

## **Low Bidding in Nepal's Construction Industry: Prevalence, Impacts and Mitigation<sup>1</sup>**

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### **Abstract**

In the Nepalese construction industry, selecting contractors based solely on the lowest bid is a common practice. While low bids may initially appear cost-effective, they often lead to long-term consequences that can have a negative impact on the project quality, durability, and timely completion. This paper explores the problematic ramifications of low bids, exploring their impact on project outcomes, stakeholder satisfaction, and the overall sustainability.

This paper identifies the key factors that influence low bidding practices, dissects their long-term repercussions, and proposes potential mitigation strategies. By providing insights into the challenges posed by low bidding practices, this paper aims to contribute to informed decision-making and encourage a shift towards more balanced and sustainable construction practices in Nepal. Furthermore, this paper seeks to establish a solid foundation for a broader knowledge base, guiding future decisions and discourse towards the establishment of balanced and ethical bidding practices in the Nepalese construction industry.

This analysis calls for a collaborative effort from all stakeholders, including project owners, contractors, subcontractors, suppliers, and regulatory bodies. By working together, these entities can effectively mitigate the risks associated with low bids and pave the way for a more robust and prosperous construction industry in Nepal.

**Keywords:** low bids, hidden costs, construction industry, Nepal, project outcomes, stakeholders, mitigation strategies, bid evaluation, average bid method.

### **1. Introduction**

In the construction industry, a "low bid" refers to a bid quoting the lowest price, including chosen alternatives, and adhering to all bidding requirements (Harris, 2006). This concept extends to

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project proposals submitted by the contractors with significantly lower estimated costs compared to their competitors. The goal is to win the contracts by offering the most financially attractive bid price.

In Nepal's construction market, the practice of contractors submitting low bids to win the contracts has become widespread. The allure of low bidding stems from the promise of direct cost savings for budget-limited clients and project owners.

The rationale behind selecting the lowest bid for award is to prioritize cost efficiency and ensure the least expensive option for completing a project. Project owners who opt for the lowest bid seek to minimize project expenses and achieve cost savings within their budgetary constraints. This strategy is often considered a way to promote fair competition and prevent favoritism or corrupt practices during the procurement process.

However, this strategy carries significant risks as the primary motivation of low bidders is just to win the contract, not delivering the best value. This can trigger a focus on immediate gains over long-term quality, with shortcuts leading to compromised materials, workmanship, and ultimately, project failures.

## **2. Drivers of low bidding**

Various factors contribute to the phenomenon of low bidding in procurement process. These influences can be multifaceted and involve aspects related to the bidder, the project, and the competitive landscape. Some key factors that play a role in encouraging low bidding are as follows:

### **2.1. Competition**

The construction industry is highly competitive, with numerous contractors competing for limited projects. In order to secure contracts and maintain a steady flow of work, contractors may resort to low bids to gain a competitive edge over their rivals.

### **2.2. Cost of materials**

The cost of materials can fluctuate over time, so the contractors may submit low bids if they believe that the cost of materials will go down in the future. The perception that low bids offer a more affordable option can be appealing to project owners, particularly when faced with financial limitations.

### **2.3. Incomplete information**

The contractors may lack comprehensive information about the project, leading to underestimation of costs. This can be exacerbated when the project details are not sufficiently communicated or understood.

### **2.4. Client expectations and market pressure**

The prevailing belief that the lowest bid represents the best value can influence contractors to underbid, even below their actual cost estimates. Additionally, client expectations and market dynamics that favor low pricing place immense pressure on contractors to stay competitive with low bids.

### **2.5. Portfolio building**

Contractors, especially newer or smaller firms, may utilize low bids as a means to establish a reputation and build their project portfolio. By offering competitive pricing, they aim to gain visibility and credibility in the industry, which can lead to future opportunities.

### **2.6. Reputation and strategic intent**

The bidders might use low bids as part of a broader strategy to enter a new market, gain a position in the industry, or establish a reputation for cost competitiveness.

### **2.7. Cash flow needs**

Companies facing financial constraints may resort to low bidding to secure immediate cash flow. This can be a short-term strategy to address urgent financial pressures.

