

Innovation and ethics in the InsurTech era: Balancing automation and human judgment

*Kateryna Zdor*¹

Опубліковано	Секція	УДК
30.09.2025	Економіка	368:004.8:174

DOI: <https://doi.org/10.5281/zenodo.20166324>

Annotation. The relevance of the study is due to the intensive introduction of InsurTech solutions into insurance activities, accompanied by the transfer of a significant part of the risk assessment and insurance claim settlement processes to the realm of algorithmic models. Under these conditions, tension is growing between the technological rationality of automated solutions and the socio-ethical nature of insurance as an institution of trust. The opacity of algorithms, the blurring of responsibility for their results, and the use of indirect behavioral and spatial data highlight the need for scientific understanding of the limits of acceptable automation of insurance decisions.

The purpose of the article is to justify approaches to ensuring a coordinated combination of algorithmic automated decisions and human judgment in the context of InsurTech development, taking into account ethical constraints and the practical needs of the modern insurance market.

The research methods are based on a logical and analytical understanding of the processes of insurance digitalization, a structural and functional analysis of the role of algorithms and humans in insurance decision-making, and a generalization of the results of modern empirical and applied research in the field of InsurTech and behavioral economics.

The research results show that the implementation of InsurTech forms hybrid models of insurance decision-making, in which algorithmic tools ensure the efficiency and scalability of standard operations, while human judgment remains decisive in context-dependent, controversial, and financially significant cases. It has been established that the key problems of using InsurTech are related to the limited explainability of algorithmic models, institutional uncertainty of liability, and risks of indirect discrimination against policyholders.

The conclusions are that ethical restrictions in InsurTech systems should be implemented through procedural mechanisms of human control rather than through formal restrictions on automation. It has been proven that preserving the role of humans in areas with a high cost of error contributes to increasing the stability of digital insurance systems and maintaining trust in insurance.

¹ **Kateryna Zdor**, Master's Degree in Economics, Department of Business Economics and Entrepreneurship, Kyiv National Economic University named after Vadym Hetman, Catholic University of San Antonio in Murcia.
<https://orcid.org/0009-0009-0257-8600>

Prospects for further research are related to the quantitative analysis of the effectiveness of various models of human intervention in algorithmic insurance decisions, the development of ethical audit tools, and the study of the long-term impact of algorithmization on the behavior of policyholders and the structure of insurance portfolios.

Key words: algorithmic decision-making, digital transformation of insurance, model explainability, human oversight, risk of discrimination, decision accountability, hybrid governance models, trust in insurance institutions.

Інновації та етика в епоху InsurTech: баланс між автоматизацією та людським судженням

Анотація. Актуальність дослідження зумовлена інтенсивним впровадженням InsurTech-рішень у страхову діяльність, що супроводжується перенесенням значної частини процесів оцінювання ризиків і врегулювання страхових випадків у площину алгоритмічних моделей. За цих умов зростає напруження між технологічною раціональністю автоматизованих рішень і соціально-етичною природою страхування як інституту довіри. Непрозорість алгоритмів, розмитість відповідальності за їх результати та використання непрямих поведінкових і просторових даних актуалізують потребу наукового осмислення меж допустимої автоматизації страхових рішень.

Мета статті полягає в обґрунтуванні підходів до забезпечення узгодженого поєднання алгоритмічних автоматизованих рішень і людського судження в умовах розвитку InsurTech з урахуванням етичних обмежень та практичних потреб сучасного страхового ринку.

Методи дослідження ґрунтуються на логіко-аналітичному осмисленні процесів цифровізації страхування, структурно-функціональному аналізі ролі алгоритмів і людини у прийнятті страхових рішень, а також узагальненні результатів сучасних емпіричних і прикладних досліджень у сфері InsurTech та поведінкової економіки.

Результати дослідження засвідчують, що впровадження InsurTech формує гібридні моделі прийняття страхових рішень, у яких алгоритмічні інструменти забезпечують ефективність і масштабованість стандартних операцій, тоді як людське судження зберігає визначальне значення у контекстно залежних, спірних і фінансово значущих випадках. Встановлено, що ключові проблеми використання InsurTech пов'язані з обмеженою пояснюваністю алгоритмічних моделей, інституційною невизначеністю відповідальності та ризиками непрямой дискримінації страхувальників.

