

Big Data, Big Reforms: Policy Hackathon

National Contractor Risk Scoring System

Overview

The Department of Public Works and Highways (DPWH), the principal government agency responsible for steering the Philippines' infrastructure development, occupies a position of profound fiscal and ethical vulnerability. While its function is crucial to economic progress, national connectivity, and disaster resilience, the ongoing issues within the DPWH are not isolated operational deficiencies but rather manifestations of a deep-seated infrastructure-corruption cycle rooted in historical precedent, systemic loopholes, and influential political capture.

This structural pathology enables two primary forms of harm to the public purse and safety. Firstly, market distortion and monopoly flourish. Instead of genuine competitive equilibrium, a small, favored network of contractors, often utilizing opaque or related corporate entities to circumvent regulations, engages in bid-rigging and strategic "contract rotation." This systematic collusion suppresses fair pricing, resulting in inflated project costs and the commissioning of substandard work. Secondly, this systemic failure directly compromises quality, frequently resulting in "ghost projects" or structures built with dangerously weak materials. This negligence culminates in catastrophic failures, turning critical public works into public hazards during natural disasters and necessitating repeated, costly repairs that deplete national resources.

The persistence of these chronic issues is not due to a lack of existing procurement law, but rather a profound failure of effective, integrated enforcement. Critical performance data, such as CPES evaluations and COA audit findings, remain stored in segregated, often non-machine-readable systems. This pervasive lack of data interoperability prevents comprehensive, real-time risk assessment, thereby enabling high-risk actors to operate with impunity. The analytical foundation for reform successfully moves beyond anecdotal evidence by establishing quantitative outcome variables (e.g., Infrastructure Risk, tied to factors like asset age and maintenance recommendations) and linking them directly to verifiable measures of governance failure (e.g., Contractor Financial Integrity and the spatial manifestation of Monopoly and Administrative Discretion). This empirical correlation validates the necessity of the proposed intervention.

The overriding rationale for implementing the National Contractor Risk Scoring System (NCRSS) is the strategic imperative to transform this endemic failure of public procurement into a verifiable system of integrity and performance assurance. The current reactive governance model has proven incapable of safeguarding public funds and ensuring quality infrastructure. Therefore, the NCRSS is conceptualized as a necessary and targeted administrative

countermeasure. It is designed to resolve the crisis by introducing objective, data-driven checks that critically limit subjective administrative discretion, enforce radical transparency through Beneficial Ownership standards, and systematically detect and deter the market manipulation that facilitates monopoly and recurrent contractor failure. The NCRSS thus represents a fundamental and urgent shift toward building an infrastructure of accountability in the Philippines.

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Policy Overview

Problem Statement

The effective execution of the national infrastructure agenda in the Philippines is fundamentally compromised by inherent weaknesses in public procurement governance. These systemic failures facilitate corrupt practices, allow monopoly through market distortion, and introduce excessive administrative discretion, ultimately leading to project failure, fiscal leakage, and diminished public trust. Specifically, the current system lacks a consolidated, objective, and predictive mechanism to assess contractor risk, relying on fragmented data and delayed sanctions that allow disqualified or opaque entities to evade accountability and repeatedly win contracts. The National Contractor Risk Scoring System is designed to address these critical vulnerabilities. This policy is aimed at establishing a data-driven barrier to ensure public funds are entrusted only to demonstrably qualified and transparent contractors.

The NCRSS enhances citizen engagement and government accountability by making complex procurement data accessible, relevant, and actionable. By simplifying information through color-coded risk scores, localized project details, and user-friendly web access, it lowers cognitive effort and encourages habitual political information seeking, particularly among citizens with low prior interest (Jennings & John, 2009). The system also leverages the Life-Cycle Effect, providing timely and meaningful information that increases political efficacy as citizens' stakes in government decisions grow. However, engagement with NCRSS depends on individuals' political information habits; those with diverse media use, or "Eclectic" repertoires (Wolfsfeld, 2016), are more likely to encounter, interpret, and act on the information. In this way, the system is most effective among users who already possess strong information-seeking behaviors, integrating into existing media channels to support informed participation, oversight of contractors, and reporting of discrepancies

Policy Proposal

The National Contractor Risk Scoring System is a unified, automated platform that integrates existing procurement and performance data and assigns each contractor a standardized risk score. This score enables agencies to identify high-risk contractors before awarding projects, reduce discretion, and enhance transparency.

Smart Checks, Safe Choices

1. Data Integration and Consolidation

The NCRSS integrates contractor-related data from existing government systems into a centralized program. These include Constructors' Performance Evaluation System

(CPES) performance ratings, Philippine Government Electronic Procurement System (PhilGEPS) registration and beneficial ownership disclosures, Government Procurement Policy Board's (GPBB) Blacklisting Database, Department of Public Works and Highways (DPWH) project progress records, and Commission on Audit (COA) audit findings. The integration resolves the long-standing issue of scattered datasets and provides government agencies with a unified, real-time reference for contractor evaluation.

2. Automated Contractor Risk Scoring

The system generates a standardized risk score for each contractor based on quantifiable indicators such as past delays, cost overruns, contract amendments, substandard performance evaluations, COA red flags, and patterns of political or geographic contractor dominance. Scores are expressed within a fixed scale and grouped into risk categories (Low, Moderate, High, Critical), enabling agencies to objectively compare the performance and integrity of contractors across sectors and regions.

