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Overlapping fiduciary guarantees and mortgage rights in Indonesian digital credit: a comparative legal analysis of integrated collateral registration for legal certainty

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ABSTRACT

The digitalisation of the financing sector has transformed lending into electronic systems that prioritise speed, efficiency, and accessibility, while creating new challenges in collateral governance. This study examines the fragmentation of registration systems for fiduciary guarantees and mortgage rights, which may lead to overlapping security interests, limited cross-system verification, and uncertainty about creditors' positions and priorities. The study aims to analyse the causes of overlapping security interests in digital credit, examine their implications for creditors' legal certainty, and formulate a model for integrating collateral registration. This normative and prescriptive legal research employs statutory, conceptual, and comparative approaches, with a qualitative analysis comparing Indonesia's registration system with Australia's Personal Property Securities Register (PPSR). The findings indicate that separating the AHU and BPN registration systems limits the effectiveness of publicity and priority principles in Grant Gilmore's framework because of inadequate cross-system verification. This condition also undermines the values of *Rechtssicherheit*, *Gerechtigkeit*, and *Zweckmäßigkeit* identified by Gustav Radbruch. The study proposes an integrated national collateral registration model featuring cross-registration search, data standardisation, debtor and collateral identification, verification protocols, and audit trails. The model adapts PPSR principles while preserving the distinct legal characteristics of Indonesian security rights.



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Introduction

Digital transformation has changed how financial services are provided and accessed (Kraus et al., 2022). Credit can now be applied for, assessed, approved, and disbursed through electronic systems, offering greater speed, efficiency, and accessibility than conventional financing (Vuković et al., 2025). Digitalisation, however, also creates new layers of risk, such as predatory digital credit practices, regulatory uncertainty, and limited supervisory mechanisms (Masyhar et al., 2026). For secured lending, the central question is whether the legal infrastructure for collateral has kept pace with the speed of electronic credit decisions. In Indonesia, the digitalisation of financing has not been accompanied by an equivalent integration of collateral governance, as illustrated by the persisting regulatory, institutional, and data-protection challenges in the use of electronic land certificates as credit collateral (Febri et al., 2025). This mismatch raises the question of

whether the existing security rights system can still provide reliable information about collateral in a digital credit environment.

In the Indonesian legal system, fiduciary guarantees and mortgage rights over land (Hak Tanggungan, hereinafter mortgage rights) are two instruments of security in rem with different objects, methods of encumbrance, and registration systems (Suwindra et al., 2026). Under Law Number 42 of 1999 on Fiduciary Guarantees, fiduciary guarantees secure movable objects, whether tangible or intangible, and immovable objects, particularly buildings, that cannot be encumbered with mortgage rights. Under Law Number 4 of 1996 on Mortgage Rights over Land and Land-Related Objects, mortgage rights secure land rights, with or without objects that form a unity with the land. Fiduciary guarantees are registered with the Directorate General of General Legal Administration (AHU), whereas mortgage rights are registered through the land administration system of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), and the two registries are not fully integrated (Masturi et al., 2026). This separation becomes more consequential in digital financing, where credit is granted quickly, involves multiple financing institutions, and depends on accurate electronic information. The problem is therefore not limited to whether the same object may be encumbered by two security institutions; it also concerns whether a creditor can obtain a complete picture of the security interests attached to a debtor's assets and financing relationships when that information is held in separate registries. This study argues that such fragmentation may create information gaps at the stage of collateral verification, which may ultimately lead to conflicts over the position and ranking of creditors' rights (Adjie, 2022). Digitising registration services without interoperability between systems has therefore not, by itself, produced transparent collateral governance or guaranteed legal certainty (Febriyanti et al., 2026), and the electronic mortgage rights service still faces supervisory and integration challenges (Nuryanti & Anggriawan, 2025). Registration interoperability is thus a systemic governance issue rather than a merely technical one.