Висновки полягають у тому, що етичні обмеження в системах InsurTech доцільно реалізовувати через процедурні механізми людського контролю, а не через формальне звуження автоматизації. Доведено, що збереження ролі людини у зонах підвищеної ціни помилки сприяє підвищенню стійкості цифрових страхових систем і підтриманню довіри до страхування.

Перспективи подальших досліджень пов'язані з кількісним аналізом ефективності різних моделей людського втручання в алгоритмічні страхові рішення, розвитком інструментів етичного аудиту та вивченням довгострокового впливу алгоритмізації на поведінку страхувальників і структуру страхових портфелів.

Ключові слова: алгоритмічне прийняття рішень, цифрова трансформація страхування, пояснюваність моделей, людський контроль, ризик дискримінації, відповідальність рішень, гібридні управлінські моделі, довіра до страхових інститутів.

Вступ (Introduction)

The rapid introduction of digital technologies into insurance activities is gradually changing the very logic of decision-making in this area. Algorithmic systems used in InsurTech solutions for risk assessment and insurance claims settlement are increasingly replacing or

supplanting individual expert judgment. Under such conditions, the efficiency of processes increases, but the decision-making procedure itself becomes less understandable for participants in insurance relations, and responsibility for the results is blurred between developers of digital models, insurers, and platform users. This creates tension between the logic of automated calculation and the social nature of insurance as an institution of trust and risk sharing.

The problem with such a transformation lies not only in the technical or organizational limitations of algorithms, but also in the change in the ethical principles of insurance decisions. Formalized risk models do not always accurately reflect the individual circumstances of the insured, especially in atypical or borderline situations. As a result, there may be situations where a formally justified automated decision is perceived as unfair or discriminatory. The lack of a clearly defined role for human judgment exacerbates information asymmetry and complicates the protection of the rights of consumers of insurance services.

This problem is directly related to current scientific challenges concerning the combination of the economic efficiency of digital innovations and the regulatory and ethical restrictions on their use. Of interest are the limits of algorithmic autonomy in financial decisions, as well as mechanisms for embedding ethical principles in digital insurance platforms. In practical terms, this is related to the need to develop InsurTech models in which automation does not remove humans from the process of making key decisions, but is used as a tool to support expert assessment. Solving this set of tasks determines not only the competitiveness of insurance companies, but also the level of trust in insurance in the context of the further digitalization of financial markets.

An analysis of recent studies on innovation and ethical challenges in InsurTech shows that the digital transformation of insurance is seen not only as a technological process, but also as a profound change in the principles of trust, responsibility, and decision-making. In this context, a number of authors emphasize the role of automation in expanding access to insurance services and forming new mechanisms of trust. Thus, in the work of G. Visagamurthy, digital trust is interpreted as an ethical category formed at the intersection of algorithmic efficiency and the responsibility of insurance institutions to their customers [16]. V. Kavade and co-authors emphasize that in the FinTech–InsurTech ecosystem, automation is becoming a determining factor in the scaling of insurance services, while weakening traditional mechanisms of personalized risk assessment [6]. K. A. M. Ali Albasheir points out that information technology is transforming insurance from a field of expert decisions into a field of digital management of data flows and models [2].

The second group of scientific publications focuses on the practical application of artificial intelligence and algorithmic models and the associated ethical risks. L. Ricciardi Celsi and A. Y. Zomaya justify the need for systematic management of AI ethics, emphasizing that the lack of explainability of algorithms in financial services creates risks of displacing human judgment [12]. N. Singhal and co-authors, analyzing decentralized insurance models, show that automated smart contracts, while eliminating intermediaries, complicate the determination of responsibility for decision-making errors [14]. J. Liu and co-authors argue that the active implementation of InsurTech increases the innovativeness of insurance companies, but at the same time makes them critically dependent on the quality of algorithms and data [8].

The third group of works is related to the analysis of institutional, regulatory, and organizational consequences of insurance automation. A. Braun and R. Jia view InsurTech as a structural change in the insurance market that promotes standardization and speed of processes, while narrowing the scope for individual professional judgment [3]. O. Manta and co-authors focus on the risks of non-transparent algorithmic decisions and potential discrimination against policyholders in digital systems [9]. S. Eti and co-authors, analyzing the European experience of InsurTech development, emphasize the need to align innovative investments with ethical standards and regulatory frameworks [4].