However, the above-mentioned factors are not always the only considerations for contractors when submitting bids. Typically, abnormally low bids can originate from two primary sources: unprofessional practices or deliberate manipulation. The former, known as the "*winner's curse*" (Capen, et al., 1971), results in the winning contractor experiencing financial setbacks due to inaccurate estimations. While enhancing professionalism can address this issue, a more severe threat arises from the bidders deliberately underpricing their bids.

In latter context, contractors may submit low bids with the expectation of recovering their costs through change orders during construction (Mirsky & Schaufelberger, 2022), also known as *predatory bidding* (Crowley & Hancher, 1995). Such a bidding strategy might be adopted by the contractors who face poor economic conditions, low cashflow, and slow growth that endanger their business survival. Change orders might be viewed as an opportunity to expand the scope of work and boost profit, which were partly sacrificed by bidding low (Awwad & Ioannou, 2012).

### **3. Low-bid award system**

Low-bid award system is a practice in construction work, where the contractors propose the lowest possible price to finish the project as per given scope, plans and specifications. The practice of awarding construction contracts in Nepal's public sector has long been dominated by the selection of the lowest bid.

As outlined in Nepal's Public Procurement Act 2007, the contracts are awarded to the lowest evaluated substantively responsive offer (PPMO, 2007). Section 25 of the Act states that the bid with the lowest price should be determined by comparing the evaluated prices of each bid. Despite the bid evaluation process allowing for the consideration of other factors outlined in the bidding documents, the contracts are typically awarded to the lowest bidders. This approach is intended to ensure cost efficiency and prevent fraudulent practices (Khan & Khan, 2015). The means of obtaining the best value under this system is to award a contract to the bidder who is both responsive and compliant, and willing to fulfill the contract terms at the lowest cost (Bedford, 2009).

The low-bid award system encourages competition among the bidders vying for the project, presenting both advantages and disadvantages for the client. Given the public sector's accountability to the public, an open and competitive bidding process, solely based on price, ensures high transparency.

#### **3.1. Project implications**

Although awarding the lowest bid can potentially save costs and increase transparency, relying solely on the lowest bid can have its own set of challenges and implications for the procurement process and project outcomes. In the highly competitive environment, low bidding can also be a powerful tool for undercutting competitors and gaining market share. However, this strategy is a double-edged sword, as it can also damage a contractor's profitability in the short term if not managed properly (Liu, et al., 2014).

Selecting the lowest bid doesn't guarantee the most cost-effective outcome for project owners, as it may not necessarily result in the lowest overall project cost. However, in some cases, a lower bid might reflect an innovative approach or strong team expertise, making that bidder the most competent choice despite the lower price (Awwad & Ioannou, 2012). The reason is that some companies possess a distinctive skill on production methods that create a totally different cost structure or opportunities for extra income compared to their competitors (Alexandersson & Hult'en, 2006).

Selecting a contractor only based on price diminishes the importance of other factors such as time and quality. Low bid as the only award criterion motivates bidders to exploit project conditions by employing opportunistic bidding strategies, where they submit an abnormally low bid and subsequently make profit by cutting corners during construction or raising claims afterward (Lo, et al., 2007). Some bidders carefully examine bid documents to identify possible errors or ambiguities that might lead to change orders or claims during the project duration (Dowle & De Stephanis, 1990). These bidders can use this knowledge to strategically submit a low bid, with the expectation of recovering the money later on. This is similar to a gambit strategy in chess where one player makes sacrifices early to put the other player at a disadvantage later (Crowley & Hancher, 1995). Public agencies face these risks because of rules that require them to award the contract to the lowest, responsive, and responsible bidder.

When the contract is awarded to the lowest bidder, it encourages intentional low bids that do not reflect the project requirements. This increases the likelihood of cost overruns, schedule delays, and conflicts among the parties. As a result, the claims and disputes escalate during construction, leading to delays, higher costs and inferior quality (Grogan, 1992). It can also lead to the selection of incompetent contractors, bid shopping, and various other issues (Clough, et al., 2015). Therefore, low bid is not necessarily of the best value.

### **3.1.1. Initial cost savings vs. long-term consequences**

Project owners and clients are often attracted to the prospect of reducing expenses and maximizing their budgets. However, it is crucial to consider the long-term consequences that can outweigh the initial cost savings associated with low bids.