3. Pre-Award Risk Alerts and Decision Support

Before a procuring entity awards a contract, the NCRSS issues a pre-award risk alert corresponding to the contractor's risk category. Low- and Moderate-risk scores allow procurement to proceed normally, while High-risk scores require written justification and additional due diligence. Critical-risk scores trigger mandatory review or temporary withholding of award. This process guides procurement officers toward evidence-based decisions and limits the influence of personal discretion or political pressure.

4. Public Transparency Portal

To promote transparency and citizen oversight, the NCRSS includes a public-facing dashboard that presents simplified contractor profiles, performance histories, and risk classifications. The portal enables civil society, journalists, and the general public to track contractor reliability and monitor patterns of procurement behavior. By opening performance information to scrutiny, the system reinforces accountability and reduces opportunities for hidden arrangements.

5. Preventive Anti-Corruptive Measures

The NCRSS functions as an early-warning mechanism by identifying high-risk contractors before project implementation. By reducing reliance on manual assessments and standardizing evaluations across agencies, the system minimizes the potential for favoritism, opaque decision-making, or manipulation of procurement outcomes. Its automated scoring system also creates a digital trail for all procurement decisions, strengthening traceability and discouraging corrupt practices.

6. Improved Infrastructure Quality and Fiscal Outcomes

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The NCRSS responds directly to long-standing governance issues in Philippine procurement by introducing data-driven early risk detection. It strengthens transparency, minimizes bias, and enhances accountability while making optimal use of existing government systems. The policy is feasible because it builds on what is already in place—CPES, PhilGEPS, BO disclosures, COA audits—while addressing the gaps that prevent these systems from working together.

How NCRSS Differs from Existing Contractor Evaluation Mechanisms

The NCRSS fills a long-standing governance gap by providing a unified, predictive, and pre-award contractor risk assessment system—something that no existing framework currently delivers. Tools such as CPES, DPWH Contractor Standards, PCAB licensing, and the PhilGEPS registry perform important but limited functions, and they operate in isolation from one another.

CPES evaluates project outputs only after implementation and does not generate a holistic profile of a contractor's performance history. PCAB licensing confirms technical eligibility but does not analyze integrity risks, beneficial ownership patterns, or repeat underperformance. PhilGEPS primarily serves as a registration and compliance system and does not assign risk scores or detect collusive or monopolistic behavior. Blacklisting mechanisms remain punitive, reactive, and dependent on manual reporting.

The NCRSS overcomes these gaps by consolidating performance, integrity, and network data from all existing systems and transforming them into a single, standardized contractor risk score. It is not a replacement for existing tools; rather, it enables them to work together through an automated scoring and pre-award alert system that supports evidence-based procurement decisions.

Implementing Agencies and Institutional Responsibilities

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1. Government Procurement Policy Board - Technical Support Office (GPPB-TSO)

Leading Implementing and Regulatory Body. The GPPB-TSO will serve as the institutional anchor of the NCRSS. As the central authority for procurement policy and compliance monitoring, it is best positioned to formalize the system through amendments to procurement rules, the development of standardized scoring guidelines, and the issuance of implementing circulars. GPPB-TSO's authority ensures that the NCRSS becomes a mandatory reference in pre-award evaluation across procuring entities. Importantly, the NCRSS does not replace or modify existing tools such as CPES, PCAB licensing, or agency-level blacklisting; instead, it bridges these fragmented tools through unified scoring. GPPB-TSO's role maintains the neutrality and integrity of the system by ensuring that NCRSS is used as a technical, non-punitive decision-support platform.

2. PhilGEPS Office - Department of Budget and Management (DBM)

Technical Operator and Systems Integrator. The PhilGEPS Office, under DBM, will serve as the technical operator responsible for embedding NCRSS functions into the existing procurement infrastructure. Because PhilGEPS already manages the national contractor registry and beneficial ownership submissions, it is the most efficient location for NCRSS data integration and automated risk scoring. PhilGEPS will develop the scoring algorithms, maintain the contractor risk database, ensure secure data pipelines from partner agencies, and manage the public transparency dashboard. This setup prevents duplication of systems and ensures that the NCRSS becomes a seamless extension of the national procurement workflow.

3. Department of Information and Communication (DICT)

Cybersecurity, Interoperability, and Infrastructure Support. DICT will ensure that NCRSS adheres to the Philippine Government Interoperability Framework (PGIF) and meets cybersecurity standards. Its responsibilities include building data-sharing protocols, providing systems infrastructure, enforcing cybersecurity safeguards, and validating interoperability with CPES databases, COA audit systems, and PhilGEPS datasets. DICT's involvement ensures that the NCRSS remains stable, secure, and capable of handling sensitive procurement information across agencies.

4. Commission on Audit (COA)

Independent Data Provider and Integrity Validator. COA's participation anchors the NCRSS in independently validated data. COA will supply audit red flags, recurring deficiencies, financial anomalies, and project performance observations, which form part of the system's risk indicators. These inputs ensure that the NCRSS is grounded in verified audit evidence rather than self-reported performance. COA's role strengthens the

credibility of the scoring mechanism and reinforces the system's early-warning and accountability functions.

