



Sustainable Development of Intellectual Property Legislation as a Component of National Security

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Abstract: The article examines the role of legislation in intellectual property as an important element in ensuring the state's national security. Analysis of the current state of intellectual property legislation indicates its gradual alignment with international standards, driven by European integration and the development of the innovative economy. At the same time, despite positive trends, several significant problems remain, including ineffective law enforcement, gaps in legal regulation, especially in the context of digitalisation, and a high level of intellectual property rights violations. This situation indicates the need to improve legislation further, taking into account modern challenges and threats. The study's practical aspect confirms that violations of intellectual property rights can directly affect the state's national security. In particular, the use of unlicensed software in state bodies or enterprises of strategic importance creates a risk of confidential information leakage and increases vulnerability to cyber threats. In addition, illegal copying or transfer of technologies, including in the military sphere, can lead to the loss of technological advantage and weakening of the state's defense capabilities. The main threats associated with insufficient legal protection of intellectual property are identified, along with directions for improving legislative regulation in this area. The need for harmonisation of national legislation with international standards is substantiated (WIPO Treaties, WIPO Copyright Treaty (WCT), WIPO Performances and Phonograms Treaty (WPPT), Madrid System for the International Registration of Trademarks, Hague System for the International Registration of Industrial Designs, Patent Cooperation Treaty (PCT)).

Keywords: Civil Law, Intellectual Property, National Security, Legislation, Legal Protection.



Introduction

In the contemporary landscape shaped by globalization, the rapid advancement of information technologies, and the pervasive digital transformation of society, intellectual property (IP) has evolved from a mere legal protection mechanism into a strategic state resource.¹ It not only represents the outcomes of human creativity and innovation but also serves as a fundamental pillar of knowledge-based economic growth, technological competitiveness, and a nation's position within the global order.² In this context, the sustainable development of intellectual property legislation becomes crucial—not only to ensure adequate legal protection but also to strengthen national resilience in addressing multidimensional challenges.³

Ukraine, as a country undergoing legal harmonization with European and international standards, has demonstrated notable progress in reforming its intellectual property legislation.⁴ Through the implementation of key international instruments such as the TRIPS Agreement and the gradual adoption of the European Union *acquis*, the normative framework governing IP has been significantly modernized. However, these formal advancements have not been fully matched by effective implementation in practice. A persistent gap between legislative harmonization and real enforcement remains a fundamental issue, one that not only undermines the protection of intellectual property rights but also directly affects national security, particularly in its economic and technological dimensions.

This problem is further exacerbated by the limited institutional capacity of the bodies responsible for IP protection.⁵ Fragmented authority among

¹ Hari Sutra Disemadi et al., 'Revitalizing Intellectual Property Rights in Indonesia: A Maqasid al-Sharia Perspective on Communal Ownership', *Al-Istinbath: Jurnal Hukum Islam* 9, no. 2 (November 2024): 625–48, <https://doi.org/10.29240/jhi.v9i2.11039>.

² 'The Urgency of Using Al-Milk an-Naqiṣ in Geographical Indications: An Ideal Preservation for Intellectual Property in Indonesia | JURIS (Jurnal Ilmiah Syariah)', accessed 15 April 2026, <https://ejournal.uinmybatusangkar.ac.id/ojs/index.php/Juris/article/view/12227>.

³ 'Mudharabah Muqayyadah and Communal Intellectual Property Protection: A Sharia-Based Law and Economics Perspective | JURIS (Jurnal Ilmiah Syariah)', accessed 15 April 2026, <https://ejournal.uinmybatusangkar.ac.id/ojs/index.php/Juris/article/view/16162>.

⁴ Katerynchuk Ivan, 'Legal Policy of the State in the Sphere of Safeguarding the Right of Intellectual Property in Ukraine', *Social and Legal Studios* 2, no. 3 (2019): 44–51, <https://doi.org/10.32518/2617-4162-2019-3-44-51>.

