

Strategic Approaches to Contractors' Prequalification Governance Decision-Making

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Abstract

The systematic literature review is based on an assessment of the strategic approaches influencing project governance decisions regarding contractor pre-qualification for construction undertakings. Contractor pre-qualification is a major strategic project governance decision-making process made by the clients and owners of construction projects to increase the chances of project success and mitigate risks related to contractor default.

The methods for the systematic literature review have considered 45 articles in total published between 2014 and 2023, with the inclusion criteria solidifying the relevance and comprehensiveness of the findings. The PRISMA chart identifies the selection of the journal articles from a total pool of 245 articles due to their relevance and compliance with the inclusion criteria.

The results of the review indicate risk assessment and performance determination as essential criteria for contractor prequalification, whereas the complexity of the project and its requirements define the use of the strategic selection approach.

In conclusion, strategic approaches can be more effective when a multi-criteria decision-making approach is integrated for contractor prequalification to ensure the timely completion of the project within the predefined budget while maintaining the best health and safety records.

Keywords: strategic decisions; governance; contractor prequalification; risk assessment; systematic review.

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1. Introduction

Project contractor selection is an important part of the construction industry as the clients encounter problems regarding contractor selection and appointment due to various uncertainties and risks (Kog and Yaman, 2014). The construction undertakings required the efficient utilization of resources and the display of technical expertise for navigating through the challenges of the dynamic working environment along with accomplishing the complicated tasks for achieving project success. Hence, the establishment of a strong and effective relationship between the project client and contractor remains vital for the successful completion of the objectives (Kog and Yaman, 2016). However, contractor pre-qualification is used as a criterion for deciding the selection of contractors from the available list of qualified contractors for the projects. Contractor selection is dependent on bid price as a dominant factor impacting the result of tenders but it is not always considered as the solitary factor for client decisions for appointing contractors. Several contractor prequalification criteria are applied to qualify the contractors for project undertakings (Patil et al., 2020). The pre-qualification process for the contractors enables them to highlight their value and differentiate themselves from the other contractors and competitors in influencing the selection decision of the clients for being awarded tenders.

For construction projects, the pre-qualification of project contractors remains vital for ensuring project success through the appointment of capable and reliable contractors (Yu et al., 2022). The critical choice of contractor selection impacts the success chances of the project as the clients are required to select the right contractors from the available list of qualified contractors and contracting firms participating in the tender. This is important for ensuring compliance with the project safety and financial budget while maintaining the quality parameters and workplace health and safety standards for ensuring client and stakeholder satisfaction.

Contractor prequalification involves the determination of their technical capabilities and past performance along with the financial stability to execute project works seamlessly (Rashvand et al., 2015). Also, the health and safety regard of the contractors are increasingly being adopted as a pre-qualification criterion for evaluating the potential contractors before tendering and bidding. Strategic project governance practices when included in contractor pre-qualification heavily influence project success as they involve the project client and associated stakeholders in the selection of the right contractor (Kukoy et al., 2021). This involves the assessment of the past performance record of the contractors and their capabilities including the availability of skilled workers and technology infrastructure along with experience in accomplishing the

project requirements (Afolayan et al., 2018). Strategic decision-making by the clients during contractor prequalification is directly interlinked with project success including its quality outcomes and cost effectiveness. Also, the capabilities of the contractors define the risk identification and mitigation efficiency of construction projects, highlighting the significance of determining the landscape of contractor prequalification as an important project governance decision for academics and industrial practitioners (Kapote et al., 2023). The research aims to contribute to the domain of academic knowledge about the strategic approaches to contractors' prequalification governance decision-making while eliminating knowledge gaps about the best practices and governance decision considerations beyond the bid price.

The research objectives to meet the aim of the systematic literature review are:

- To analyze the strategic approaches used for contractor prequalification governance decision-making in projects.
- To determine the factors influencing the selection of strategic approaches for contractor prequalification governance decision-making.
- To analyze the effectiveness of the strategic approaches for project risk mitigation and time, cost, quality, health, and safety performance.
- To recommend best practices for strategic contractor prequalification governance decisions for effective selection and project success.