The fourth group of studies focuses on customer centricity and preserving the role of the human factor in digital insurance ecosystems. J. John and co-authors, based on bibliometric analysis, show that despite the rapid growth in the number of InsurTech studies, the humanitarian and ethical aspects of automation remain secondary [5]. M. Shivani and co-authors consider InsurTech-oriented bancassurance as a form of integration of digital platforms and personalized customer interaction [13]. S. Ahmad and co-authors argue that the digital transformation of insurance requires active human involvement in strategic and morally complex decisions [1]. D. Srinivas and co-authors emphasize that excessive automation can undermine customer trust even as operational efficiency increases [15]. Additional aspects of responsibility and trust in automated insurance systems are discussed in works on decentralized insurance and AI ethics management [14; 12].

Despite a significant amount of research in the field of InsurTech, issues related to the comprehensive analysis of the transformation of insurance decision-making processes remain unresolved. Existing works mainly focus on individual technological or regulatory aspects, which does not allow for a clear definition of the functional limits of the use of algorithmic models and the role of human judgment in risk management, underwriting, and insurance claims settlement. Ethical issues of algorithm opacity, blurred responsibility, and potential discrimination against policyholders also remain insufficiently addressed, mostly being considered declaratively and without proper applied justification. The proposed study aims to address these gaps through a systematic analysis of the interaction between algorithmic decisions and human judgment in digital insurance systems. The work allows us to clarify the limits of acceptable automation of insurance processes, specify the ethical risks of InsurTech, and justify practical approaches to the integration of human control mechanisms, which deepens the scientific understanding of the problem and enhances the applied value of the study.

The aim of this article is to justify approaches to ensuring a balanced combination of automated algorithmic solutions and human judgment in the context of InsurTech development, taking into account ethical constraints and the practical needs of the modern insurance market.

The aim of the article:

1. To study the transformation of insurance decision-making processes in the context of digitalization and the implementation of InsurTech solutions.
2. To determine the functional limits of the application of algorithmic models and the role of human judgment in insurance processes, taking into account ethical and managerial aspects.
3. To justify practical approaches to integrating human control mechanisms and ethical principles into InsurTech systems.

Результати (Results)

The transformation of decision-making processes in insurance under the influence of digitalization and the spread of InsurTech. The digitization of the insurance market is gradually changing the nature of management and operational decisions, which were previously based primarily on the professional experience of underwriters and standardized statistical approaches. The spread of InsurTech solutions is shifting the focus toward algorithmic processing of data arrays, where automated models for risk assessment, loss forecasting, and real-time decision-making play a key role. This transformation is not linear or uniform: in different insurance segments, digital tools are replacing human judgment with varying degrees of intensity, forming hybrid management models. At the same time, the importance of non-financial data, in particular behavioral and contextual data, is growing, which expands the information base for decision-making but complicates its interpretation and verification. As a result, insurance decisions are increasingly being made as a result of a digital

system rather than individual expert assessment. This changes not only the speed and cost of operations, but also the approach to responsibility for the consequences of decisions made. The human factor does not disappear completely, but recedes to the level of control, correction, or intervention in exceptional cases. This restructuring of decision-making logic creates new functional roles within insurance organizations and requires a rethinking of traditional management procedures (Table 1).

Table 1

Transformation of decision-making processes in insurance under the influence of digitalization

Process component	Traditional model	Digitalized (InsurTech) model
Data sources	Historical statistics, customer questionnaires	Big data, behavioral and external digital data
Risk assessment	Expert and semi-standardized	Algorithmic, model-based
Speed of decision-making	Delayed, with multi-stage verification	Almost instantaneous, in real time
Human role	Central in all stages	Control or corrective
Transparency of decisions	Relatively high, explainable	Often limited due to the complexity of algorithms

Source: compiled by the author based on [1; 2; 3; 5; 16]

