

Reforming Software Procurement in Nepal: A Quality and Cost-Based Selection Approach

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ABSTRACT: The rapid expansion of digital governance has significantly increased demand for software systems in the public sector. However, Nepal's procurement framework, governed by the Public Procurement Act 2063, primarily emphasizes the Lowest Evaluated Bidder (L1) approach, which prioritizes cost over quality. This has resulted in project delays, cost overruns, poor system performance, and high failure rates.

This paper proposes the adoption of a **Quality and Cost-Based Selection (QCBS)** model for public software procurement. The QCBS approach balances technical capability and financial evaluation, improving vendor selection and project outcomes. Based on empirical findings, including analysis of over 100 software tenders, the study demonstrates that higher bid discounts correlate negatively with project success.

The paper recommends policy reforms including QCBS adoption, software-specific procurement guidelines, and capacity building for procurement officials to enhance Nepal's digital governance ecosystem.

KEYWORDS: QCBS, Software Procurement, Public Sector ICT, Digital Governance, Procurement Reform

I. INTRODUCTION

Public procurement plays a vital role in national governance and accounts for a significant portion of Nepal's national expenditure. With the rise of digital transformation initiatives under the Digital Nepal Framework 2019, government investment has increasingly shifted toward software systems. However, Nepal continues to apply traditional procurement practices designed for physical infrastructure to software projects. The mandatory L1 model prioritizes cost over technical quality, leading to:

- Poor system performance
- Project delays and abandonment
- Vendor lock-in
- Cybersecurity risks

Software development differs fundamentally from physical goods due to its iterative and complex nature. Therefore, a new procurement approach is necessary.

II. LITERATURE REVIEW

A. Price-Based Procurement

Price-based procurement emphasizes cost minimization. While it ensures transparency, it often leads to poor outcomes in complex ICT projects due to underbidding and compromised quality.

B. Quality and Cost-Based Selection (QCBS)

QCBS evaluates vendors based on both technical and financial criteria. International organizations such as the

Asian Development Bank and World Bank recommend limiting financial weight to 30–40% in ICT procurement.

Typical structure:

- Technical Score: 70%
- Financial Score: 30%

C. Global Best Practices

Countries with advanced digital governance systems adopt procurement models focusing on:

- Technical capability
- Cybersecurity standards
- Vendor experience

These approaches significantly improve software project success rates.

III. PROBLEM FORMULATION

Nepal's current procurement model creates several structural and operational challenges:

- Incentivizes underbidding (30–50% below estimated cost)
- Weak technical evaluation capacity
- Lack of cybersecurity and source code clauses
- High project failure rate (approximately 65%)

The reliance on the L1 system under Section 25 of the Public Procurement Act leads to poor-quality outcomes.

IV. PROPOSED METHODOLOGY

The study proposes a **QCBS-based evaluation model** for software procurement:

Criteria	Weight
System Architecture	20%
Security Framework	15%
Development Methodology	15%
Team Qualification	15%
Past Experience	15%
Maintenance Plan	10%
Financial Proposal	10%

This ensures balanced evaluation between technical excellence and cost efficiency.

V. RESULTS AND ANALYSIS

A. Empirical Findings

Analysis of 112 software tenders reveals:

- Average bid discount: 27.4%
- Failure rate: 65% (delayed + abandoned projects)
- Strong negative correlation between discount and success ($r = -0.71$)

B. Key Insights

- Projects with >30% discount show extremely high failure rates
- Lack of IT training reduces evaluation quality
- Weak Terms of Reference (ToR) lead to poor implementation

VI. DISCUSSION

The findings indicate that procurement challenges in Nepal are:

Structural

- Construction-centric procurement framework
- Mandatory L1 selection

Technical

- Weak ToR drafting
- Lack of cybersecurity requirements

Behavioral

- Limited IT literacy among procurement officers
- Influence of institutional and political factors

Institutional

- Lack of standardized cost estimation
- Weak contract monitoring mechanisms

To address these issues, reforms must go beyond financial adjustments and focus on institutional capacity and governance.

VII. CONCLUSION

Nepal's current procurement model presents significant challenges for software development projects because of its strong emphasis on cost rather than the broader dimensions of technical quality, implementation capability, security, and

long-term sustainability. Unlike conventional goods, software systems require continuous technical expertise, effective requirements management, system integration, testing, cybersecurity, maintenance, and adaptation to changing organizational needs. Therefore, selecting a software vendor primarily on the basis of price may create risks that become visible only during implementation and operation. The adoption of a Quality- and Cost-Based Selection (QCBS) approach can provide a more balanced mechanism by evaluating vendors according to both technical capability and financial feasibility. By giving appropriate weight to system architecture, cybersecurity, development methodology, team qualifications, relevant experience, quality assurance, maintenance, and financial considerations, QCBS can support the selection of vendors that are better equipped to deliver reliable and sustainable software solutions. Such an approach can also reduce the risks associated with excessively low bids, implementation delays, poor system performance, and inadequate long-term support. Reforming public software procurement practices is therefore essential for achieving sustainable digital transformation and improving the quality of public service delivery in Nepal. Procurement reform should extend beyond changing the financial evaluation mechanism and should include software-specific procurement guidelines, stronger technical evaluation capacity, clearly defined Terms of Reference, measurable acceptance criteria, cybersecurity provisions, effective contract management, and lifecycle-based cost evaluation. A greater focus on quality and value for money can help government institutions make procurement decisions that consider not only the initial contract cost but also the long-term operational, maintenance, security, and enhancement requirements of software systems. Ultimately, a quality-oriented procurement framework can contribute to more reliable digital government systems, better utilization of public resources, reduced implementation risks, and improved services for citizens. Therefore, adopting a balanced and software-specific procurement approach should be considered an important step toward strengthening Nepal's digital governance ecosystem and ensuring that public

investment in technology produces sustainable and measurable outcomes.

VIII. FUTURE WORK

Future research directions include:

- Agile procurement frameworks
- AI-based procurement evaluation systems
- Vendor performance monitoring models

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