2. Method

Literature Search

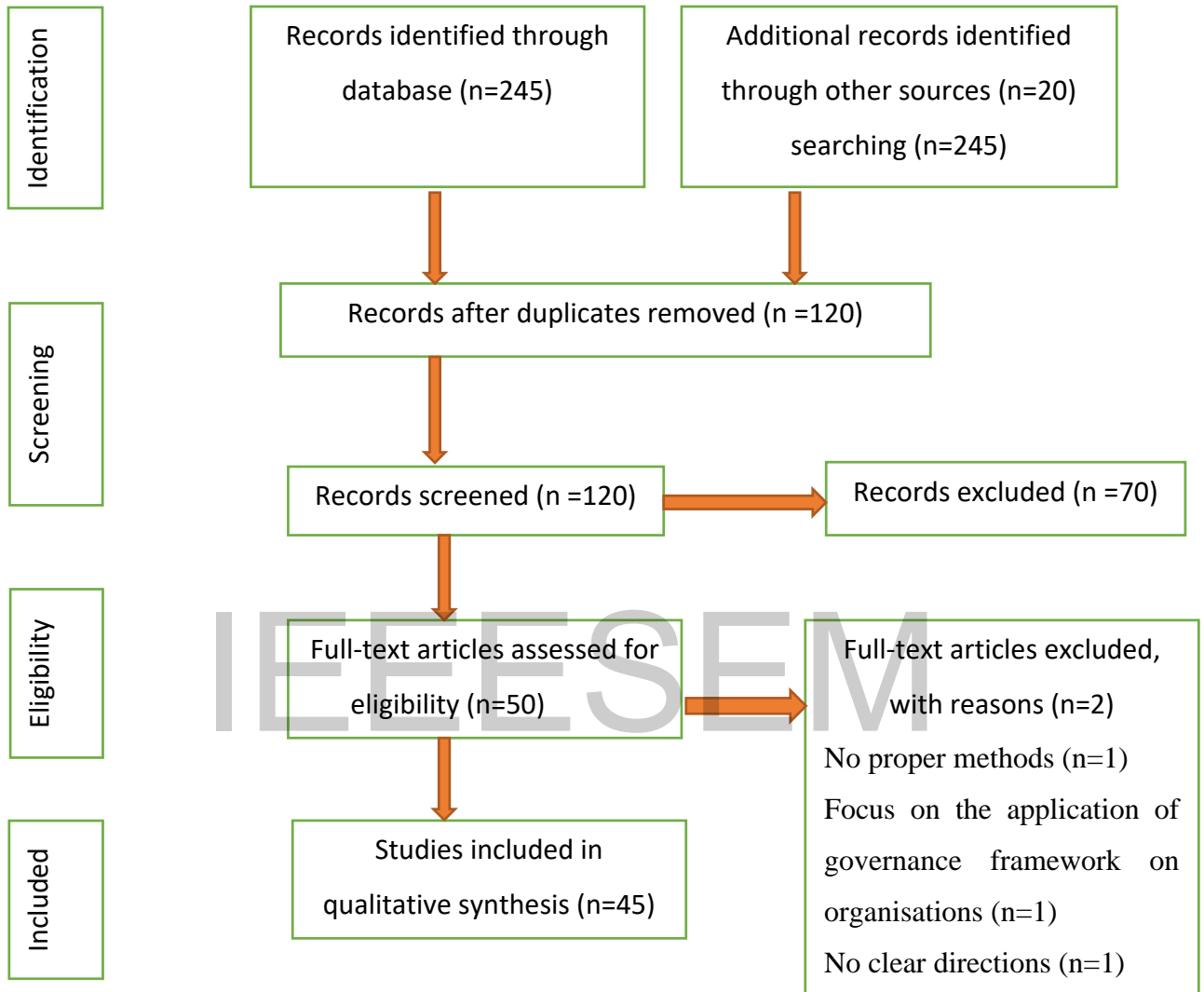


Figure 1. Selection Process of the literature review articles

The PRISMA chart presented above debits the literature search procedure integrated into the systematic literature review. The chart highlights the results of information searching and screening of the journal articles before selecting the final publications. The literature search was conducted by referring to primary databases like Google Scholar, Science Direct, and ResearchGate. In this context, keywords relevant to the research topic like strategic approaches, contractor pre-qualification, governance decision-making, etc were used in the data basis. The identified articles were evaluated by reading the title of the publication and the abstract to identify if the content matches the research topic. Some of the publications were rejected based on the absence of properly defined research methods and references to project governance decision frameworks. Finally, 45 open-access articles were selected for consideration in the systematic literature review.

Table 1. Systematic Literature Review Articles Summary

Author/s and year	Aim and objectives	Methods	Findings
Almohassen et al. 2023	The research aims to evaluate construction contractors in the pre-tendering stage through an integrated-based model.	Secondary Qualitative – AHP interviews	Contractor evaluation before tendering is vital for improving governance decision efficiency by understanding the characteristics and capabilities of the contractors to meet the minimum requirements of the project
Alshamrani et al., 2023.	The investigation analyses the development of a pre-qualification and selection framework for construction project	Primary Quantitative Survey	A detailed framework is required for considering different aspects of the performance of the contractors for the selection of the most competent candidate due

	contractors in Saudi Arabia.		to the massive delays and cost overruns in the Saudi construction industry.
Cristóbal et al., 2023.	The research aims to investigate contractor selection for Project execution using multi-attribute decision-making.	Secondary Quantitative	Both the quantitative and qualitative attributes of the contractors need to be evaluated during the pre-qualification stage, including technical expertise and liquidity ratios