These consequences can manifest in various forms, including compromised quality, project delays, additional expenses for rework and repairs, and jeopardized overall project success. It is essential to recognize the trade-off between immediate cost savings and the potential long-term expenses that can arise from low bids.

### **3.1.2. Increased risk of cost overruns**

Low bids can increase the risk of cost overruns during the construction phase. Contractors who submit abnormally low bids may struggle to complete the project within the estimated budget. Unforeseen expenses, such as rising material costs or additional work requirements, can quickly erode initial cost savings. Contractors who submit low bids may be more likely to request change orders and variations, which can also lead to additional costs.

### **3.1.3. Project delays and disruptions**

Contractors who submit low bids may struggle to allocate adequate resources, manpower, and equipment to meet project timelines. Insufficient planning and management can lead to delays and disruptions, causing additional expenses.

### **3.1.4. Hidden costs of rework and repairs**

Contractors who submit low bids may resort to using substandard materials or compromising on the quality of work as a means for cost saving. This can lead to the need for costly rework or repairs. These additional costs, which may not be apparent during the bidding stage, can have a significant impact on the project's short-term finances.

## **4. Survey methodology**

Primary data was gathered via a survey of 42 Nepalese construction industry professionals engaged in bidding, procurement, execution, and oversight of construction projects. The data collection was done through a structured questionnaire tailored to the objective of study. The survey questionnaire was designed based on validated concepts from published academic studies on low bidding practices and outcomes.

The survey questionnaire comprised a mix of multiple choice as well as a few open-ended items. This enabled gathering of both quantitative and qualitative data on respondent demographics, familiarity with low bidding, perceptions of ethicality and impacts, causes, and mitigation measures.

The questionnaire was self-administered to participants anonymously via online forms over a one-month period. E-mail outreach helped achieve a 100% response rate from the identified sample. The voluntary nature and lack of identifiable information helped minimize response bias.

## **5. Results**

### **5.1. Respondent profile**

The roles of the respondents are categorized as follows:

- **Project Owners/Clients:** This group comprised 38% of the total participants. Project owners and clients are crucial stakeholders who initiate and fund construction projects. They play an important role in awarding contracts and selecting contractors.

- **Contractors:** An equal number of respondents, 38% in total, identified themselves as contractors. Contractors are responsible for executing construction projects as per the specifications provided by project owners. They compete in bidding processes to secure contracts.
- **Other Roles:** 24% of respondents mentioned having roles such as construction engineer, project manager, and donor agency representatives. These individuals might be involved in project planning, management, and funding aspects.

The respondent profile reveals that the survey primarily attracted project owners/clients and contractors, together accounting for 76% of the sample. This is a significant finding as project owners and contractors are the two most critical stakeholders involved in the bidding process. Their perspectives on low bidding practices are crucial as they directly impact the decision-making process in awarding contracts.

A significant majority of the respondents possessed over a decade of experience. These figures suggest that the data collected was sourced from proficient domain experts who possess extensive knowledge of bidding practices within the Nepalese construction industry.

## **5.2. Low bidding familiarity and prevalence**

57% of the survey participants identified themselves as "very familiar" with the concept of low bidding, while 43% considered themselves "familiar" with this concept. This indicates that a significant majority of the participants possess a substantial understanding of low bidding practices. The high level of familiarity among the respondents suggests that the data collected is likely to be more reliable and accurate. Their insights are more likely to be based on informed knowledge and experience in dealing with low bids.

Since the participants are well-versed in low bidding practices, their perspectives are more likely to be aligned with the ground reality of the construction industry in Nepal. The absence of respondents in the "not familiar" and "somewhat familiar" categories further supports the idea that the survey attracted individuals with a good level of knowledge on the subject matter.

## **5.3. Understanding of low bidding practices**

The most commonly cited definition of low bidding, chosen by 43% of the respondents, emphasized that low bidding involves sacrificing quality for cost savings. This interpretation suggests that contractors submitting low bids may compromise on materials, workmanship, or safety measures to reduce project costs and make their bids more competitive.



28% of the respondents considered low bidding as the bid with the lowest cost among all proposals. This definition indicates that low bids are those that offer the lowest price regardless of other factors.