From the perspective of secured transactions law, disclosure of an object's encumbrance status is a prerequisite for certainty about creditors' positions. The principle of publicity enables interested parties to know that a security right exists, while the principle of priority determines the ranking of creditors when more than one security interest relates to the same asset or financing relationship (Lu & Liu, n.d.). Both principles are embedded in Indonesian law. Fiduciary guarantees must be registered and arise on the date they are recorded in the Fiduciary Register, and where the same object is subject to more than one fiduciary agreement, priority belongs to the party that registered first (Samosir et al., 2026). Mortgage rights must likewise be registered at the Land Office, and where the same object is encumbered by more than one mortgage right, their ranking is determined by the date of registration (Khan et al., 2025). Thus, overlapping guarantees are not solely an administrative issue of connectivity between registrations, but are directly related to the legal ability to provide predictability of the parties' positions (Ningsih, 2025). In a fragmented registration system, however, limited cross-system access to information can weaken the publicity function, particularly when credit is processed quickly through different digital channels. This may create uncertainty about creditors' positions, increase the risk of disputes when security rights are enforced, and complicate the resolution of non-performing loans. Overlapping security interests are therefore not solely an administrative connectivity issue; they directly affect the law's capacity to make the parties' positions predictable. Without reliable information about the status and ranking of collateral, both creditors and debtors are exposed, because neither can adequately anticipate the legal consequences of the encumbrance. Strengthening the collateral system in the digital credit ecosystem should therefore be framed not only as an administrative efficiency agenda but also as an instrument for maintaining legal certainty and balancing the parties' economic interests.

This study adopts a two-layer theoretical framework. The first layer is analytical and draws on Grant Gilmore's theory of security interests. Gilmore's treatise on security interests in personal property treats filing, notice, perfection, and priority as the core functions that allow a security interest to be asserted against third parties rather than merely against the debtor. In this framework, publication through registration matters because it allows third parties to know the existence of a collateral interest in an object, while a priority mechanism is needed to determine the order of creditors when multiple collateral interests intersect (Ningsih, 2025). This lens is appropriate because the problem examined here is not the validity of individual security agreements but the capacity of the registration system to give notice and to order competing interests. It also corresponds to the functional logic of notice-based registration systems such as the Australian Personal Property Securities Register (PPSR), which makes it a suitable common denominator for the comparative analysis. In this study, Gilmore's framework is used to diagnose where the separation between fiduciary registration at AHU and mortgage registration at ATR/BPN impairs publicity, perfection, and priority when collateral must be verified across systems. The second layer is evaluative and draws on Gustav Radbruch's

theory of the three basic values of law, namely justice (*Gerechtigkeit*), purposiveness or utility (*Zweckmäßigkeit*), and legal certainty (*Rechtssicherheit*), which may stand in tension with one another and must therefore be balanced. In this study, legal certainty is the main benchmark for assessing the collateral registration integration model, especially the system's ability to produce predictable and reliable information about the status and priority of collateral. At the same time, the fairness dimension ensures that the registration mechanism provides proportionate protection for parties with an interest in the collateral object, while the utility dimension assesses whether the system can effectively carry out the registration function in support of digital financing development (Wang, 2026). Gilmore's framework explains how a registration system should function, but it does not by itself provide criteria for weighing competing values, for example broader access to collateral information against the protection of debtors' personal data. Radbruch's framework supplies those criteria. Legal certainty serves as the primary benchmark and is understood as the system's ability to produce predictable and reliable information about the existence, status, and ranking of security rights. Justice concerns whether interested parties have proportionate and equal access to that information, while utility concerns whether the system effectively supports digital financing (Wang, 2026). The integration model formulated in this study is therefore intended not merely to unify technology or databases, but to build collateral governance that balances legal certainty, justice, and utility in the digital credit ecosystem.

Several previous studies have shown that the digitalisation of the financing system and the administration of guarantees pose increasingly complex legal issues, although each study addresses a different scope. The use of intangible assets, particularly copyright, as collateral continues to encounter several structural challenges, including the absence of valuation standards, limited integration between the Directorate General of Intellectual Property and the Directorate General of General Legal Administration, and inadequate technical protocols (Marsella et al., 2024). The study recommends integrating the registration system as part of the institutional reconstruction of fiduciary guarantees. Financial digitalisation, including cashless transactions, fintech, and the development of digital assets, improves efficiency but also introduces new challenges to financial security, particularly around regulatory frameworks and cybersecurity (Baddam et al., 2023). Digital financing still faces challenges related to supervision, dispute resolution, and protecting parties involved in fintech lending transactions (Suryoutomo et al., 2025).

