



## Identify Factors Affecting Bid Value Below 80% in the Procurement of Construction Goods or Services

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### Abstract

Competition for construction service is more competitive, the ability to win the tenders is an indicator of success in competition. The method of selecting the service provider with the lowest price often leads to different interpretations. It can be seen from the number of bids below 80% which continues to increase. This research aims to identify the value of the factors that influence the supply below 80%, analyze the dominant factors that have the most influence, and determine the respondents' views based on the company's qualifications in determining the factors that influence the occurrence of bids below 80%. The research method uses the Relative Importance Index (RII). The result of this research obtained 24 factors that affect the value of the offer under 80%. From these 24 factors, ten dominant factors were found, such as (1) the type of project; (2) Project duration; (3) Government Regulations; (4) the risk of carrying out the work; (5) Fluctuations in resource prices; (6) availability of qualified staff; (7) Past failures/profits in similar projects; (8) Tender method (open/close); (9) availability of required funds and office overhead; and (10) Document completeness and design quality.

## Introduction

The procurement of construction goods and services plays a pivotal role in infrastructure development, demanding efficiency, transparency, and accountability. It involves stages from planning, provider selection, to contract execution, all of which must adhere to strict government regulations. In Indonesia, Presidential Regulation No. 12 of 2021 on Government Procurement of Goods and Services governs these processes. Price evaluation is a crucial component within this framework, especially when the selection is made using the lowest bid method, which can significantly influence project success or failure.

One of the core elements of project success is budget efficiency, which refers to completing a construction project within the allocated budget without compromising quality. Efficient budget management not only ensures smooth project execution but also enhances stakeholder satisfaction, including that of clients, contractors, and workers (Ferdinand & Pamadi, 2023; Remi, 2017; Doloi, 2013; Metwally et al., 2025; Sanyaolu et al., 2023; Abolghasemi et al., 2024). The use of strategic planning and advanced tools such as Building Information Modeling (BIM) has been widely recognized as essential in managing costs within complex construction environments (Sarifudin & Jin, 2024; Wibowo et al., 2024; Yang et al., 2021; Sepasgozar et al., 2022).

In recent years, a growing number of construction procurement projects in Indonesia have been awarded to contractors who submit bid values below 80% of the Owner's Estimate (*Harga Perkiraan Sendiri/HPS*). This phenomenon is largely driven by fierce competition among contractors who offer substantially lower bids in order to secure contracts even at the risk of reduced profitability or financial losses (Gea, 2023; Mahapatni, 2021; Gumbu, 2024). While such bidding strategies are sometimes essential for business continuity, they are also associated with project delays and potential abandonment.

The increased prevalence of such low bids raises concerns about long-term project sustainability. Contractors are often forced to cut costs in execution, which can affect work quality and project timelines. The abundance of contractors in the market places significant pressure on prices, pushing them down to levels that are often unsustainable (Gea, 2023; Omopariola et al., 2024). This situation not only threatens construction quality but also poses a challenge to public accountability and budget absorption in government-funded projects.

To manage budget efficiency and prevent financial risks, cost and time performance analysis tools such as Earned Value Analysis (EVA) have been proven effective in measuring and predicting construction performance (Ningsi et al., 2023; Yulianti et al., 2024; Sobhe et al., 2024; Sobh et al., 2024; Desse & Mengesha, 2024). Transparent planning and monitoring from the early stages are essential to avoiding financial pitfalls, especially when initial bidding is unrealistically low. Poor project planning and oversight often lead to cost overruns or delays during implementation (Remi, 2017; Suryawinata, 2024; Slaeat, 2024; Vusumzi & Siwakhile, 2024).

Addressing these challenges requires a comprehensive managerial approach. The adoption of Lean Project Management principles has been shown to reduce waste and improve operational efficiency in construction (Prisilia & Purnomo, 2018; Garcés & Peña, 2023; Ajirotutu et al., 2024). Furthermore, strong project planning, cost control, and adaptive strategies enable contractors to complete projects on time and within budget despite dynamic field conditions (Fardila & Adawyah, 2021; Sadad & Sangidana, 2024; Jayamaha et al., 2024; Ellis et al., 2021).

