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Detecting Collusion in E-Purchasing Through Local Electronic Catalogs: Indicators and an Early-Detection Framework

Manuscript Information

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Abstrak

Pengadaan melalui Katalog Elektronik Lokal ditujukan untuk meningkatkan transparansi dan efisiensi pengadaan barang/jasa pemerintah. Namun, prosedur digital tetap dapat dimanipulasi apabila penyedia telah dikoordinasikan sebelum transaksi tercatat dalam sistem. Penelitian ini mengkaji karakteristik dan indikator persekongkolan dalam e-purchasing serta merumuskan kerangka deteksi dini yang relevan bagi pengawasan pengadaan dan penelusuran dugaan tindak pidana korupsi. Penelitian menggunakan metode hukum normatif dengan pendekatan perundang-undangan dan konseptual, didukung kajian terhadap dua belas putusan perkara korupsi pada Pengadilan Negeri Banda Aceh dalam lingkup peradilan tindak pidana korupsi tahun 2024–2025 serta telaah tujuh artikel jurnal. Hasil penelitian mengidentifikasi enam karakteristik berulang, yaitu pengendalian beberapa penyedia oleh satu pihak, kompetisi semu, manipulasi ketersediaan produk dalam katalog, pengaturan pemilihan penyedia sebelum transaksi, kolusi vertikal yang melibatkan pejabat pengadaan, serta penghindaran kompetisi melalui pemecahan paket atau peminjaman perusahaan. Pola tersebut tercermin dalam indikator relasional, perilaku digital, prosedural, dan pascatransaksi. Penelitian mengusulkan kerangka tiga lapis berupa sinyal risiko, indikator yang memerlukan pemeriksaan persekongkolan, dan penilaian relevansi pidana. Kerangka ini merupakan instrumen penyaringan dan rujukan pemeriksaan, bukan dasar otomatis untuk menyimpulkan kesalahan. Penerapannya memerlukan penguatan bukti, pengujian unsur tindak pidana, serta pembedaan antara penyimpangan administratif, pelanggaran persaingan usaha, dan korupsi. Keterbatasan utama penelitian ialah kerangka tersebut belum diuji menggunakan data mentah transaksi e-katalog lokal.

Kata Kunci:
Bid Rigging, E-Purchasing, Deteksi Dini, Pengadaan Pemerintah, Korupsi.

Abstract

Electronic purchasing through local electronic catalogs is intended to improve transparency and efficiency in public procurement. Nevertheless, digital procedures may still be manipulated when suppliers are coordinated before a transaction is recorded. This study examines the characteristics and indicators of collusion in local e-catalog purchasing and develops an early-detection framework relevant to procurement oversight and the tracing of suspected corruption. It employs normative legal research with statutory and conceptual approaches, supported by a case study of twelve corruption court decisions from the Banda Aceh District Court's corruption jurisdiction in 2024–2025 and a review of seven journal articles. The findings identify six recurring characteristics: common control over several suppliers, sham competition, manipulation of catalog availability, prior arrangement of supplier selection, vertical collusion involving procurement officials, and avoidance of competition through package splitting or borrowed companies. These patterns are reflected in relational, digital-behavioural, procedural, and post-transaction indicators. The study proposes a three-layer framework consisting of risk signals, indicators requiring collusion-focused examination, and assessment of criminal-law relevance. The framework is intended as a screening and referral instrument, not as an automatic determination of guilt. Its application requires corroboration, attention to the elements of each offence, and a clear distinction between administrative irregularities, competition-law violations, and corruption. The principal limitation is that the proposed framework has not yet been tested against raw local e-catalog transaction data.

Keyword:
Bid Rigging, E-Purchasing, Early Detection, Public Procurement, Corruption.

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INTRODUCTION

Public procurement requires layered oversight because it involves public funds, administrative authority, and relationships between procurement officials and business actors. Digitalisation through electronic catalogs is expected to broaden access to information, shorten processes, and improve transaction traceability. However, the use of an electronic system does not in itself guarantee genuine competition. Arrangements may be made

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before the supplier-selection process is recorded in the system, meaning that a transaction that appears procedurally compliant may not reflect fair competition.

