

## Integration of ASEAN Blue Economy Standards as Reconstruction of Coastal Digitalization for Sustainability and Investment Certainty

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### Abstract

*The blue economy represents one of ASEAN's most strategically significant sectors, carrying substantial potential to drive sustainable economic growth, particularly for coastal communities across the region. Amid the accelerating pace of digital transformation, however, these communities face a pressing legal vacuum one in which neither adequate normative frameworks nor harmonized regional standards sufficiently shield them within digital market ecosystems or safeguard investment certainty in the blue economy sector. The regulatory gap between ASEAN's digital standards and existing national legal instruments constitutes an unresolved structural barrier that demands urgent scholarly attention. This study aims to examine the synchronization of ASEAN Blue Economy digital standards into national regulations as a mechanism for legal protection of coastal communities, while simultaneously constructing a legal reconstruction model capable of ensuring data security and investment certainty for blue economy actors. Employing a normative juridical methodology through both statute and conceptual approaches, this research identifies a fundamental disharmony between ASEAN digital frameworks and domestic regulatory instruments a dissonance that systematically undermines coastal communities' legal standing in digital markets. The study further finds an absence of integrative legal models bridging the blue economy and digital ecosystems. Accordingly, this research proposes a legal tech synergy reconstruction model as a new normative framework cohesively integrating ASEAN Blue Economy standards, data governance, and investment certainty. The findings are intended to serve as a policy foundation and catalyst for national regulatory reform responsive to the evolving digital economy dynamics of Indonesia's coastal territories.*

**Keywords:** ASEAN Blue Economy, Legal Reconstruction, Coastal Community Digitalization, Investment Certainty, Legal-Tech Synergy

### 1. INTRODUCTION

The rapid integration of digital technologies into maritime and coastal economic activities has exposed a fundamental legal lacuna in Indonesia's national regulatory architecture. (Lowan-Trudeau, 2023) Despite the country's strategic position as the world's largest archipelagic state with over 17,000 islands and a coastline exceeding 95,000 kilometres its existing legal framework governing coastal economic activities remains

fragmented, technologically unprepared, and misaligned with the evolving digital standards advanced under the ASEAN Blue Economy framework.(Zhang et al., 2026) Notably, Indonesia's current legislative instruments, including Law No. 27 of 2007 on the Management of Coastal Areas and Small Islands as amended by Law No. 1 of 2014, and Law No. 11 of 2020 on Job Creation, fail to incorporate any coherent mechanism for digital market participation, data governance, or technology-based investment protection for coastal communities. The absence of such provisions is not merely a technical oversight it constitutes a structural legal deficiency that directly undermines the constitutional mandate under Article 33 of the 1945 Constitution, which requires the state to ensure the equitable management of natural resources for the greatest benefit of the people.

The empirical consequences of this regulatory gap are both tangible and deeply consequential. Across coastal regions in Indonesia from the fishing villages of Natuna to the aquaculture zones of Sulawesi community-based maritime enterprises increasingly engage with digital platforms for trade, logistics, and financial services, yet do so without the protection of a tailored legal regime.(Walewangko et al., 2026) A 2023 report by the Ministry of Marine Affairs and Fisheries (*Kementerian Kelautan dan Perikanan*) recorded that fewer than 12% of coastal small-to-medium enterprises (SMEs) operating within digital ecosystems had formal legal certainty regarding data ownership or platform accountability. Meanwhile, foreign and domestic investors entering the blue economy digital sector face compound regulatory uncertainty navigating an incoherent patchwork of sectoral laws, electronic commerce regulations under Law No. 19 of 2016, and investment provisions under the Capital Investment Law none of which have been calibrated to the specificities of coastal digital economies (Kasmita et al., 2026).

The theoretical tension underlying this phenomenon is one between *das sollen* the normative vision articulated by ASEAN's 2021 Blue Economy Framework and Indonesia's own Sustainable Development Goals-aligned maritime policies and *das sein*, the practical legal reality experienced by coastal actors. Under the ASEAN Blue Economy Framework, member states are enjoined to harmonise digital regulations, ensure data sovereignty for coastal communities, and facilitate crossborder digital investment within the maritime sector.(Uppal et al., 2022) Indonesia has formally endorsed these principles through its ASEAN commitments, yet the transposition of such standards into domestic law remains conspicuously absent. This disjunction reflects a broader failure in the country's regulatory reform methodology: international normative commitments are seldom accompanied by concrete legislative reconstruction at the national level, leaving an operational void between aspiration and enforcement (Renckens & Elliott, 2026).