5. Department of Public Works and Highways (DPWH)

Primary User Agency and Target of Reform. The DPWH remains a central beneficiary of the NCRSS due to its extensive contractor engagements, but it retains full authority over its own blacklisting mechanism. The NCRSS does not subsume DPWH's power to sanction contractors because blacklisting is a separate legal and administrative process. Instead, the NCRSS strengthens DPWH's decision-making by identifying high-risk contractors—especially those with recurring deficiencies or suspected identity recycling. While the system cannot directly prevent “phoenix companies” from bypassing blacklisting, its beneficial ownership and network analysis expose linkages between related entities. Further reforms to improve the blacklisting process are recommended for DPWH, but fall outside NCRSS's technical scope.

6. Civil Society Organizations (CSOs)

Transparency Monitors and Feedback Generators. Through access to the NCRSS public portal, CSOs can observe contractor performance trends, monitor risk classifications, and raise flags for anomalies that require official review. Their participation reinforces social accountability by independently validating government data, participating in feedback loops, and contributing to citizen audit initiatives. CSO engagement enhances public trust and amplifies transparency, especially in politically sensitive or high-value projects.

7. Business and Industry Associations

Compliance Partners and Integrity Advocates. Private sector groups play a complementary role by supporting their members in complying with NCRSS requirements, interpreting risk indicators, and improving internal governance to raise their scores. Their involvement encourages a shift toward ethical contracting practices and industry-wide accountability. Business associations can participate in consultative sessions with GPPB-TSO and PhilGEPS to refine indicators and safeguard fairness in scoring, ensuring that NCRSS is not misused as a punitive or exclusionary tool.

The NCRSS does not replace or modify the DPWH Blacklisting Mechanism, as blacklisting is an administrative sanction that falls within DPWH's regulatory authority. Instead, NCRSS functions under the GPPB-TSO and DBM as a preventive, data-driven scoring and decision-support system. While DPWH's blacklisting can be bypassed when sanctioned contractors create new corporate entities, NCRSS reduces the effectiveness of this loophole by linking contractor performance and integrity indicators to beneficial ownership and network

behavior. This means that even if a contractor forms a new company, patterns of related ownership and repeated high-risk behavior will continue to appear in their NCRSS profile.

Reforms to strengthen blacklisting procedures remain a recommended action for DPWH, while NCRSS provides the analytical infrastructure necessary to detect identity recycling, collusion, and repeated underperformance at the pre-award stage. The division of responsibilities ensures that NCRSS maintains its neutrality and technical objectivity while DPWH retains its mandate over punitive enforcement.

Technology Stack

The development of the prototype leveraged a streamlined and accessible technology stack to ensure functionality, transparency, and user engagement: *The National Contractor Risk Scoring System*. The front-end interface was implemented using HTML and was hosted and executed via OneCompiler, a web-based integrated development environment that allowed rapid prototyping and testing without dependency on complex server setups. This approach facilitated ease of access for users and rapid iteration during the hackathon process.

The platform integrates multiple functional modules designed to provide actionable insights and support informed decision-making regarding contractor risk management:

1. *Search Bar for Verifying Risk of Contractors* – A user-friendly input interface that allows stakeholders to query contractor information and retrieve a consolidated risk profile.
2. *How NCRSS Works* – An explanatory module presenting the operational framework of the National Contractor Risk Scoring System (NCRSS), including data sources, methodology, and scoring processes.
3. *Why This Matters to You* – Contextual guidance highlighting the relevance of contractor risk assessment for public procurement, transparency, and accountability.
4. *What Does Your Contractor's Score Mean* – A detailed explanation translating numerical risk scores into practical interpretations for end-users.
5. *Risk Indicator Breakdown (The Five Components)* – A structured presentation of the five risk components used in evaluating contractors, enabling stakeholders to identify specific areas of concern.
6. *Public Feedback and Discrepancy Reporting* – A participatory feature allowing users to submit observations, corrections, or feedback, fostering transparency and continuous improvement of the system.

This technology stack prioritizes accessibility, clarity, and responsiveness, ensuring that both technical and non-technical stakeholders can navigate the platform effectively and derive meaningful insights to guide policy decisions.