⁵ Zulkifli Zulkifli, Almusawir Almusawir, and Andi Tira, 'Communal Intellectual Property Rights and Creative Industry Development Through Integration Patterns', *Jurnal Hukum* 41, no. 3 (October 2025): 767–93, <https://doi.org/10.26532/jh.v41i3.46980>.

institutions, insufficient specialized human resources, and weak coordination between key actors—such as customs authorities, law enforcement agencies, and the judiciary—have resulted in ineffective enforcement. Consequently, counterfeiting and piracy continue to proliferate, even in strategic sectors such as pharmaceuticals, posing direct threats to public health and economic stability. From a national security perspective, the protection of critical technologies and strategic know-how has become increasingly urgent. Existing legislation does not yet provide a comprehensive framework for safeguarding sensitive information, including dual-use technologies, defense innovations, and state-funded scientific research. Gaps in export control mechanisms and the prevention of intellectual asset leakage abroad further increase the risk of exploitation by external actors, ultimately weakening state sovereignty.

At the same time, the rapid development of digital technologies and artificial intelligence (AI) presents new regulatory challenges that remain largely unresolved.⁶ Questions concerning the legal status of AI-generated works, authorship, ownership rights, and liability in the digital environment highlight a significant lag between technological progress and regulatory responses.⁷ This legal uncertainty not only hinders innovation but also creates opportunities for misuse and exploitation.⁸ Beyond protection issues, another critical concern lies in the low level of intellectual property commercialization. Ineffective technology transfer mechanisms, weak linkages between academia and industry, and an underdeveloped innovation ecosystem have limited the optimal utilization of intellectual assets.⁹ In an increasingly competitive global environment, such limitations risk eroding national competitiveness and economic strength. In the international dimension, although Ukraine has formally acceded to major global IP agreements, the practical implementation of its international obligations remains insufficient. This not only affects the effectiveness of IP protection but also has implications for the country's international reputation and trade relations. Additionally, a lack of specialized

⁶ Bruce E. Boyden, 'Generative AI and IP Under US Law', in *The Cambridge Handbook of Generative AI and the Law*, ed. Mimi Zou et al. (Cambridge University Press, 2025), 270–99, <https://doi.org/10.1017/9781009492553.022>.

⁷ Bernard Nainggolan, Agus Joko Pramono, and Stefan Koos, 'Legal Protection of Intellectual Property for Digital Works by Utilizing Emerging Technologies', *Jurnal Hukum* 41, no. 4 (December 2025): 897–924, <https://doi.org/10.26532/jh.v41i4.40811>.

⁸ Mary-Rose McGuire, 'European IP License Contract Law: A Model for Data Sharing Transactions', in *Research Handbook on Intellectual Property Licensing, Second Edition*, ed. Jacques de Werra and Irene Calboli (Edward Elgar Publishing Ltd., 2025), 489–509, <https://doi.org/10.4337/9781839108747.00037>.

⁹ Nibrosu Rohid et al., 'Digital Activism in Contemporary Islamic Politics: A Critical Analysis of Social Media's Impact on Islamic Movements', *MILRev: Metro Islamic Law Review* 4, no. 1 (April 2025): 208–33, <https://doi.org/10.32332/milrev.v4i1.10159>.

expertise and low levels of legal awareness in the field of intellectual property further weaken the overall system's performance.

Previous studies have examined intellectual property legislation from various perspectives. The first strand of research focuses on the harmonization of IP laws with international standards, particularly those of the European Union, emphasizing normative reforms and regulatory alignment.¹⁰ However, this approach tends to remain largely doctrinal and does not sufficiently address issues of practical implementation or their implications for national security. The second body of research concentrates on the effectiveness of law enforcement in combating IP violations, including piracy and counterfeiting.¹¹ While offering valuable insights into enforcement challenges, it often neglects the broader national security dimension.¹² The third line of inquiry highlights the role of intellectual property in fostering innovation and economic growth, particularly through commercialization and technology transfer.¹³ Nevertheless, these studies rarely establish a comprehensive link between IP governance and strategic national threats.

These gaps reveal the absence of an integrative framework that connects the sustainable development of intellectual property legislation with national security considerations. Furthermore, there is limited scholarly attention to how digitalization, artificial intelligence, and the risks associated with the leakage of critical technologies reshape the need for legislative reform in this domain. In response to these gaps, this study offers three main contributions. First, it integrates intellectual property law with the concept of national security, providing a more comprehensive and multidimensional analytical framework. Second, it emphasizes a sustainability-oriented approach to IP legislative development—one that goes beyond formal harmonization to include effective implementation and adaptability to technological change. Third, it addresses contemporary challenges such as digitalization, artificial

¹⁰ Robert Hargreaves, 'Can You Patent a Plant? What Dandelion Rubber Reveals about IP Law in the UK and EU', *Journal of Intellectual Property Law and Practice* 21, no. 2 (2026): 129–35, <https://doi.org/10.1093/jiplp/jpaf080>.