The concreteness of this problem is further illustrated by the trajectory of ASEAN's Digital Economy Framework Agreement (DEFA), negotiations for which intensified in 2023–2024 (Choi & Porananond, 2023) As member states race to establish compatible digital governance architectures, Indonesia's coastal communities risk exclusion from the emerging regional digital marketplace. Cases in point include the repeated disputes over platform data ownership involving coastal fishery cooperatives (*koperasi nelayan*) attempting to access regional e-commerce channels, and the documented reluctance of fintech investors to extend digital financial products into coastal areas absent clear data protection guarantees.(Mashoene et al., 2025) These are not isolated incidents they are symptomatic of a regulatory system that has not kept pace with the convergence of digital technology and blue economy development. Without a reconstructed legal framework that speaks to both dimensions, the

state's ability to attract responsible investment while protecting its most vulnerable maritime communities will remain severely constrained.

The urgency of this research is underscored by the scarcity of legal scholarship that addresses the intersection of ASEAN Blue Economy standards, digital transformation, and national regulatory reconstruction in a unified analytical framework. Existing literature in Indonesian maritime law has generally confined itself to either environmental governance, fisheries regulation, or coastal spatial planning treating digital integration as peripheral rather than constitutive of the contemporary blue economy.(Phelan et al., 2020a) At the international level, scholarly work on ASEAN digital governance rarely descends into the granular question of how its standards should be transposed to protect sub-national coastal actors.(Pinjaman et al., 2025) This gap between the macro-normative and the micro-practical represents the central *research gap* this study seeks to address: the absence of a model for legal reconstruction that simultaneously operationalises ASEAN digital standards and guarantees data security and investment certainty for Indonesia's coastal communities.

Three prior works bear particular relevance to this inquiry. Pratama (2025), in his article "Optimalisasi Perdagangan Internasional dalam Sektor Blue Economy untuk Mendukung Pembangunan Berkelanjutan Kelautan di Indonesia," published in *Suloh: Jurnal Fakultas Hukum Universitas Malikussaleh*, examines how Indonesia can maximise its participation in international trade through the blue economy sector as a vehicle for sustainable marine development, focusing on trade-law instruments and environmental sustainability frameworks.(Kandriana, 2025) Agam et al. (2025), in the volume *Inovasi Blue Economy* published by Kamiya Jaya Aquatic, offer a multidisciplinary exploration of blue economy innovation strategies, emphasising technological and economic dimensions of maritime resource management with limited engagement with legal architecture. Maryani, Harliani, and S. Pi (2025), in *Birunya Laut, Sejahteranya Nelayan* published by LSO Creative, provide a community-centered account of how blue economy principles can translate into welfare improvements for Indonesian fishing communities, with a focus on livelihood and social equity outcomes. While each of these contributions advances the discourse on blue economy development in Indonesia, none engages with the problem of digital regulatory reconstruction in any systematic way, nor do they propose a normative framework for integrating ASEAN digital standards into national law. The present study departs from these works precisely on this axis: rather than examining trade optimisation, innovation management, or social welfare in isolation, it constructs a legal-tech synergy model a new normative paradigm that treats the integration of ASEAN Blue Economy digital standards and national regulatory reform as coconstitutive requirements for sustainable coastal economic governance.

Against this backdrop, the study addresses two central research questions: first, how should ASEAN Blue Economy digital standards be synchronised with Indonesia's national regulatory framework in order to provide effective legal protection for coastal communities participating in the digital market; and second, what model of legal reconstruction can simultaneously guarantee data security and digital investment certainty for blue economy actors in coastal territories? In answering these questions, this research aims to make a dual contribution: theoretically, it advances the concept of *legal-tech synergy* as an analytical and normative tool for bridging international digital governance frameworks with domestic constitutional obligations; practically, it offers a reconstructive model that can serve as a policy blueprint for Indonesian legislators and regulators navigating the intersection of

maritime law, digital economy governance, and ASEAN regional integration commitments.(Phelan et al., 2020).