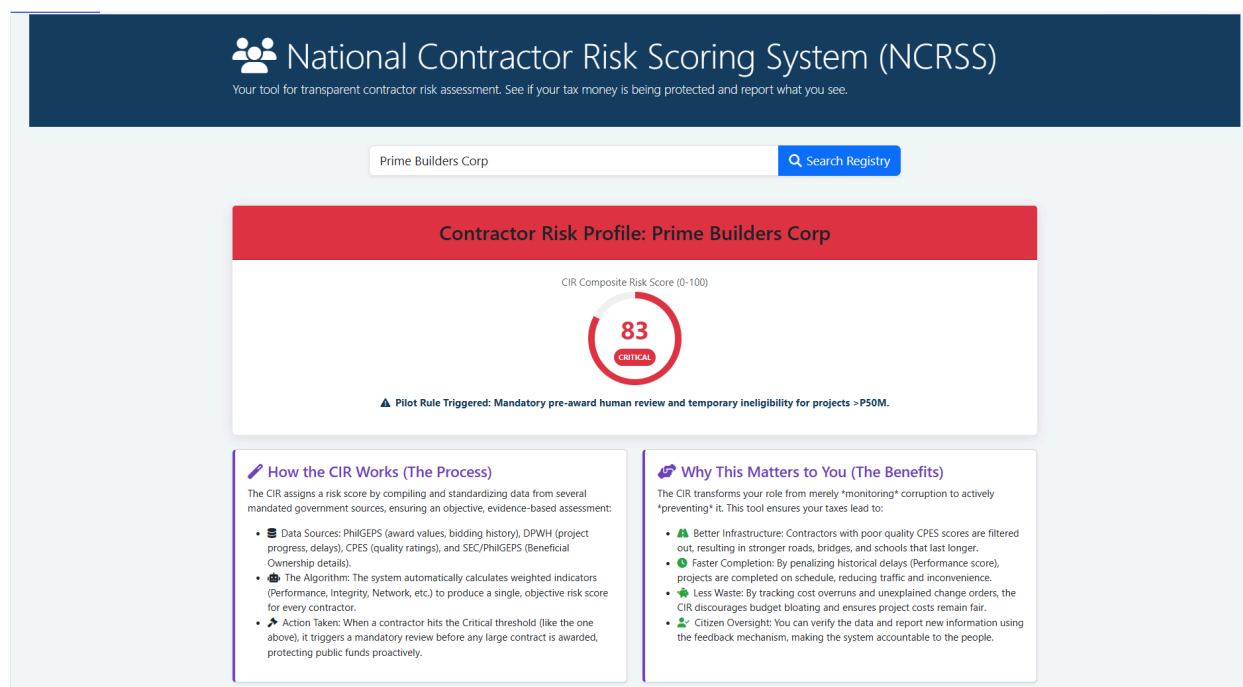


Figure 2. Search Bar for Verifying Risk of Contractors, How NCRSS Works, and Why This Matters to You

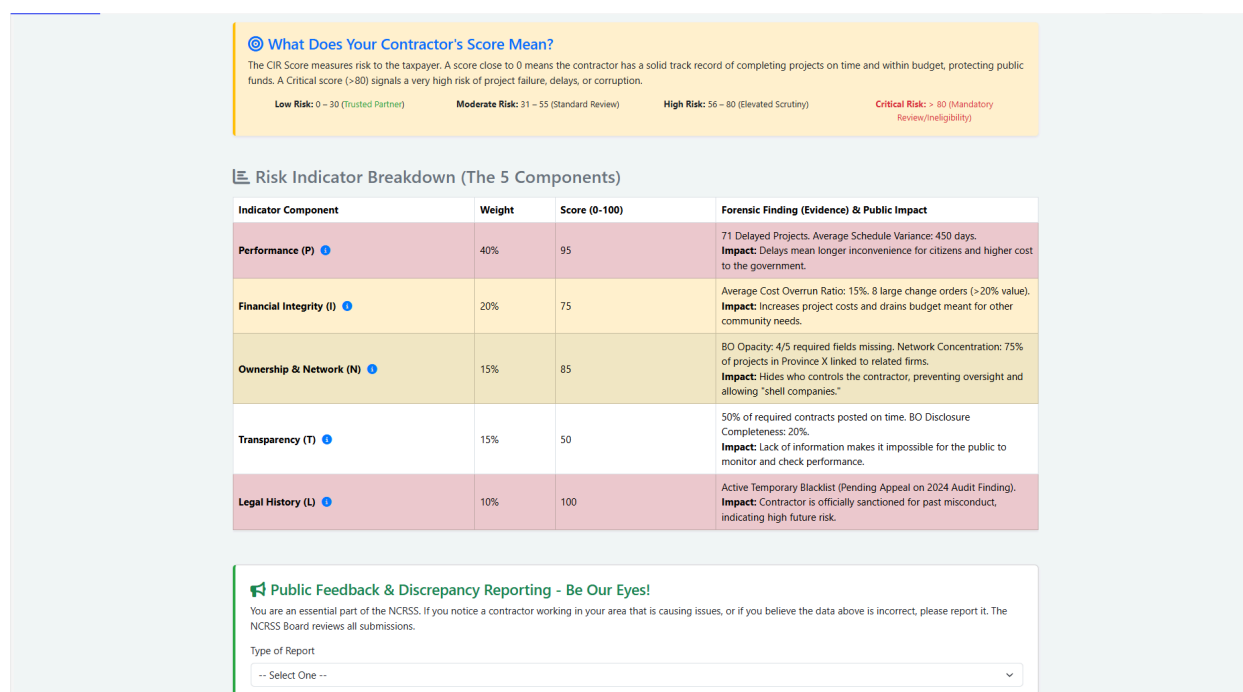


Figure 3. Risk Indicator Breakdown (The Five Components)

Ownership & Network (N) ⓘ	15%	85	BO Opacity: 4/5 required fields missing. Network Concentration: 75% of projects in Province X linked to related firms. Impact: Hides who controls the contractor, preventing oversight and allowing "shell companies."
Transparency (T) ⓘ	15%	50	50% of required contracts posted on time. BO Disclosure Completeness: 20%. Impact: Lack of information makes it impossible for the public to monitor and check performance.
Legal History (L) ⓘ	10%	100	Active Temporary Blacklist (Pending Appeal on 2024 Audit Finding). Impact: Contractor is officially sanctioned for past misconduct, indicating high future risk.

Public Feedback & Discrepancy Reporting - Be Our Eyes!

You are an essential part of the NCRSS. If you notice a contractor working in your area that is causing issues, or if you believe the data above is incorrect, please report it. The NCRSS Board reviews all submissions.

Type of Report

-- Select One --

Details/Evidence (Required)

Provide specific details, dates, and location (e.g., "The contractor on the XYZ Bridge Project in 2023 used substandard materials").

