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Abstract

Objective: This research shall Evaluate the systemic viability of Online Dispute Resolution (ODR) and decentralized justice protocols as replacements for the traditional and fragmented banking chargeback mechanism in the cross-border e-commerce transactions.

Methodology: A comparative legal and technical analysis through the regulatory frameworks of the United States (Regulation Z), the European Union (Digital Services Act) and India (RBI ODR mandates) against emerging private ODR systems.This Paper specifically addresses proprietary banking collaboration tools (Verifi, Ethoca) alongside blockchain-based arbitration protocols (Kleros, Boson) to assess their efficiency, cost and enforceability in cross-border disputes.

Arguments: The paper substantiates that the chargeback architected for analog fraud has become a prohibitively expensive barrier to global digital trade. It also put forwards the argument that banking sector's attempt to internalize ADR through tools like Rapid Dispute Resolution (RDR) is faltering as evidenced by the 2025 Visa VAMP rule changes which penalize merchants even for Auto Resolved disputes. Consequently, a transparent, jurisdiction-Neutral *lex cryptographia* (Coded lawor self-executing Law) is required to mitigate the friendly fraud epidemic that is presently supported by banking rails

Findings: The paper observes that while statutory consumer protections currently prevent ADR from fully replacing chargebacks and a convergence toward a Tiered Justice system is emerging. The registration or certification of independent bodies like Appeals Centre Europe under the EU Digital Services Act and the rise of smart contract escrow models signal a future

where code driven ODR that resolves High volume disputes placing banking intervention to a final appellate role.

Keywords: Cross-Border E-Commerce, Online Dispute Resolution, Chargebacks, Decentralized Justice, Digital Services Act.

Cross-Border Chargeback Conflicts: Can ADR Replace Fragmented Banking Dispute Mechanisms?

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Introduction: The Divergence of Law and Technology

The global digital economy, which surpassed $5 trillion in transaction volume in 2024 operates on a financial dispute resolution infrastructure that was architected in the analog era of the 1970s. The "chargeback" originally conceived as a consumer protection mechanism against mail order fraud and physical credit card theft has mutated into a complex, fragmented and prohibitively expensive system for the modern age of cross-border e-commerce.[3] As digital trade transcends national borders, the friction between disparate banking regulations such as the United States' Regulation Z, the European Union's PSD2 and Digital Services Act (DSA) and India's Reserve Bank circulars creates a compliance minefield for merchants and a disjointed experience for consumers.

What is often framed as a matter of operational inefficiency is in reality a deeper structural problem. It stems from the tension between the inherently transnational character of internet-based transactions and the territorially confined scope of financial consumer protection law. A single purchase may connect a consumer located in Europe, a merchant operating in South Asia and a payment instrument governed by U.S. banking regulation. Despite this convergence of legal systems, disputes arising from such transactions are typically resolved through the chargeback mechanism. This process, while administratively convenient still sidesteps the substantive analysis normally associated with contract law and replaces it with a simplified all or nothing reversal of funds.

This paper discusses whether Alternative Dispute Resolution (ADR) particularly in its online form can realistically displace dispute resolution systems controlled by banks and card networks. It finds that financial institutions are already attempting to absorb certain ADR efficiencies through proprietary or pre-dispute coordination tools such as Verifi and Ethoca, thereby streamlining disputes without altering the underlying institutional framework. At the same time, a more decentralized strand of Online Dispute Resolution is emerging and driven

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[3] Federal Reserve Bank of Philadelphia, Consumer Protection in the Credit Card Market, Discussion Paper (2004).

by blockchain based initiatives and regulatory developments including the European Union's Digital Services Act, which together point toward the early formation of a transnational technology mediated adjudicatory layer sometimes described as *lex cryptographia*. Although unresolved questions of enforceability, the continued force of mandatory consumer protection rules and risk of parallel dispute proceedings significantly limit the capacity of these systems to function as a full substitute for existing banking mechanisms.

I. The Structural Crisis of Global Payments.

The fundamental architecture of Cross-border payments relies on a correspondent banking network and card scheme infrastructure never intended to handle high volume, low value consumer disputes with the granularity required by modern commerce. The friction inherent in this system is a crisis of governance, jurisdiction and incompatible regulatory philosophies.