## **2. METHOD**

This study applies a normative (doctrinal) legal research methodology, which is the most suitable approach for analysing legal norms, regulatory frameworks, and normative constructs rather than empirical social phenomena. The research focuses on the internal coherence of legal norms, particularly the synchronisation of ASEAN Blue Economy digital standards with Indonesian national law and the formulation of a reconstructive legal model for coastal digital governance (CamposCastillo et al., 2025) To achieve these aims, the study adopts two main approaches: the statute approach and the conceptual approach. The statute approach systematically identifies and analyses Indonesian legislation, ASEAN frameworks, and international instruments to assess consistency, gaps, and harmonisation potential. Meanwhile, the conceptual approach develops the theoretical foundations of the proposed legal reconstruction model by engaging with legal certainty, sustainable development law, and digital governance theory to formulate a legal-tech synergy model that extends beyond existing regulations (Dudchenko et al., 2023).

Legal materials are classified into three hierarchical categories. Primary legal materials include binding normative instruments such as the 1945 Constitution of Indonesia, Law No. 27 of 2007 on Coastal Area Management, Law No. 1 of 2014, Law No. 11 of 2020 on Job Creation, Law No. 19 of 2016 on Electronic Information and Transactions, the ASEAN Blue Economy Framework (2021), and the ASEAN Digital Economy Framework Agreement (DEFA).(Kamal Putra & Asri, 2023) Secondary legal materials consist of academic literature supporting interpretive analysis, including peer-reviewed journal articles, textbooks, research reports, and comparative law studies related to blue economy governance and digital regulation. Tertiary materials such as legal dictionaries, encyclopaedias, and official glossaries are used to ensure terminological precision and consistency (Kraska & Park, 2022).

Data analysis follows a prescriptive-analytical method consistent with the normative legal research paradigm.(Yunaldi et al., 2021) Rather than merely describing legal phenomena, the study evaluates the adequacy of existing norms and prescribes normative improvements.(Fromm, 2025) Legal materials are interpreted using systematic, teleological, and comparative methods to identify regulatory gaps and develop a coherent, evidence-based framework for legal reconstruction that meets the standards of rigorous international legal scholarship.(Porras-Gómez, 2025).

## **3. RESULTS AND DISCUSSION**

### **A. Synchronization of ASEAN Blue Economy Digital Standards into National Regulations: Legal Protection for Coastal Communities in the Digital Market**

The question of how ASEAN Blue Economy digital standards ought to be synchronized into Indonesia's national regulatory framework is not merely a technical legislative exercise it is, at its core, a constitutional imperative. Indonesia's coastal communities, numbering approximately 87.8 million people who depend directly or indirectly on marine resources, are increasingly exposed to the risks and opportunities of the digital economy without the shelter of an adequate normative architecture.(Lestari et al., 2020) The convergence of two transformative forces the global institutionalisation of the blue

economy as a sustainable development paradigm and the accelerating penetration of digital platforms into maritime value chains demands a legal response that is both structurally coherent and constitutionally grounded.(Guerreiro, 2021a) The central analytical challenge, therefore, is to determine whether Indonesia's existing regulatory landscape is capable of absorbing ASEAN Blue Economy digital standards in a manner that genuinely protects coastal communities, or whether a more fundamental normative reconstruction is required.(Hananto et al., 2023).