Kapote et al. 2023	The research analyses the effective pre-qualification systems considering their essentiality for minimising delays on road projects.	Mixed methods Survey and field visits	The time and cost requirements of the project harm the selection of contractors based on the pre-qualification system as work suspension during monsoon and land acquisition at the major causes of delays
Liu et al., 2023	The research aims to investigate the bidding evaluation and contractor selection using a balance index model and comprehensive input efficiency based on data envelopment analysis.	Secondary Qualitative	The data envelopment analysis model is ideal for improving the efficiency and effectiveness of contractors with evaluation for appropriate selection across construction projects and real estate undertakings

<p>Nurjaman and Listyantoko, 2023.</p>	<p>The research investigates the analytic hierarchy process for the determination of decision-making in the selection of contractors.</p>	<p>Primary and secondary Survey and Case study of a well-known palm oil company headquartered in Jakarta (Indonesia)</p>	<p>The contractors having the best pre-qualification and commercial criteria testing are found to provide the best score in terms of results indicating the need for selecting the right contractors for smooth operations</p>
<p>Ameh et al., 2022.</p>	<p>The research investigates the impact of Contractors' Prequalification Criteria (CPC) on Time Performance in Construction Projects Execution.</p>	<p>Primary Quantitative 189 surveys</p>	<p>The chances of project failure increase if the contractors are not engaged and hence, it is significant to ensure the inclusion of management capability, reputation, and financial capability within the contractor pre-qualification criteria along with the capabilities of the workers and work experience.</p>
<p>Amireh, 2022</p>	<p>A study evaluates the impact of contractor selection methods and contractors' pre-qualifications on delays in Jordanian public construction projects.</p>	<p>Mixed methods Survey and case study</p>	<p>In terms of contractor selection, the reference to qualifications and financial standing are highly important along with the technical skills of the workers for ensuring success</p>