A. The Fragmentation of Wholesale and Retail Payments

In the past, banks have enjoyed a monopolistic dominance over the payment landscape. However, this dominance is eroding in the cross-border segment due to the inherent inefficiencies of the correspondent banking model. A single cross-border transaction often hops through multiple intermediaries such as gateways, processors, correspondent banks and networks while each applying its own compliance checks and data mapping protocols.[4]

This fragmentation creates a profound inefficiency when a dispute arises. In a domestic setting the issuer and acquirer operate under a unified legal framework. In cross-border e-commerce while a dispute involves navigating the intersection of the cardholder's local consumer protection laws (Eg: US Federal Law), the merchant's local contract laws (Eg: UK Common Law) and the supranational operating regulations of card networks like Visa and Mastercard. The Bank of England has observed that these uneven international rules force payments to be checked repeatedly increasing the latency and cost of resolving even simple errors.[5]

B. The Regulatory Divergence: A Tri-Polar World

The complexity of Cross-border disputes is driven by the incompatibility of major

[4] Bank of England, Cross-border payments, https://www.bankofengland.co.uk/payment-and-settlement/cross-border-payments (last visited Dec. 25, 2025)
[5] Id

regulatory regimes. A merchant selling globally must navigate three distinct regulatory poles: the United States, the European Union and India.

1. The United States: Regulation Z and the Presumption of Guilt

In the United States, the Truth in Lending Act (TILA) and Regulation Z provide the bedrock of consumer disputing rights.[6] These regulations were designed to empower consumers against large financial institutions, granting them the right to withhold payment for 'property or services not accepted... or not delivered as agreed'[7]

Importantly, the regulatory burden for investigation falls heavily on the issuer. Regulation E and Z mandate "prompt investigation" of errors often requiring provisional credit to be issued to the consumer within 10 days.[8] If a financial institution determines that an error occurred then they must correct it within one business day. This creates a regulatory incentive for issuers to "shoot first and ask questions later" processing a chargeback immediately to comply with federal timelines rather than engaging in a protracted investigation with a foreign merchant. The merchant response or representation phase is effectively a "guilty until proven innocent"l trial where the merchant must prove delivery against a statutory presumption of consumer veracity.[9]

2. The European Union: PSD2 and the Digital Services Act

Europe has adopted a bifurcated approach. The Second Payment Services Directive (PSD2) focuses heavily on security through Strong Customer Authentication (SCA).[10] By mandating two-factor authentication for electronic payments, PSD2 theoretically reduces the volume of "unauthorized transaction" chargebacks as the liability shifts to the issuer if they fail to enforce SCA.

Nevertheless, the EU is simultaneously building a parallel dispute resolution infrastructure through the Digital Services Act (DSA). Article 21 of the DSA constitutes a paradigm shift mandating that online platforms must allow users to select certified out of court dispute settlement bodies to resolve disputes regarding content moderation

[6] Truth in Lending Act, 15 U.S.C. § 1601 et seq. (1968); Regulation Z, 12 C.F.R. § 1026 (2024)
[7] 15 U.S.C. § 1666(a)(3)(B).
[8] 12 C.F.R. § 1026.13.
[9] Monica Eaton-Cardone, The True Cost of Chargebacks, Chargebacks911 (2023)
[10] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, 2015 O.J. (L 337) 35.

and account suspensions.[11] Unlike the US model which relies on the financial rail, the EU is attempting to build a certified adjudication infrastructure independent of the payment flow. These certified bodies, such as the newly certified *Appeals Centre Europe* in Ireland that are mandated to be impartial and independent of the platforms.[12]

3. India: The RBI's Protective Isolationism

India represents a third pole of strict regulatory control. The Reserve Bank of India (RBI) has implemented stringent rules for recurring payments requiring Additional Factor of Authentication (AFA) for recurring transactions above ₹15,000 and mandating that cardholders must be able to revoke mandates easily.[13]

Furthermore, the RBI has mandated the introduction of Online Dispute Resolution (ODR) systems for authorized Payment System Operators (PSOs) specifically for failed transactions.[14] The RBI's vision is for a Technology-driven, rule-based, customer-friendly and transparent dispute redressal system with minimal manual intervention. This indicates a state-level desire to automate disputes but the strict localization and repatriation rules for Cross-border Payment Aggregators (PA-CB) add friction for international merchants.[15]

C. The "Friendly Fraud" Epidemic

The structural weakness of these fragmented systems is exploited by friendly fraud (first party misuse). European Central Bank research highlights that while only 11% of EU transactions are Cross-border, they account for a staggering 63% of credit card fraud losses.[16] The anonymity and distance of Cross-border commerce combined with the presumption of consumer innocence in regulations like Reg Z have weaponized the chargeback process against merchants. Fraudsters know that filing a dispute is often easier than navigating a merchant's return policy especially across language barriers.