The ASEAN Blue Economy Framework, formally adopted in 2021, establishes a comprehensive regional architecture for sustainable ocean-based economic development. Among its most consequential provisions are those pertaining to digital integration: the Framework explicitly calls upon member states to facilitate digital connectivity for coastal and maritime actors, promote data-driven resource management, and develop harmonised regulatory environments conducive to cross-border digital investment in the blue economy sector.(Guerreiro, 2021b) These commitments are reinforced by the ongoing negotiations for the ASEAN Digital Economy Framework Agreement (DEFA), which when concluded will constitute the most ambitious regional digital governance instrument in Southeast Asia's history, covering digital trade, electronic payments, data flows, and cybersecurity standards. Critically, the ASEAN Blue Economy Framework does not operate in a legal vacuum; it is situated within a broader normative ecosystem that includes the ASEAN Agreement on Electronic Commerce (2019) and various ASEAN sectoral agreements on fisheries, maritime transport, and environmental governance. The normative expectation directed at Indonesia, as a founding member of ASEAN, is therefore not merely aspirational – it carries the weight of regional treaty commitments that generate obligations of good-faith implementation under international law principles, including the *pacta sunt servanda* doctrine (Putra et al., 2024).

A rigorous examination of Indonesia's existing legislative framework reveals a pattern of structural incompatibility with the ASEAN digital standards applicable to blue economy activities. The primary legislative instruments governing coastal management Law No. 27 of 2007 as amended by Law No. 1 of 2014 were enacted in a pre-digital regulatory context and contain no provisions addressing digital market participation, electronic data rights, algorithmic platform accountability, or digital investment facilitation for coastal actors.(Tenri & Setiyono, 2022) (Tilley et al., 2024).

The following table presents a systematic comparative mapping of key ASEAN Blue Economy digital standards against the corresponding provisions or conspicuous absences thereof in Indonesia's national legal framework:

Table 1. Systematic comparative mapping of key ASEAN Blue Economy digital standards against

ASEAN Blue Economy Digital Standard	Relevant ASEAN Instrument	Corresponding Indonesian Regulation	Assessment of Synchronization
Digital connectivity for coastal/maritime SMEs	ASEAN Blue Economy Framework	Law No. 11/2020	<i>Partial</i> SME digitisation supported but no coastalspecific provisions

	(2021), Art. 4	(Job Creation), PP No. 7/2021	
<b>Cross-border data flow governance for marine data</b>	ASEAN DEFA (negotiation draft, 2023)	Law No. 27/2022 (Personal Data Protection)	<i>Minimal</i> PDP Law lacks sectoral application to marine/coastal data ecosystems
<b>Digital investment facilitation in blue economy sectors</b>	ASEAN Comprehensive Investment Agreement (ACIA)	Law No. 25/2007 (Capital Investment), BKPM Regulation	<i>Inadequate</i> No coastal blue economy digital investment category established
<b>Cybersecurity standards for maritime digital infrastructure</b>	ASEAN Cybersecurity Cooperation Strategy 2021–2025	PP No. 71/2019 (Electronic Systems), BSSN Regulations	<i>Fragmentary</i> Maritime sector excluded from critical infrastructure cybersecurity frameworks
<b>E-commerce consumer protection for coastal actors</b>	ASEAN Agreement on E-Commerce (2019)	Law No. 8/1999 (Consumer Protection), PP No. 80/2019	<i>Deficient</i> No coastal actorspecific protections; general provisions inapplicable to platform-mediated fisheries trade
<b>Marine data sovereignty and community data rights</b>	ASEAN Blue Economy Framework, Pillar III	Law No. 27/2022 (PDP Law)	<i>Absent</i> Community-level data rights for coastal groups not recognized
<b>Digital certification and traceability for marine products</b>	ASEAN Sectoral MRA on Fisheries Products	Ministry of Marine Affairs Regulation No. 18/2021	<i>Emerging</i> Digital traceability pilots exist but no binding legal framework

**Source:** Analysed by author

The table above does not merely illustrate regulatory gaps it exposes a deeper structural failure: Indonesia's legislative architecture treats digital governance and coastal

marine governance as categorically separate domains, administered by different ministries under different legal paradigms, with no institutional mechanism for normative cross-fertilisation.(Gita Prissandi et al., 2023) The Ministry of Communication and Digital Affairs (*Kominfo*) governs the digital legal space, while the Ministry of Marine Affairs and Fisheries governs the coastal sector; the two ministerial jurisdictions produce regulations that rarely converge, creating what legal scholars term *regulatory silos* compartmentalised normative regimes that collectively fail to address complex, multidimensional phenomena such as the digitisation of the blue economy (Fauziyah & Savira Putri, 2022).