Another 24% of respondents viewed low bidding as a proposal with a considerably lower cost compared to other bids submitted for the same project. This definition implies that a bid is considered "low" based on its comparative cost to other bids.

5% provided a unique definition, specifying that low bidding entails submitting a bid substantially below the Engineer's cost estimate, but with potential risks in project implementation.

The diversity of definitions highlights the multifaceted nature of low bidding and the varied perspectives held by professionals in the Nepalese construction industry. The recognition of both the lowest absolute cost bid and significantly lower comparative cost bids indicates that stakeholders perceive low bidding through different lenses. While some emphasize the absolute lowest price, others consider the bid's competitiveness compared to other proposals. This suggests that the evaluation of low bids may vary among project owners and highlights the importance of transparent and consistent bid evaluation criteria.

The unique definition provided by two respondents highlights the potential risks associated with abnormally low bids that fall significantly below the Engineer's cost estimate. This suggests that stakeholders are aware of the challenges posed by bids that deviate drastically from realistic cost estimates.

#### **5.4. Ethical perspectives**

The respondents were asked to rate their beliefs regarding the ethics of low bidding in construction projects. 38% of respondents consider low bidding in construction projects as "very unethical," and an additional 33% perceive it as "somewhat unethical." Together, these responses account majority of respondents who hold negative ethical views about low bidding.

24% of respondents expressed a neutral stance on this matter. A minority of respondents (5%) held a perspective that low bidding is "somewhat ethical." No respondents rated it as "very ethical," indicating a clear lack of endorsement for the ethical merits of this bidding practice.

#### **5.5. Acceptable threshold for low bids**

The survey aimed to understand stakeholders' perspectives on the acceptable threshold for low bids in construction projects. Respondents were asked to provide the minimum percentage below the estimated cost that they would consider as a low bid.



The responses indicated a range of perspectives on what percentage below the estimated cost should be considered as a low bid. Most respondents consider bids falling within the range of 15-30% below the estimated cost as the minimum threshold for low bids. This range was the most commonly cited by the participants (81%).

Additionally, there were some varying perspectives, with a minority of respondents (10%) considering even 10% below the estimated cost as a low bid. Conversely, a few respondents suggested that a bid must be at least 25% below the estimated cost to be categorized as low.

### **5.6. Prevalence of low bid prioritization**

The survey results reveal a striking finding: 95% of the respondents reported that they have observed construction projects where low bids were prioritized over other factors in awarding contracts. This significant majority of "Yes" responses highlights an alarming trend of over-reliance on the lowest bid price as the primary criterion for selecting contractors, rather than conducting a comprehensive evaluation of the value and technical expertise offered by them.

### **5.7. Frequency of low bidding by contractors**

A significant majority of contractors (76%) frequently or occasionally engage in low bidding practices when bidding for construction projects. This suggests that competitive low pricing is a common strategy employed by contractors in an attempt to secure contracts.

14% indicated that they rarely engage in low bidding practices. The data indicates that 1 in 10 contractors completely avoid low bidding, opting for alternative pricing strategies or prioritizing factors such as quality, technical competence, or reputation over cost when submitting their bids.

### **5.8. Perceived drivers of low bidding**

Based on the survey responses, the primary factors perceived to influence low bidding in Nepal's construction industry are as follows:

- *Intense competition:* 71% of the respondents identified intense market competition as a significant factor.
- *Lack of knowledge about project requirements:* 67% of the respondents pointed out information gaps concerning project requirements.
- *Pressure to secure projects:* 67% of the respondents mentioned that there is pressure to win contracts, leading to low bids.
- *Lack of contractor qualifications:* 62% of the respondents believe that insufficient contractor capabilities contribute to low bidding.

- *Lack of emphasis on quality:* 57% of the respondents stated that low bids are often associated with compromised quality.
- *Lack of awareness on hidden costs:* 52% of the respondents indicated that contractors may not be fully aware of hidden costs when submitting low bids.
- *Need of maintaining client relationships:* 29% of the respondents considered the need of maintaining relationships with clients as a factor influencing low bidding.
- *Budget limitations:* Only 5% of the respondents mentioned budget limitations as a factor in low bidding.