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[11] Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market for Digital Services and amending Directive 2000/31/EC, art. 21, 2022 O.J. (L 277) 1.

[12] Appeals Centre Europe, https://appeals-centre.eu (last visited Dec. 25, 2025)

[13] Reserve Bank of India, Processing of e-mandate on cards for recurring transactions, CO.DPSS.POLC.No.S-518/02-14-003/2020-21 (Dec. 4, 2020).

[14] Reserve Bank of India, Online Dispute Resolution (ODR) System for Digital Payments, DPSS.CO.PD No.116/02.12.004/2020-21 (Aug. 6, 2020).

[15] Reserve Bank of India, Regulation of Payment Aggregator – Cross-border (PA-CB), CO.DPSS.POLC.No.S-786/02-14-008/2023-24 (Oct. 31, 2023)

[16] European Central Bank, Report on Card Fraud in 2021 (2023).

II. The Economics of Discord: The True Cost of the Banking Dispute Mechanism

The growing interest in ADR as a potential substitute is best understood against the backdrop of the significant economic inefficiencies embedded in the prevailing banking dispute model. The financial impact of a chargeback is not limited to the reversal of the transaction amount but operates more broadly as a systemic cost imposed across the E-commerce ecosystem distorting incentives and increasing transactional friction for all participants.

A. The Anatomy of Financial Loss

When a chargeback is successfully processed against a merchant the financial impact is multifaceted and compounding:

1. Chargeback Fees: Acquiring banks charge a non-refundable administrative fee for processing the dispute. These fees typically range from $15 to $100 per instance depending on the merchant's risk profile.[17] Consequently, this fee is levied regardless of whether the merchant wins or loses the dispute.
2. Lost Goods (The "Double Hit"): In item not received cases the merchant has typically already shipped the product. Due to the complexities of international logistics, it is rarely cost effective to retrieve the item where the merchant loses the inventory cost entirely.[18]
3. Operational Overhead: The labour cost of fighting a dispute gathering compelling evidence (tracking numbers or IP logs), drafting representment letters and navigating the acquirer's portal is significant. Estimates suggest that when factoring in labour and opportunity costs, the total cost of a chargeback can be more than double the original transaction value.[19]

B. The Penalty Regimes: VDMP and ECP

Beyond the direct costs of individual disputes, the card networks subject merchants to

[17] Stripe, Dispute Fees, https://stripe.com/docs/disputes/fees (last visited Dec. 25, 2025).
[18] Signifyd, The State of Commerce Report 2024 (2024)
[19] LexisNexis Risk Solutions, True Cost of Fraud Study: Ecommerce and Retail Report (2023).

stringent monitoring regimes that trigger escalating penalties once specified dispute thresholds are exceeded effectively incentivizing dispute suppression over revenue recovery.

- Visa Dispute Monitoring Program (VDMP): The standard threshold is a 0.9% dispute to sales ratio. Exceeding this can lead to monthly fines starting at $50 per dispute and escalating to $25,000 review fees.[20]
- Mastercard Excessive Chargeback Program (ECP): With a threshold of 1.5% merchants can face fines up to $200,000 per month in the High Excessive category.[21]

The data indicates a structural bias: the banking mechanism penalizes merchants not just for confirmed fraud but for disputes generally. A merchant offering bona fide goods or services may nevertheless be enrolled in programs such as the Visa Dispute Monitoring Program solely on the basis of claim volume including claims arising from coordinated friendly fraud without regard to the substantive merit of the underlying disputes.

C. The "Merchant's Dilemma" and the Subsidy of Fraud

The high cost of fighting disputes creates a perverse incentive structure known as the "Merchant's Dilemma." For low value transactions (Eg: under $25) the math is punishing. If a merchant receives a dispute for a $20 item, then they face a $15 dispute fee plus at least $20 in labour costs to fight it. Therefore, merchants are economically rational to accept liability for invalid claims rather than engage the banking dispute mechanism. This cost of doing business effectively subsidizes friendly fraud teaching consumers that filing a dispute is a guaranteed way to get free products.[22]

III. The Banking Sector’s Response: "Internalized ADR"

Recognizing that the full arbitration cycle is too slow and expensive, the banking sector and card networks have aggressively introduced "pre-dispute" layers. These mechanisms attempt to mimic the speed of ADR while remaining within the proprietary banking infrastructure.