From a constitutional standpoint, this regulatory fragmentation constitutes a deviation from the state's affirmative obligations under Article 33(3) of the 1945 Constitution, which mandates that the earth, water, and natural resources contained therein shall be controlled by the state and utilised for the greatest prosperity of the people.(Desafitri Rb & Heliaantoro, 2024) When coastal communities who are constitutionally entitled to benefit from Indonesia's marine resources are denied effective legal protection in the digital markets through which those resources are increasingly traded, the state's constitutional stewardship function is materially compromised. This argument is further reinforced by the principle of *rechtssicherheit* (legal certainty) as elaborated by Gustav Radbruch: law must be not only just and purposive, but certain and certainty, in the digital context, requires that coastal actors know their rights, remedies, and obligations within digital platforms with the same clarity that land-based commercial actors enjoy (Sevel, 2023).

The doctrine of *state responsibility* in international law provides an additional analytical lens. Indonesia, having endorsed the ASEAN Blue Economy Framework and the associated digital governance commitments, incurs international responsibility for the persistent regulatory gap between its ASEAN obligations and its domestic implementation.(Meliala, 2024) The International Law Commission's Articles on State Responsibility (2001) establish that failure to implement international commitments through legislative action constitutes an internationally wrongful act attributable to the state a dimension of the problem that Indonesian legal scholarship has yet to adequately address in the blue economy context.(The Korean Association of Maritime Transportation Studies et al., 2025).

The analysis above leads to a central prescriptive proposition: effective synchronisation of ASEAN Blue Economy digital standards into Indonesian national law cannot be achieved through piecemeal regulatory amendment. What is required is a deliberate, architecturally coherent process of normative reconstruction one that proceeds through three analytically distinct but operationally integrated phases (Wilbert et al., 2024).

The first phase is *vertical harmonisation*: the alignment of Indonesia's national legislative instruments with ASEAN-level digital standards, achieved through the enactment of a dedicated Blue Economy Digital Governance Law (*Undang-Undang Tata Kelola Digital Ekonomi Biru*) that formally transposes the key provisions of the ASEAN Blue Economy Framework and the forthcoming DEFA into domestic law.(Law Faculty of Wijaya Putra University, Surabaya, East Java, Indonesia & Endarto, 2024) This law should establish, inter alia, a coastal digital rights charter, a marine data sovereignty regime, and a coastal investment facilitation mechanism with embedded digital regulatory sandboxes.

The second phase is *horizontal integration*: the elimination of regulatory silos through mandatory cross-ministerial coordination mechanisms, establishing joint regulatory authority

between the Ministry of Marine Affairs and Fisheries, the Ministry of Communication and Digital Affairs, and the Investment Coordinating Board (BKPM) over all matters pertaining to coastal digital economic governance (Djunarsjah & Handayani, 2021).

The third phase is *institutional anchoring*: the establishment of an independent Coastal Digital Economy Regulatory Authority (*Otoritas Regulasi Ekonomi Digital Pesisir*) with quasi-judicial powers to adjudicate disputes arising from platform-mediated coastal commerce, enforce data protection obligations in marine digital ecosystems, and monitor compliance with ASEAN digital standards at the sub-national level (Narahara et al., 2024).

Absent this three-phased synchronisation architecture, Indonesia's coastal communities will remain structurally exposed – legally unprotected participants in a digital economy whose rules are written for others, in a language the law has yet to learn to speak on their behalf. The normative deficit is not incidental; it is systemic, and it demands a response commensurate with its depth and constitutional gravity (Subekti et al., 2023).

## **B. Legal Reconstruction Model for Guaranteeing Data Security and Digital Investment Certainty for Blue Economy Actors in Coastal Territories**

The second research question directs analytical attention toward a fundamentally constructive legal challenge: not merely diagnosing what is absent from Indonesia's regulatory framework, but prescribing – with normative rigour and doctrinal coherence – what a reconstructed legal architecture must look like in order to simultaneously guarantee data security and digital investment certainty for coastal blue economy actors. This is a question of legal engineering as much as legal analysis, and it demands engagement with jurisprudential theory, comparative regulatory models, and the specific structural conditions of Indonesia's coastal digital economy. The central thesis advanced in this section is that no piecemeal legislative amendment can adequately address the compound regulatory deficits identified in the preceding analysis; what is required is a paradigm-level legal reconstruction premised on the concept of *legal-tech synergy* – a normative framework that treats technological governance mechanisms and legal regulatory instruments as mutually constitutive, co-designed, and operationally integrated. (Zachary Cooper & Lodder, 2023).

