American Journal of Open Research, 04 (10), October, 2025
E-ISSN: 2834-7668

The Importance of Copyright for the Protection of the Creator's Rights

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Abstract: As the demand for increased efficiency and transparency in Intellectual Property Rights (IPR) management grows, the development of an integrated, technology-based information system has become an urgent necessity. This system is expected to facilitate the registration, search, and management of IPR data more quickly, easily, and securely. The purpose of this research is to develop an Intellectual Property Rights Information System designed to increase efficiency, transparency, and ease of access to IPR information, thereby making a positive contribution to the advancement of innovation and the protection of creators' rights in Indonesia. This research employs a systematically designed method to create and implement an effective and efficient IPR information system. The novelty of this research lies in the creation of an IPR registration system on the Institution's website, allowing IPR registration to become more optimal. Furthermore, the provision of IPR data granted in previous years ensures that all Universitas Negeri Semarang (UNNES) members can access information on IPR acquisitions at UNNES. The stages of this research include situation analysis, identification of improvement needs, system enhancement, and system feasibility analysis. The findings indicate that a special menu is required for Intellectual Property registration on the *Lembaga Penelitian dan Pengabdian kepada Masyarakat* (LPPM) website, enabling every member of the academic community who requires IPR registration to do so with ease. Additionally, this menu facilitates the collection of Intellectual Property data from the UNNES academic community.

Keywords: IPR, Information Systems, Intellectual Property

INTRODUCTION

In the era of globalization and rapid technological advancement, intellectual property rights (IPR) play a crucial role in driving innovation, protecting creative works, and adding value to products or services produced by individuals and companies. IPR covers various areas, such as copyright, patents, trademarks, and industrial designs, which aim to protect ownership of ideas and creations with economic value (Primawanti & Ali, 2022; Triandini et al., 2019; Nurul et al., 2022; Bratha, 2022). With the growing need for increased efficiency and transparency in IPR management, the development of an integrated, technology-based information system is an urgent need (Aswiputri, 2022; Fadilla, 2021). This system is expected to facilitate the registration, search, and management of IPR data more quickly, easily, and securely. Furthermore, the IPR information system can also serve as a reference source for the public, academics, and business actors in obtaining accurate and up-to-date information regarding intellectual property protection. Although the existing system has made a significant contribution to IPR management, several challenges remain that require solutions (Nova et al., 2022; Priharsari, 2022; Perrina, 2021): (1) Better Integration: The Indonesian IPR information system needs to comprehensively integrate data from various types of IPR (patents, trademarks, copyrights). (2) Friendly User Interface: An improved user experience, including intuitive and responsive navigation, can improve accessibility. (3) Security and Data Protection: The use of blockchain technology can be an alternative to improve security and prevent rights violations. And (4) Automation of the Registration Process: Implementing artificial intelligence for document verification and similarity searches can expedite the registration process. Considering existing advances and development opportunities, the proposed IPR information system is expected to provide a more integrated, efficient, and secure innovative solution to support intellectual property protection in Indonesia (Mulyawan et al., 2021; Solechan, 2021; Wahyudi, 2022).

The Relationship between Intellectual Property Rights Information System Development and the Sustainable Development Goals (SDGs): 1) SDG 9 -- Industry, Innovation, and Infrastructure. The development of an Intellectual Property Rights information system directly supports innovative infrastructure by providing a digital platform that makes it easier for innovators, academics, and businesses to access and protect their intellectual property (Putra & Huda, 2021; Singgalen, 2021). This accelerates the innovation process and creates a conducive ecosystem for the development of technology and the creative industry (Elanda & Buana, 2020; Mulyani et al., 2019; Arief & Sugiarti, 2022); 2) SDG 4 -- Quality Education. An easily accessible Intellectual Property Rights information system can be a learning resource for students, researchers, and teachers in understanding aspects of intellectual property protection, thereby increasing legal awareness and knowledge related to IPR among various groups (Wahono & Ali, 2021; Purwaningrum et al., 2021; Prasetyaningrum et al., 2022). Based on these needs, this proposal is prepared to develop an Intellectual Property Rights Information System designed to increase efficiency, transparency, and ease of access to IPR information, thereby making a positive contribution to the development of innovation and the protection of creators' rights in Indonesia.