In modern insurance company practice, this transformation is implemented through the gradual introduction of algorithmic modules into existing management systems. For example, in the auto insurance segment, automated scoring systems are used for the initial classification of customers by risk level based on data about driving style, frequency of trips, and spatial characteristics of movement. In such cases, decisions on rates or insurance eligibility are made without the direct involvement of an underwriter, while human judgment is only used to review non-standard or appeal cases [2]. Similar logic is applied in property insurance, where digital platforms combine satellite imagery, property data, and loss history to automatically update risk profiles. A notable practical example is the insurance company Lemonade, which uses AI algorithms to automate the settlement of insurance claims in the home and rental insurance segment. In typical situations, customers submit a claim via a mobile app, after which the system analyzes the data based on pre-trained models and makes a decision on payment without involving an insurance expert. According to the company, a significant proportion of minor insurance claims are processed within seconds, demonstrating the practical effect of replacing human judgment with algorithmic judgment in standard cases [7]. At the same time, complex or potentially controversial cases are automatically transferred for manual review, confirming the use of a hybrid decision-making model. At the level of insurance claim settlement, InsurTech solutions generally allow for the automation of preliminary damage assessment by analyzing photos and videos uploaded by customers through digital channels. In practice, large insurers use such tools to speed up payments for mass risks and reduce the workload on expert services [16]. At the same time, management control focuses on validating algorithms, monitoring errors, and periodically adjusting models, which indicates a change in the role of humans from direct decision-makers to controllers and those responsible for the functioning of the digital system.

Specifics of applying algorithmic models and data in risk management, underwriting, and insurance claims settlement. The use of algorithmic models in insurance is developing as a differentiated practice linked to specific risk management, underwriting, and claims settlement functions. Digital tools are primarily used in processes where risk can be formalized through sets of variables and statistical dependencies, and decisions are subject to scaling. At the same time, the heterogeneity of insurance products and events determines different levels of acceptable automation: from almost completely algorithmic decisions in standard types of insurance to fragmentary support for expert analysis in complex or non-standard cases. Under these conditions, data becomes a central element of management, and the effectiveness of algorithms directly depends on their relevance and contextual relevance (Table 2).

Table 2

Specifics of using algorithmic models and data in insurance processes

Insurance process	Types of algorithmic models	Nature of data	Level of automation
Risk management	Forecast, scenario, correlation	Historical, macroeconomic, external factors	Limited
Underwriting	Scoring, classification	Questionnaire, behavioral, telematic	High
Settlement of insurance claims	Recognition and anomaly models	Visual, text, transactional	Selective

Source: compiled by the author based on [1; 6; 8; 9]

In practice, this algorithmic structure functions as a system of hierarchical filters that distributes the flow of decisions according to their level of complexity. In risk management, algorithmic models are used to identify changes in the portfolio structure and signal risk concentration, but they do not perform the functions of final management decisions. For example, the results of scenario modeling are used to justify management decisions regarding reinsurance or limit adjustments, but the choice of strategy itself remains with top management [9]. In underwriting, algorithmic systems operate in batch mode, ensuring uniformity and reproducibility of tariff decisions. In practice, this manifests itself in a reduction in risk assessment time from days to minutes, which is especially important for digital sales channels. At the same time, for risks with increased value or non-standard parameters, algorithmic assessments perform an auxiliary function, serving as the basis for further expert interpretation. In the field of insurance claims settlement, algorithmic models are used for the initial classification of claims, assessment of typical losses, and identification of anomalies that may indicate errors or abuse. Practice shows that it is at this stage that digital tools allow for combining processing speed with the concentration of specialists' attention on problematic cases [9]. This organization of processes increases the operational efficiency of insurance companies while preserving the possibility of human intervention where formalized models lose the necessary sensitivity to context.

The growing role of algorithmic models in insurance is confirmed by the results of industry surveys of insurance companies in the US and European countries conducted in 2022–2024 by consulting and analytical organizations. In particular, according to a study by McKinsey & Company conducted among large and medium-sized insurers in North America and the EU, in 2022, only about 25–30% of companies used machine learning or artificial intelligence (AI) tools in key operational processes, primarily in underwriting and loss analysis [10]. By the end

of 2023, the share of such companies had grown to over 40%, which was associated with the scaling of digital sales channels and the automation of typical insurance claims settlement. More rapid growth is expected in 2024–2025. According to Deloitte Insurance Outlook's global survey of insurance companies in the US, UK, Germany, France, and Scandinavia, about 70–76% of insurers reported using AI tools or generative models in at least one business function, including underwriting, risk management, or claims settlement [10]. Thus, the use of algorithmic models is gradually moving from pilot projects to standard operating practice (Fig. 1).