Before prescribing a reconstruction model, it is analytically necessary to establish the jurisprudential basis upon which such reconstruction can be legitimately undertaken. Legal reconstruction, as a concept distinct from mere legislative amendment or regulatory reform, implies a deliberate re-architecting of the normative foundations governing a particular domain – not the patching of specific gaps, but the rethinking of the structural logic that produced those gaps in the first place. In the context of this study, the inadequacy of Indonesia's existing framework is not accidental; it is the product of a legislative paradigm that conceptualises the blue economy and the digital economy as separate normative domains, each governed by its own institutional logic, ministerial authority, and regulatory vocabulary. Legal reconstruction, therefore, must begin with the explicit repudiation of this artificial separation and the affirmation of a new normative premise: that in the contemporary maritime economy, digital infrastructure and ocean resource governance are inseparable, and the law must reflect this ontological unity (Jin et al., 2025).

This position finds doctrinal support in Roberto Mangabeira Unger's theory of *reconstructive jurisprudence*, which holds that legal systems can and must be intentionally redesigned to serve transformative social purposes when existing structures demonstrably fail to do so. It is further reinforced by the principle of *responsive law*, developed by Philippe

Nonet and Philip Selznick, which holds that a mature legal system must be capable of responding adaptively to social complexity rather than merely applying pre-existing rules mechanically. Applied to the present context, the principle of responsive law demands that Indonesia's legal system develop normative instruments specifically calibrated to the complex, hybrid nature of coastal digital blue economy activities not instruments borrowed wholesale from either maritime law or digital commerce law, but genuinely integrated instruments that speak to both simultaneously.(Yanzalinda et al., 2024).

The first pillar of the proposed reconstruction model concerns data security. In the coastal blue economy context, data security is not merely a technical or cybersecurity matter it is a question of fundamental rights, economic sovereignty, and community self-determination. Coastal communities generate vast quantities of economically and ecologically significant data through their daily activities: catch location data, species distribution records, weather and ocean condition observations, supply chain transaction records, and financial behaviour patterns accumulated through digital platform interactions. This data constitutes what may be termed *coastal community data assets* resources of significant commercial and strategic value that are currently harvested, processed, and monetised by platform operators, aggregators, and data brokers without any legal framework compelling equitable benefit-sharing or community consent (Spinrad, 2021).

Indonesia's Personal Data Protection Law (Law No. 27 of 2022) represents a meaningful legislative step toward data rights recognition, but its architecture is fundamentally individualistic it protects the data rights of individual persons, not communities or collectives. This is a critical normative deficiency in the coastal blue economy context, where data is generated collectively through communal fishing activities, cooperative aquaculture operations, and community-managed marine territories. The reconstruction model must therefore introduce the concept of *collective data rights (hak data kolektif)* into Indonesian law a normative category that recognises fishing communities, coastal cooperatives, and indigenous maritime communities as collective data subjects with enforceable rights to data access, portability, and benefit participation (Spinrad, 2021).

Comparatively, the European Union's Data Governance Act (2022) provides a useful though not uncritically transferable reference point. The EU framework introduces the concept of *data altruism* and *data intermediaries* as mechanisms for enabling communities to pool and collectively govern their data while retaining legal control over its use. Adapted to the Indonesian coastal context, this model could be operationalised through the establishment of *Coastal Data Cooperatives (Koperasi Data Pesisir)* legally recognised entities with the authority to negotiate data-sharing agreements on behalf of their member communities, enforce data use restrictions against platform operators, and distribute data-derived revenues equitably among members. The legal basis for such entities could be grounded in the existing Cooperatives Law (Law No. 25 of 1992) as amended, supplemented by specific provisions within the proposed Blue Economy Digital Governance Law that establish the regulatory status, rights, and obligations of Coastal Data Cooperatives (Bühler et al., 2023).