Email (Optional, for follow-up)

youname@example.com

Submit Report for Review

Verify the Data (Public Transparency)

View All Project Contracts (PhilGEPS) View Beneficial Ownership Record (SEC/PhilGEPS)

Figure 4. Public Feedback and Discrepancy Reporting

Methodology

This study applied a risk-driven data forensics approach to assess systemic weaknesses in public procurement and to determine the operational requirements for the National Contractor Risk Scoring System (NCRSS). The methodology focused on standardizing heterogeneous government datasets, generating objective risk measures, and conducting quantitative tests that isolate structural performance and integrity issues.

Data Sources

The analysis used the following data sets provided:

Data 1: Infrastructure Data

Data 2: Sumbong sa Pangulo - Flood Control

Data 3: COMELEC's Fiscal and Electoral Data from July 2025

Analytical Framework

The research followed a three-pillar Risk-Driven Data Forensics Framework:

1. Feature Engineering and Metric Development

The first phase standardized raw data into measurable risk indicators. Categorical and numerical fields were reformulated into four core NCRSS components—Quality, Performance, Integrity, and Network.

- a. Condition data were converted into ordinal risk scores.
- b. Timeliness variables were transformed into schedule variance metrics.
- c. Cost deviations were computed as overrun ratios.
- d. Contractor linkages were mapped to network concentration indicators.

These formulations established the quantitative basis for subsequent reliability and integrity assessments.

<i>Metric</i>	<i>Formulation</i>	<i>CIR Score Component</i>
Condition Risk Score	Mapped: 'Low' to 1, 'Moderate' to 2, 'High' to 3,	Quality (Q): Direct input for Asset Quality Tracking.

	'Critical' to 4	
Schedule Variance	Actual Completion Date - Original Completion Date(in Days)	Performance (P): Core of the Schedule Slippage Index.
Cost Overrun Ratio	(Actual Cost - Approved Budget for Contract (ABC)/ ABC) x 100	Integrity (I): Flags financial integrity risk.
Network Concentration	Count of Projects with Inter-Related Contractors/Total Projects	Network (N): The basis for the BO & Collusion Index.

Table 1. Integrity Metric System

2. Systemic Risk Quantification

The second phase applied descriptive statistics, correlation testing, anomaly detection, and top-group clustering to identify patterns indicative of systemic failure. The procedures included:

- a. Testing relationships across age, condition, delay, and cost metrics.
- b. Detecting statistical outliers in quality, timeliness, and financial performance.
- c. Grouping contractors by frequency and severity of performance deviations.
- d. Assessing concentration levels within contractor networks and local political environments.

These methods enabled the isolation of recurrent, cross-dataset failure points.

3. Cross-Domain Integrity Mapping

The third phase connected procurement outcomes with network and political concentration indicators. Beneficial ownership linkages, inter-related contractor patterns, and electoral dynamics were cross-referenced using proportional and concentration-ratio techniques. This step provided a consolidated view of vulnerability to collusion, repeat offending, and opaque contracting relationships.

Data Treatment and Validation

Quality checks included standard missing-value treatments, consistency verification across merged datasets, and sensitivity testing on derived metrics. Detailed formulations, classification rules, and statistical outputs are contained in the appendices.

Purpose of the Methodological Approach

This methodology was designed to produce an objective, evidence-driven foundation for evaluating procurement system performance and determining the operational design of the NCRS. It enabled a shift from descriptive reporting toward quantifiable, replicable indicators of quality, accountability, and transparency risks.

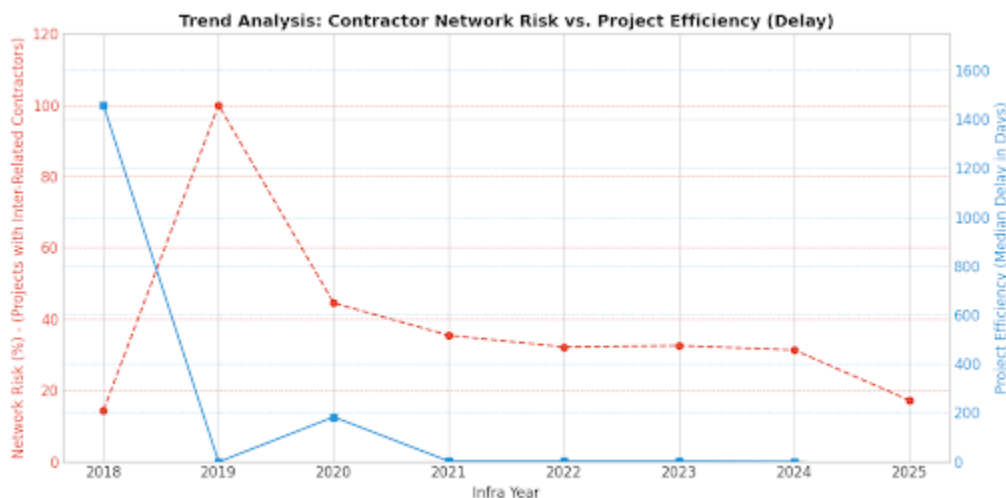


Figure 5. Trend Analysis: Contractor Network Risk vs. Project Efficiency

Operational and Strategic Implications for the NCRSS

Administrative Feasibility

Administrative feasibility is high. The NCRSS fits directly within existing procurement governance architecture, using PhilGEPS (DBM-PS), GPPB-TSO, COA audit findings, and DICT data infrastructure. Integrating the system requires only administrative instruments such as GPPB circulars, not new legislation. This reduces adoption time and institutional resistance. Data needed for NCRSS already exists in government repositories but is siloed; consolidating these datasets is consistent with the PDP 2023–2028 directive on digital government interoperability and improved public-sector data governance (NEDA, 2023). Alignment with SDG 16 further strengthens administrative legitimacy (United Nations, 2015).