This study aims to identify and analyze the key factors influencing the submission of bid values below 80% of the HPS in public construction procurement. It explores how economic pressures, company strategies, and long-term project implications contribute to this trend. The objectives are threefold: (1) to identify the main factors affecting bid values below 80%; (2) to determine the most dominant factors influencing such bidding behavior; and (3) to evaluate contractor perspectives based on company classification. This research is expected to contribute to the formulation of more sustainable bidding strategies and procurement policies in the construction sector.

## Methods

This study employs a quantitative descriptive approach using a survey method. The variables used in the research were derived from a comprehensive literature review and previous relevant studies. These variables were subsequently analyzed using the Relative Importance Index (RII) method to identify and describe the key factors influencing bid values below 80% in construction procurement. The research focused specifically on water resources infrastructure projects in West Java Province, Indonesia, whose procurement was managed by the Regional Procurement Services Agency (BP2JK) and awarded to contractors with bid values below 80% of the Owner's Estimate (HPS). The respondents consisted of contractors who had won such tenders.

The research began with the formulation of a problem statement, which centered on identifying the factors influencing low bid values. This was followed by determining clear

and focused research objectives. A literature review was then conducted to explore relevant prior studies, from which potential influencing factors were identified and further elaborated through thematic grouping based on similarities in definition and context. Once these variables were finalized, the study proceeded to define the research population and sample, since the study utilized a survey method. A structured (closed-ended) questionnaire was then developed, based on the elaborated factors affecting bid values. To ensure that the questionnaire was an accurate and reliable measurement tool, validity and reliability tests were conducted. If the test results showed insignificance, the questionnaire was revised and retested until it met the acceptable criteria.

Following this process, the validated questionnaire was distributed to respondents, and the collected data were analyzed using the RII method. The analysis was aimed at identifying the most influential factors contributing to low bid values. The final stage of the research involved drawing conclusions and providing recommendations based on the findings. The sequence of these research stages is presented in Figure 1.

The main instrument used in this study was a closed-ended questionnaire distributed to relevant respondents. To measure the frequency and perceived impact of each factor affecting bid values below 80%, a 5-point Likert scale was applied, where 1 = Not Influential, 2 = Slightly Influential, 3 = Moderately Influential, 4 = Influential, and 5 = Highly Influential. The sampling method used was Slovin's formula. Based on available data, there were 73 contract packages with bid values below 80% of the HPS, from which a minimum of 42 valid samples were obtained to meet the required sample size threshold.

### Structured Problem-Solving Cycle



Figure 1. Structured Problem-Solving Cycle

## Results and Discussion

### Validity and Reliability Tests

The validity test of this research instrument was carried out using the SPSS for windows Version 25 software program. The validity test was carried out by comparing the calculation numbers obtained from the SPSS and critical results. If the calculation is  $>$  critical then it is said to be valid and vice versa if the calculation is  $<$  critical then it is said to be invalid. The basis for making decisions on this validity test is that the items of the questionnaire statement are said to be valid if the recalculated value exceeds 0.300. The overall results of the validity

test of the 24 questions were declared valid so that they can be used as a measuring tool for this research.

After conducting a validity test, a reliability test is then carried out. This reliability test was carried out once using the SPSS for windows Version 25 software program by calculating the correlation coefficient through the reliability scale. The criterion of a variable is declared reliable if the alpha Cronbach value > the table with  $n = 15$  respondents, and the reliability coefficient > 0.70. The alpha Cronbach value obtained is 0.876 so it can be declared reliable.

### Description of General Data of Respondents

The general data of the respondents was obtained from the results of the questionnaire at the beginning of the questionnaire. The description of the respondent's general data is considered important to know the background of the respondent which can be used as input to explain the results obtained from the research.