The prominent factors, such as competition, limited project knowledge, and the pressure to secure contracts highlight the prevailing bidding culture in Nepalese construction industry. Additionally, the inadequate qualifications of some contractors, a lack of emphasis on quality, and a lack of awareness about hidden costs play key roles in encouraging low bids.

### **5.9. Deliberate losses from low bidding**

Nearly all respondents (95%) estimate that between 30% and 60% of contractors deliberately underbid and incur losses. This highlights a prevalent high-risk bidding strategy, where contractors bid with the sole objective of winning a project.

In contrast, only 5% of respondents indicated that only 30% of contractors engage in deliberate underbidding incurring losses. This implies a widely held perception that a considerable number of contractors purposefully underbid for projects.

### **5.10. Intentional low bidding for cost recovery**

The majority of respondents (90%) have a good awareness of the intentional low bidding to enable cost recovery afterwards. More than half of the respondents (52%) report being "very familiar" with this practice, and an additional 38% consider themselves "moderately familiar." Together, these responses indicate that strategic underbidding for later cost recovery is well-known and understood among the stakeholders surveyed.

A small portion of participants (10%) indicated that they are "somewhat familiar" with the intentional low bidding practice. Although a minority, this group further contributes to the overall awareness of intentional low bidding within the surveyed population.

It is worth noting that none of the respondents claimed to be "not familiar at all" with intentional low bidding, reinforcing the notion that this practice is commonly recognized and acknowledged within Nepal's construction industry.

### **5.11. Strategy for executing low bid contracts**

As per the survey findings, the most common strategy adopted for executing low bid contracts in the Nepalese construction industry is "delaying subcontractor payments", indicated by 38% of respondents. Using inferior quality materials and payment delays to staff are also reported as common by 33% and 19% of the respondents respectively.

10% of respondents acknowledge the simultaneous occurrence of all the mentioned practices - delaying subcontractor payments, using inferior quality materials, and payment delays to staff. This suggests that a notable portion of participants perceives a combination of these practices as a prevalent approach in executing underbid contracts.

### **5.12. Overall impacts of low bidding on project outcomes**

The majority of respondents (90%) cite an overall negative or very negative impact of low bidding on project outcomes.

Project delays and disruptions are the most widely observed adverse effect of low bidding highlighted by 90% of respondents. Additionally, poor construction quality is a significant concern for 71% of participants, indicating that compromised quality is another commonly observed consequence. Safety risks during project execution are acknowledged by 67% of respondents, emphasizing the potential dangers associated with low bidding practices. Disputes during implementation emerge as another considerable issue, with 62% of participants expressing concerns about conflicts arising during the project's execution. Furthermore, 38% of respondents point to both additional expenses for rework and repairs, as well as increased maintenance costs over time, highlighting the multifaceted challenges associated with low bidding.

The data provides strong empirical evidence on the typical negative consequences of low bid contracting in construction projects. The lack of positive perspectives further reinforces the perceived downsides of low bidding on aspects like quality, timeliness, costs and safety. This aligns with the direct experiences highlighted by the sample.

### **5.13. Effects on subcontractors**

The vast majority of respondents (90%) believe that the effects of low bidding on subcontractors are negative or very negative. This finding highlights the significant challenges and risks subcontractors face when working on projects that have been awarded through low bidding practices.

An instance of this is the unethical practice of "*bid shopping*", where subcontractors are squeezed to lower their prices after the main contractor's bid has been accepted and the contract awarded, thereby compromising the integrity of the bidding system.

A minority of 10% indicates a neutral stance, suggesting a divergence in opinions regarding the impact of low bidding on subcontractors within the surveyed population.

Low bidding is widely seen as detrimental to subcontractors by most stakeholders. The lack of positive perspectives further highlights the unfavorable outcomes believed to be faced by subcontractors due to low bidding main contractors. Addressing the challenges and risks imposed on subcontractors requires an attention.

#### **5.14. Opinion on Nepal's Construction Norms**

Over half of the respondents (52%) believe that Nepal's Construction Norms are higher than necessary but still fall short in fully compensating for the gaps created by low bidding. Only a small percentage (5%) feel that the construction norms are excessively high and effectively balance the low bidding gaps. Additionally, 15% of the respondents consider Nepal's Construction Norms to be appropriate and unrelated to low bidding gaps. The remaining 28% of respondents are uncertain, indicating a mixed awareness on this issue.