Economic Feasibility

Economic feasibility is strong. In 2024, infrastructure disbursements reached approximately PHP 1.545 trillion, establishing a large baseline where even small improvements produce substantial fiscal benefits. The CBA uses assumptions and as cited in Uniga, Kraft, Uezono, Fajardo, Obmana, Genuino, & Guerrero's article (2020), the official social discount rate (SDR) prescribed by the Philippine National Economic Development Authority is 10% for cost-benefit analysis (CBA) of social projects.

Key assumption:

1. One-time development cost: PHP 300 million
2. Annual O&M cost: PHP 80 million
3. Time horizon: 5 years
4. Discount rate: 10%
5. Leakage reduction scenarios: 0.1%, 0.5%, 1.0%, 2.0%
6. Benefit source: avoided overspend, reduced contractor failure, and reduced rework, consistent with public-sector decision frameworks

Even the conservative 0.1% scenario produces a BCR above 10. The central 1% scenario produces a BCR above 100, demonstrating strong national-level economic impact.

Return on Investment

The NCRSS is a high-return, low-cost digital intervention. Over five years, the central scenario (1% leakage reduction) yields:

1. *PV of Benefits*: PHP 65.08B
2. *PV of Costs*: PHP 0.637B
3. *Net Present Value (NPV)*: PHP 64.44B
4. *Benefit–Cost Ratio (BCR)*: 102.17

This magnitude of return is consistent with successful digital governance reforms identified in comparable national procurement and PPP governance studies (OECD, 2024; Preciados & Hall, 2016).

Decision-Maker Confidence

Decision-makers can rely on this CBA due to its methodological alignment with international standards (ADB), maximizing the social discount rate as prescribed by NEDA, its use of sensitivity

analysis, and its consistency with PDP 2023–2028’s strategic emphasis on digital public administration. Evidence-based validation mechanisms—such as independent COA audits, a matched-control pilot evaluation, and public disclosure of risk-scoring performance—ensure transparency and reinforce institutional credibility. The structure directly supports Ambisyon Natin 2040’s demand for a trustworthy, efficient, and people-centered government (NEDA, 2023).

Resource Allocation Justification

The NCRSS requires minimal budgetary allocation relative to national infrastructure spending. The initial PHP 300M is less than 0.02% of annual public infrastructure spending. The annual PHP 80M operations and maintenance cost is negligible relative to potential savings. The PDP 2023–2028 mandates modernization of digital government systems; NCRSS aligns with this mandate and provides a measurable, quantifiable investment case. Allocating resources for NCRSS contributes to SDG 16’s governance indicators and reduces systemic procurement risk.

Scenario	Annual Avoided Leakage (PHP)	Present Value of Benefits (5 yrs)	Present Value of Costs (5 yrs)	Net Present Value	Benefit - Cost Ratio
0.1%	1,545,000,000	6,508,102,049	636,988,800	5,871,113,249	10.21
0.5%	7,725,000,000	32,540,510,243	636,988,800	31,903,522,443	51.06
1.0% (Central)	15,450,000,000	65,081,020,487	636,988,800	64,444,031,687	102.17
2.0%	30,900,000,000	130,162,040,974	636,988,800	129,525,052,174	204.34

Table 2. Summary of Five-Year Costs, Benefits, and Returns (10% Discount Rate)

Monitoring and Evaluation Framework

Pre-Analysis Plan (PAP) for the NCRSS Plot

The pilot aims to assess whether NCRSS improves procurement outcomes by reducing contractor risk exposure, lowering cost overruns, and enhancing procurement integrity. It provides empirical evidence for national-scale rollout, aligned with PDP 2023–2028 governance targets (NEDA, 2023) and SDG 16 accountability indicators (United Nations, 2015).

The evaluation criteria for assessing the NCRSS follow the NEDA–DBM Joint Memorandum Circular No. 2015-01, or the National Evaluation Policy Framework. This framework establishes a unified national system for monitoring and evaluating government projects and programs. It institutionalizes evaluation as a core tool for evidence-based policymaking, strengthens accountability, and supports continuous improvement in public sector performance.

Evaluation Criteria from National Evaluation Policy Framework

The evaluation criteria listed herewith are drawn from internationally-accepted criteria as prescribed by evaluation organizations (i.e., OECD-DAC and UNEG) and adopted by development institutions (i.e., ADB, WB and JICA). Evaluations shall address, at a minimum, the following eleven questions covering four areas:

Relevance

1. Alignment and Consistency with National Priorities and Policies. To what extent do project/program outcomes/impacts align with the achievement of national priorities and existing laws, including PDP sector outcomes?
2. Responsiveness to Stakeholder Needs. To what extent does the program/project address the urgent needs of the stakeholders?
3. Complementation with Other Program/projects. To what extent does the program/project complement existing program/project resulting in better outcomes?
4. Programmatic Alternatives. Are there better ways to achieve the program's/project's outcomes/impacts, or to contribute to related national priorities?

Effectiveness

5. Objectives Achievement. What intended outputs and outcomes/impacts (short-term outcomes, medium-term outcomes, and long-term impacts) were found, and to what extent can they be attributed to project/program activities?
6. Unintended Results. What unintended outputs and outcomes/impacts were found, and to what extent can they be attributed to project/program activities?