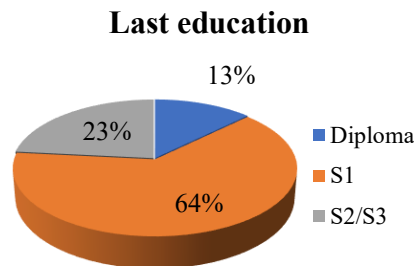


Figure 2. Respondent's Last Education

Source: Data processing, 2022

From Figure 2, it is known that most of the respondents have the last level of S1 education, namely 30 respondents with weights (63.83%), S2 education as many as 11 respondents (23.40%) and Diploma education as many as 6 respondents (12.77%). This condition is expected to provide an actual assessment of the questionnaire statements.

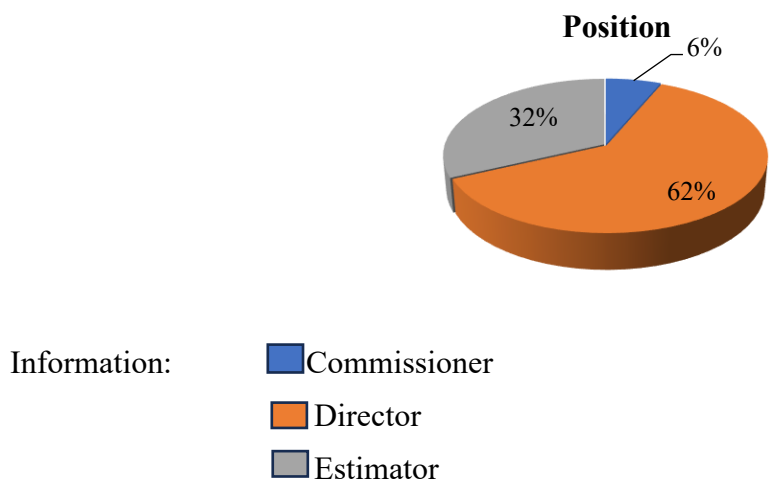
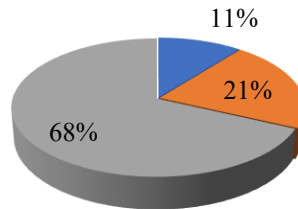


Figure 3. Respondent's Position

Source: Data processing, 2022

### Experience



Information: ■ < 5 years  
■ 5-10 years

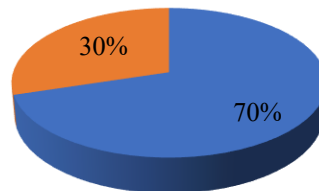
Figure 4. Respondent's Position

Source: Data processing, 2022

From Figure 3, it can be seen that the respondents who served as the most dominant directors in providing answers. As many as 61.70% of respondents are expected to increase the correctness of respondents' perceptions in filling out questionnaires.

Figure 4 explains that respondents have varying work experience on construction projects. The experience of respondents in construction projects is an important indicator in providing accurate answers. A total of 32 respondents (68.09%) have more than 10 years of work experience.

### Company Qualifications



Information: ■ Intermediate  
■ Big

Figure 5. Company Qualifications

Source: Data processing, 2022

Based on Figure 5, it can be seen that medium companies are the most respondents in this study, which is 70.21% and the remaining 29.79% are respondents from large companies.

### Percentage of Jobs Ever Won Through Competitive Bidding

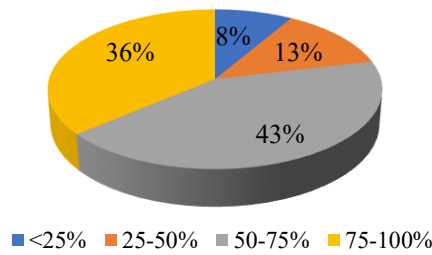


Figure 6. Percentage of Employment

Source: Data processing, 2022

From Figure 6, the percentage of jobs that have been won through competitive bidding for all projects during the company's operation is <25% as many as 4 respondents, 25-50% as many as 6 respondents, 50-75% as many as 20 respondents, and 75-100% as many as 17 respondents.

### Ranking of Influencing Factors based on all respondents

Table 1 shows the ranking of factors that affect the bid value below 80% based on the answers of all respondents. From the results of the calculation of the RII it was obtained that 3 factors were in the category of "very influential", while the rest were in the category of "influential" as many as 18 factors and "quite influential" as many as 3 factors.