Digitising mortgage rights requires stronger accessibility, transparency, implementation capacity, and supervisory mechanisms to ensure an effective and reliable electronic registration system (Nuryanti & Anggriawan, 2025). However, these studies have not placed fiduciaries and dependents in a single digital credit ecosystem to examine information fragmentation and potential conflicts of interest in collateral. The study on system integration in Marsella et al.'s research focuses on the relationship between intellectual property registration and fiduciary, while Nuryanti and Anggriawan focus on supervising the electronic dependent rights system; neither has tested interconnectedness across the guarantee regime. Similarly, Suryoutomo et al. focus on protection relations in fintech lending, while Baddam et al. discuss digital financial security more broadly and do not offer a specific institutional construction of the guarantee registration system in Indonesia. Thus, in the literature reviewed, no studies have been found that specifically analyse the overlapping interests of fiduciary guarantees and dependency rights in the digital credit ecosystem as issues related to the fragmentation of the registration system, then test it through comparison with the guarantee registration systems of other countries to formulate an integration model oriented towards legal certainty. This gap is the space for this research's contribution to connect guarantee law, digital registration governance, and legal certainty in a single analytical framework.

Departing from this gap, this research offers novelty in three dimensions. First, conceptually, this study frames the overlapping interests of guarantees not solely as a matter of the object's substance, but as a consequence of limitations in publication systems and registration governance that operate in fragmented ways across guarantee regimes. This position differs from Marsella et al. (2025), who identified the absence of valuation standards and the lack of integration between intellectual property registration and fiduciary registration as the main problem. This study expands on this problem by highlighting the limited information connectivity between fiduciary registration in AHU and dependency rights in BPN in the context of cross-system verification needs. Second, contextually, this study examines registration fragmentation in the digital credit ecosystem, where faster financing and the use of electronic systems increase the need for accurate, available, and traceable collateral information across regimes. Throughout the literature search, no studies specifically link the fragmentation of AHU-BPN registration to the risk of overlapping collateral interests in accelerating digital credit in Indonesia. Third, prescriptively, this study does not stop at identifying weaknesses in the national system, but formulates a model of collateral registration integration by using a legal comparison of the Australian Personal Property Securities Register (PPSR) as a benchmark to build a

more integrated, transparent, and supportive collateral publication system that supports certainty regarding the status and priority of rights. Thus, this research contributes by incorporating perspectives from guarantee law, digital registration governance, and legal comparison to develop an adaptable registration integration model in the context of Indonesian law.

Based on the problems, research gaps, and novelties described, this study aims to analyse the causes of the overlap between fiduciary guarantees and dependents in the digital credit ecosystem, especially related to fragmentation of the registration system and limited information connectivity between guarantee regimes. This study further analyses the implications of this overlap for creditors' legal certainty, especially in determining the status, position, and priority of guarantee rights and the exercise of executory rights. Based on the analysis, this study formulated a guarantee registration integration model that can strengthen information disclosure, increase interoperability between systems, and support legal certainty in Indonesia's digital credit ecosystem. The model was developed through a comparative approach, using the Australian Personal Property Securities Register (PPSR) as a reference to identify adaptable registration principles for national securities governance.

Method

This study is normative legal research with a prescriptive orientation. It aims not only to identify and analyse the legal problems arising from overlapping fiduciary and mortgage interests in the digital credit ecosystem, but also to formulate a legal construction that addresses fragmentation in the collateral registration system. The study does not collect empirical data on the frequency of overlapping registrations; its findings are doctrinal and prescriptive and are derived from the systematic analysis of legal materials. For Indonesia, primary legal materials comprise Law Number 42 of 1999 on Fiduciary Guarantees and Government Regulation Number 21 of 2015 on Procedures for Registering Fiduciary Guarantees and Fees for Making Fiduciary Guarantee Deeds; Law Number 4 of 1996 on Mortgage Rights over Land and Land-Related Objects and Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 5 of 2020 on Electronically Integrated Mortgage Rights Services; Law Number 27 of 2022 on Personal Data Protection; and Constitutional Court Decision Number 18/PUU-XVII/2019. For Australia, they comprise the Personal Property Securities Act 2009 (Cth) and the Personal Property Securities Regulations 2010. Secondary legal materials consist of treatises and journal articles on secured transactions, collateral registration, digital financing, and comparative law. The comparative analysis uses a functional method, which compares how different legal systems solve the same practical problem rather than comparing rules that merely share the same label (Zweigert & Kötz, 1998).

