

An Integrative Model of the Use of Digital Technologies in the Legislative Process: Conceptual Substantiation

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Summary

The development of digital technologies causes certain changes in all spheres of public life, including in the sphere of functioning of public power. The deepening of automation in the spheres of public administration determines the need to analyze existing practices in this area, as well as the consequences of this process. The introduction of information technologies into legislative activity is one of the directions of digital state formation and development. The legislative process and its results objectively affect all spheres of human activity and society and therefore have an administrative and regulatory impact on every citizen. Therewith, an integrated approach to assess the ongoing transformation of legislative activity suggests the expediency of forming an integrative model for the implementation of digital technologies in this area, which would cover both theoretical and legal aspects and the organizational and practical components of this process. The methodology of the presented work is based on a dialectical approach using a combination of general scientific and private scientific methods of scientific cognition and comprehension, among which: the explication method, the formal legal (dogmatic) method, the comparative-legal method, with which the existing theoretical and practical results of the implementation of digital solutions in legislative activity and the method of legal modeling have been considered. The purpose of the study is to consider an integrative model of the use of digital technologies in the legislative process and conceptually substantiate it. The paper concludes that such elements – validity, phasing, normativity, effectiveness together act as a conceptual substantiation of the integrative model of the implementation of digital technologies in legislative activity.

Keywords:

integrative model, legislative activity, digital technologies, the law as an algorithm, automated decision-making

1. Introduction

A significant number of digital technologies, many of which are used with varying degrees of efficiency within

the framework of public administration, lead to a significant change in the relationship between the state and citizens and a qualitative transformation of the entire system of public power [1]

The correct reflection of such a transformation at the regulatory level determines the need to develop the process of developing and adopting regulatory legal acts, which is reflected in the framework of a fairly widespread practice of using a variety of digital solutions in legislative activity (machine learning, big data, blockchain technology, etc.). It is precisely this model of transformation of the legislative process, which is being built considering the adequate use of digital technologies, that will ensure that this activity meets the needs of modern public administration [2].

The current situation determines the need to form potential models of their use, which would take into account all possible theoretical and organizational risks of the transformation of law-making into a digital format to the maximum extent [3]. By themselves, such risks are predetermined by the contradictory nature of any innovative technology that combines both positive components and threats primarily to human and civil rights and freedoms.

The multidimensional nature of existing digital technologies, their different nature, and orientation are closely studied in the scientific literature [4-7], which allows talking about the formation of individual elements of a comprehensive model for the introduction of such tools in the process of developing and adopting legal acts.

Meanwhile, the presence of such fragmented theoretical developments makes it extremely urgent to create a unified integrative approach [8-10], which would most adequately reflect both common features associated with the implementation of digital technologies in the legislative process, as well as the specific characteristics of individual digital solutions (their shortcomings and positive elements, risks and limitations, etc.). Nevertheless, there are

currently no approaches to build a single integrated model that would cover the concept of transformation of legislative activity in the context of its digitalization. Such an integrative model should reflect the validity and permissibility in itself of such a transformation of legislative activity from both theoretical and practical points of view. Validity from a theoretical and legal position is ensured by the preservation of the legal essence of legislative activity as one of the independent elements of public power. Organizational and practical validity is connected with the accumulated empirical experience of using digital solutions in the framework of automation and development of various areas of law enforcement and legal realization, which confirms the effectiveness of such tools for solving the problems of digitalization of legislative activity.

The second aspect, which provides a conceptual substantiation of the integrative model, is predetermined by the phasing and normativity of the transformation process of legislative activity in the conditions of its digitalization [11]. The phasing nature implies the possibility of implementing various digital solutions either within the framework of certain branches of law (the most predisposed to automation) or in relation to certain stages of law-making activity.

The final element to which attention is drawn in this article is the effectiveness of the integrative model of the use of digital technologies in legislative activity. Effectiveness, in this case, is understood as a qualitative transformation of the procedure for the development and adoption of regulatory legal acts through the introduction of digital technologies of various kinds.

The main purpose of the study is to consider an integrative model of the use of digital technologies in the legislative process and conceptually substantiate it.