Opinions are divided among respondents regarding whether Nepal's Construction Norms adequately compensate for the gap caused by low bidding. While a majority believes that the norms are higher than required, there is a consensus that they do not fully offset the negative consequences of low bidding practices. A significant number are unsure, pointing to the need for greater clarity on whether norms play a mitigating role in low bidding or not.

#### **5.15. Mitigation strategies**

The majority of respondents favored a comprehensive approach to mitigating the challenges associated with low bidding in the Nepalese construction industry. This approach includes enhanced bid evaluation criteria, strengthened contractor qualifications and monitoring mechanisms, a commitment to promoting transparency and accountability, and educating stakeholders about potential risks associated with low bids.

- Enhancing bid evaluation criteria (86% respondents)
- Strengthening contractor qualifications and monitoring (76% respondents)
- Promoting transparency and accountability (57% respondents)
- Educating stakeholders about the hidden costs of low bidding (52% respondents)

These preferences highlight the need for multifaceted approaches to control unhealthy low bidding practices while ensuring desirable outcomes in the construction industry. Respondents believe that a combination of reforms in procurement, contracting, transparency, and education will be instrumental in addressing the issue of low bidding effectively.

## **6. Discussion**

The study results align with existing literature on the pervasiveness of low bidding and associated adverse impacts on construction projects globally. The findings provide empirical validation of low bidding as a critical concern within the context of Nepal's construction industry.

### **6.1. Prevalence and causes**

The high proportion of contractors who frequently or occasionally engage in low bidding practices suggests that this is a common tactic used to gain a competitive edge in the bidding process. The Nepalese procurement system favors awarding contracts to the lowest bidder, which motivates the contractors to submit low bids. The lack of transparency surrounding government cost estimates makes it difficult for contractors to accurately assess the true cost of a project, which can lead to them submitting abnormally low bids.

Despite recent regulations that demand justifications for the bids that are below the estimated cost by 30%, this has not been effective in deterring the submission of abnormally low bids. This is likely due to the fact that the penalties for submitting abnormally low bids are not severe enough. Additionally, the regulations are difficult to enforce, as proving that a bid is unrealistically low can be a complex task.

The widespread familiarity and high self-reported engagement in low bidding practices is the evidence of deep-rooted systemic competitive pressures that drive unrealistic bid pricing. Intense competition for contract awards combined with information gaps on actual project costs appear to induce contractors into a race to the lowest bid.

The lack of emphasis on technical qualifications over low prices during bid evaluation exacerbates the issue. This is because it encourages contractors to focus on submitting the lowest bid, rather than on submitting a bid that is realistic and that takes into account the quality of work.

### **6.2. Impacts**

The strong acknowledgement of poor construction quality, delays, cost escalations, disputes, and safety issues reaffirm global research on the risks induced throughout project lifecycles due to low bids. The downstream negative effects on subcontractor performance further validates that unfavorable outcomes permeate across the value chain.

Nevertheless, the recognition of these concrete issues among Nepalese stakeholders serves as a positive foundation for initiating reforms. The acknowledgment of adverse impacts seems to fuel a need for subsequent discussions on mitigation strategies.

### 6.3. Differing ethical perspectives

There is a lack of consensus on the ethics of low bidding. The split views on fairness, competition ethics, and moral hazards deserve deeper investigation. The ambivalence indicates that even experts grapple with reconciling short-term savings for clients against long term, industry-wide impacts of irrational pricing.

Further dialogue and education on construction industry ethics could aid more balanced, principled perspectives. Nepal's nascent anti-corruption drive presents an opportunity to articulate acceptable bid practices.

### 6.4. Mitigation measures

The proposed mitigation measures align with global recommendations on addressing unrealistic bids, through improved bid evaluation criteria, efforts to enhance contractor skills, effective monitoring, transparency, and educating stakeholders about the hidden costs of low bidding.

