resources to mission-critical tasks. This enhances governance controllability and adaptability, which is particularly crucial under conditions of rapidly changing operational environments and high uncertainty. At the same time, the transition from an administrative model inherited from Soviet штабна practice to a network-oriented organization is not an automatic consequence of introducing digital tools. It requires coordinated changes in processes, information access rules, and accountability frameworks for decision-making.

The proposed solutions include the following. First, strong leadership from the highest echelons is essential. When commanders-ranging from the Minister of Defense and the Chief of the General Staff to unit commanders-personally demonstrate the use of digital systems, this sets a standard for their subordinates.

Second, the importance of training and motivation cannot be overstated. Systematic digital literacy programs are crucial for officers, particularly in demonstrating effective workload management (including time efficiency and reduction of administrative overload). It is advisable to establish key performance indicators for commanders related to digital decision-making practices – for example, the proportion of electronic reports generated within a unit, the timeliness and appropriateness of request processing – and to incorporate these indicators into performance evaluations.

The maturity of digital record-keeping should be assessed primarily as a managerial metric rather than as a mere факт of technical implementation. Core indicators include the circulation time of key documents, the share of procedures conducted without paper duplication, data and metadata quality metrics, as well as service resilience parameters and incident response performance.

Taken together, these indicators make it possible to distinguish fragmented digitalization from data-driven governance. They also enable the alignment of evaluation with managerial outcomes rather than with the number of tools deployed.

4. Process deficiencies. The mere transfer of an outdated procedure into a digital format does not enhance its effectiveness; "simply focusing on the transition from paper to digital, without reassessing the processes themselves, may fail to produce the expected results". The optimization of the fundamental nature of document management is therefore essential [12]. The recommended approach is that, alongside the deployment of IT solutions, the redesign of existing processes must be regarded as decisive. Process optimization should precede digitization; otherwise, there is a risk of creating an "electronic bureaucracy".

5. Provision of resources and infrastructure. The flow of digital documents requires the availability of computers, servers, secure communication channels, and technical support. In peacetime, this primarily concerns the allocation of financial resources and time; in wartime, however, it additionally involves ensuring system functionality in combat conditions. Resource prioritization is therefore critical. The government must allocate funding for information technologies within the Armed Forces even under conditions of fiscal constraint, as such expenditures constitute an investment in operational effectiveness. Cooperation with international partners, including through bilateral agreements supporting digital projects [25], represents an important factor in accelerating digital transformation.

6. Regulatory constraints and bureaucratic barriers beyond the Ministry of Defense. A significant obstacle to the digital transformation of military document management remains outdated regulatory frameworks and institutional resistance from adjacent public authorities. In practice, legal inconsistencies arise: despite the legislatively established equivalence of electronic and paper documents, courts, social protection authorities, and other public institutions sometimes refuse to recognize electronic documents as valid evidence or as sufficient grounds for decision-making. Under such conditions, the state must act proactively, anticipating institutional inertia by updating subordinate regulations and legislative provisions in order to eliminate formal requirements mandating paper documentation. In particular, a number of normative legal acts require

revision with respect to the introduction of electronic document management in the defense sector, the social protection of servicemembers, and interagency data exchange. This issue warrants separate and in-depth scholarly examination.

7. User engagement and service usability. It is essential to ensure that electronic services are максимально user-friendly. In this regard, "Army+" provides a positive example: prior to its launch, 64,000 servicemembers were surveyed regarding their needs [5], and the findings informed the system's design (a rational set of functions without superfluous features). This approach should be sustained: introduce a function, collect feedback, refine the solution. Digital teams within brigades are expected to communicate upward which products function effectively and which do not [13]. Such responsiveness must become part of organizational culture-listening to the end user, whether a soldier or a staff officer, and promptly updating IT solutions accordingly. At the state level, it is critically important to streamline bureaucratic procedures related to approving modifications of software systems. In the civilian IT sector, updates are often deployed on a near-weekly basis, whereas public-sector systems frequently remain static due to complex procurement procedures and authorization protocols. Without regulatory simplification and adaptive governance mechanisms, the responsiveness of military digital services will remain constrained.

8. Analytical interpretation of the managerial effect. Electronic document management within the military generates its effect not merely through faster document transmission, but through the shortening of the managerial cycle: decision/document drafting – approval – registration – execution – monitoring and feedback. Digital tools reduce transaction costs in document workflows. However, this effect is achieved only if regulations, roles, and the distribution of responsibilities are revised simultaneously. In the absence of such changes, digitalization does not shorten the managerial cycle; instead, it formalizes the duplication of operations and increases the burden associated with approval procedures.

9. Risk of hybridization and controllability criteria. The transitional period of coexistence between paper-based and digital environments is practically inevitable. However, it creates the risk of parallel registries and version conflicts, which undermine the reliability of managerial information and complicate execution control. Effective controllability requires the designation of a single source of truth regarding document status. It also necessitates clearly defined channel prioritization rules, unified reference registries and classifiers, and standardized circulation time norms. In addition, measurable data quality indicators must be introduced to ensure the consistency, completeness, and timeliness of information within digital document management processes.