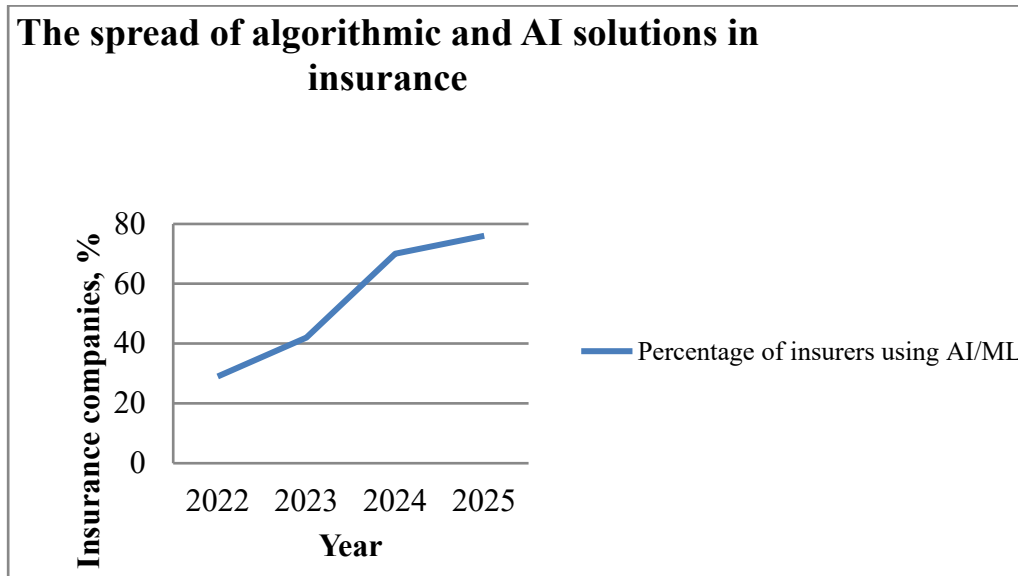


Fig. 1. The spread of algorithmic and AI solutions in insurance
Source: compiled by the author based on [10; 11]

This trend reflects the accelerated spread of algorithmic and AI solutions in insurance companies in developed insurance markets, primarily in the US and European Union countries. Practice shows that the primary driver of growth has been the automation of underwriting for mass insurance products and the digitization of standard insurance claims settlement, where algorithmic solutions demonstrate the greatest economic effect. At the same time, survey results show that even with a high level of AI implementation, final management decisions in complex or financially significant cases usually remain with human experts. This means that the recorded growth in the share of companies using algorithmic models is not synonymous with the complete automation of insurance processes, but reflects the formation of a hybrid management model characteristic of the modern InsurTech environment.

The role of human judgment in digital insurance systems and the limits of its replacement by automated tools. In digital insurance systems, human judgment no longer plays a universal role. Automated decisions cover a significant portion of typical operations, but this does not mean that human involvement has been completely eliminated. Practice shows otherwise: the algorithm works as long as the situation fits within a predetermined framework. As soon as a non-standard combination of factors or legal uncertainty arises, the automated mechanism becomes insufficient. At such points, human intervention becomes a necessary condition for decision-making, rather than just a formality. Functionally, human judgment in digital insurance is not related to the speed or scale of data processing, but to responsibility for the consequences of the decision. Algorithmic models are capable of working correctly within statistically repeatable scenarios, but they do not fully take into account the context of the insured event, its causal nature, or the legal nuances of contract interpretation. This is where the limits of replacing humans with automated tools become apparent (Table 3).

Table 3

Functional differentiation of the roles of humans and automated tools in digital insurance

Decision-making stage	Automated tools	Human judgment
Formulation of an initial proposal	Algorithmic calculations and template scenarios	Intervention in atypical cases
Assessment of complex risks	Limited analytical support	Interpretation of context
Resolution of disputes	Preliminary technical review	Final decision and responsibility
Compliance monitoring	Logging and monitoring	Audit and legal assessment

Source: compiled by the author based on [3; 12; 14; 15]

In insurance practice, this is implemented through predetermined intervention thresholds. Thus, in mass insurance, minor insurance events are settled automatically, while losses with ambiguous circumstances are immediately referred to experts. In the corporate segment, the algorithm can calculate tariff or limit options, but the decision on risk acceptability is made by a person, taking into account experience, customer reputation, and legal restrictions of the contract. In practice, this often means manually adjusting the algorithmic proposal, even if it is formally economically acceptable [3]. From a scientific and applied perspective, such a model demonstrates the functional limitations of algorithmic insurance decisions. Human judgment is not eliminated, but concentrated in areas of increased error weight. It is in these areas that automation ceases to be the dominant principle and switches to a support mode, allowing insurance companies to avoid systemic decisions that are correct from a model perspective but unacceptable from an institutional or legal point of view.