The fundamental difference between electronic tendering and e-purchasing is important. In a tender, competition is visible through the submission and evaluation of bids. In e-purchasing, buyers select products and suppliers from a catalog and then place orders and negotiate in accordance with the applicable rules. Accordingly, vulnerabilities arise not only at the bidding stage, but also in determining which products can be listed, how suppliers are selected, and whether negotiation is genuinely conducted. When suppliers have been pre-arranged, system records may capture the transaction without fully revealing the coordination that preceded it.

The previous studies reviewed for this research provide several points of departure. Widoyoko (2018) emphasises that procurement manipulation may begin during planning and budgeting, while the subsequent electronic process may serve merely as a formality. Wibowo (2015) discusses the benefits of e-purchasing in reducing mark-ups and eliminating intermediaries, while also noting the potential reduction in competition among suppliers. Hamzah (1983) and Beridiansyah (2017), meanwhile, highlight the importance of distinguishing administrative irregularities from individual criminal liability. Although relevant, the literature inventoried for this study does not specifically formulate operational indicators of collusion in the context of local electronic catalogs.

This study examines twelve decisions issued in 2024–2025 by the Banda Aceh District Court within its corruption jurisdiction. The cases intersect with public procurement and/or are relevant to identifying patterns of collusion. Only some decisions directly concern e-catalog procurement; the others are used in a limited way to compare patterns found in procurement conducted outside e-catalogs. This boundary is important so that findings from conventional tenders are not automatically treated as evidence that the same methods occurred in e-purchasing.

Against this background, the study addresses two questions: first, how can the characteristics and indicators of collusion among business actors in e-purchasing through Local Electronic Catalogs be identified from a competition-law perspective? Second, how can those indicators be developed into an early-detection framework relevant to procurement oversight and the tracing of suspected corruption offences?

METHODS

This is normative legal research employing statutory and conceptual approaches. The materials comprise relevant legislation, legal literature, and twelve corruption-case decisions issued by the Banda Aceh District Court in 2024–2025. Seven journal articles were inventoried to map the contributions of previous studies and identify the research gap. Decisions were selected based on their connection with public procurement and their relevance to identifying supplier-arrangement patterns, coordination among actors, procedural irregularities, and document manipulation.

The analysis was conducted qualitatively by examining facts set out in the decisions, indictments, and judicial considerations available in the research materials. Findings were grouped into relational, digital-behavioural, procedural, and post-transaction indicators. These indicators were then considered in relation to competition law and corruption law to develop an early-detection framework. The study does not process raw Local Electronic Catalog transaction data, statistically test supplier histories, or conduct interviews. Its findings are therefore a normative construction based on case-law review, not a measurement of prevalence or an empirical validation of a detection model.

RESULTS AND DISCUSSION

Characteristics and indicators of collusion in e-purchasing

The twelve decisions analysed comprise three decisions from 2024 and nine from 2025. Based on their mechanisms and factual characteristics, they can be grouped into four categories: cases most closely related to e-catalog procurement; direct procurement involving package splitting and the use of borrowed companies; electronic tenders involving control of participants' accounts or documents; and procurement cases indirectly relevant through forged documents, fictitious activities, volume shortfalls, or irregular implementation. This grouping is intended to identify patterns, not to claim that every case constitutes bid rigging.

The findings most closely related to e-purchasing appear in Decisions Nos. 60/2024 and 63/2024. According to the research report, five supplier companies were controlled by the same party, while their directors were described as close associates or employees of a coordinator who connected the suppliers. When snapper fingerlings and trash fish feed were unavailable in Aceh's local catalog, the relevant product listings were added through the electronic catalog of the North Sumatra Provincial Government. As described in the

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decisions, supplier selection and negotiation did not follow the official procedures; instead, a company link that had been pre-arranged was selected. Accountability documents also indicated that the work had been completed in full, although the goods were not delivered to the beneficiary groups listed in the documents.

These facts suggest that manipulation in e-purchasing may occur beyond what is visible in the transaction interface. If control relationships among business actors have been established in advance, the existence of several business entities does not necessarily indicate independent competition. Likewise, adding a product listing or selecting a supplier through a formally available system does not guarantee that access and buyer choice have been established fairly. Any conclusion of collusion must nevertheless be based on the totality of facts and evidence, not merely on personal relationships or the use of a catalog from another province.