2. Methods

The methodology of the presented work is based on a dialectical approach using a combination of general scientific and private scientific methods of scientific cognition and comprehension, among which:

- 1) the explication method, which allowed considering an integrative model of the application of various digital technologies (machine learning, distributed ledger technologies, big data, etc.) in the legislative process from the point of view of legal science (in particular, from the theory and practice of the legislative process);
- 2) a formal legal (dogmatic) method by which the legal characteristics of the integrative model of digital technology implementation are investigated from the point of view of its compliance with the constitutional and legal nature of the legislative process;

- 3) a comparative legal method by which the existing theoretical and practical results of the implementation of digital solutions in legislative activity are considered;
- 4) a method of legal modeling, with the help of which conceptual approaches on key issues of the formation of an integrative model of digitalization of the legislative process have been developed and substantiated.

3. Results

The analysis of theoretical approaches and the practice of implementing digital technologies in the process of developing regulatory legal acts allowed formulating several criteria that act as a conceptual basis for the formation of an integrative model for the introduction of digital solutions into the law-making process:

- 1) The validity of the integrative model of digital technology implementation is based on two aspects – theoretical and practical. The theoretical aspect is based on the preservation of the constitutional and legal nature of the legislative activity, regardless of its automation degree. The point is that regardless of the scale of implementation of various digital solutions, the process of developing and adopting regulatory legal acts remains unchanged in terms of compliance with its legal nature. The practical aspect reflects the already existing empirical experience of using various digital technologies in legislative activity and related areas, which confirms the effectiveness of the introduction of such tools in the process of developing and adopting regulatory legal acts.
- 2) The phasing (sequential nature) of the implementation of digital technologies implies the formation of conceptual foundations for the use of various digital solutions in those areas of legal regulation that are most predisposed to automation (tax, mandatory sphere, etc.). In addition, the phasing nature of the formation of an integrative model of the use of digital technologies in the legislative process suggests the possibility of their implementation in relation to individual stages of the legislative process with subsequent expansion of the scope of application.
- 3) The normativity of the integrative model is based on the mandatory regulatory reflection of the steps taken in the implementation of digital technologies in legislative activity. This implies the need to adjust at least the rules for the development and entry into force of regulatory legal acts, as well as regulations defining the procedure for the exchange of data and documents between public authorities involved in the development and adoption of regulatory legal acts.
- 4) The existing approaches allow talking about the existence of two models for the formation of an integrative model for the introduction of digital technologies into the sphere of legislative activity. The first involves the

formation of a maximally automated system for the development, evaluation, interpretation, and execution of legal regulations with minimal human involvement. The second is related to the formation of tools that will provide organizational and technical support to the law enforcement officer (both ordinary users and representatives of public authorities) within their activities but do not lead to absolute automation of legislative activity and law enforcement.

4. Discussion

4.1 The validity of the integrative model of the introduction of digital technologies into the legislative process

Legislative activity is immanently connected with the rights and freedoms of man and citizen. This factor should be taken into account when considering the transformation of this activity in the context of its digitalization. It is for this reason that this process should be justified both from a theoretical and practical point of view [12].

As part of the consideration of the problem of the theoretical validity of the integrative model of the implementation of digital technologies in the legislative process, it is necessary first of all to focus on the risks associated with such a transformation (Figure 1).

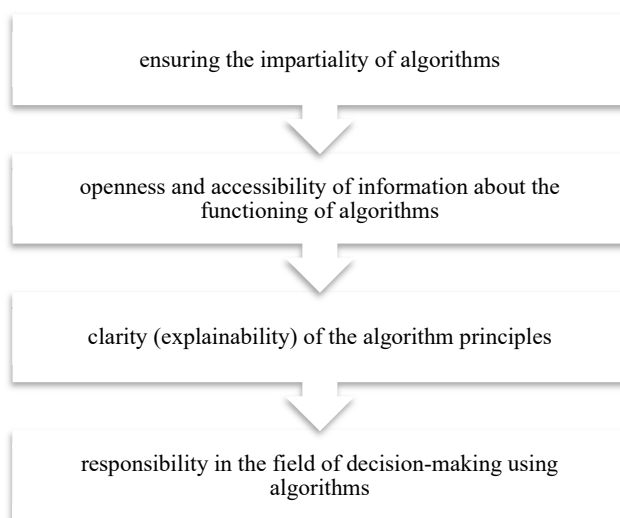


Fig. 1 Risks of digital technologies implementation

Particular attention should be paid to the issue related to the possibility of self-learning of the algorithm based on new data [13]. The ability of the algorithm to learn independently, considering the processing and analysis of new data, actualizes the problems of predictability of decisions made by the algorithm [14]. In addition, the learnability of the algorithm can potentially lead to

violations of the principle of equality before the law, since decisions regarding subjects in similar conditions may differ over time [15].