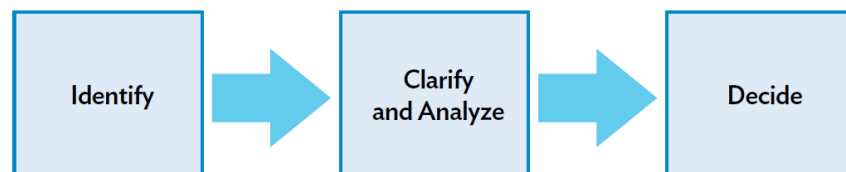
It is also suggested that greater reforms in bidding norms could help address the key drivers of low bids. Considering the significant influence of market competition, it may be necessary to go beyond merely focusing on contractors and also reform bidding processes to achieve more effective outcomes.

## 7. Recommendation

The recommendations highlight the need for a multifaceted approach combining education, policy reforms, checks on contractor capacity, and transparency. Further research could support developing standardized bidding guidelines and decision frameworks that minimize unreasonable low pricing.

### 7.1. The three-step approach

The Asian Development Bank provides guidance on a three-step approach that can be highly effective in dealing with low bids in construction projects (ADB, 2018):



Source: Asian Development Bank, 2018

### **7.1.1. Comparing bid price with Engineer's cost estimate**

The bid price can be compared with the Engineer's cost estimate to validate assumptions, check for accuracy, and update with current market prices. Incorrect assumptions or misunderstandings about technical solutions or price levels could justify why a bid price may not be considered abnormally low.

### **7.1.2. Comparing bid price with other bidders**

The bid price can be compared with the prices offered by other bidders submitting substantially responsive bids. This helps to determine if the bid price is significantly lower than the market average.

### **7.1.3. Comparing bid price with similar contract prices**

The bid price can be compared with prices paid in similar contracts in the recent past, either government- or development partner-funded. This helps to assess if the bid price is abnormally low compared to prevailing market conditions.

### **7.1.4. Seeking external expert assistance**

In complex cases, the entity may need the assistance of external experts, especially for high-level technology projects, to determine if a bidder is capable of performing a contract within its bid price.

### **7.1.5. Rejecting or accepting with higher performance security**

If the bid price is determined to be abnormally low and not justified, the entity has the option to reject the bid or accept it with a higher performance security to safeguard the fulfillment of the contract.

It is important to note that these options should be applied based on the specific circumstances of each case and in accordance with applicable procurement regulations

## **7.2. The average bid method**

The average bid method provides a more rational and balanced approach to bidding processes. This method has the potential to foster fair competition, discourage abnormally low bids, and contribute to the overall improvement of the bidding landscape. Implementing such measures can contribute to promoting a healthier and more sustainable environment for contractors and stakeholders involved in construction projects.

In the average-bid method, the contract is awarded to the bidder whose price closely aligns with the average of all submitted bids. Typically, the winning bidder is determined by a specific



relationship with the calculated average of all bid prices. Various average bid methods employ distinct procedures for average calculation or employ different criteria to identify the winning bid. For instance, some methods use an arithmetic or weighted average, while others consider the average of remaining bids after eliminating those that deviate beyond a specified percentage from the overall average. Additionally, the winning bidder might be the one whose price is nearest to the average or the one whose bid is closest to, but less than, the average. Taiwan adopts the former approach, whereas Italy employs the latter.

To illustrate the average bid method, let’s consider the following hypothetical example featuring six bidders and their respective bid amounts:

Bidder	Bid Amount	Deviation from Average	% Deviation from Average
A	110.00	+14.50	+15.18%
B	102.00	+6.50	+6.81%
C	96.00	+0.50	+0.52%
D	85.00	-10.50	-10.99%
E	105.00	+9.50	+9.95%
F	75.00	-20.50	-21.47%

The average bid amount is calculated as 95.50. These values represent the difference from the average and the percentage difference for each contractor based on provided bid amounts.

According to low bid criteria, Bidder F with a bid of 75.00 would be awarded the contract. However, applying the Taiwanese method suggests that Bidder C, with a bid of 96.00, which is closest to the average, secures the project. On the other hand, following the Italian method would indicate that Bidder D, with a bid of 85.00, being both closest to and lower than the average, wins the contract.

This methodology is typically employed when dealing with a limited number of bidders. In scenarios involving a larger pool of bidders, additional regulations may be implemented, such as the exclusion of the highest and lowest bids, as seen in Switzerland.