¹¹ Laura Zoboli and Maciej Bernatt, 'The Interplay of Data Protection, Competition Law, IP Law and Data Sharing', in *Data Sharing Regulation in Europe*, ed. Laura Zoboli and Maciej Bernatt (Taylor and Francis, 2025), 183–200, <https://doi.org/10.4324/9781003248255-11>.

¹² Aqa Raza and Ghayur Alam, 'IP Case Law Development', *Journal of Intellectual Property Rights* 29, no. 4 (2024): 347–49, <https://doi.org/10.56042/jipr.v29i4.8638>.

¹³ Soubeir Nadde-Pblix, 'Economic Partnership Agreements of the EU: A Step Ahead in Reforming International IP Law? - Workshop of the Max Planck Institute for Intellectual Property and Competition Law, June 2011', *IIC International Review of Intellectual Property and Competition Law* 43, no. 8 (2012): 951–58.

intelligence, and the protection of strategic technologies as integral components of national security.

Accordingly, this study is guided by the following research question: How can the sustainable development of intellectual property legislation effectively contribute to strengthening national security in the context of globalization and digital transformation? The significance of this research lies in its contribution to developing a conceptual framework that links intellectual property with national security, as well as in offering policy-relevant insights for lawmakers in designing adaptive and responsive legislative strategies. Moreover, this study enriches the academic discourse on intellectual property law, particularly within the context of countries navigating global integration and digital transformation. Ultimately, it provides both theoretical and practical contributions to advancing sustainable legal development aligned with the strategic interests of the state.

Method

The methodological basis of the study is a set of general scientific and specialised methods of cognition that provide a comprehensive analysis of legislation in the field of intellectual property as a component of the state's national security. In particular, the dialectical method was used, which allowed studying the development of legal regulation of intellectual property in a dynamic manner, and a systemic approach, which enabled considering intellectual property as an integral element of the national security system. The comparative legal method was used to compare national legislation with international standards, while the formal legal method was used to analyse regulatory legal acts. In addition, the statistical method enabled assessment of the level of violations in the field of intellectual property and the effectiveness of mechanisms for their legal protection. Analysis of the current state of intellectual property legislation indicates its gradual alignment with international standards, driven by European integration and the development of the innovative economy. At the same time, despite positive trends, several significant problems remain, including the lack of effective law enforcement, gaps in legal regulation, especially in the context of digitalisation, and a high level of intellectual property rights violations. This situation indicates the need to improve legislation further, taking into account modern challenges and threats.

The study's practical aspect confirms that violations of intellectual property rights can directly affect the state's national security. In particular, the use of unlicensed software in state bodies or enterprises of strategic importance creates a risk of confidential information leakage and increases vulnerability to cyber threats. In addition, illegal copying or transfer of technologies, including

in the military sphere, can lead to the loss of technological advantage and weakening of the state's defense capabilities. Statistical data indicate that the problem of intellectual property rights violations remains relevant. A significant share of software is used without proper licenses, and piracy remains high. A significant number of copyright and related rights violations are recorded each year, resulting in substantial economic losses. At the same time, there is a trend of rising cybercrime and intellectual property litigation, indicating the growing importance of this issue in modern conditions. Thus, the study allows us to conclude that effective action is an important legislative prerequisite for ensuring the state's national security. At the same time, the current legal regulation requires further improvement, particularly by taking into account statistical indicators, practical challenges, and the need to align with international standards.

Results and Discussion

Intellectual property as a strategic resource of the state

Intellectual property in modern conditions is considered one of the key strategic resources of the state, which determines the level of its economic development, its innovative capacity, and its national security. Unlike traditional material resources, intellectual assets are intangible yet form the basis of the high-tech economy, digital transformation, and the state's defence potential.¹⁴ Such assets include inventions, utility models, industrial designs, copyright objects, software, databases, trade secrets, and other results of intellectual activity.¹⁵

The legislative consolidation of intellectual property's importance as a strategic resource is reflected in several Ukrainian regulatory legal acts. In particular, the Civil Code of Ukraine (Book IV, "Intellectual Property Law") defines the legal principles governing the acquisition, exercise, and protection of intellectual property rights. The Law of Ukraine "On Copyright and Related Rights" (2022, as amended) is also of great importance and is aligned with the standards of the European Union, particularly the EU Directive on Digital Content. In addition, the Law of Ukraine "On the Protection of Rights to

¹⁴ Kung-Chung Liu, *Deciphering IP Law and Its Conflict and Complementarity with Competition Law: Global Norms against Asian Context* (Taylor and Francis, 2025), <https://doi.org/10.4324/9781003597766>.