Such risks can be minimized as noted in the scientific literature [10, 16, 17]. In particular, the report of the Australian Ombudsman presents a whole section (governance and design), revealing some principles in the field of the introduction of digital technologies in the field of public administration [8]. The following is noted among other things: the need to involve interdisciplinary groups in the development and maintenance of algorithms; application of data that comply with the standards established in the legal regulation; the need to create different "versions" of algorithms that can make decisions considering previously existing regulatory rules, etc.

Consequently, the theoretical validity of the implementation of digital technologies in legislative activity is a guarantee of ensuring the principle of legal certainty and lies in the fact that the introduction of various technological solutions should take into account both the advantages and possible disadvantages of their use, and special mechanisms should be laid to minimize such disadvantages. This will allow developing an optimal model for the introduction of modern technologies into the legislative process and preserve its legal nature.

The practical component of validity is based on the existing positive practice of using various digital technologies in areas related to the legislative process, which makes it possible to assess the potential of their use in the framework of legislative activity.

4.2 Phasing and normativity of the formation of an integrative model of the implementation of digital technologies

The independent elements that guarantee the conceptual substantiation of the use of digital technologies in legislative activity are the phased and normative nature of their implementation.

There are various approaches to understanding the phased digitalization of legislative activity in the scientific literature. In particular, it is noted that some branches of legal regulation are most predisposed to automation, and therefore the transition to digital legislation should begin with such industries [16]. Such branches include, for example, administrative legislation, private law regulation, immigration law [18].

One of the striking examples of "industry digitalization" is the introduction of macro directives. This approach can be most widespread in the field of private law (contract law, tort relations, family and inheritance law) [19]. For example, this will allow individualizing due diligence requirements [20] in the field of tort law, which will be based on the individual characteristics of the subject.

Another reason for analyzing the phased automation of legislative activity is its stage-by-stage nature. The implementation of digital solutions at certain stages of the legislative process forms the necessary empirical basis for the subsequent expansion of such practices.

For example, the search for contradictions and inconsistencies with existing regulations in new drafts of regulatory legal acts is significantly simplified when using machine learning technology [21]. A significant increase in the effectiveness of regulatory impact assessment in the context of the use of big data is equally important, which allows modeling the results of the introduction of new regulations and assessing their consequences based on predefined indicators [22].

Phasing as an element of an integrative model of the implementation of digital technologies in legislative activity ensures the accumulation of the necessary practical experience and its subsequent consideration when expanding the practice of implementing such technologies. This creates conditions for the evolutionary nature of the transformation of legislative activity, which acts as a guarantee of the preservation of its legal nature.

Normativity implies the need for the appropriate development of a regulatory legal framework that provides comprehensive regulation of the use of digital technologies in legislative activity [23].

Therewith, it should be understood that the lack of legal regulation or incorrect regulation of this sphere of public relations poses a threat not only to human rights and freedoms (especially in the field of equality and non-discrimination, as well as personal data protection) but also calls into question the legality, transparency, and validity of decisions made using algorithms [24].

The scientific literature notes that a whole range of issues related to the use of digital technologies in public administration falls out of the sphere of legal regulation [22].

Such issues include, for example, determining who exactly is the decision-maker; who exactly has the authority to make a decision (programmer, legislator, employee, or the algorithm itself).

The question of how the situation should be solved if the result of the algorithm is only one of the elements for the final decision is equally important – for example if the algorithm indicates the presence of contradictions, inconsistencies in the existing and proposed regulation – which is accepted by a person [25].

These aspects do not exhaust the entire range of controversial issues that may arise in conditions of partial or full automation of decision-making but form the general outline of the legal regulation development of the implementation of the digital solutions.

With this approach, the complexity of the legal regulation of the processes of using various solutions in the field of public administration is ensured. Such normativity

is a necessary element of the integrative model of the implementation of digital technologies in legislative activity, and therefore should be taken into account when determining the directions of transformation of modern management.

4.3 Effectiveness of the integrative model of digital technology application

The effectiveness as a result of the implementation of an integrative model of the use of digital technologies in the legislative process is associated with a qualitative transformation of the procedure for the development and adoption of regulatory legal acts based on the automation of certain operations.

Accordingly, it is permissible to distinguish two models of digitalization of the legislative process:

- when the decision-making process is brought to absolute automatism with the complete exclusion of human influence (including in terms of control);
- when a person retains the competence to make a final decision [8].