In the revised example shown below, Bidders A and F are excluded from consideration, resulting in a new average of 97.00, and Bidder C is awarded the project for having the bid closest to this revised average.

Bidder	Bid Amount	Deviation from Average	% Deviation from Average
B	102.00	+5.00	5.15%

<b>C</b>	96.00	-1.00	-1.03%
<b>D</b>	85.00	-12.00	-12.37%
<b>E</b>	105.00	+8.00	8.25%

Some government procurement processes employ additional exclusion criteria beyond exclusively selecting the lowest bidder. For instance, Peru has regulations stating that bids with 10 percent above and below of the average bid amount should not qualify for award consideration (Albano, et al., 2006).

In the above example, bids from Bidders A, D, and F are excluded. The average bid amount of the remaining bidders (B, C, and E) is calculated to be 101.00.

<b>Bidder</b>	<b>Bid Amount</b>	<b>Deviation from Average</b>	<b>% Deviation from Average</b>
<b>B</b>	102.00	+1.00	+0.99%
<b>C</b>	96.00	-5.00	-4.95%
<b>E</b>	105.00	+4.00	+3.96%

Since Bidder B presented the bid closest to the calculated average, they are awarded the contract.

A similar principle, known as the "Danish System," calculates a reasonable bid by first rejecting the lowest and highest bids as extremes, then averaging the remaining offers. This system immediately discards the highest and lowest bids, with only the remaining offers considered (Ahmed & Morad, 1993). The formula is similar to PERT:

$$NA = (NH + 4A + NL) / 6$$

Where:

NA = New average

NH = New high

A = Average of all bids

NL = New low

The first bid above this calculated NA is treated as the rational, reasonable, and acceptable offer.

Applying this to the same hypothetical bid example, Bidder D's bid becomes the new low at 85 and Bidder E's bid becomes the new high at 105. With the overall average at 95.50, the formula yields a new average bid of 94.83. Bidder C's bid of 96.00 is the first one above this threshold, and

would therefore be deemed the most reasonable and realistic to accept. A key limitation of the Danish system is that it is only effective when there are a minimum of eight bidders.

These competitive cost-based average bidding approaches are primarily utilized to ensure the selected bidder is capable, minimize project risks, and avert disputes and construction claims. The basic principle is that bidders should receive a sensible and practical cost for their work. With a fair price, the assumption is that the bidder would meet project quality requirements, finish on time, and maintain positive relationships with other stakeholders.

The underlying philosophy of this concept is that the best bid is not necessarily the lowest or highest, but rather the one that is most reasonable. This could mean the bid closest to a calculated average (Herbsman & Ellis, 1992), or one that aligns with a specific relationship to the average of all the bid prices (Ioannou & Leu, 1993).

## **8. Conclusions and further research**

To reiterate, the widespread occurrence of low bids in the Nepalese construction industry introduces substantial challenges that may compromise project outcomes, quality, and long-term sustainability. However, by implementing mitigation strategies, such as refining bid evaluation criteria, promoting transparency and accountability, strengthening contractor qualifications and performance monitoring, and educating stakeholders about the hidden costs of low bids, these challenges can be effectively addressed. By adopting these measures, the construction industry in Nepal can proactively address the challenges posed by low bidding and strive for more sustainable project outcomes.

It is essential for project owners, contractors, subcontractors, and suppliers to acknowledge the long-term value of prioritizing quality, expertise, and adherence to industry standards over cost alone. It is also important to recognize that sustainable and high-quality construction comes with a price, and investing in qualified contractors, transparent processes, and best practices is imperative for the long-term benefit of all stakeholders. By promoting a collaborative and transparent approach, the Nepalese construction industry can overcome the pitfalls of low bidding and achieve successful construction projects that contribute to the country's development and economic growth.

The findings from this study affirm that low bidding is a pressing concern in Nepal, demanding immediate attention and reform. Areas for future research include expanding sample sizes across various project types and stages, comparative analyses across markets, bid pricing psychology studies, and pilot testing interventions to shape evidence-based reforms.

The authors are confident that the findings of this study serve as a strong foundation for advancing discussions. It is imperative to emphasize the importance of collaboration among stakeholders to identify the solutions. We hope that stakeholders can come together to find the solutions that work for all.

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