Table 1. Ranking based on all respondents' answers

Code	Weight	Rank	Category
X1	0.868	1	Very Influential
X2	0.851	2	Very Influential
X3	0.732	15	Influential
X4	0.834	4	Influential
X5	0.783	12	Influential
X6	0.698	19	Influential
X7	0.800	10	Influential
X8	0.702	18	Influential
X9	0.685	21	Influential
X10	0.770	13	Influential
X11	0.813	8	Influential
X12	0.728	16	Influential
X13	0.826	6	Influential
X14	0.817	7	Influential
X15	0.749	14	Influential
X16	0.809	9	Influential
X17	0.660	24	Moderately Influential
X18	0.689	20	Influential
X19	0.672	23	Moderately Influential
X20	0.796	11	Influential
X21	0.719	17	Influential
X22	0.830	5	Influential
X23	0.677	22	Moderately Influential

X24	0.847	3	Very Influential
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Source: Data processing, 2022

The project type factor is at the top of the ranking, which is the 1st rank with a weight of 0.868. These results show that respondents greatly influence these factors in compiling the value of the offer. Based on the data obtained, the scope of work of open project types such as river normalization work, rehabilitation, periodic maintenance, or inundation land clearance has a tendency for contractors to submit a bid value below 80%. In addition to the job being a routine job, winning the same job project in previous years can help the company predict various possible risks that arise so that it can minimize budget usage.

The 2nd rank is Project duration with a weight of 0.851. The duration of a project is the time it takes to complete a project. With the type of work that has been submitted before, the contractor considers the level of complexity of the work to be low and the possibility of completing the work will be faster, so the contractor tends to dare to lower the bid price.

Furthermore, respondents placed the Government Regulation factor in 3rd place with a weight of 0.847. The existence of new rules and/or regulations will greatly affect the bid price. Contractors compete fiercely in providing competitive bid value, there are regulations related to the selection of service providers with the lowest price evaluation method, contractors tend to lower the bid price as a form of strategy in order to win tenders.

The 4th rank that affects the bid value below 80% is the "risk of work implementation" factor with a weight of 0.834. Based on the results of the study, the risk of carrying out work greatly affects the contractor in considering the determination of the bid price. Ease of access in the field, availability of adequate materials, tools and materials, and reliable human resources can reduce the likelihood of risks of work implementation. This allows contractors to lower their bid prices because it can minimize the possible risks that will be faced.

The factor "Fluctuation in the price of resources" with a weight of 0.830 is ranked 5th. As previously explained, contractors usually take a margin from the price of materials without reducing the technical specifications of the material to be used. A decrease in material prices will widen the margin, so contractors will be interested in lowering their bid prices. Usually this factor is related to other factors, for example the contractor's calculation of the time of the execution of the work actually does not allow to reduce the bid price, but because the margin of the material is estimated to be large so that it can cover the cost to deal with the duration problem, the contractor will dare to lower the bid price. The possibility of material price volatility must be considered from the beginning of the bidding process, especially in making a cost budget plan to the implementation process. It is very important for contractors to get around unexpected costs due to fluctuations in the price of materials, fuel, and labor during the execution of a construction project. Having a good relationship by collaborating with suppliers makes it easier to get a supply of materials or materials.

### Ranking Factors based on Company Qualifications

Table 2 shows the ranking of factors that affect the value of the offer below 80% based on the company's qualifications.