The proposed approach to developing this IPR information system involves the following steps: 1) User Needs Analysis Approach. Data collection from key users, including individuals, educational institutions, research institutions, and businesses, will be conducted to understand their needs in managing, searching, and protecting IPR information. This needs analysis will form the basis for designing user-friendly features and interfaces that are relevant to user needs. 2) Web-Based and Mobile Technology Approach. The information system will be developed using web-based and mobile technologies to facilitate user accessibility and flexibility. The platform will be designed to be accessible anytime and anywhere, with an intuitive and secure interface. 3) Data Integration and Information Security. The system will be designed to integrate data from various sources related to IPR, including patents, copyrights, trademarks, and industrial designs. Information security is a top priority to protect user rights and prevent data breaches. 4) Automation and Optimization of the IPR Registration Process. The IPR registration and management process will be optimized by implementing automation, such as electronic form completion, automatic data verification, and registration status notification, to increase efficiency and reduce time. 5) Multi-Party Collaborative Approach. System development will involve collaboration with various stakeholders, including the government, research institutions, professional associations, and technology developers, to ensure a holistic and sustainably implemented solution. 6) Utilizing Data for Analytics and Prediction. The system will be equipped with analytical capabilities to provide strategic insights into IPR trends and potential infringements. This can assist decision-makers in formulating more effective intellectual property protection policies and strategies. With this approach, the development of the Intellectual Property Rights Information System is expected to provide innovative and effective solutions that support optimal IPR protection and management.

Previous studies have highlighted the importance of technology in improving intellectual property rights (IPR) management but have left gaps in integration, usability, and security. For example, Wicaksono et al. (2020) analyzed the existing Indonesian IPR information system and found that although it facilitated basic registration and data retrieval, it lacked comprehensive integration across patents, trademarks, and copyrights, limiting efficiency and user satisfaction. Similarly, Putra and Santoso (2021) examined the potential of digital tools in IPR management and emphasized automation and AI-based verification; however, their study did not consider user-centered design or multi-platform accessibility, nor did it address data security and stakeholder collaboration comprehensively. These studies indicate a gap in developing an IPR information system that is fully integrated, user-friendly, secure, and capable of supporting multi-stakeholder collaboration.

This research addresses these gaps by proposing the development of a web-based and mobile IPR information system that integrates data from patents, trademarks, copyrights, and industrial designs, incorporates user-centered design for intuitive navigation, applies blockchain technology for data security, and utilizes automation for registration and verification processes. The purpose of this study is to design a robust and accessible IPR information system that enhances efficiency, transparency, and protection of creators' rights in Indonesia. The benefits include improving innovation infrastructure, facilitating legal awareness among users, and providing evidence-based insights for policymakers to strengthen the national creative and technological ecosystem.

METHOD

This research used a systematically designed method to design and develop an effective and efficient Intellectual Property Rights (IPR) information system. The steps involved include:

1. Data Collection Method
   a. Literature Review
      Reviewing references from scientific journals, books, IPR-related regulations, and existing information systems such as WIPO, USPTO, and DJKI.
   b. Observation and Analysis of the Existing System
      Observing the information system currently used by the Directorate General of Intellectual Property (DJKI) to identify its strengths and weaknesses.
   c. Interviews and Questionnaires
      Collecting data from system users, such as entrepreneurs, academics, and government officials, to understand their needs and expectations regarding system features, accessibility, and security.
2. System Design Method
   a. Requirements Analysis
      Identifies the functional and non-functional requirements of the system based on data collection results.
   b. System Modeling
      Uses the Unified Modeling Language (UML) method to model business processes and interactions between system components. Diagrams used include use case diagrams, activity diagrams, and class diagrams.
3. System Development Method
   Adopting the Rapid Application Development (RAD) method to accelerate the development process with an iterative approach. The RAD stages include:
   a. Planning: Defining the system's primary requirements.
   b. Design Workshop: Developing an initial prototype based on user requirements.
   c. Implementation: Building a fully functional system based on feedback from prototype users.
4. System Testing Methods
   a. Functional Testing
      Using black-box testing to ensure all system features operate according to specifications.
   b. Usability Testing
      Using the System Usability Scale (SUS) method to evaluate the system's user experience and ease of use.
   c. Security Testing
      Conducting tests to ensure the system has an adequate level of security, including user data protection and prevention of unauthorized access.
5. Evaluation and Improvement Methods
   Test results will be evaluated and used to conduct iterative improvements, ensuring the information system meets user needs and operates reliably.

With this structured research method, it is hoped that the development of the Intellectual Property Rights Information System will produce innovative, efficient solutions that meet stakeholder needs.

RESULTS AND DISCUSSION

System Requirements Analysis

a) Interview results indicated a strong desire from lecturers for a user-friendly and informative system.
b) The IPR management unit desired a system that could track all submissions and provide regular reports.
c) Students, as potential users, expected clear submission guidelines and an easy-to-understand process.
d) From this analysis, several key system features were determined, such as an online submission form, status notifications, process tracking, and a reporting dashboard.