<p>Kunkcu et al., 2022.</p>	<p>The research aims to conduct a review of the multi-criteria decision-making methods for contractor selection</p>	<p>Secondary Qualitative Journal study (2000-2021)</p>	<p>Different decision-making methods are used for constructor selection including fuzzy logic and AHP, but the multi-criteria decision-making methods present comparative capabilities for solving contractor selection problems</p>
<p>Lees et al., 2022</p>	<p>The research aims to analyze the cost and time overruns in Western Australian government projects considering the procurement decision-making antecedents.</p>	<p>Secondary Qualitative Interviews</p>	<p>Contractor and procurement decision-making require risk allocation and a structured pre-qualification process relevant to the project circumstances.</p>
<p>Yu et al. 2022</p>	<p>The study uses the ISM method to analyze the relationships between various contractor prequalification criteria.</p>	<p>Secondary ISM-Qualitative</p>	<p>ISM is useful for ranking the criteria of contractor pre-qualification for selecting qualified contractors for construction building and strategic planning.</p>
<p>Abdul Razak et al., 2021.</p>	<p>The research aims to identify the health and safety prequalification criteria for contractor selection in construction projects by conducting a systematic review.</p>	<p>Secondary Qualitative Literature Study for Contractor Selection in Construction</p>	<p>Identification of the safety pre-qualification criteria can facilitate the germination of the efforts of the contractors for the safe execution of the project activities before</p>

			the location of the contract by the client
ElDean and Abdelalim, 2021.	The research aims to analyze a proposed system for the prequalification of construction companies & subcontractors for projects in Egypt.	Primary Quantitative Survey	The contemporary construction companies in Egypt integrated modern construction methods referring to the adept application of subcontractor capabilities requiring careful selection according to the local environment for improving project efficiency cost, time, and quality.
Kukoy et al. 2021	The research analyses the pre-qualification of selecting construction project contractors using health and safety criteria.	Primary Quantitative Survey	The findings indicate the lack of health and safety consideration as a client goal or project value criteria which reduces its applicability as a contractor selection pre-qualification criterion.
Marović et al. 2021	The research aims to establish a multi-criteria decision support concept for selecting the optimal contractor.	Secondary Qualitative – AHP	The incorporation of stakeholder demands and transparency in governance decision-making is vital for improving the legitimacy of project contractor prequalification with sustainable decisions.

Naik et al., 2021	The research aims to review the modelling of a multi-criteria decision support system for the prequalification assessment of construction contractors using CRITIC and EDAS models.	Mixed methods Literature review and review of experts	The prequalification assessment requires the approval of the project stakeholders to ensure consistency with their expectations. Ranking the companies and ascending weightage is vital for improving the quality of pre-qualifications before the assignment of projects to ensure success.
analyzen et al., 2020	The research conducts a performance analysis of fuzzy analytic hierarchy process multi-criteria decision support models for contractor selection.	Primary Qualitative	The FAHP model is useful for ranking the contractors for projects as a corporate decision criterion by focusing on the distinctive features for final selection.
Khosro et al., 2020.	The research aims to analyze the decision criteria for the assessment of contractors in the prequalification phase of public projects	Primary Quantitative survey	Contractor expertise and safety considerations are weighted highly by the project owners and decision-makers as a pre-qualification criterion.
Patil et al. 2020	The research conducts a review of contractor prequalification criteria and their impact on project success factors.	Secondary Qualitative	Contractor pre-qualification criteria for project success include financial soundness and technical ability along

			with management capacity and reputation.
Bakry and Daoud, 2019.	The research aims to analyse a contractor prequalification model for lean project delivery.	Primary Quantitative survey	The contractor pre-qualification model provides a ranking of the contractors depending on their experiences of delivering lean undertakings with categories including a scoring system for flexibility
El-khalek et al., 2019	The research aims to evaluate the construction subcontractor prequalification evaluation criteria and their impact on project success.	Primary Quantitative survey	Contractor reputation and technical capability are important factors influencing pre-qualification decisions along with the cost and quality compliance
Eriksson et al., 2019	The research aims to analyze the collaborative procurement strategies for infrastructure projects with a multiple-case study approach.	Primary Qualitative	The duration of collaboration among the project owner and the contractors is vital for improving innovation and early involvement for successful procurement while reducing governance issues
Aboelmagd, 2018.	The research aims to analyze a decision support system for	Secondary Quantitative Case study	The use of a formal and standard AHP and value engineering can