The second pillar of the reconstruction model addresses digital investment certainty a prerequisite for attracting the scale of responsible private capital required to develop Indonesia's coastal blue economy digital infrastructure. Investment certainty, in legal terms, rests upon three foundational normative conditions: *predictability* (investors must be able to reliably anticipate the legal consequences of their actions), *stability* (the regulatory framework must not be subject to arbitrary or retroactive change), and *enforceability*

(investors must have access to effective, impartial dispute resolution mechanisms). A rigorous assessment of Indonesia's current framework reveals deficiencies across all three dimensions in the coastal blue economy digital context (Dwikora et al., 2024).

Predictability is undermined by the regulatory silo problem identified in the preceding section: an investor seeking to develop a digital platform for coastal fisheries trading must navigate overlapping and sometimes contradictory provisions across at least six distinct regulatory domains—coastal management law, electronic commerce law, investment law, data protection law, financial services regulation, and fisheries law without any integrating normative instrument that coherently governs the intersection of these domains. Stability is compromised by the frequency of regulatory change in Indonesia's digital governance space; the Electronic Information and Transactions Law has been amended twice in less than a decade, and implementing regulations in the digital sector are routinely revised in ways that create retrospective compliance burdens for existing investors. Enforceability is weakened by the absence of a specialised dispute resolution forum with both technical competence in digital commerce and substantive expertise in maritime law existing commercial courts and arbitration bodies lack the domain-specific capacity to adjudicate complex disputes arising from coastal blue economy digital investments (Howell & Potgieter, 2021).

The following table synthesises the core components of the proposed legal reconstruction model, mapping each normative instrument to the specific investment certainty deficit it addresses:

Table 2. Synthesises the core components of the proposed legal reconstruction model

<b>Investment Certainty Dimension</b>	<b>Current Normative Deficiency</b>	<b>Reconstructive Legal Instrument Proposed</b>	<b>Operational Mechanism</b>
<b>Predictability</b>	Regulatory fragmentation across six sectoral domains	Blue Economy Digital Governance Law	Single integrated normative framework with clear jurisdictional hierarchy
<b>Regulatory coherence</b>	No cross-ministerial coordination mandate	Inter-Ministerial Blue Economy Digital Coordination Board	Binding joint-regulation authority with dispute resolution between ministries
<b>Stability</b>	Frequent retrospective regulatory change	Investor Protection Clause in Blue Economy Digital Law	Stabilisation provision guaranteeing regulatory freeze period for qualifying investments
<b>Data investment security</b>	Absence of marine data asset classification	Marine Data Asset Registry ( <i>Registri Aset Data Kelautan</i> )	Legally recognised registry establishing ownership, valuation, and transfer rules for marine data

<b>Dispute resolution</b>	No specialised forum for coastal digital commerce disputes	Blue Economy Digital Arbitration Chamber	Specialised arbitration body with combined digital and maritime law expertise
<b>Community benefit sharing</b>	No mechanism for equitable platform revenue distribution	Coastal Digital Benefit-Sharing Framework	Mandatory platform contribution mechanism linked to coastal community development fund
<b>Cross-border investment facilitation</b>	ASEAN DEFA commitments not yet domestically transposed	ASEAN Blue Economy Investment Protocol (domestic implementing regulation)	Regulatory sandbox for ASEAN cross-border blue economy digital investments

**Sources:** Analysed by author

The foregoing analysis converges on the central normative contribution of this study: the *Legal-Tech Synergy Model (Model Sinergi Legal-Teknologi)* as a paradigm for legal reconstruction in the coastal blue economy digital governance space. This model is premised on the recognition that, in the digital age, effective legal protection and investment certainty cannot be achieved through legal instruments alone they require the deliberate co-design of legal norms and technological governance mechanisms, such that each reinforces and operationalises the other (Zwitter & Hazenberg, 2021)