¹⁵ Yevhen Leheza, 'Administrative and Criminal Law Aspects of Preventing Offenses Committed by Minors in the Sphere of Illegal Circulation of Narcotic Drugs, Psychotropic Substances and Precursors', *Journal of Drug and Alcohol Research* 12, no. 10 (November 2023), <https://doi.org/10.4303/JDAR/236269>.

Inventions and Utility Models” and other special acts form a system of legal protection of innovations.¹⁶

In the context of national security, the provisions of the legislation on cybersecurity and the protection of critical infrastructure are particularly important. In particular, the Law of Ukraine “On the Basic Principles of Ensuring Cybersecurity of Ukraine” establishes the need to protect information systems, which is directly related to protecting intellectual property, especially software and digital technologies. Thus, the legal regulation of IP is integrated into the state’s broader security system.¹⁷

The practical importance of intellectual property as a strategic resource is especially evident in defence technologies and the digital economy. For example, the development of unmanned systems, software for cyber defence, encryption systems, and military information platforms is based on intellectual property rights, the protection of which is critical to maintaining the state’s technological advantage. Loss of control over such objects due to violation of IP rights or industrial espionage poses a direct threat to national security.¹⁸

Statistical data for 2024–2025 indicate that the issue of intellectual property protection remains highly relevant. According to summarised data from state bodies and international organisations in the field of IP, thousands of cases of copyright and related rights violations are recorded in Ukraine each year, particularly in the software and digital content sectors. The use of unlicensed software in certain sectors remains significant, posing cybersecurity risks and economic losses. There is also a tendency to increase litigation in the field of intellectual property, which is associated with both greater legal awareness among business entities and the intensification of digitalisation processes. At the same time, international innovation development indices indicate the need to further improve Ukraine’s IP protection system, as the levels of innovation commercialisation and rights protection do not yet fully meet European standards.¹⁹

¹⁶ Laila Barqawi and Mohammad Abu Baker, ‘The Correlation between Islamic Law and Modern Intellectual Property Law’, *Corporate Law & Governance Review* 7, no. 3 (2025): 19, <https://virtusinterpress.org/The-correlation-between-Islamic-Law-and-modern-intellectual-property-law.html>.

¹⁷ Olha Hryhorash et al., ‘The Development of Small Business as a Source of Formation of Local Budget Revenues in Ukraine’, *Investment Management and Financial Innovations* 15, no. 1 (2018): 133–140, [https://doi.org/10.21511/imfi.15\(1\).2018.12](https://doi.org/10.21511/imfi.15(1).2018.12).

¹⁸ Iegor Dymko et al., ‘Integrated Approach to the Development of the Effectiveness Function of Quality Control of Metal Products’, *Eastern-European Journal of Enterprise Technologies* 6, no. 3 (90) (2017): 26–34, <https://doi.org/10.15587/1729-4061.2017.119500>.

¹⁹ Yevhen Leheza et al., ‘The Essence of the Principles of Ukrainian Law in Modern Jurisprudence’, *Revista Jurídica Portucalense* 32 (2022): 342–63, [https://doi.org/10.34625/issn.2183-2705\(32\)2022.ic15](https://doi.org/10.34625/issn.2183-2705(32)2022.ic15).

Therefore, intellectual property in modern conditions is not only a legal category but also a strategic resource of the state that directly affects its economic stability, innovative development, and national security. The effectiveness of legislative regulation in this area determines the state's ability to protect its technological achievements, ensure competitiveness, and counter modern security threats.