Efficiency

7. Efficient Delivery of Outputs. Were the activities cost efficient? Was the utilization of resources optimized in terms of the realization of the program/project objective? To what extent was resource utilization minimized in relation to the delivery of outputs?
8. Operational Alternatives. Are there better, more efficient ways to deliver project/program
9. Timeliness. Were the objectives achieved on time? outputs?

Sustainability

10. To what extent did the benefits of a program/project continue after funding ceased?
11. What were the major factors which influenced the achievement or non-achievement of sustainability of the program/project?

Evaluation Design

The pilot will use a quasi-experimental matched-control design, suitable for procurement settings where randomization is impractical. Comparable DPWH project portfolios will serve as control groups. The evaluation will apply a difference-in-differences framework to measure outcome changes over time, consistent with public-sector best practices in ex-ante economic evaluation (ResearchGate PPP model).

Data Sources

1. *PhilGEPS*: registration, blacklist status, bidding patterns
2. *DPWH*: project costs, milestones, slippages
3. *COA*: audit observations and performance validations
4. *DICT*: system availability, cybersecurity logs
5. *GPPB-TSO*: compliance data and exceptions

These data needs are aligned with PDP digital governance targets and ADB guidance on CBA data design (Asian Development Bank, 2008).

KPI Category	Indicator	Measurement Source
Contractor Performance	Share of awards to high-risk contractors	PhilGEPS + NCRSS flags
Project Delivery	Change in cost overruns (%)	DPWH finance data
Scheduling Performance	Change in delays (%)	DPWH timeline reports
Predictive Validity	Positive Predictive Value (PPV) of risk flags	COA-validated outcomes
Administrative Efficiency	Change in procurement cycle times	PhilGEPS logs
System Reliability	Uptime (%) and incident reports	DICT systems logs

Table 3. Key Performance Indicators (KPIs)

Statistical Analysis Plan

The evaluation will use:

1. Difference-in-differences estimation between pilot and matched-control projects
2. Predictive accuracy metrics (PPV, NPV, sensitivity, specificity)
3. Fiscal impact modeling for avoided overspend

Pilot Timeline

Phase	Duration	Activities
Setup	Months 0–2	Data MOUs, system deployment, training
Implementation	Months 3–10	NCRSS active use, KPI measurement
Validation	Months 11–12	Independent COA audit + academic review
Reporting	Month 12	Decision memorandum for national rollout

Data Governance and MOUs

All participating agencies will adopt standardized data-sharing agreements defining data scope, privacy requirements, retention periods, and roles. This is consistent with PDP digital governance standards (NEDA, 2023).

Insights and Analyses

Systemic Infrastructure Vulnerabilities

Analysis of infrastructure data reveals that deterioration occurs independently of asset age, indicating that structural failure is embedded within the procurement and construction process rather than arising from natural physical wear. Even infrastructure built after 2010 shows significant vulnerabilities, with forty-five projects classified as poor or bad. This pattern suggests that deficiencies in project planning, execution, and oversight are systemic rather than incidental. Geographic analysis further demonstrates that high-risk infrastructure is localized rather than evenly distributed, with provinces such as Pangasinan exhibiting higher concentrations of vulnerable projects. This highlights the necessity for targeted, region-specific interventions to mitigate systemic risk and improve infrastructure resilience.

Contractor Networks and Concentration Risk

The concentration of contractors with discretionary authority correlates strongly with elevated project risk. Contractors who operate across multiple projects are disproportionately associated with substandard outcomes, demonstrating the potential for collusion and monopolistic practices. Beneficial ownership analysis shows that certain contractors maintain multiple related entities, allowing sanctioned or high-risk individuals to sustain a market presence through shell companies. Cross-referencing contractor networks with political and electoral data indicates that projects in politically dominated regions are often prioritized based on visibility or financial incentives rather than genuine public need. This dynamic amplifies systemic vulnerabilities and contributes to suboptimal governance outcomes.

Anti-Corruption and Governance Implications

The National Contractor Risk Scoring System (NCRSS) introduces mechanisms that directly address corruption risks by linking contractor performance and blacklisting status to individual beneficial owners. By enforcing transparency and penalizing opaque ownership structures, the system diminishes opportunities for evasion and repeated contract awards to high-risk entities. Network concentration analysis further enables procurement agencies to detect clusters of related firms that dominate bidding processes, providing a critical tool to counter rigged bids and suppressed competition. The use of a standardized, objective 0–100 risk score with mandatory thresholds for high-value projects limits discretionary decision-making by procurement officials. By shifting the burden of proof to contractors and ensuring decisions are supported by verifiable data, the system creates a transparent audit trail that deters political influence and favoritism.

Citizen Demand for Transparency

Citizens do not consume political information in a uniform way. *Political Information Repertoires and Political Participation* (Wolfsfeld, 2016) shows that people combine different media—TV, newspapers, and especially social media to create their own “political information repertoires.” These repertoires determine how actively they seek political information and how likely they are to participate. Individuals with diverse and mixed repertoires (the *Eclectics*) tend to be the most informed and most politically active.

Applied to the NCRSS, this means the system’s transparency tools, its portal, scores, and data visualizations do not guarantee that all citizens will actively search for procurement information. As Wolfsfeld (2016) argues, transparency is not only a technological issue but a *political communication* one. Information only influences behavior when it reaches citizens through the media channels they already use and trust.