	selecting optimal construction bid prices.		maximize project quality while minimizing time and cost as it can improve contractor selection based on the determination of their competencies.
Afolayan et al. 2018	The research aims to evaluate the prequalification decision criteria for selecting contractors in Nigeria using an analytic hierarchy process.	Primary Quantitative Survey	The technical capability of the contractors is referred to for determining their prequalification criteria while past performance was perceived as one of the most important factors along with resource availability, health, and safety.
Ayettey and Danso, 2018.	The research aims to investigate the contractor selection criteria in the Ghanaian construction industry considering the benefits and challenges.	Primary Quantitative Survey	The utilization of the multi-criteria method for contractor prequalification is not extensively used in the construction industry of Ghana but its broader application could result in benefits like saving time and contractor default probability for the project owner while improving quality standards

Koçak et al., 2018	The research analyses subcontractor selection with an additive ratio assessment method.	Secondary multi-criteria decision-making literature	Construction companies can appoint and select sub-contractors from multiple alternatives using the ARAS method for selecting the most suitable contractors based on 11 distant criteria apart from the lowest bidder
Liang et al., 2018.	The research aims to use leading and lagging indicators to select safe contractors at the prequalification stage of construction projects.	Mixed Methods Literature review and expert opinions	The most influential factors for the safety performance of the construction contractors included the commitment of the management and safety risk management.
Alptekin and Alptekin, 2017.	The research analyses criteria influencing contractor selection using the TOPSIS method.	Primary Quantitative Survey	Selection of the right contractor is a significant aspect of construction due to risk and performance criteria where the lowest bidders may not always provide the best results requiring the integration of a multi-criteria selection approach.
Ola et al., 2017	The research aims to conduct an assessment of factors responsible for the choice of contractors'	Primary Quantitative survey	Building construction requires the identification of contractor pre-qualification based on

	prequalification criteria for civil engineering projects considering the perspectives of the consultants		different factors including the project type along with the involvement of the clients and the consultants.
Osurua et al., 2017	The investigation analyses the determinants of contractors' pre-qualification criteria in a recessed economy in Nigeria.	Primary Quantitative survey	Past performance of project contractors is the four most important criteria for pre-qualification followed by experience and resource availability.
Kog and Yaman, 2016	The investigation analyses the multi-agent systems-based contractor pre-qualification model.	Secondary literature survey	The use of a tender management system can improve the efficiency of contractor pre-qualification with better consideration of financial standing, management ability, technical expertise, reputation, and health and security.
Modupe and Ola, 2016.	The project explores the relevance of contractors' prequalification criteria to the time performance of civil engineering projects.	Primary Quantitative Survey	The pre-qualification criteria of the contractors are directly related to the performance of civil engineering projects as the criteria for pre-qualification impacts the performance and timely completion along with adherence to the goals

<p>Mohamed and Majeed, 2016.</p>	<p>The research aims to use an analytical network process to find priorities weights of contractor's pre-qualification.</p>	<p>Primary Quantitative survey and ANP</p>	<p>The main criteria for subcontractor pre-qualification include financial situation and technical expertise to ensure availability of resources and compliance with the technical specifications</p>
<p>Ola, 2016.</p>	<p>The research investigates the potential attributes of contractors' prequalification criteria for civil engineering projects considering the essential tools for project administration.</p>	<p>Primary Quantitative Survey</p>	<p>The experience of the contractors determines their capability of successfully executing civil engineering projects which are used as the basis for pre-qualification along with other inherent characteristics to ensure the successful delivery of civil engineering projects</p>
<p>Patel et al., 2016.</p>	<p>The research aims to study the factors affecting contractor's perspectives on risk management.</p>	<p>Secondary Qualitative, literature comparison</p>	<p>AHP is useful for construction project risk analysis and decision-making regarding risk evaluation, corporate stability initiatives, and contractor prequalification for improving the success of construction projects with multi-criteria decision-making.</p>