The permissibility and validity of the application of a particular model concerning the legislative process, including in relation to its various stages, is one of the system-forming issues, the solution of which is largely associated with the formation of a holistic concept of the legislative process digitalization [26]. Therewith, an important theoretical and methodological issue is the very possibility (or lack thereof) of applying and implementing digital technologies to certain areas of human activity, including the legislative process or certain types of regulatory legal acts in the process of their adoption (for example, to constitutions).

Full automation assumes that information is collected and processed automatically by an algorithm. In this case, the decision is made only based on pre-laid data, on which the operation of the algorithm is based.

It should be noted that full automation as a model of transformation of the legislative process today seems unrealizable. This does not exclude the possibility of full automation in other areas of management, which is already the case in practice. Full automation in certain areas (for example, in taxation) has been used for a long time in Norway. Firstly, due to the lack of empirical experience in the use of various digital technologies in the field of law-making. Secondly, due to the high degree of risks of non-compliance with the requirements described in section one of this paper, which jeopardizes the validity of decisions made in this way [12].

It is necessary to focus on the concept of Rules as Code turning to the second model, which assumes the preservation of the decisive influence of a person on decision-making. The essence of this approach is based on the fact that digital technologies act as organizational and

technical tools that significantly simplify the decision-making process.

Within the framework of legislative activity, this concept assumes that the algorithm is used as a utilitarian tool at the stage of determining the needs for regulating certain public relations, preparing advisory opinions for legislators, evaluating incoming legislative proposals, and drafting regulatory legal acts [26].

There are three models of transition to a digital legislative process in the concept under consideration:

1) Implementation of algorithms for the procedure of interpretation of newly adopted regulatory legal acts. The transformation, in this case, concerns the development of a generally binding interpretation that will serve as a normative guideline for the development and adoption of new regulatory legal acts.

2) The use of algorithms only for the transformation of secondary regulation (by-laws), which contains procedural rules for primary regulation. With this approach, the transformation into a machine-readable form of secondary regulation and its subsequent processing by the algorithm will allow tracking changes in by-laws that should be reflected in the primary regulation.

3) Implementation of algorithms for the entire process of development and adoption of regulatory legal acts of primary regulatory legal acts. The procedure for reviewing regulations will mainly be carried out according to the traditional procedure with such a legislative strategy, but with an additional element of analyzing changes using an algorithm [11].

The fact that the algorithm does not imply the exclusion of a person from the process of developing and adopting new regulatory rules is common to the presented models, which is reasonable. The result in this case is the formation of organizational and technical tools in terms of data analysis in the development and adoption of regulatory legal acts.

5. Conclusion

In their totality, the elements – validity, phasing, normativity, effectiveness – act as a conceptual substantiation for the integrative model of the implementation of digital technologies in legislative activity.

It is advisable to identify the areas of legal regulation that should undergo the transformation from the point of view of ensuring the normativity of the integrative model of the use of digital technologies in legislative activity: firstly, regulation, which directly fixes the possibility of using automation in the field of legislative activity; secondly, legislation that indirectly regulates the use of algorithms in the framework of the development and

adoption of regulatory legal acts (legislation in the field of anti-discrimination, in the field of personal data protection); thirdly, regulatory rules that fix the procedure for the use of information technologies in the process of legislative activity (the procedure for the formation of anthologies of current regulation, the procedure for the transformation of regulations into machine-readable form, etc.), as well as the procedure for the modernization and development of such technologies.

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References

- [1] Schartum, D.: *From Legal Sources to Programming Code: Automatic Individual Decisions in Public Administration and Computers under the Rule of Law*. Cambridge University Press (2020).
- [2] Taylor, A., Bench-Capon, T.J.M.: *Support for the formulation of legislation*. In: Bench-Capon, T.J.M. Knowledge-Based Systems and Legal Applications. Academic Press, London, vol. 36, pp. 95-113 (1991).
- [3] Kirillova, E.A., Bogdan, V.V., Blinkova, E.V., Zulfugarzade, T., Yunusova, K.V.: *The Main Features of the Use of Digital Technologies in the Financial and Banking Sector*. Webology, vol. 18(Special Issue), pp. 1326–1341 (2021).
- [4] Hampton, W.M.: *Predictive Coding: It's Here to Stay*. E-Discovery Bulletin. Practical Law, pp. 28-32 (2014). <http://doi.org/10.14704/WEB/V18SI04/WEB18201>
- [5] Alpaydin, E.: *Introduction to Machine Learning*. 3rd ed. Cambridge: The MIT Press (2014).
- [6] Metsker, O.G., Trofimov, E., Petrov, M., Butakov, N.A.: *Russian Court Decisions Data Analysis Using Distributed Computing and Machine Learning to Improve Lawmaking and Law Enforcement*. Procedia Computer Science, vol. 156, pp. 264-273 (2019). <https://doi.org/10.1016/j.procs.2019.08.202>
- [7] O'Shields, R.: *Smart Contracts: Legal Agreements for the Blockchain*. North Carolina Banking Institute, vol. 21(1) (2017).
- [8] Le Sueur, A.: *Robot Government: Automated Decision-making and its Implications for Parliament*. In: Parliament: Legislation and Accountability. Oxford. Hart Publishing, (2016).
- [9] de Mulder, R.V., Meijer, A.: *From trias to tetras politica: The need for additional checks and balances. Illustrated by immigration law*. In: Shellen, I., Thaens, M., van de Donk, W. Public administration in the Information Age: Revisited. IOS Press BV (2012).
- [10] Devins, C., Felin, T., Kauffman, S., Kopp, R.: *The Law and Big Data*. Cornell Journal of Law and Public Policy, vol. 27(2), pp. 357-413 (2017).
- [11] Schartum, D.W.: Law and algorithms in the public domain. Etikk I Praksis - Nordic Journal of Applied Ethics, vol. 10(1), pp. 15-26. (2016). <https://doi.org/10.5324/eip.v10i1.1973>