The problem that serves as the *tertium comparationis* is how a legal system informs prospective creditors of existing security interests and orders competing interests. Australia's PPSR was selected for three reasons. First, the Personal Property Securities Act 2009 (Cth) replaced a set of fragmented federal and state registries with a single national register, a reform that corresponds directly to the fragmentation problem examined in this study. Second, the PPSR is a notice-based register built around publicity, perfection, and priority, which aligns with the analytical framework adopted here. Third, its search functions, such as searches by grantor, serial number, and point in time, are documented in legislation and official guidance, which allows systematic comparison. The comparison also recognises three limits on transferability: Australia is a common law federation, whereas Indonesia is a civil law unitary state; the PPSR does not cover interests in land, whereas mortgage rights are land-based; and the two countries differ in administrative capacity and data infrastructure. The study therefore compares registration functions rather than transplanting rules. Because the study is doctrinal and prescriptive, the proposed model is a normative construct that is evaluated against legal principles and comparative evidence; it has not been validated empirically through expert panels, pilot implementation, or analysis of registration data. This limitation is discussed further at the end of the Results and Discussions section.

Results and Discussions

Overlapping Fiduciary Guarantees and Mortgage Rights in Digital Credit: Causes and Implications for Creditors' Legal Certainty

The analysis begins from the normative baseline that fiduciary guarantees and mortgage rights are distinct security institutions. Law Number 42 of 1999 defines fiduciary guarantees as security rights over movable objects, whether tangible or intangible, and over immovable objects, particularly buildings, that cannot be

encumbered with mortgage rights (Article 1(2)), whereas Law Number 4 of 1996 defines mortgage rights as security rights over land rights, with or without other objects that form a unity with the land (Article 1(1)). Each institution arises through registration in a different administrative system (Wijaya et al., 2026). A fiduciary guarantee arises on the date it is recorded in the Fiduciary Register managed by AHU (Law Number 42 of 1999, Article 14(3)), and its registration, amendment, deletion, and search have been digitised through the AHU Online service. A mortgage right arises through registration in the land administration system (Law Number 4 of 1996, Article 13; Fatikha et al., 2026), registration determines the ranking of mortgage creditors (Rianto et al., 2024), and the process is now conducted through the electronic mortgage rights service (HT-el). The two institutions were therefore built on different publicity regimes from the outset (Wijaya et al., 2026). This institutional difference is not in itself a legal weakness. As the following analysis shows, the problem arises when digital financing requires information about a debtor's collateral to be verified quickly and across both systems (Rianto et al., 2024). Thus, from the beginning, the two guarantee institutions were built through different publishing regimes: the fiduciary was in the general law administration, while the dependency was in the land administration. This institutional difference is not in itself a legal weakness. Problems arise as financing activities move toward a digital ecosystem, so information about the financing relationship with debtors must be verified faster and across systems.

Gilmore's analysis of security interests in personal property shows that modern security law must do more than provide a basis for creating a security interest. It must also enable third parties to learn of that interest and to determine its position against competing claims, which is why filing, notice, perfection, and priority form the core of the system (Henckels, 2024). Applied to the Indonesian context, this framework allows the study to test whether the separation of fiduciary and mortgage registration can still provide adequate legal notice and certainty about the status of rights when financing is processed digitally. The fundamental problem, therefore, does not lie in the existence of two registries as such, but in the absence of a cross-regime publicity and verification mechanism that allows creditors to obtain a complete picture of the security interests attached to a debtor's assets and financing relationships. This is why the institutional separation between AHU and land administration becomes legally relevant in the context of digital credit.

The shift from conventional financing to digital credit has changed the character of the credit verification process (Zhang et al., 2026). In conventional secured lending, the examination of prospective debtors and collateral generally passes through structured administrative stages that involve direct interaction between creditors, debtors, and public officials: fiduciary guarantees are created by notarial deed, and mortgage rights by a deed drawn up by a Land Deed Official (PPAT) (Torkian et al., 2026). Digital credit compresses many of these stages through data exchange and automated, system-based decision-making (Vieira et al., 2025). These changes improve efficiency, but they also raise the demands placed on the accuracy, completeness, and interconnectedness of the information used in the credit process.

For secured transactions law, this matters because the quality of a credit decision depends not only on the debtor's ability to repay but also on certainty about the existence and ranking of the collateral. The faster financing can be provided through digital platforms, the greater the need for a verification mechanism that supplies accurate information on collateral status before credit is granted. In other words, the acceleration of credit processes should not result in decisions that are unaccompanied by adequate due diligence on the legal status of the collateral (Dwivedi & Kamps, 2025).

These risks are even more complex when a debtor obtains financing facilities from more than one institution. Multiple access to digital credit can create multiple financing relationships that use different assets and interrelated collateral interests. In such a situation, the creditor needs not only information on whether a guarantee has been registered, but also the ability to trace the relationship among the debtor's identity, the object of the guarantee, the type of guarantee, and the creditor who acquired the right to the guarantee.