10. Institutional design for scaling. The scaling of electronic record-keeping should be conceptualized as a transition from a project-based mode to a sustainable change policy, which requires a clearly designated process owner and a responsible authority for service development. The architecture of information systems must be coherent and centrally governed. Data governance should be institutionalized as a distinct function. The security framework must provide for regular audits and compliance monitoring. Within such a model, digital solutions are integrated into a unified ecosystem rather than functioning as a set of isolated tools.

Further progress is possible only through comprehensive digitalization and the enhancement of the quality and timeliness of strategic decision-making in the defense sector, as well as improvements in managerial processes both in combat conditions and in routine military activities. This constitutes a mandate for fundamentally new structures within the system of the Ministry of Defense of Ukraine, such as the Directorate for Digital Transformation and Information Security Policy in the Defense Sector, along with a number of executive units. It also entails the formation and effective use of a unified information environment of the Defense Forces through the adoption of common standards, protocols, and architectures, the provision of necessary services, and the full utilization of information resources aimed at ensuring operational effectiveness.

Conclusions

The digital transformation of military document management in Ukraine has evolved from the establishment of a robust legal framework governing electronic documents to the implementation of practical tools at the operational level, including electronic reporting systems and servicemember-oriented services.

The study demonstrates that, under wartime conditions, the digital transformation of military

document management is shifting from an "auxiliary" function to a critical component of defense governance controllability. The practical effect of digitalization manifests itself in the reduction of the full decision-making and execution cycle, as well as in the enhanced traceability of managerial actions.

Key barriers to scaling include several interrelated factors. First, insufficient process reengineering leads to the transfer of inefficient regulations into the digital environment. Second, fragmentation of regulations and role distribution among involved actors undermines coherence. Third, uneven infrastructure readiness and user support create disparities in implementation. Fourth, data governance challenges persist, particularly with respect to data quality, metadata management, and the absence of unified reference registries and identifiers.

Practical recommendations are formulated within the logic of a managed change policy rather than isolated projects. It is necessary to designate process and product owners, establish a single source of truth regarding document status, and implement unified routing schemes, reference registries, and classification rules. A separate task involves formalizing requirements for integration with state registries and ensuring inter-system data exchange in accordance with partner standards.

The limitations of this study are associated with reliance on open sources, which precludes detailed analysis of certain solutions implemented within secure environments. Future research should focus on quantitative measurement of impact (including cycle time reduction, decrease in losses and errors, and time savings for commanders), cost-benefit modeling, analysis of user experience and change management practices, as well as the development of standardized reengineering "packages" for core administrative procedures of military service.

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ГІБРИДНИЙ ВІЙСЬКОВИЙ ДОКУМЕНТООБІГ У ЗБРОЙНИХ СИЛАХ УКРАЇНИ: УПРАВЛІНСЬКІ РИЗИКИ ТА УМОВИ МАСШТАБУВАННЯ ЦИФРОВИХ ЗМІН

Розглянуто цифрову трансформацію внутрішнього військового діловодства й адміністративного документообігу в системі Міністерства оборони і Збройних Сил України як управлінську реформу, що змінює процеси, дані та відповідальність, а не лише запроваджує окремі інформаційні рішення. Показано, що в умовах повномасштабної війни ключовим ефектом цифровізації є скорочення управлінського циклу «створення документа – погодження – підпис – виконання – контроль», зростання дисципліни виконання та керованості, а також формування надійних управлінських даних для планування і моніторингу. Методологічну основу становлять системний і структурно-функціональний підходи; емпірична база сформована шляхом desk research і контент-аналізу нормативно-правових актів, стратегічних документів та відкритих матеріалів щодо впровадження електронного документообігу в оборонному секторі, із порівнянням окремих міжнародних практик.

Визначено, що нинішній стан має гібридний характер: цифрові сервіси співіснують із паперовими й офлайн-процедурами, що забезпечує адаптивність, але створює ризики подвійних реєстрів, конфлікту версій та «електронної бюрократії». Обґрунтовано, що масштабування можливе лише за умови процедурного реінжинірингу, узгодженого управління даними (довідники, ідентифікатори, метадані), інституційного закріплення ролей (зокрема вертикалі цифровізації) та сервісів документообігу (контроль доступу, журналювання, сегментація, відновлюваність і робота за умов деградації зв'язку). Запропоновано рамку оцінювання зрілості цифрового діловодства за показниками часу обігу документів, частки е-процедур без дублювань, якості даних та інцидентів/доступності, що дає змогу узгодити ключові показники ефективності з управлінським результатом. У перспективі цифровий розвиток військового документообігу має перейти від інструментальної цифровізації окремих процедур до субстанціональної трансформації управління, де стандартизовані процеси, ролі та відповідальність, якісні дані й метадані стають базою датоцентричного ухвалення рішень і контролю виконання. Практична цінність праці полягає у рекомендаціях щодо переходу від проєктного впровадження окремих сервісів до керованої політики змін у секторі оборони.

Ключові слова: *військове діловодство, державне управління, електронний документообіг, електронні рапорти, нормативно-правове забезпечення, трансформація процесів, управління даними, цифрова трансформація.*

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