A. Collaboration Networks: Verifi and Ethoca

The two dominant players in this space, Verifi (acquired by Visa) and Ethoca (acquired

[20] Visa, Visa Core Rules and Visa Product and Service Rules § 11.1 (Apr. 2024).
[21] Mastercard, Chargeback Guide § 2.2 (May 2025).
[22] See generally Midigator, The Year in Chargebacks (2024).

by Mastercard) have built networks that allow issuers and merchants to "talk" before a formal chargeback is filed.

Ethoca Alerts: When a cardholder calls their bank to dispute a charge, Consequently this fee is levied Ethoca intercepts this signal and notifies the merchant via an API. The merchant has a short window (typically 24 to 72 hours) to issue a refund voluntarily.[23] This prevents the chargeback from being recorded against their ratio but acts essentially as a "forced refund" mechanism rather than adjudication.

Verifi Rapid Dispute Resolution (RDR): This is the most significant evolution towards automated resolution. RDR allows merchants to set rules (Eg: "Auto refund all disputes under $50") to automatically resolve claims.[24] If a dispute meets the criteria Visa automatically debits the merchant and credits the cardholder without generating a chargeback fee.

B. The "Compelling Evidence 3.0" Shift

Introduced recently, Visa's Compelling Evidence 3.0 (CE 3.0) rule represents a shift toward evidentiary based resolution. It allows merchants to share historical data of previous undisputed transactions with the same cardholder. If the merchant can prove the user has a history of valid purchases (using matching Device IDs, IP addresses or shipping addresses) then the issuer is blocked from filing a fraud dispute.[25] This is a rare instance of the system favouring the merchant's data over the consumer's claim effectively acting as an automated summary judgment.

C. The 2025 VAMP Rule Change

The landscape is shifting further in 2025. Previously disputes resolved via RDR did not count heavily against a merchant's monitoring metrics. However, starting 1st April 2025 Visa is adjusting the Visa Acquirer Monitoring Program (VAMP) rules.

Fraud alerts (TC40s) resolved through RDR will now count towards the VAMP ratio.[26] This means that while RDR saves the merchant the fee, it no longer hides the fraud

[23] Ethoca, Ethoca Alerts: Stopping Fraud and Chargebacks, https://www.ethoca.com/products/alerts (last visited Dec. 25, 2025).
[24] Verifi, Rapid Dispute Resolution (RDR), https://www.verifi.com/rdr (last visited Dec. 25, 2025).
[25] Visa, Compelling Evidence 3.0 Support Guide (2023).
[26] Ravelin, Visa VAMP Changes: What Merchants Need to Know, Ravelin Blog (2025), https://www.ravelin.com/blog/visa-vamp-changes-chargeback-disputes.

signal from the network. This strategic shift forces merchants to focus on preventing fraud at checkout rather than just cleaning it up efficiently post transaction.

IV. The Legal Architecture of True ADR and ODR

Parallel to the banking sector's internal optimization, the international legal bodies have been constructing a framework for true Online Dispute Resolution (ODR) that operates outside the banking ledger.

A. The UNCITRAL Framework

The United Nations Commission on International Trade Law (UNCITRAL) recognized early on that traditional judicial mechanisms are inadequate for Cross-border E-commerce disputes. The cost of suing a merchant in a foreign country for a $50 item is prohibitive. To address this UNCITRAL has developed the Technical Notes on Online Dispute Resolution (2016).[27]

The framework is calibrated for Cross-border disputes arising from low value transactions particularly where the logistical and cost barriers of physical attendance render traditional adjudicatory processes impracticable. It envisages a sequenced dispute resolution architecture consisting of mandatory negotiation followed by facilitated settlement and culminating, if necessary, in adjudication. Although formally non-binding the framework has exerted normative influence on domestic legislative design and has informed the development of rule based and automated negotiation systems within online dispute resolution environments.