In this context, technical weaknesses in the electronic dependent rights system indicate that digitising registration is not yet synonymous with system interoperability. Digitising mortgage rights still requires stronger supervision, accessibility, transparency, and institutional governance, as sectoral registration systems do not automatically ensure an integrated collateral information ecosystem (Nuryanti & Anggriawan, 2025). Consequently, the challenges of digital credit extend beyond the electronic availability of AHU Online and HT-el to the effectiveness of cross-system collateral verification. A more fundamental legal question is whether both systems can produce verifiable information across regimes when creditors need certainty regarding the status and standing of collateral. If the answer is no, digitalisation can create a paradox: the credit-granting process gets faster, but the process of ensuring the legal security of the guarantee does not accelerate in comparable terms.

On this basis, the overlap of guarantees needs to be understood more precisely. In a fiduciary regime, more than one security interest may relate to a particular object, as long as it meets the requirements of applicable law (Salvia & Putri, 2024). Similarly, dependent rights can be charged more than once on the same object, with each dependent right rated under the relevant legal provisions. A different problem arises when a debtor has a financing portfolio involving fiduciary and dependents, while information on both regimes is not available in a single cross-system verification mechanism. Thus, the term “overlap” in this study does not mean that the same piece of land can be simultaneously burdened by fiduciary and dependent rights as two identical security rights, but rather describes potential conflicts of interest and information between creditors in financing relationships involving different assets and guarantee regimes. This distinction is important so that the analysis does not conflict with the principle of speciality and the character of the object of each guarantee institution (Suparidho et al., 2026).

From a publicity perspective, registration must provide notice of the existence of a guarantee interest so that the party seeking to enter into a transaction or provide credit can take existing rights into account. The AHU system provides a mechanism for searching fiduciary data, including by certificate numbers, serial and non-serial objects, fiduciaries, and fiduciaries. The problem is that publication in one registry does not automatically provide notice of interests recorded in another registry. When fiduciary information is in the AHU system, while information on the right of dependency is in the land administration system, the party conducting the credit assessment must verify it through a different system.

From a priorities perspective, the problem becomes increasingly complex. Creditor rating in principle presupposes the existence of a mechanism that can determine when a security right acquires a defensible position against the interests of another party. Gilmore's thinking on priorities shows the importance of rules that determine the position of competing securities interests. In the Indonesian context, each regime has its own priority rules, but this study focuses on the lack of a cross-registration mechanism that allows collateral conflicts of interest to be detected and assessed at the credit-granting stage.

A similar pattern of fragmented registration and limited cross-system integration has been identified in the context of copyright-based fiduciary guarantees (Marsella et al., 2024). The study identified unintegrated systems for administering intellectual property and fiduciary guarantees as a structural obstacle to using copyright as collateral. Although the collateral object differs, the findings show the same pattern: relevant rights or objects for financing are recorded in a single system, while the information required by the registration system or other financing processes remains disconnected. This fragmentation strengthens the argument that collateral registration in the digital economy is not solely sectoral, but also has a cross-system information governance dimension. The failure to connect the information ultimately affects the certainty of the creditor's position. Creditors who register a guarantee obtain legal status based on the guarantee regime they use. However, in a financing ecosystem involving multiple creditors and several types of collateral, such certainty depends not only on the validity of the registration in the sectoral registry, but also on the legal system's ability to demonstrate to other creditors that a collateral interest already exists.

These problems become more concrete when a loan becomes non-performing and more than one creditor seeks to protect its interest in the debtor's assets. Unclear information about existing security interests can trigger competing claims about creditors' positions, especially where a creditor was unable to identify all relevant interests during due diligence. In the fiduciary regime, enforcement must also take into account Constitutional Court Decision Number 18/PUU-XVII/2019, which held that, where there is no agreement on default and the debtor does not voluntarily surrender the collateral, enforcement must follow the same procedure as the execution of a final and binding court judgment.

Therefore, the implications of registration fragmentation extend beyond administrative issues. Fragmentation can reduce predictability for individual creditors, increase the likelihood of disputes during execution, and raise legal costs when non-performing loans must be resolved. From the perspective of guarantee law, this condition shows that the existence of electronic registration is not enough if each registration only functions as an administrative silos. The new registration function can work optimally if interested parties can adequately access the information needed to determine the existence and position of a security interest. Thus, registration fragmentation is a root problem that hinders the optimisation of publicity principles and prioritisation in the digital credit ecosystem. This issue forms the basis for testing whether cross-regime registration integration can be built as a governance model that is not only more administratively efficient, but also able to meet the goal of legal certainty. The next discussion identifies a registration integration model that can overcome these limitations through a comparative perspective on Australia's Personal Property Securities Register (PPSR) system.