Table 2. Ranking by Company Qualifications

Code	Factor	Medium Project Weight	Rank	Large Project Weight	Rank
X1	Project Type	0.885	1	0.829	3
X2	Project Duration	0.861	2	0.829	4
X3	Project Complexity	0.697	20	0.814	6

X4	Execution Risk	0.824	6	0.857	1
X5	Construction Method	0.800	11	0.743	15
X6	Availability of Equipment and Materials (cost/supply/quality)	0.703	18	0.686	17
X7	Document Completeness and Design Quality	0.788	13	0.829	5
X8	Tender Submission Duration	0.715	16	0.671	18
X9	Identity/Competitiveness of Tender Participants	0.715	15	0.614	23
X10	Contract Type (unit price, lump sum, etc.)	0.788	12	0.729	16
X11	Tender Method (open/closed)	0.812	8	0.814	7
X12	Experience with Similar Projects	0.715	17	0.757	13
X13	Availability of Qualified Staff	0.836	5	0.800	10
X14	Past Project Failures or Profits	0.824	7	0.800	11
X15	Reliability/Uncertainty in Cost Estimates	0.782	14	0.671	19
X16	Availability of Required Funds and Office Overheads	0.806	10	0.814	8
X17	Company Need for Public Exposure	0.685	22	0.600	24
X18	Relationships with Owner and Suppliers	0.685	23	0.700	20
X19	Current Workload and Need for Projects	0.667	24	0.686	21
X20	Adequacy of Market Price Information	0.806	9	0.771	12
X21	Type of Owner (Government/Private)	0.703	19	0.757	14
X22	Resource Price Fluctuation	0.842	4	0.800	9
X23	Payment Record	0.697	21	0.629	22
X24	Government Regulations	0.848	3	0.843	2

Source: Data processing, 2022

Based on the results of respondents' answers based on medium and large qualified companies, each group of respondents has different perceptions in placing factors in the top five rankings. The respondents of medium-qualified companies placed the Project Type factor in the 1st rank, while the respondents in the large qualifications placed the factor in the 3rd rank. These results show that respondents of medium-qualified companies consider the type of project in

compiling a bid value below 80%. The type of project being carried out, for example, in the river normalization project which is an open project type, the contractor has a tendency to lower the bid price as a form of strategy in order to win the tender. This type of project usually has a low level of complexity and complexity, so with the company's experience on the same type of project allows the contractor to bid below 80%.

Furthermore, respondents of medium-qualified companies placed Project duration in 2nd place, in contrast to respondents of large qualified companies who placed project duration in 4th place. The duration of the project will be related to the cost of carrying out the work. Inaccurate estimates of implementation time will cause work risks such as delays in project completion so that it will have an impact on project costs. The completion of the work is faster, and the contractor considers the level of complexity of the work to be low as well, so the contractor tends to dare to lower the bid price.

Government Regulation Factor is ranked 3rd based on the perception of respondents of medium-qualified companies, but by respondents of large qualified companies this factor is placed in 2nd place. These results reveal that according to the respondents of large qualified companies, the existence of regulations that underlie contractors bidding at low prices has a great influence on the value of bidding in the procurement of construction goods/services. The lowest price evaluation method to determine the potential winner regulated by Presidential Regulation No. 12 of 2021 gives rise to different interpretations according to the interests of each party. As a result, most contractors tend to bid much lower than HPS to compete with each other, although there are other provisions that are binding by providing a certain amount of performance guarantees.

Fluctuations in resource prices according to respondents of medium-qualified companies are ranked 4th, but according to the perception of respondents of large qualified companies are not included in the top five rankings of influential dominant factors. Contractors usually take a margin from the price of the material without deducting the technical specifications of the material to be used. A decrease in material prices will widen the margin, so contractors will be interested in lowering their bid prices. Usually this factor is related to other factors, for example the contractor's calculation of the time of the execution of the work actually does not allow to reduce the bid price, but because the margin of the material is estimated to be large so that it can cover the cost to deal with the duration problem, the contractor will dare to lower the bid price. The possibility of material price volatility must be considered from the beginning of the bidding process, especially in making a cost budget plan to the implementation process. It is very important for contractors to get around unexpected costs due to fluctuations in the price of materials, fuel, and labor during the execution of a construction project. Having a good relationship by collaborating with suppliers makes it easier to get a supply of materials or materials.