Cases involving procurement outside e-catalogs provide comparisons showing how competition can be made to appear genuine. In Decision No. 29/2025, the research materials record that the same party used another company's SPSE account to submit a bid that was slightly higher. Similarities in bid documents, formatting, numbering sequences, and login IP addresses were reportedly identified by auditors as indicators of collusion. Decision No. 28/2025 also involved borrowed accounts, similarities in Construction Safety Plan documents, and participants who did not genuinely take part in the qualification-verification stage. These patterns arose in electronic tendering and can therefore be used in e-purchasing only as analogies for developing examination indicators, not as direct evidence concerning local-catalog transactions.

Taken together, the materials point to six characteristics. First, several apparently separate suppliers are controlled by one party. Second, sham competition is created through supporting suppliers or deliberately uncompetitive bids. Third, catalog listings or product availability are manipulated to facilitate a pre-planned transaction. Fourth, supplier arrangements are made before the transaction is recorded. Fifth, the arrangement involves vertical collusion between business actors and procurement officials or managers. Sixth, competition is avoided through package splitting or the use of another company's name.

Tabel 1. Classification of Indicators for Identifying Collusion in Public Procurement

Indicator type	Examples identified in the decisions	Analytical function
Relational	Several companies controlled by one coordinator; directors are close associates/employees; companies are lent or borrowed.	Assess the possibility of relationships and a common plan among parties.
Digital-behavioural	Use of another party's account; matching IP addresses; similarities in document format, structure, and numbering.	Trace possible coordination through system logs and electronic documents.
Procedural	Pre-arranged supplier selection; negotiations that do not follow procedure; addition of catalog listings; package splitting.	Identify the stages and mechanisms that may have been manipulated.
Post-transaction	Fictitious handover or accountability documents; misappropriated beneficiary identities; full payment for non-compliant work.	Examine consequences, possible state financial losses, and criminal-law relevance.

The four indicator groups serve different analytical purposes. Relational and digital-behavioural indicators may help assess the possibility of coordination, but still require verification because personal relationships, shared networks, or similar document formats may have legitimate explanations. Procedural indicators show potential opportunities or forms of irregularity, but do not always reveal who coordinated with whom. Post-transaction indicators relate more closely to work performance, the accuracy of accountability documents, and possible effects on public finances. Accordingly, no single indicator should be used in isolation as conclusive proof of collusion.

Article 22 of Law No. 5 of 1999 on the Prohibition of Monopolistic Practices and Unfair Business Competition prohibits collusion with another party to arrange and/or determine the winner of a tender in a way that may result in unfair business competition. A conceptual challenge arises because e-purchasing is not identical to conventional tendering. This study proposes analysing the risk of arrangements in e-purchasing by considering the function of supplier selection, including access to catalog listings and the selection of suppliers to receive orders. However, the application of Article 22 to e-purchasing must not be assumed automatically: the scope of the term "tender" and the legal basis for its application require further examination against relevant regulations, guidance, and competition-law enforcement practice.

The principal distinction between an administrative irregularity and collusion is the existence of coordination intended to determine who obtains the procurement award. A procedural irregularity may be a risk signal, but does not automatically prove an agreement among business actors. Similarly, a financial loss or a discrepancy in work volume does not, by itself, establish bid rigging. The analysis should combine

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indicators from more than one group and assess their consistency with other evidence. This cautious approach accords with Hamzah's (1983) distinction between administrative irregularities and corruption offences, as well as Beridiansyah's (2017) emphasis that criminal liability must be based on an individual's conduct and culpability.

An early-detection framework and its legal relevance

Based on these characteristics and indicators, this study proposes a three-layer early-detection framework. The first layer consists of risk signals that can be monitored through supplier, catalog, transaction, and budget-schedule data. The second layer involves targeted examination to determine whether the signals indicate coordination among parties. The third layer assesses legal relevance, including whether procurement officials were involved, fictitious documents were used, authority was abused, or indications of state financial loss warrant further investigation.