An Integrated Collateral Registration Model for Legal Certainty: A Functional Comparison with Australia's PPSR

The reform of Australian securities law through the Personal Property Securities Act 2009 responds to the need for a more coherent national legal framework for security interests in personal property. PPSA 2009 also forms the basis for the Personal Property Securities Register (PPSR), which began operating on January 30, 2012. The PPSR replaces several registries previously scattered at the federal and state levels, including the ASIC Register of Company Charges and various registries of vehicles charged with collateral, so security-interest information in personal property can be held in a single national registry. As such, Australia's reforms focus not only on digitising registration but also on consolidating institutions and assurance information.

PPSR functions as a registry of noticeboards for the importance of collateral in personal property, not as a registry of ownership. The system can be accessed online for 24 hours and allows the public, including potential creditors, to search to find out whether a security interest has been registered for personal property. The search mechanism can be carried out based on the grantor's identity, a specific serial number, a registration number, or a certain time (point-in-time search). For prospective creditors, the ability to search by grantor matters because it lets them examine collateral interests registered against the debtor's personal property or in the debtor's possession before granting financing.

The key advantage of the PPSR lies in its relationship with the perfection and priority rules of the Personal Property Securities Act 2009 (Cth). Registration is the principal method of perfecting a security interest, and a perfected security interest generally has priority over an unperfected one. Where more than one perfected security interest exists in the same collateral, priority is generally determined by the order of their priority times, which for registered interests ordinarily correspond to the time of registration. The Act also recognises exceptions, most notably the special priority of purchase money security interests (PMSIs), so the Australian system relies not merely on a "first to register" principle but on a structured set of priority rules (Personal Property Securities Act 2009 (Huda, 2026)).

Table 1. Comparison of collateral registration in Indonesia and Australia

Dimension	Indonesia	Australia (PPSR)	Implication for Indonesia
Scope and architecture	Separate registries: fiduciary guarantees at AHU; mortgage rights at the Land Office (ATR/BPN)	A single national register for security interests in personal property; interests in land are excluded	A single access point is feasible at the level of information, while land remains under its own regime
Publicity and search	Searches are conducted within each registry; no cross-regime search is available	Online search by grantor, serial number, registration number, and point in time	Introduce a cross-registry search layer based on debtor and object identifiers
Perfection and effect of registration	Registration creates the security right in each regime (Law Number 42 of 1999, Article 14(3); Law Number 4 of 1996, Article 13)	Registration is the principal method of perfection	The effect of registration is already strong within each regime; the gap lies in visibility across regimes
Priority	Regime-specific rules (Law Number 42 of 1999, Article 28; Law Number 4 of 1996, Article 5); no cross-regime rule	Consolidated priority rules, including exceptions for PMSIs	Clarify ranking rules for object-boundary overlaps
Identification and data standards	Each registry uses its own identification format [authors to verify]	Standardised grantor and serial-number identifiers	Adopt common minimum data elements and identifiers, subject to personal data protection
Traceability	[authors to verify whether point-in-time searches or audit trails are available]	Point-in-time search is available	Provide audit trails and point-in-time verification
Legal basis and accountability	No specific legal basis for cross-registry data exchange was identified in this study	A single statute governs registration, search, and priority	Harmonised regulation on data exchange, access, and liability is required
Transferability	Civil law system; unitary state; sectoral authorities	Common law system; federation; a single national registrar	Transfer functions and design principles rather than rules

This shows that the strength of the PPSR lies not only in its use of technology, but in the convergence of registration, access to information, perfection, and priority rules within one legal framework. However, the PPSR covers only personal property and does not cover land or fixtures. Thus, the Australian model cannot be directly transferred to replace Indonesia's dependent rights system. Its comparative value lies in its information architecture principles: a single national search mechanism, uniform data standards, traceability of registration status, and unified priority rules.

The fundamental difference between Indonesia and Australia lies in the registration architecture. Indonesia maintains a guarantee regime based on the characteristics of its objects and legal institutions. Fiduciary guarantee information is recorded through the fiduciary administration at AHU, while the right of dependency is in the land administration. Through the PPSR, Australia consolidates various security interests in personal property into a single national registry. The consolidation does not mean all Australian guarantee laws are in one system, as interests in land remain outside the PPSR, but for personal property, the PPSR provides a single national access point to security-interest information.