The availability of qualified staff is ranked 5th as a factor considered by respondents of medium-qualified companies in compiling offer prices below 80%. Having qualified staff will help minimize the risk of project implementation, so the company can minimize unexpected expenses during project implementation. In contrast to the perception of respondents of large qualified companies that place the factors of document completeness and design quality as the 5th rank. These results show that complete tender documents and good design quality make it easier for companies to estimate the value of the bid. The more reliable the cost estimate is, the more likely it is that the contractor will bid on a lower price.

The difference in respondents' views in determining ten dominant factors, namely: (1) Project complexity; (2) Completeness of documents and design quality; (3) Past failures/profits in similar projects; and (4) Adequacy of market price information sources.

### **Ranking Factors based on Respondents' Work Experience**

Table 3 shows the ranking of factors that affect the value of the offer below 80% based on the respondents' work experience. From the results of the calculation of the RII it was obtained that 2 factors were in the category of "very influential", while the rest were in the category of "influential" as many as 17 factors and "quite influential" as many as 5 factors.

Table 3. Ranking based on Respondents' Work Experience

Code	≤ 10 Years Weight	Rank	> 10 Years Weight	Rank	Influence Category
X1	0.867	3	0.869	1	Influential
X2	0.880	2	0.838	2	Influential
X3	0.733	14	0.731	17	Influential
X4	0.853	4	0.825	4	Highly Influential
X5	0.720	15	0.813	8	Influential
X6	0.653	23	0.719	18	Influential
X7	0.800	10	0.800	12	Influential
X8	0.667	19	0.719	19	Moderately Influential
X9	0.667	20	0.694	22	Moderately Influential
X10	0.840	6	0.738	16	Influential
X11	0.813	9	0.813	9	Influential
X12	0.693	16	0.744	13	Influential
X13	0.827	7	0.825	6	Influential
X14	0.827	8	0.813	11	Influential
X15	0.773	11	0.738	15	Moderately Influential
X16	0.773	12	0.825	7	Influential
X17	0.667	21	0.656	24	Moderately Influential
X18	0.667	22	0.700	21	Influential
X19	0.680	17	0.669	23	Influential
X20	0.760	13	0.813	10	Influential
X21	0.680	18	0.738	14	Influential
X22	0.840	5	0.825	5	Influential
X23	0.613	24	0.706	20	Moderately Influential
X24	0.893	1	0.825	3	Highly Influential

Source: Data processing, 2022

Respondents with ≤ 10 years of work experience ranked the Government Regulation factor 1st, while respondents with > 10 years of work experience ranked the factor 3rd. These results reveal that respondents with ≤ 10 years of work experience in the first strategy to win the tender focus on low prices by being willing to provide implementation guarantees as stated in Presidential Regulation of the Republic of Indonesia number 12 of 2021 article 33 paragraph (3) point b. In contrast to respondents whose work experience > 10 years in making bids is below 80%, the most influential factor is the type of project. As previously mentioned, open project types such as in routine work projects, contractors have a tendency to lower the bid price. The company's experience in working on the same project allows contractors to bid below 80%.

There are three other factors that are included in the top five rankings with the same ranking by both respondents, namely the 2nd rank by the project duration factor with the weight of respondents with 10 years of  $\leq$  work experience of 0.880 and respondents with 10 years of  $>$  work experience of 0.838, then in the 4th rank is occupied by the risk factor of work implementation with a weight of each of 0.853 and 0.825, followed by the 5th rank, namely the factor of fluctuation in resource prices with weights of 0.840 and 0.825, respectively. This result shows that from both groups of respondents agreed to assess the three factors as the dominant factors affecting the value of the offer below 80%.

The difference in respondents' views in determining ten dominant factors, namely: (1) Construction Method; (2) Completeness of documents and design quality; (3) Contract type (*unit price, lumpsum*, etc.); (4) Past failures/profits in similar projects; and (5) Availability of required funds and office *overhead*.

## Discussion

This study aims to analyze factors influencing bid values below 80% in construction project tenders. The validity and reliability tests of the research instruments revealed that the instruments were both valid and reliable. Validity was assessed using SPSS for windows Version 25, with the criterion that an item is valid if the calculated r-value exceeds 0.300. All 24 items were deemed valid. The reliability test using Cronbach's alpha yielded a value of 0.876, exceeding the reliability threshold. This aligns with prior research emphasizing the importance of rigorous validity and reliability testing to ensure data quality in quantitative research (Sekaran & Bougie, 2016). Reliable and valid research instruments are essential prerequisites for accurate and trustworthy research outcomes.