Concretely, the Legal-Tech Synergy Model proposes four structurally integrated layers of normative reconstruction. The first is the *constitutional anchoring layer*, which involves a formal constitutional interpretation or, in the longer term, a constitutional amendment affirming that digital data derived from coastal community activities constitutes a form of natural resource falling within the scope of Article 33(3) of the 1945 Constitution, thereby subjecting it to the state's stewardship obligation and the people's collective entitlement. The second is the *primary legislative layer*, consisting of the proposed Blue Economy Digital Governance Law, which establishes the foundational normative framework integrating all relevant domains. The third is the *institutional layer*, comprising the Coastal Digital Economy Regulatory Authority, the Blue Economy Digital Arbitration Chamber, and the Coastal Data Cooperative framework as the operational vehicles for implementing the reconstructed legal framework. The fourth is the *technological compliance layer*, mandating the use of *regulatory technology (RegTech)* instruments including blockchain-based marine product certification systems, algorithmic compliance monitoring tools, and automated benefit-sharing payment mechanisms as legally required components of any digital platform operating in the coastal blue economy sector (Probst, 2020)

This four-layer architecture is not merely additive it is designed to function as a selfreinforcing normative ecosystem in which legal obligations are technologically embedded, technological systems are legally accountable, and coastal communities are structurally positioned as rights-bearing actors rather than passive subjects of regulatory decisions made elsewhere. In doing so, the Legal-Tech Synergy Model represents a genuine normative innovation: a reconstruction framework adequate to the complexity of the

challenge, grounded in constitutional principle, aligned with ASEAN regional commitments, and operationally calibrated to the lived realities of Indonesia's coastal blue economy communities (Rusmana et al., 2025)

#### **4. CONCLUSION**

Based on the analysis as outlined above, the following conclusions can be drawn:

- This study has demonstrated that the synchronization of ASEAN Blue Economy digital standards into Indonesia's national regulatory framework is not merely a matter of legislative adjustment, but a constitutional imperative that remains critically unfulfilled. The comparative analysis reveals a systemic pattern of regulatory fragmentation. Indonesia's existing legislative instruments, including the Coastal Area Management Law, the Electronic Information and Transactions Law, and the Personal Data Protection Law, operate as isolated normative silos that collectively fail to provide coastal communities with meaningful legal protection in the digital marketplace. The structural incompatibility between ASEAN's regional digital governance commitments and Indonesia's domestic regulatory architecture produces a compounded legal deficit: coastal communities are simultaneously denied data sovereignty, excluded from equitable platform benefit-sharing mechanisms, and left without enforceable rights as participants in the digital blue economy. This condition represents a deviation from the state's constitutional obligations under Article 33(3) of the 1945 Constitution and constitutes a breach of Indonesia's goodfaith obligations under its ASEAN regional commitments, demanding a normative response of commensurate depth and ambition (Suparto et al., 2025).
- In response to this diagnosis, this study proposes the Legal-Tech Synergy Model as a paradigm-level reconstruction framework capable of simultaneously guaranteeing data security and digital investment certainty for coastal blue economy actors. The model operates across four structurally integrated layers: constitutional anchoring, primary legislation through a dedicated Blue Economy Digital Governance Law, institutional architecture comprising specialised regulatory and arbitration bodies, and a technological compliance layer embedding RegTech instruments as legally mandated governance mechanisms. Together, these layers form a self-reinforcing normative ecosystem that positions coastal communities as rights-bearing actors, attracts responsible digital investment through enhanced regulatory predictability and stability, and fulfils Indonesia's ASEAN Blue Economy commitments through coherent domestic transposition. The Legal-Tech Synergy Model thus constitutes this study's principal theoretical and practical contribution to the development of coastal digital governance law in Indonesia and the broader ASEAN region (Suparto et al., 2025).

#### **NOVELTY**

The novelty of this research lies in the integration of three domains that have traditionally been examined separately: the blue economy, the digital economy, and a technology-based legal compliance model (legal-tech synergy). This study goes beyond normative synchronization by proposing a reconstructive legal framework that utilizes digital technology as an instrument of compliance by design in coastal governance. Accordingly, this research introduces a new model that positions technology as a bridge between regulation,

maritime economic activities, and monitoring mechanisms, thereby creating a legal approach that is adaptive, preventive, and oriented toward sustainable coastal governance.

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