From a publicity perspective, these differences have important consequences. In Indonesia, collateral information is searched through registration under the respective regimes. A creditor assessing a debtor's overall collateral position may need to examine different systems depending on the type of object and the collateral institution. In Australia, PPSR provides a single point of access for security interests over personal property, with searches by grantor, specific object, registration number, or specific time. The system improves interested parties' ability to obtain notice of collateral interests before making transactions or providing financing.

Differences are also seen in priority construction. In the Australian system, the PPSA provides consolidated priority rules, including the principle that perfected security interests generally outweigh unperfected security interests and that priority among several perfected interests is generally determined on a priority basis, with certain exceptions. Indonesia has priority rules in each guarantee regime, but this study finds a problem when information and its publication mechanism should be used to cross-check in the digital finance ecosystem. Thus, the difference between Indonesia and Australia is not solely a difference in registration technology, but a difference in the legal and information architecture that underpins the registration function.

From the perspective of preventing conflicts of interest in guarantees, PPSR also provides a means to identify the existence of security interests before transactions are made. The examination of the grantor is intended, among other things, to help prospective financiers find out whether there is a registered security interest in the relevant personal property. Thus, the registration system functions preventively by providing information before disputes arise, not just as proof after bad credit (Kusumawardani & Aminah, 2026).

The comparison shows that Indonesia's main problem is not the absence of electronic services. Indonesia has digitised fiduciary administration and dependency rights, but this digitalisation is evolving differently across institutional regimes. The key challenge is ensuring that information from each registry can be used effectively when creditors need a more comprehensive picture of the security interests relating to a debtor or its asset portfolio.

The first disadvantage is data fragmentation. The lack of a single national lookup point linking collateral information across different regimes means collateral status must be examined depending on the character of the object and the administrative system in which the collateral is recorded. In the context of digital credit, such fragmentation becomes increasingly significant because financing decisions can be made quickly and are based on electronic data processing.

The second weakness is limited interoperability. Digitised systems cannot necessarily exchange or consolidate information. Under such conditions, digitalisation improves efficiency within each system but has not yet produced ecosystem-level efficiency. Previous studies have highlighted the need for greater integration between intellectual property administration and fiduciary registration, as well as stronger supervision and governance within the Electronic Mortgage Rights system (Nuryanti & Anggriawan, 2025). The two studies reinforce the indication that integration and interoperability are recurring problems in the digitisation of assurance administration.

The third disadvantage is the risk of priority conflicts in cross-system contexts. Rules on the position of creditors are normatively available in each regime, but the problem arises at the initial identification stage: how the creditor obtains sufficient information to know the interests of the existing collateral before making

a financing decision. Thus, a good priority rule will not work optimally if the information system does not provide adequate notice for parties who want to enter into the transaction.

These issues show a fundamental difference between administrative digitalisation and digital governance integration. Digitalisation turns manual documents or processes into electronic ones, while integration requires data, standards, verification processes, and legal rules to work across institutions. It is in this context that the lessons learned from the Australian PPSR become relevant: not to eliminate the differences between the fiduciary regime and dependents in Indonesia, but to adopt the principles of a single point of search, data standardisation, registration traceability, and certainty of priorities in accordance with the needs of the national legal system.

Based on this analysis, this study proposes the National Guarantee Registration Integration Model as a framework that connects sectoral registrations without eliminating the legal character of each guarantee institution. This model differs from the idea of establishing a single guarantee law that completely replaces fiduciary and dependents. What is needed first is a layer of information integration and verification that lets data from individual registries remain managed by sectoral authorities, but can be traced through a single national search portal.

The first component integrates fiduciary data and dependency rights into one national search platform. The platform does not have to replace AHU or land systems; instead, it serves as an interoperability layer that connects information from both systems. With this model, the authorities retain their respective registration authority, but the parties who need information no longer conduct the checks completely separately.

The second component is a search based on the debtor's identity and the collateral object. For individual debtors, the NIK can be used as one of the identifiers connected to the registration data in accordance with data protection provisions. For legal entities or business entities, the identification mechanism must use the relevant entity's identity, while for collateral objects, an identity is required that allows the object to be accurately traced. The Australian model highlights the importance of grantor and serial number-based searches, while reminding us that search quality depends heavily on accurate identification of parties and objects.