Integration of ethical principles and human control mechanisms into InsurTech systems. The use of InsurTech solutions in insurance raises a number of issues that go beyond questions of efficiency or speed of data processing. First and foremost, there is the opacity of algorithmic models, where the mechanism for setting rates or refusing claims is virtually impossible to explain in terms that are understandable to the policyholder. In practice, this means that there is no clear answer to the question of why clients receive different decisions under formally similar conditions. Such opacity complicates not only communication with the client, but also internal quality control of decisions, as the algorithm begins to function as a “black box” even for the insurance company itself. Another problem area is the blurring of responsibility for decisions made on the basis of algorithms. Automated systems are involved in key stages of the insurance process, but are not formally responsible. In the event of an error or system failure, responsibility is shared between the developer, the platform owner, and the insurer, creating a situation of institutional uncertainty [15]. In such conditions, the risk of negative consequences is effectively shifted to the policyholder, who is unable to influence the logic of the algorithmic decision. The issue of potential discrimination arising from the use of indirect risk indicators is particularly sensitive. Algorithmic models can correlate insurance decisions with a customer's place of residence, behavioral patterns, or digital footprints without formally recording discrimination. As a result, restrictions on access to insurance protection become hidden, making them difficult to detect and assess legally. These effects are exacerbated by the dependence of models on historical data, which already reflects structural market imbalances. In practice, these problems are exacerbated by the lack of established approaches to ethical review of algorithms and uneven regulatory control [12]. The focus of InsurTech solution evaluation is primarily on financial indicators and operational efficiency,

while the social consequences of algorithmization remain secondary. This creates a situation in which technically correct solutions may be unacceptable from the point of view of fairness or trust, but do not violate any formal norms. This is one of the key scientific and practical contradictions of modern InsurTech.

Integrating ethical principles into InsurTech systems in practice requires not declarative codes, but procedural decisions embedded in the daily work of insurance companies. First and foremost, it is advisable to limit the scope of fully automated decisions by clearly defining the categories of cases in which the algorithm cannot be the final decision-maker. In mass insurance products, automation may remain dominant, but for financially significant, controversial, or atypical situations, there should be a mandatory transition to human review without the formal nature of such intervention. Practice also shows the advisability of introducing internal algorithmic control that is not limited to checking the technical correctness of models. This involves regularly evaluating decisions in terms of their impact on different groups of policyholders, identifying indirect discriminatory effects, and recording cases of systemic distortion of results. It is advisable to integrate such control into risk management or compliance functions, rather than leaving it solely in the responsibility of IT departments. Of particular importance is ensuring the explainability of algorithmic decisions to the extent that is practically sufficient for internal and external use. In insurance systems, this can be achieved not through full disclosure of the model, but through the ability to reproduce the logic of the decision in the form of key factors that influenced the rate, refusal, or amount of payment. The existence of such mechanisms reduces conflicts with the insured and at the same time facilitates control by the regulator. An important practical recommendation is to institutionalize the role of humans not as an “exception to automation,” but as a permanent element of responsible decision-making. This involves establishing areas of personal responsibility for experts for the results of algorithmic work, particularly in cases where digital recommendations have been accepted or rejected. Under such conditions, human control ceases to be a formality and becomes a factor in restraining risky or socially sensitive decisions. In summary, the practical integration of ethical principles into InsurTech should take place through the gradual restructuring of management procedures, rather than through technological restrictions alone. The effectiveness of such decisions is manifested not in a reduction in the level of automation, but in the ability of insurance systems to maintain a balance between the economic feasibility of algorithms and the need for human control where the cost of error goes beyond purely computational logic.

Висновки

The study found that the development of InsurTech is shaping a hybrid model of insurance decision-making, in which automated algorithms handle standard situations, while human judgment is focused on areas of increased uncertainty and responsibility. It has been shown that algorithmization increases the operational efficiency of insurance, but at the same time exacerbates institutional and ethical contradictions related to the opacity of models, blurring of responsibility, and the possibility of indirect discrimination against policyholders. It has been found that these problems are not purely technological in nature and are caused by the specifics of data use, the management logic of digital platforms, and the prioritization of economic efficiency over the social consequences of decisions. The feasibility of integrating human judgment into digital insurance systems through procedural mechanisms of control, explainability, and personal responsibility has been substantiated, which allows preserving the institutional legitimacy of insurance without abandoning the advantages of automation. Prospects for further research are related to the quantitative analysis of the effectiveness of various models of human intervention in InsurTech, the development of tools for ethical auditing of algorithms, and the assessment of the long-term impact of algorithmization on the trust of policyholders and the stability of insurance portfolios.