Tabel 2. Three-Layer Early-Detection Framework for Identifying Risks in Public Procurement

Layer	Indicators or examination questions	Relevant data sources	Recommended follow-up
1. Risk signals	Recurring suppliers; unusual addition of products/listings; similar packages with closely spaced values; full payment near year-end.	Catalog transaction histories, supplier profiles, package data, and budget schedules.	Monitoring, requests for clarification, and preliminary review by oversight personnel.
2. Collusion-focused examination	Are several suppliers controlled by the same party? Do accounts, IP addresses, documents, or bidding patterns indicate coordination? Were supplier selection and negotiations conducted properly?	Ownership/management data, access logs, bid documents, negotiation records, communications, and supplier-selection documents.	In-depth review by the Government Internal Supervisory Apparatus (APIP); assess whether referral to the competition authority is warranted.
3. Legal relevance	Were officials involved? Was authority abused? Were fictitious documents used, payments inconsistent with performance made, or state financial losses caused?	Audit findings, contract and payment documents, electronic evidence, witness statements, and related records.	Map the facts against legal elements and, where sufficient grounds exist, refer the matter to law-enforcement authorities.

The framework treats a signal as a reason to investigate, not as a legal conclusion. At the first layer, transaction concentration or similarities in supplier profiles indicate risks that need explanation. At the second layer, oversight personnel assess whether the signals reinforce one another and point to coordination. At the third layer, verified facts are mapped against the relevant legal elements. This separation prevents a detection system from generating automatic allegations merely because a transaction deviates from a general pattern.

The framework may strengthen procurement oversight by encouraging examination before or during a transaction, rather than only after a loss has been identified. Potentially relevant data include supplier-selection histories, catalog changes, company-management relationships, access logs, negotiation records, handover documents, and payment records. Access to these data must be ensured through lawful means, sound data governance, auditable records, and procedures for testing the reliability of electronic information.

From a competition-law perspective, indicators of coordination among business actors may provide grounds for further examination of suspected collusion. If the suspicion concerns only horizontal coordination among businesses, the competition-law route should be considered within the authority of the relevant institution. If the identified pattern also involves procurement officials, misuse of authority, document fabrication, or consequences for state finances, the matter may require analysis under corruption law. These routes must not be conflated: the presence of competition-related indicators does not automatically establish all elements of a corruption offence.

In the context of corruption law, Articles 2 and 3 of the Anti-Corruption Law are relevant for examination where the facts indicate an unlawful act or abuse of authority and the consequences required by law. Article 12(i) should also be examined carefully, but only where the facts and the status of the subject satisfy its elements. At the initial-detection stage, the results of competition-data analysis are not, in themselves, evidence proving a criminal offence. Their evidentiary value depends on how the data were obtained, their authenticity and integrity, their connection with other facts, and compliance with the applicable procedural and evidentiary rules.

The study's limitations should be considered when applying the framework. The sample covers only twelve decisions from one court over two years, and only a small portion directly concerns e-catalogs. Decisions involving procurement outside e-catalogs are used as analogies for identifying patterns, not for measuring the incidence of collusion in local catalogs. In addition, the framework has not been tested against

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raw transaction data and has no numerical thresholds for determining when an anomaly should move to the next examination layer. Further research should test the indicators using lawfully accessed and verified transaction data, involve procurement oversight personnel and competition-law experts, and evaluate both false-positive rates and the model's ability to identify risks.

CONCLUSION

This study concludes that indications of collusion in e-purchasing through Local Electronic Catalogs may be identified through six characteristics: control of several suppliers by one party, sham competition, manipulation of catalog listings, pre-arranged transactions, vertical collusion, and the avoidance of competition. These characteristics may be traced through relational, digital-behavioural, procedural, and post-transaction indicators. The indicators should be assessed together and tested; none should be treated as conclusive evidence when considered alone.

These indicators can be organised into a three-layer early-detection framework: risk signals, collusion-focused examination, and assessment of legal relevance. The framework helps connect administrative oversight with possible competition-law examination or the tracing of suspected corruption, while preserving the distinction between procedural irregularities, collusion, and criminal offences. Because it has not been tested against raw local e-catalog transaction data, it remains a conceptual model requiring empirical validation. Any use of data-analysis results in legal proceedings must be based on lawfully obtained evidence, corroboration by other evidence, and examination of each relevant legal element.

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