B. The Failure of the EU ODR Platform

The EU initially attempted to solve this with the **ODR Regulation (524/2013)**, which established a Pan European ODR platform. However, the platform suffered from low uptake by traders and lack of consumer awareness. Consequently, the European Commission has proposed repealing this regulation acknowledging that the centralized platform failed to achieve its objectives.[28]

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[27] U.N. Comm'n on Int'l Trade Law, Technical Notes on Online Dispute Resolution, U.N. Doc. V.17-00382 (2017).

[28] Regulation (EU) 2024/3228 of the European Parliament and of the Council of 19 December 2024 repealing

C. The Rise of the Digital Services Act (DSA)

Learning from this failure the EU has pivoted to a new model under the Digital Services Act (DSA). Article 21 constitutes a paradigm shift mandating that online platforms must allow users to select certified out of court dispute settlement bodies.[29] Unlike the centralized ODR platform the DSA fosters a competitive market of certified bodies. As of 2025 new entities like the Appeals Centre Europe in Ireland and User Rights GmbH in Germany have been certified.[30] This establishes a precedent for state certified privately operated dispute resolution that sits outside the bank but carries legal weight.

V. Decentralized Justice: The Blockchain Alternative

The concept of decentralized justice represents an emerging attempt to address the enforceability and cost limitations associated with conventional ADR by embedding dispute resolution directly into blockchain based transactional systems. Through the use of smart contract, these models convert adjudicatory outcomes into self-executing obligations while reducing reliance on external enforcement mechanisms. In crypto-native commercial environments this architecture has the potential to displace the banking intermediary as the primary locus of dispute enforcement though its applicability remains largely confined to ecosystems in which value and performance are natively digital.

A. Kleros: The Justice Protocol

Kleros is a decentralized autonomous organization (DAO) acting as a third-party arbitration service. It relies on the game theoretic "Schelling Point" where crowd sourced jurors are incentivized to vote for the truth to earn tokens (PNK).[31]

- Process: If a dispute arises jurors are randomly selected. They review the evidence and vote. Jurors who vote with the majority are rewarded those who vote against are penalized.

Regulation (EU) No 524/2013 (ODR Regulation).

[29] Digital Services Act, supra note 9, art. 21

[30] Taylor Wessing, Abolition of the ODR Platform, https://www.taylorwessing.com (Jan. 2025)

[31] Federico Ast & Bruno Deffains, Kleros: A Socio-Legal Case Study of Decentralized Justice & Blockchain Arbitration, 37 Ohio St. J. on Disp. Resol. 57 (2021).

- Cost Efficiency: Unlike the fixed banking fees, Kleros utilizes a "loser pays" model discouraging frivolous disputes.
- Integration: Kleros is already integrated with platforms via plugins allowing dApps to escalate disputes directly to the protocol.[32]

B. Mattereum and Boson: Bridging Real World Assets

Protocols like Mattereum and Boson Protocol address the "oracle problem" of physical goods.

- Mattereum: Uses "Ricardian Contracts" smart contracts paired with legally binding natural language contracts to ensure that a digital token represents an enforceable claim to a physical asset.[33]
- Boson Protocol: Uses sequential game theory to automate the "fair exchange" of assets without human intermediaries. Both buyer and seller commit deposits to a smart contract which are slashed if they deviate from the agreed protocol.[34]

C. The Enforceability Gap

The principal obstacle to the substitution of chargebacks by blockchain based ODR lies in enforceability within the fiat financial system. Chargebacks are inherently self-executing because banks exercise direct control over account ledgers, allowing remedies to be imposed without external intervention. By contrast, ODR determinations generally depend on voluntary compliance or subsequent judicial enforcement. Smart escrow mechanisms partially resolve this deficiency by conditionally immobilizing funds at the transactional stage, thereby replicating the bank's capacity for unilateral enforcement through protocol level control rather than institutional authority.

[32] Id.
[33] Vinay Gupta, Mattereum: The Internet of Agreements, Mattereum Whitepaper (2018).
[34] Justin Banon et al., Boson Protocol v2 Whitepaper (2021).

VI. Comparative Analysis: ADR vs. Banking Dispute Mechanisms

To determine whether ADR can replace banking disputes. we compare them across critical performance metrics.