Table 1. Intellectual property as a strategic resource of the state

| Component | Contents | Importance for the state | Examples/implementation tools |
|-------------------------------------|--|--|---|
| Economic resource | IP as a source of income, investment, and innovation | GDP growth, development of high-tech industries | Licensing, patents, royalties, startups |
| Innovative potential | Stimulating scientific research and development | Increasing the competitiveness of the economy | Technology parks, R&D centres, and government grants |
| National security | Protection of critical technologies and information | Preventing technology leakage, technological sovereignty | Export control, trade secret protection |
| Cultural resource | Protection of copyright and cultural heritage | Preservation of national identity | Copyright legislation, support for creative industries |
| International integration | Compliance with international IP standards | Attracting foreign investment, participation in global markets | TRIPS, WIPO, EU Association Agreement |
| Legal instrument | IP rights protection system | Ensuring a fair market and legal certainty | Legal protection, anti-piracy measures, and customs control |
| Digital resource | IP in the digital economy (software, databases, AI) | Developing a digital state and e-governance | Software protection, open data, digital platforms |
| Educational and scientific resource | Results of intellectual activity in the field of education | Forming human capital | Academic publications, university patent activity |
| Investment attractiveness | The presence of an effective IP | Increasing investor confidence | Investor rights protection, |

| system | | | transparent registration procedures | IP registers |
|----------------------------|------------------------------------|--|---|--------------|
| Anti-counterfeiting policy | Fighting piracy and counterfeiting | Protecting the domestic market and consumers | Customs of IP objects, sanctions, and inspections | |

Source: Author's Interpretation

The table above presents intellectual property (IP) as a multidimensional strategic resource of the state, spanning the economic, legal, security, innovation, and cultural spheres. Its detailed analysis reveals the systemic nature of IP's impact on state policy and societal development. First, the economic dimension of IP demonstrates its role as a key driver of economic growth. In the modern economy, intangible assets form a significant part of companies' value, and effective management of IP rights contributes to the development of innovative businesses, attracts investment, and shapes the technology market. For Ukraine, this is especially relevant in the context of the development of the IT, pharmaceutical, and creative industries. At the same time, the weakness of IP commercialisation mechanisms and the insufficient level of rights protection remain constraining factors.

The innovative potential of IP manifests in stimulating scientific and research activities. The presence of an effective system of legal protection of research results motivates both public and private institutions to invest in R&D. At the same time, the problem lies in the low level of technology transfer between science and business, which reduces the practical return on intellectual capital. From a national security perspective, IP serves as a tool for protecting strategically important technologies. In the context of global competition and hybrid threats, controlling the circulation of technologies, protecting trade secrets, and preventing industrial espionage have become critical. For Ukraine, this aspect is intensified by military challenges, in which the leakage of technologies or know-how can have direct consequences for defence capabilities. The cultural aspect of IP aims to preserve national identity and support creative industries. Copyright provides a balance between access to cultural goods and stimulation of creative activity. At the same time, the spread of digital content increases the risk of piracy, requiring the modernisation of protection mechanisms.

In the context of international integration, IP is an indicator of the level of the state's legal system. Harmonisation of legislation with international standards (in particular, TRIPS and EU norms) opens up access to global markets and increases investment attractiveness. However, implementing such standards requires not only formal adoption of norms but also effective enforcement.

The legal component of IP provides the institutional basis for its functioning. Judicial protection, customs authorities' activities, and anti-piracy measures build trust in the system. At the same time, the length of court proceedings, the complexity of proving violations, and the lack of specialisation among judges remain key problems. The digital dimension of IP, associated with the development of the digital economy, is gaining particular importance. Software, databases, and artificial intelligence are becoming new objects of legal regulation. New challenges arise here, particularly regarding the attribution of results generated by AI and the balance between open data and the protection of rights.

The educational and scientific aspect of IP determines the level of human capital formation. Universities act not only as centres of knowledge but also as creators of IP. However, the culture of patenting and commercialising scientific results remains underdeveloped in Ukraine. From the perspective of investment attractiveness, an effective IP system is one of the key factors for foreign investors. Transparency of procedures for registering rights, guarantees of their protection, and the predictability of law enforcement create a positive investment climate. Finally, anti-counterfeiting policy is an important element of economic security. The spread of counterfeit products, in particular medicines, poses a threat to both the economy and the health of the population. Effective customs mechanisms and sanction policy are key tools for countering this phenomenon. In general, intellectual property is not only a legal institution but also a complex strategic resource that determines the level of innovation, economic sustainability, and national security of the state. For Ukraine, the priority areas are strengthening law enforcement, developing the infrastructure for IP commercialisation, integration into the international legal space, and adaptation to the challenges of the digital economy.