- [12] Zalnieriute M., Moses, L.B., Williams, G.: *The Rule of Law and Automation of Government Decision-Making*. Modern Law Review, vol. 82(3), pp. 425-455 (2019). <http://doi.org/10.2139/ssrn.3348831>
- [13] Hindman, M.: *Building Better Models: Prediction, Replication, and Machine Learning in the Social Sciences*. The Annals of the American Academy of Political and Social Science, vol. 659, Toward Computational Social Science: Big Data in Digital Environments, pp. 48-62 (2015).
- [14] Walsh, T., Levy, N., Bell, G., Elliott, A., Maclaurin, J., Mareels, I., Wood, F.: *The effective and ethical development of artificial intelligence: An opportunity to improve our wellbeing*. Report for the Australian Council of Learned Academies (2019). https://acola.org/wp-content/uploads/2019/07/hs4_artificial-intelligence-report.pdf
- [15] Perry M.: *iDecide: Digital pathways to decision*. 2019 CPD Immigration Law Conference (2019) <https://www.fedcourt.gov.au/digital-law-library/judges-speeches/justice-perry/perry-j-20190321>
- [16] Jackson, M.: *Regulating A*. In: Bertram C., et al. Closer to the Machine: Technical, social, and legal aspects of AI. Office of the Victorian Information Commissioner, pp. 121-138 (2019).
- [17] Boucher, P.: *Artificial intelligence: How does it work, why does it matter, and what can we do about it?* Scientific Foresight Unit (STOA), European Parliamentary Research Services (2020). [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641547/EPRS_STU\(2020\)641547_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641547/EPRS_STU(2020)641547_EN.pdf)
- [18] Sokolov, M.: Smart Legal Contract as a Future of Contracts Enforcement. SSRN, (2018). <http://doi.org/10.2139/ssrn.3208292>
- [19] Busch, C., de Franceschi, A.: *Granular Legal Norms: Big Data and the Personalization of Private Law*. Forthcoming in Mak, V., Tai, E.T.T., Berlee, A. (eds). Research Handbook on Data Science and Law. Edward Elgar (2018).
- [20] Ben-Shahar, O., Porat, A.: *Personalizing Negligence Law*. New York University Law review, vol. 91(3) (2016).
- [21] Dale, R.: *Law and Word Order: NLP in Legal Tech*. Natural Language Engineering, vol. 25(1), pp. 211-212 (2019). <http://doi.org/10.1017/S1351324918000475>
- [22] Byers, A.: *Big Data, Big Economic Impact?* A Journal of Law and Policy for the Information Society, vol. 10(3), pp. 757-764 (2015).
- [23] Turner, J. Robot Rules: Regulating Artificial Intelligence. Palgrave Macmillan, 2019.
- [24] Kritikos, M.: *Artificial Intelligence ante portas: Legal & ethical reflections*. European Parliamentary Research Service (2019).
- [25] Kirillova, E.A., Koval, V.N., Zenin, S., Parshin, N.M., Shlyapnikova, O.V.: *Digital Right Protection Principles under Digitalization*. Webology, vol. 18 (Special Issue), pp. 910-930 (2021).
- [26] Perry, M.: *iDecide: Administrative decision-making in the digital world*. Australian Law Journal, 91(1) (2017).