Metric	Banking Chargeback System	Centralized ODR (eBay/Amazon)	Decentralized Justice (Kleros)
Speed	Slow (30-90 days)	Fast (Hours to Days)	Moderate (Days to Weeks)
Cost to Merchant	High ($15-$100 fee + penalties)	Moderate (Platform fees)	Low/Variable (Loser pays)
Enforceability	High (Bank reverses funds)	High (Platform reverses funds)	High (Smart Contract Escrow)
Transparency	Low (Opaque bank rules)	Medium (Platform policies)	High (On chain evidence)
Fairness	Consumer-biased (Reg Z mandates)	Consumer-biased (A-to-Z Guarantee)	Neutral (Incentivized truth)
Cross-Border Friction	High (FX fees, regulatory clashes)	Low (Platform localization)	Zero (Crypto-native)

Analysis: The banking dispute resolution model derives consumer confidence from regulated allocations of liability and clearly defined reversal rights. Online dispute resolution systems by contrast tend to prioritize procedural neutrality and greater merchant participation. Platform

based ODR succeeds where the platform itself assumes an intermediary role comparable to that of a financial institution effectively centralizing trust and enforcement within a single governance structure. Fully decentralized ODR models face greater barriers to widespread adoption largely because they require users to substitute institutional assurance with reliance on algorithmic processes and collective decision-making mechanisms rather than on a regulated financial intermediary.

VII. The "Double Jeopardy" Problem and Jurisdictional Conflicts

The single biggest hurdle for ADR replacing chargebacks in the US and EU markets is the "Double Jeopardy" risk.

A. The Conflict of Parallel Tracks

A consumer might agree to use Kleros or a merchant's ODR platform for a purchase. If they lose the case in that forum then, they retain the statutory right under US Regulation Z or UK Section 75 to file a chargeback with their bank. The bank is legally mandated to investigate. Unless the merchant can prove the ODR decision constitutes "compelling evidence" that satisfies the bank's criteria (which is currently not guaranteed) while the bank may grant the chargeback anyway. The merchant loses twice: once in time/fees for the ODR and again for the chargeback.[35]

B. Jurisdictional Challenges

Recent jurisprudence highlights the tension between arbitration clauses and consumer rights.

- ***Soleymani v. Nifty Gateway LLC*** **(UK):** The Court of Appeal ruled that consumer protection rights (specifically regarding jurisdiction) can override arbitration clauses in standard terms, even in crypto-asset disputes.[36] This suggests that courts are hesitant to allow private ODR to completely displace statutory protections.
- ***Uber Technologies Inc. v. Heller*** **(Canada):** The Supreme Court of Canada invalidated an arbitration clause that was prohibitively expensive for a gig worker reinforcing that ODR mechanisms must be accessible and fair to be enforceable.[37]

[35] See generally Visa Core Rules, supra note 18 (discussing dispute rights).
[36] Soleymani v. Nifty Gateway LLC EWCA (Civ) 1297 (Eng.).
[37] Uber Technologies Inc. v. Heller, 2020 SCC 16 (Can.).

These cases demonstrate that while ODR is efficient but it cannot easily contract out of fundamental consumer protections in B2C transactions.

Conclusion: Towards a Tiered Justice System

The findings indicate that ADR and ODR are unlikely to supplant the fragmented bank centred dispute resolution framework governing mass market retail transactions in the short term, largely due to mandatory consumer protection regimes such as Regulation Z and PSD2 that entrench access to bank administered remedies.

Nonetheless the evidence points not to displacement but to convergence with dispute resolution authority increasingly organized into a tiered justice system rather than a single unified mechanism.

1. **Tier 1: Automated ODR (The "Filter"):** Pre-dispute tools (Such as Verifi RDR and Ethoca) and smart contract escrows resolve the vast majority of simple disputes instantly via rules-based automation. This layer handles 90% of volume.
2. **Tier 2: Certified ADR (The "Adjudicator"):** Independent bodies certified under frameworks like the DSA handle complex disputes regarding terms of service, content and high-value returns.
3. **Tier 3: The Banking/Legal Appeal (The "Backstop"):** The traditional chargeback mechanism and court system remain as a final backstop used only when Tier 1 and 2 fail or in cases of systemic fraud.

Accordingly, while bank-centred dispute resolution remains dominant in consumer markets, code-based adjudicatory systems grounded in *lex cryptographia* are likely to function as the primary ordering mechanism in digitally native and cross-border economic environments where traditional financial intermediaries are structurally ill-suited.