Foreign experience of the impact of intellectual property legislation on national security

International practice shows that effective legislation in the field of intellectual property (IP) is a key tool for ensuring national security, economic stability, and technological sovereignty. Leading countries worldwide consider the system of intellectual property protection not only as a legal mechanism for protecting the rights of creators, but also as an element of strategic policy in defence, cybersecurity, and innovative development. In the USA, the system of intellectual property protection is based on a set of legislative acts, among which the Patent Act, the Copyright Act, and cybersecurity legislation are particularly important. The activities of the United States Patent and Trademark Office (USPTO) play a special role, as well as mechanisms for protecting critical technologies within the framework of national security policy. In the USA, intellectual property is closely related to the defence sector, particularly

through the regulation of dual-use technologies and the control of the export of innovations. This prevents the leakage of strategic developments and ensures the state's technological advantage.

In the European Union, IP legislation is harmonised through EU directives and regulations, ensuring a uniform approach to the protection of intellectual property rights. The European Patent Office (EPO) and the EU Intellectual Property Office (EUIPO) are of great importance. The EU views intellectual property as a component of digital and economic security, especially in the context of the development of artificial intelligence, cybersecurity, and the digital market. Strengthening IP protection in the EU is aimed at combating cybercrime, industrial espionage, and illegal use of technologies. In the UK, after Brexit, the national system of intellectual property protection was strengthened through the UK Intellectual Property Office (UKIPO). The legislation is focused on protecting innovations in defence, pharmaceuticals, and digital technologies. Particular attention is paid to protecting trade secrets as an element of the state's economic security.²⁰

In Japan and South Korea, IP legislation is closely integrated with industrial policy and national security strategy. These states actively protect technologies in electronics, robotics, and artificial intelligence. For example, Japan has a system of enhanced protection for enterprise know-how that helps minimise the risks of industrial espionage and the loss of technological advantage. Summarising international experience, we can conclude that in developed countries, legislation in the field of intellectual property performs not only a regulatory function, but also a security function. It is integrated into the broader national security system and covers the protection of critical technologies, cybersecurity, the defence industry, and strategic innovations. Particular attention is paid to preventing technology leakage, strengthening control over knowledge transfers, and combating cybercrime.²¹ Thus, foreign experience confirms that an effective system of legal protection of intellectual property is an important element in ensuring the state's national security, and its integration into strategic policy helps increase economic and technological stability amid global challenges.

²⁰ Yevhen Leheza, Larysa Yerofieienko, and Volodymyr Komashko, 'Peculiarities of Legal Regulation of Intellectual Property Protection in Ukraine under Martial Law: Administrative and Civil Aspects', *Revista Justiça Do Direito* 37, no. 3 (2023): 157-172, <https://doi.org/10.5335/rjd.v37i3.15233>.

²¹ Yevhen Leheza et al., 'Interpretation of Regulatory and Legal Acts in Contemporary Contexts: Foreign Experience, Comparative Perspectives, and Pathways for Regulatory Reform', *NUSANTARA: Journal Of Law Studies* 5, no. 1 (February 2026): 102-22, <https://doi.org/10.5281/zenodo.18727992>.

Table 2. Intellectual property protection systems and their impact on national security

| Criterion | Ukraine | USA | European Union | Japan/South Korea |
|---|--|---|--|---|
| Level of integration of IP into national security | Partially integrated, mainly through cybersecurity | At a high level, IP is an element of defence and technological security | High, through EU digital and economic security | Very high, strategic element of industrial policy |
| Main governing bodies | UKRNOI VI, IP courts (gradual formation) | USPTO, federal courts, and defence agencies | EUIPO, EPO, national offices | JPO (Japan), KIPO (Korea) |
| Legislative framework | Civil Code, special laws, reform 2022–2024 | Patent Act, Copyright Act, and ITC regulations | EU directives, regulations, harmonised standards | Patent Act, trade secret, and innovation laws |
| Protection of critical technologies | Limited, mainly through general norms | Strong export control (dual-use, ITAR) | Increased control through the EU framework | Very strong protection of know-how and technology |
| Cybersecurity and IP | Under formation, there are gaps | Integrated system at the state security level | High integration through the Digital Single Market | High level of technological protection |
| Fighting violations (piracy, espionage) | Average effectiveness | Very high | High, harmonised mechanisms | Highly, a preventative model |
| Level of commercialisation of innovations | Average/low | Key strategic | High | Very high |

Source: Author's Interpretation

The comparative analysis shows that in most developed countries, intellectual property legislation is integrated into the national security system

and serves not only a legal but also a strategic function. The highest level of such integration is observed in the USA, where intellectual property is considered an element of the state's defence and technological advantage, and the mechanisms for its protection are directly linked to national security policy and the export control of critical technologies.