<p>Ulubeyli and Kazaz, 2016.</p>	<p>The research analyses the fuzzy multi-criteria decision-making model for subcontractor selection in international construction projects.</p>	<p>Primary Quantitative survey and subcontractor selection model (CoSMo) development</p>	<p>The CoSMo is significant for practical implementation for strategic selection of the principal contractors for risk reduction along with conceptualizing the decision-making of the subcontractors to identify the weak points and make improvements</p>
<p>Fard et al. 2015</p>	<p>The study conducts a managerial evaluation of construction contractors in the selection process.</p>	<p>Primary Quantitative survey</p>	<p>Contractor selection criteria include the assessment of experience in construction projects along with a quality certificate of works undertaken and export of the construction personnel</p>
<p>Jung and Mills, 2015.</p>	<p>The research analyses an approach to sustainable standardization of the submittal process through illustrative study in construction.</p>	<p>Secondary Quantitative Case study</p>	<p>Construction involves large-scale production of a specific category utilizing different agents and materials required in the judicious use of resources and human liver for standardizing production with sustainable practices and strategic decision-making regarding contractor selection</p>

Rashvand et al. 2015	The research investigates the context of contractor selection at the prequalification stage considering the current evaluation and shortcomings.	Mixed methods Expert survey and literature review	Management capability consideration for contractor prequalification is ambiguous, requiring comprehensive models and a focus on aspects beyond time and cost performance.
Rashvand et al. 2015	The research aims to analyse a contractor management performance evaluation model at the prequalification stage.	Multi-method – quantitative survey and qualitative – ANP method	Contractor management performance assessment considering the pre-qualification criteria requires contractors to focus on critical project management practices for improving performance
Alptekin, 2014.	The research aims to investigate a multi-criteria decision-making approach in contractor selection.	Primary Survey questionnaire Quantitative AHP	The contract determines the success level of construction projects required in strategic decisions regarding contractor selection with AHP in a multi-criteria environment.
Alzober and Yaakub, 2014	The research proposes an integrated model for the selection of the prequalification criteria for contractor	Primary Quantitative survey	The AHP model is useful for assigning the importance of contractor pre-qualification criteria weightage for efficient selection through multi-criteria

<p>Kog and Yaman, 2014</p>	<p>The research conducts a meta-classification and analysis of contractor selection and prequalification.</p>	<p>Secondary Qualitative</p>	<p>Contractor selection problems can be solved by statistical models along with fuzzy set theory and AHP. The use of IT applications and agent-based systems is also useful for contractor prequalification.</p>
<p>Plebankiewicz, 2014.</p>	<p>The research investigates modelling decision-making processes in bidding procedures with the use of the fuzzy sets theory.</p>	<p>Secondary mathematical apparatus using fuzzy sets</p>	<p>The construction owners need to make strategic decisions for supervising the bidding procedures involving the contractors for appropriate selection</p>
<p>Puri and Tiwari, 2014</p>	<p>The research analyses the criteria for contractors' selection and bid evaluation.</p>	<p>Primary Quantitative survey</p>	<p>The criteria for contractor pre-qualification and beat evaluation include the use of multi-criteria evaluation models focusing on data about financial stability and experience of the organization along with management experience and workplace health and safety considerations.</p>

Table 2. Summary of Methodology Applied in Articles

No	Methods	Frequency
1	Primary Quantitative Survey	20
2	Secondary Qualitative	11
3	Primary Qualitative	2
4	Secondary Quantitative	4
5	Mixed Methods – survey and case study	4
6	Primary and Secondary survey and case study	2
7	Mixed Methods Literature review and review of experts	2

Table 2 provides information about the methods applied in all 45 articles set, more than one method was utilized in different ways as mixed of quantitative and qualitative, rather than mixed of both primary and secondary methods, mixed survey and case study, literature review, and review of experts. The main method applied in most of the articles is the primary quantitative survey method in the start set. The case Systematic Literature Review (SLR) had 20 primary studies. However, 11 articles applied secondary qualitative methods (i.e., including ISM, AHP, literature review, and interviews). four articles applied secondary quantitative and the same number used mixed methods (survey and case study), other methods such as literature review and review of experts, primary and secondary survey and case study, and primary qualitative were used as the main methods of the articles.