The third component is data standardisation and verification protocols. Integration will not be effective if AHU and BPN use incompatible data structures, terminology, identification formats, or update mechanisms. Therefore, national standards are needed regarding the minimum elements of collateral data, encumbrance status, changes, deletions, creditor identities, debtor identities, and object identities. The system also needs to provide audit trails so that any changes to information can be traced by the time and authority that made them. From a legal certainty perspective, trail audits are important because they allow reconstruction of the state of registration at the time a credit decision is made.

The fourth component is the verification mechanism before granting credit. Every financial institution that provides credit based on an electronic system needs to be able to conduct cross-registration checks before disbursing the facility, if the object or profile of the debtor is relevant to the existing guarantee. These checks can produce simple statuses, such as "no relevant registration found", "there is an active registration", or "follow-up checks are required", without making the automated system the party that determines the substantive validity of a right. Thus, technology functions as an instrument of legal notice and risk screening, while authoritative legal mechanisms determine validity and legal standing.

The fifth component is regulatory harmonisation. Technical integration without a clear legal basis can create new problems related to authority, data access, responsibility for misinformation, and the legal consequences of system failures. Therefore, developing an integrated system must be accompanied by harmonising the Fiduciary Guarantee Law and the Law on Dependent Rights, as well as implementing regulations governing data exchange, access to registration, information updates, and institutional responsibility. In other words, the integration this research offers is regulatory-technical integration, not just the development of new applications.

The model was then tested using Gustav Radbruch's three legal values. First, *Rechtssicherheit* is achieved if interested parties can obtain consistent information about the status and timing of registration, so they can better predict the position and priority of rights. Second, *Gerechtigkeit* demands that the system provide creditors with an equal opportunity to know the existence of collateral interests and not create profits solely from the invisibility of data in other registries. Third, *Zweckmäßigkeit* requires the integration to support the practical goals of digital financing by reducing search costs, accelerating due diligence, and lowering dispute

risk without sacrificing legal certainty. Thus, the success of the model is not measured only by whether AHU and BPN can technically be "connected", but also by whether the connectivity results in information certainty, fairness of access to information, and usefulness for the financing process. At this point, the model offered in this study goes beyond the general recommendations on data integration in previous studies. This model articulates such integration into an institutional and technical architecture that can be tested against the legal principles of guarantee, as well as the values of legal certainty, fairness, and utility.

Conclusions

In response to the first research question, this study concludes that overlapping fiduciary and mortgage interests in Indonesia's digital credit ecosystem are caused primarily by the fragmentation of collateral registration rather than by defects in the substantive rules of either regime. Fiduciary guarantees and mortgage rights are registered in separate systems at AHU and ATR/BPN, each with its own internal publicity and priority rules, but no cross-regime mechanism allows a creditor to verify in a single step all security interests relevant to an object or to a debtor's financing relationships. Measured against Gilmore's framework, this fragmentation impairs the publicity and priority functions of registration in three situations: object-boundary overlap, debtor-portfolio overlap, and enforcement-stage overlap. In response to the second research question, this fragmentation reduces creditors' legal certainty because the existence, ranking, and enforceability of security rights cannot be reliably predicted at the time a credit decision is made. It increases the risk of competing claims and enforcement disputes and raises the cost of resolving non-performing loans. Evaluated through Radbruch's values, the current registration governance has not fully realised *Rechtssicherheit*, because information on collateral status and ranking is not predictable across regimes; *Gerechtigkeit*, because creditors do not have equal access to relevant information; or *Zweckmäßigkeit*, because collateral verification does not keep pace with digital financing.

To address this problem, this study developed a model for integrating national insurance registration that is not intended to erase the sectoral character of fiduciary and dependents, but to build a layer of interoperability and cross-registration search that connects AHU and BPN information. The model includes data standardisation, identification of debtors and collateral objects, verification protocols, and trail audits, drawing on registration architecture principles from the Australian Personal Property Securities Register (PPSR). Thus, integrating registration is a key prerequisite to strengthen the publication function, improve priority determination, and ultimately realise legal certainty in Indonesia's digital credit ecosystem. The model is a normative construct derived from doctrinal and comparative analysis and has not yet been empirically validated. Its implementation therefore requires further research, including analysis of court decisions and registry data on competing claims and validation through consultation with AHU, ATR/BPN, the Financial Services Authority, and lending institutions. Subject to these steps, integrating collateral registration across regimes is a key prerequisite for strengthening publicity, clarifying priority, and ultimately realising legal certainty in Indonesia's digital credit ecosystem.

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