The general data of respondents indicated that most respondents held an S1 degree (63.83%), worked as directors (61.70%), had over 10 years of experience in construction projects (68.09%), and were from medium-sized companies (70.21%). They also had a significant percentage of projects won through competitive bidding. This respondent profile is crucial as it ensures that the research findings reflect the accurate perceptions of construction practitioners. Previous research has demonstrated that educational background, position, and work experience of respondents can influence their perceptions of factors affecting tender decisions (Anantatmula & Kanungo, 2010). However, some studies suggest that variations in respondent backgrounds may lead to differences in research results, thus requiring consideration of respondent characteristics when interpreting findings (Huff & Tingley, 2015; Olson et al., 2019).

The ranking of factors based on all respondents' answers revealed that project type, project duration, government regulations, work implementation risk, and resource price fluctuation were the top five factors influencing bid values below 80%. Project type ranked first with a weight of 0.868. This finding is consistent with previous research indicating that projects with routine work types tend to have lower bid values as contractors can better estimate risks based on prior experience (Liu et al., 2017). The second-ranked factor, project duration, is also supported by literature stating that projects with short durations and low complexity tend to receive more competitive bid prices (Assaf et al., 2023). Nevertheless, some studies argue that the work implementation risk factor may not always significantly impact bid values, depending on specific project conditions and company strategies (Olatunji et al., 2023; Shokri-Ghasabeh & Chileshe, 2016).

The comparison of factor rankings based on company qualifications showed differences in perceptions between respondents from medium and large qualified companies. Respondents from medium-sized companies prioritized project type and project duration, while those from large companies focused more on government regulations and work implementation risk. These differences may stem from varying business strategies and capacities. Medium-sized

companies might concentrate on routine projects to strengthen their market position, whereas large companies are likely more sensitive to regulations and complex risk management. Previous research also supports these findings, indicating that company size and qualifications can influence priority factors in tender decision-making (Bohari et al., 2021; Cheaitou et al., 2019). However, some studies contradict this, stating that company size does not always lead to significant differences in factors affecting bid values, especially in highly competitive construction markets (Oo et al., 2022).

The analysis of factor rankings based on respondents' work experience revealed that respondents with  $\leq 10$  years of experience prioritized government regulations, while those with  $> 10$  years of experience prioritized project type. Three other factors (project duration, work implementation risk, and resource price fluctuation) received the same rankings from both groups. This indicates that work experience can influence the prioritization of factors in determining bid values. Previous research supports that knowledge and experience gained over time can impact strategic tendering decisions (Dewagoda et al., 2021; Hastie et al., 2017). Yet, some studies disagree, asserting that work experience does not consistently affect factor priorities in tender decisions, as market conditions and company strategies also play significant roles (Muhammed et al., 2022).

## Conclusion

Based on the identification results, 24 factors were found to influence bid values below 80% in the procurement of construction goods and services. Among these, ten factors were identified as the most dominant, namely: project type, project duration, government regulations, execution risk, fluctuations in resource prices, availability of qualified staff, past failures or profits in similar projects, tender method (open or closed), availability of required funds and office overheads, and the completeness and quality of design documents. These key factors serve as crucial references in understanding the tendency toward low bidding in construction procurement.

However, differences in perception regarding the dominant factors emerge when viewed from the perspectives of company qualifications and respondent work experience. Based on company qualifications, the differing factors include project complexity, completeness and quality of design documents, past failures or profits in similar projects, and adequacy of market price information. Meanwhile, based on respondents' work experience, variations are seen in construction method, completeness and quality of design documents, contract type (unit price, lump sum, etc.), past failures or profits in similar projects, and availability of required funds and office overheads. These findings indicate that background characteristics of procurement actors significantly influence their assessment of risk factors in the bidding process.

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