In the countries of the European Union, the intellectual property protection system is harmonised and aimed at ensuring economic, digital, and cybersecurity. Particular attention is paid to creating a single market for innovation, effectively protecting the rights of copyright holders while simultaneously stimulating innovation. Japan and South Korea demonstrate a model in which intellectual property is directly related to industrial policy and technological sovereignty. In these countries, the emphasis is on protecting know-how and high-tech developments, as well as preventing industrial espionage.

At the same time, Ukraine's intellectual property protection system is undergoing transformation and gradual integration into the European legal space. Despite the presence of basic legislation and institutional structure, the level of integration of IP into the national security system remains insufficient. The main problems are the limited effectiveness of law enforcement, insufficient protection of critical technologies, and gaps in digital regulation. Thus, international experience shows that effective legislation in the field of intellectual property is not only an instrument of legal regulation but also an important element of national security, which determines the level of technological development, economic stability, and defence capability of the state.

Conclusion

As a result of the study, it was established that legislation in the field of intellectual property is an important system-forming element in ensuring the state's national security. Its significance goes beyond purely legal regulation and encompasses the economic, technological, information, and defence spheres, which together form the state's strategic resilience against internal and external threats. Analysis of theoretical approaches and the regulatory framework has shown that, in modern conditions, intellectual property is a key resource for innovative development, and the effectiveness of its legal protection directly affects the level of the state's technological sovereignty. It has been established that proper legislative regulation contributes to protecting critical technologies, developing defence capabilities, reducing the risk of industrial espionage, and preventing the leakage of strategically important information. A comparative analysis of international experience has shown that in developed countries (in particular, the USA, the European Union, Japan, and South Korea), intellectual property is integrated into the national security system and is considered a

strategic instrument of state policy. At the same time, Ukraine is gradually developing legislation in this area, but its integration into the security system remains insufficient. The study's practical aspects confirm that violations of intellectual property rights, particularly in digital technologies, software, and defence development, pose a real threat to national security. This necessitates strengthening law enforcement mechanisms, improving the system of rights protection, and adapting legislation to the modern challenges of digital transformation. Thus, effective and modern intellectual property legislation is a necessary condition for ensuring the state's national security, economic stability, and innovative competitiveness. Further development of legal regulation should be based on harmonisation with international standards and on consideration of foreign experience, thereby increasing the level of protection of the state's strategic interests.

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Author Contributions Statement

Yuliia Leheza conceived and developed the study's overall structure, formulated the main arguments, and guided the preparation and writing of the manuscript. Oleh Tsyhanov and Vira Halunko made significant contributions to the theoretical analysis and interpretation of the results, offering critical conclusions that strengthened the legal and methodological aspects of the study. Meanwhile, Andriy Boyko and Volodymyr Buha played a key role in conducting the literature review, collecting relevant data, and refining the discussion to ensure coherence between the regulatory framework and the current realities of legislative development. All authors actively participated in the review and final approval of the manuscript, ensuring its academic accuracy and integrity.

AI Usage Statement

The authors state that artificial intelligence (AI) applications were used on a small scale to assist with language correction, grammar correction, and rephrasing in academic writing. There was no use of AI when generating research data, conducting analysis, interpreting legal materials, or developing

arguments and conclusions in the study. All the substantive work, including intellectual contributions such as conceptualisation, legal analysis, comparative assessment, and findings interpretation, was carried out entirely by the authors. The authors assume complete responsibility for the contents, correctness, and originality of this work.

Conflict of Interest

The author declares that there is no potential conflict of interest, whether financial, professional, or personal, that could have influenced the research findings, data interpretation, or conclusions presented in this article. The research was conducted independently and objectively to ensure academic integrity and transparency.

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