Список використаних джерел (References)

1. Ahmad, S., Karim, R., Sultana, N., & Lima, R. P. (2025). InsurTech: Digital transformation of the insurance industry. In *Financial landscape transformation: Technological disruptions* (pp. 287–299). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83753-750-120251016>.
2. Ali Albasheir, K. A. M. (2023). The impact of IT on insurance of the technological industry. *Journal of Advanced Zoology*. 44. <https://doi.org/10.53555/jaz.v44iS5.556>.
3. Braun, A., & Jia, R. (2025). InsurTech: Digital technologies in insurance. *The Geneva Papers on Risk and Insurance – Issues and Practicе* 50(1): 1–7. <https://doi.org/10.1057/s41288-024-00344-x>.
4. Eti, S., Dinçer, H., Meral, H., Yüksel, S., & Gökalp, Y. (2024). InsurTech in Europe: Identifying the top investment priorities for driving innovation. *Financial Innovation*. 10(1): 38. <https://doi.org/10.1186/s40854-023-00541-y>.
5. John, J., Joseph, M., Joseph, S., Jacob, G., Rose, N., & Thomas, S. (2024). InsurTech research dynamics: A bibliometric review of technological innovations in insurance. *Multidisciplinary Reviews*. 7(12): 2024288. <https://doi.org/10.31893/multirev.2024288/>
6. Kavade, V., Kottawar, V., Chopade, P., Baravkar, P., & Bahalkar, P. (2024). A new era in FinTech and InsurTech using AI. *Frontiers in Health Informatics*. 13(3): 11057–11068. https://www.researchgate.net/publication/388424155_A_New_Era_in_Fintech_and_Insurtech_using_AI
7. Lemonade. (2025). The secret behind Lemonade’s claims. <https://www.lemonade.com/claims>.
8. Liu, J., Ye, S., Zhang, Y., & Zhang, L. (2023). Research on InsurTech and the technology innovation level of insurance enterprises. *Sustainability*. 15(11): 8617. <https://doi.org/10.3390/su15118617>.
9. Manta, O., Folcuț, O., & Militaru, I. (2023). Artificial intelligence, integrity, and opportunity in InsurTech. *Journal of Information Systems & Operations Management*. 17(1): 97–110. <https://web.rau.ro/websites/jisom/Vol.17%20No.1%20-%202023/JISOM%2017.1.pdf>.
10. McKinsey & Company. (2025). Global insurance report 2025: The pursuit of growth. <https://www.mckinsey.com/industries/financial-services/our-insights/global-insurance-report>.
11. McKinsey & Company. (2025a). The future of AI in the insurance industry. <https://www.mckinsey.com/industries/financial-services/our-insights/the-future-of-ai-in-the-insurance-industry>.
12. Ricciardi Celsi, L., & Zomaya, A. Y. (2025). Perspectives on managing AI ethics in the digital age. *Information*. 16(4): 318. <https://doi.org/10.3390/info16040318>.
13. Shivani, M., Veera Lakshmi, B., & Sharma, H. (2025). InsurTech-enabled bancassurance: A conceptual study of innovation, integration, and customer-centricity. *Advances in Consumer Research*. 2: 5365–5374. <https://acr-journal.com/article/insurtech-enabled-bancassurance-a-conceptual-study-of-innovation-integration-and-customer-centricity-1662/>
14. Singhal, N., Goyal, S., & Singhal, T. (2024). Potential, risks, and ethical implications of decentralized insurance. Palgrave Macmillan. <https://doi.org/10.1007/978-981-97-5894-4>
15. Srinivas, D., Sharma, A., Pandey, S., Kaparwan, R., Ali, F., & Ahmad, V. (2025). Digitalization in insurance: The rise of InsurTech. In *2025 World Skills Conference on Universal Data Analytics and Sciences (WorldSUAS)* (pp. 1–6). IEEE. <https://doi.org/10.1109/WorldSUAS66815.2025.11199237>
16. Visagamurthy, G. (2025). Digitizing trust: Ethical dimensions of InsurTech in the era of financial inclusion. *Journal of Computer Science and Technology Studies*. 7(5): 1007–1012. <https://doi.org/10.32996/jcsts.2025.7.5.116>