System Design

a) The system was designed as a web-based system for users to access anytime and anywhere.
b) The database structure was designed to support various types of IPR: copyrights, patents, trademarks, and industrial designs.
c) The interface was designed to be simple, with intuitive navigation to facilitate users from various backgrounds.
d) Use Case diagrams were created to illustrate the interaction between users and the system.
e) Activity diagrams help illustrate the overall process flow within the system.
f) Each form is equipped with validation to avoid data input errors.

System Implementation

a) The implementation process was carried out in three stages: coding, internal testing, and beta launch.
b) The programming language used was PHP with the Laravel framework due to its scalability and security.
c) The MySQL database was chosen because it is open-source and suitable for medium-scale campus applications.
d) The system is hosted on Unnes' internal server to maintain integration with other academic information systems.
e) The notification module uses campus email to inform users of application status.

System Testing

a) Testing was conducted using the black box method to ensure all functions functioned as required.
b) The trial was conducted with 20 lecturers and 30 students from various faculties.
c) Feedback from early users indicated that the system was very helpful, especially in tracking and documenting processes.
d) Security testing was conducted to ensure data could not be accessed by unauthorized parties.
e) System performance was tested with 100 simultaneous connections and the results remained stable.

Testing revealed several areas requiring improvement, such as document upload speed and the addition of user assistance features. The system was then refined by speeding up the upload process and adding short video guides. A search feature was also added to facilitate users in finding previous submissions. A post-implementation evaluation was conducted after the system had been running for three months. The results showed a 47% increase in the number of IPR submissions compared to the previous period.

This system makes it easier for lecturers and students to manage the rights to their scientific works. IPR administrators can now more easily summarize data and generate reports for university leadership. With the system, the application process, which previously took weeks, can now be completed in a matter of days. The system also increases transparency because each user can view the progress of their application status. University administrators can monitor IPR trends and make data-driven decisions.

In the long term, this system will support the achievement of the university's key performance indicators (KPIs), particularly in innovation and research downstreaming. Unnes' reputation in the field of intellectual property (IP) is improving as more works are officially registered. Students are increasingly encouraged to produce works worthy of patenting or copyright registration. Lecturers are further motivated to develop innovative products because copyright protection is now more secure. This system can serve as a model for implementation at other universities with similar needs.

The main challenge is user adaptation to the new system, especially senior lecturers. This requires a persuasive approach through workshops and mentoring. Technical challenges also arise when some user devices do not optimally support the system. The solution is to ensure the system is compatible with various browsers and mobile devices. Regular backups are necessary to anticipate data loss due to technical disruptions.

In addition, the positive outcomes of the system implementation are supported by the Technology Acceptance Model (TAM) proposed by Davis (1989), which suggests that perceived ease

of use and perceived usefulness are key determinants of user acceptance of information systems. By improving document upload speed, adding video guides, and incorporating a search feature, the system enhanced both ease of use and usefulness, which likely contributed to the 47% increase in IPR submissions. Similarly, research by Alhassan et al. (2021) on digital platforms for academic administration found that interactive guides, streamlined processes, and real-time tracking significantly improve user engagement and compliance with reporting procedures. These theories and prior findings reinforce that user-centered design, technical optimization, and transparent progress monitoring are critical for maximizing adoption and effectiveness of technology-based IPR management systems in higher education. Implementing these features not only accelerates administrative processes but also strengthens motivation for innovation and compliance among lecturers and students, aligning with the university's strategic goals for research and intellectual property development.

This research makes a significant contribution to the digitalization of higher education administration services. The system can be further developed by adding trend analysis features and potential commercialization of the work. Unnes is expected to make this system part of the university's overall digital transformation strategy. With leadership support and cross-unit collaboration, this system will become a crucial pillar in fostering a culture of campus innovation. This research opens up opportunities for further study on the use of AI technology in the assessment and classification of potential intellectual property rights (IP) in the future.

CONCLUSION

The developed Intellectual Property Rights (IPR) information system at Universitas Negeri Semarang (UNNES) has proven effective in streamlining and accelerating the IPR application process through user-centered development aligned with practical needs. Its advanced features, including status tracking, automatic reporting, and document integration, have significantly improved the quantity and quality of IPR management within the university. The successful implementation of this system underscores the importance of collaboration among all stakeholders. Future research is recommended to explore the integration of artificial intelligence and data analytics to further enhance IPR management efficiency and predictive capabilities. The author would like to Ministry of Education, Culture, Research and Technology, and Research Institutions and Community Service, Universitas Negeri Semarang, for research funding, through a contract letter DPA LPPM Semarang State University Number: DPA 139.032.693449/2025.01, with the 2025 Research Implementation Assignment Agreement for LPPM UNNES DPA Funds Number 219.14.3/UN37/PPK.11/2025, dated March 14, 2025

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