Inclusion and Evaluation of Studies

The inclusion criteria utilized for the systematic review serve as the basis for selecting the journal articles based on predefined criteria. The inclusion criteria for the systematic review included the consideration of relevant publications published in the last 10 years. Hence the period of publication selected for consideration was 2014 to 2023. The inclusion criteria were integrated to ensure the authenticity and relevance of the research publications regarding the present practices of contractor prequalification and strategic governance in decision-making across construction projects. A total of 45 journal articles were selected for the systematic review due to meeting the inclusion criteria. Subsequently, a CASP checklist was used for determining the quality criteria for the selection of the articles due to the incorporation of questions that address the key attributes of the publications. The valuation criteria have been

highly effective in terms of ensuring the relevance of the selected articles with the research topic.

4. Results

Strategic approaches for contractor prequalification governance decision-making

Contractor prequalification is an important part of project governance decision-making for the shortlisting and selection of the most suitable contractors to be appointed for projects. The project owners utilise a risk-based assessment approach for contractor prequalification depending on their financial capability and history of compliance with the project objectives and regulatory considerations (Liang et al., 2018). The safety records of the contractors along with the capability of the workers are also determined for the maximization of project success opportunities and minimization of risk. Performance-based criteria are also used as a major for determining the timely completion rate of projects by the contractors within the specified schedule (Plebankiewicz, 2014). The technology infrastructure and tools used by the contractors along with their collaborative capabilities to effectively engage with the stakeholders are also considered as a multi-criteria decision-making approach during governance decision-making for pre-qualification. The utilization of a multi-criteria approach translates to the benefits in maximization of the overall value to the project owner while minimizing the possibility of contractor default (Alptekin, 2014). However, the challenges with the selection criteria include ongoing disputes among the contractors and the clients along with adequate assessment accuracy due to the lack of information leading to substandard work.

Factors influencing strategic approach selection for contractor prequalification in governance decision-making

Different factors influence the strategic approach involved in the selection of the criteria for contractor pre-qualification in the project governance decision-making. The project requirements and complexity of the project environment are considered for shaping the strategic decision-making approach depending on the technical requirements and size of the project (Kunkcu et al., 2022). The regulatory requirements and accepted industry standards are also considered along with the magnitude of risk involved in the project. Specific client requirements including the integration of digital and innovative technology and the sustainability considerations in the project are also integrated into the governance decisions for customizing the criteria for contractor pre-qualification (Patel et al., 2016). However, resource availability including human capital and financial budget are important considerations for

contractor pre-qualification indicating the magnitude of weightage provided to the bids and the other criteria of the contractors like capabilities and past performance. This is vital for finalizing the project feasibility-related decisions and the integration of stakeholder perspectives for contractor pre-qualification to improve the chances of project success (Ulubeyli and Kazaz, 2016).

Effectiveness of the strategic approaches for project risk mitigation and time, cost, quality, health, and safety performance

The use of AHP is significant for the determination of the risk associated with a construction project and for improving the effectiveness of contractor qualification by referring to a multi-determined decision-making strategy. Selection of the contractors with the best pre-qualification scores can increase the time, cost, and quality performance of the projects along with the attainment of the health and safety objectives (Nurjaman and Listyantoko, 2023). The reference to past performance data of the contractors is vital for making informed decisions regarding appointment and delegation of responsibilities for specific components of the project. The strategic approaches are also effective for ensuring continuous improvement in project performance for achieving time at cost savings while reducing the risk for the owners. However, it is important to focus on a multi-criteria approach for contractor pre-qualification and selection to ensure a clear definition of the quantitative and qualitative attributes to maintain objectivity (Abdul Razak et al., 2021).