Thus, the tendency of people to look for NCRSS-related information will be strongest among those who already possess active, multi-platform information repertoires. These Eclectic users, who combine traditional news, online sources, and social media are the most likely to encounter NCRSS content, understand its political relevance, and integrate it into their participation behaviors, such as monitoring contractors or reporting discrepancies.

NCRSS strengthens accountability most effectively among people who already have strong information-seeking habits. Its impact grows as the system becomes embedded across the diverse media environments where politically engaged citizens naturally look for information.

In addition, Kim’s (2009) *Communication Mediation Model* establishes that political information seeking and ultimately political participation is shaped by three core drivers: political interest, political efficacy, and media use, particularly internet-based information environments. Individuals are more likely to search for government information when they already possess some interest in political affairs, believe they can understand or influence political processes, and are accustomed to using digital platforms to obtain political content.

This model directly explains how citizens will interact with the National Contractor Risk Scoring System (NCRSS). Because the NCRSS delivers procurement information through a simple online interface, it taps into the same psychological and media pathways Kim (2009) identifies. Its localized project data heightens political interest; its discrepancy-reporting feature strengthens political efficacy by giving citizens a direct role in accountability; and its web-based, user-friendly design aligns with modern internet consumption habits.

As a result, the citizens most likely to actively seek, check, and monitor NCRSS information are those whose interest, efficacy, and digital media use already predispose them to engage in political information seeking. In this way, the NCRSS operationalizes Kim’s model by lowering access barriers and reinforcing the psychological conditions that motivate individuals to search for government transparency data

Climate and Socioeconomic Consequences

Failures in critical infrastructure, such as flood control structures, represent a form of climate injustice, as corruption directly undermines the nation's capacity to adapt to environmental risks. Each peso lost to misprocurement reduces disaster resilience and endangers lives and livelihoods. Regions dominated by political dynasties are particularly vulnerable, experiencing poor governance outcomes despite high levels of initial infrastructure spending. Projects in these areas are often designed to maximize political gain or kickbacks rather than address genuine public needs, further compounding systemic inefficiencies and societal harm.

Statistical Patterns and Cross-Domain Insights

Quantitative analysis highlights that systemic failures are concentrated rather than random. Projects exhibiting poor quality, repeated delays, or financial irregularities are often associated with contractors who show extreme deviations in one or more risk indicators. Network and cross-domain mapping demonstrate that vulnerabilities are amplified by interdependencies between performance, integrity, and contractor concentration. Beneficial ownership linkages and political affiliations further compound these risks. This evidence underscores the need for multidimensional monitoring that captures operational, structural, and governance-related vulnerabilities across projects.

Operational and Strategic Implications for the NCRSS

The NCRSS provides a centralized, evidence-based source of truth by integrating previously siloed datasets, including CPES, PhilGEPS, blacklisting records, and COA audits. This integration enhances transparency and enables agencies to make informed, data-driven decisions. By standardizing contractor evaluations and incorporating automated risk scoring, the system reduces discretionary bias and provides early warning signals to prevent delays, cost overruns, and poor project execution. Operationally, NCRSS improves fiscal efficiency by avoiding contractors with histories of underperformance and enabling more strategic resource allocation. Its public-facing portal strengthens social accountability, allowing civil society, media, and citizens to monitor procurement performance. Multi-stakeholder governance ensures balanced oversight, mitigates regulatory capture, and fosters compliance through industry engagement and independent monitoring.

Strategically, the NCRSS represents a shift from reactive to preventive governance. By assessing contractor risk prior to project awards, the system minimizes opportunities for corruption, reduces project failures, and promotes efficient use of public funds. Its scalable design allows for pilot implementation in select agencies or project types, such as DPWH flood control infrastructure, with potential for nationwide adoption. Aggregated data from the system can guide broader procurement reforms, inform budget allocation decisions, and support evidence-based policymaking, creating a continuous cycle of improved transparency, accountability, and governance outcomes.

The evidence indicates that infrastructure risk is systemic, concentrated among specific contractors and regions, and exacerbated by political influence and opaque ownership structures. Quantitative risk scoring and network analysis provide actionable tools for policymakers to identify high-risk contractors, mitigate collusion, and enforce accountability. By linking operational performance with governance indicators and anti-corruption measures, the NCRSS enables targeted interventions, preventive governance, and strategic reform. This integrated approach ensures that procurement decisions are both data-driven and aligned with public interest, while reinforcing transparency, ethical standards, and resilience in critical infrastructure systems.

Setup and Installation Guide

The National Contractor Risk Scoring System (NCRSS) is designed for immediate deployment with minimal technical requirements. Users can access and install the system via a single web-based link: <https://tinyurl.com/NCRSS-NCPAG>

Installation Process:

1. *Access the Link* – Open the URL in any standard web browser. The platform is fully compatible with modern browsers and requires no additional software.
2. *Load the System* – Upon opening the link, the NCRSS interface will load automatically. No local server setup or configuration is required.
3. *Navigate Modules* – Users can immediately interact with all platform components, including contractor search, risk scoring, indicator breakdowns, and feedback submission.
4. *System Readiness* – The platform is fully operational upon access, ensuring immediate usability for both policy stakeholders and technical users.

This setup procedure emphasizes simplicity and accessibility, ensuring that public procurement officers, contractors, and other relevant stakeholders can engage with the system efficiently and without technical barriers.

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