Best practices for strategic contractor prequalification governance decisions for effective selection and project success

The strategic contractor prequalification governance decisions are critical for ensuring the success of projects. Considering the best practices, the contractor ensures that the project's requirements are well-being. This includes technical specifications, project scope, timeline, budget the other relevant criteria. This has been done by establishing clear and objective criteria for evaluating contractors. The pre-qualification criteria such as experience, financial stability, and technical expertise (Kog and Yaman, 2016). This is because of developing a standardized prequalification process that has been consistently applied to all potential contractors. Moreover, the contractor uses the prequalification software or online platform to streamline the process and manage the evaluations of contractors efficiently. The contractors also have a strong commitment to safety and a track record of maintaining a safe work environment. The effective prequalification process helps in identifying and mitigating potential risks associated

with contractors. By thoroughly evaluating contractors' financial stability, past performances and compliances, contractors encounter the issue during the project lifecycle (Ola, 2016).

Similarly, quality assurance ensures that only contractors with a proven track record of delivering high-quality work are selected for projects. This enhances the overall quality of workmanship, leading to better project outcomes and client satisfaction (Ameh et al., 2022). Despite the efforts to establish objective criteria, there may still be a degree of subjectivity in evaluating contractors. Thus, different stakeholders may have varying interpretations of the prequalification process. Conversely, past performance metrics are often used as indicators for future success, as a result, the contractor may face unforeseen challenges or changes in their capabilities affecting the ability to deliver future projects (Patil *et al.*, 2020). The overall practices have been ensured by maintaining documentation of the prequalification process consisting of criteria used for evaluations and communication with contractors. The best practices can generate a huge impact on organizations to make informed decisions and strategic contractors have contributed to the success of their projects.

5. Discussion

Based on the above analysis of results, findings have been able to be explored through the study. Based on the above analysis, it has been discussed that the strategic approach involves conducting a comprehensive risk assessment of potential contractors. This includes evaluating factors such as financial stability and safety records to mitigate potential risks. It has been discussed that the strategic approach aligns with the project objective to assess the contractor's capabilities and track records to determine their suitability for the specific requirements of the projects (Amireh, 2022). By prioritizing alignment with project goals, construction firms can enhance the likelihood of achieving desired outcomes within the budget and schedule constraints. Moreover, the stakeholder in the prequalification decision-making process is essential for ensuring buy-in and alignment with project goals. This has been done by soliciting input from stakeholders and considering their perspectives to reflect their interests. The approach also involves performance criteria in the prequalification process to identify contractors with proven tracks and records of delivering high-quality results (Alptekin and Alptekin, 2017). This may involve assessing past performance metrics such as on-time delivery, adherence to budget, and client satisfaction ratings.

According to Kapote *et al.* (2023), the strategic approaches determine their unique benefits, as construction firms have been able to ensure selected contractors have the necessary

qualifications, expertise, and resources to complete the projects. This mainly reduces the risk of the project's delays and cost overruns. The strategic approach of prequalification helps the organizations to identify and mitigate the potential risks of the project lifecycle. This has been done through evaluating contractors, financial stability, safety records, and past performance and organizations can minimize the risks of working with unreliable or unsafe contractors (Ayettey and Danso, 2018). The construction workers and staff can use the prequalification process to lead to cost savings in the long run. The standardization of the prequalification process and utilizing technology can streamline decision-making to reduce time. As opined by Kog and Yaman, (2016), the strategic approaches for contractors' prequalification governance decision-making are significant for the project's success. Thus, *limited information* can be challenging to verify the accuracy of the information provided, particularly for smaller or less well-known contractors. As a result, the contractors may not be able to best fit for the projects. In addition, the standard prequalification process can sometimes be inflexible and may not adequately account for unique project requirements or contractors' capabilities (Modupe and Ola, 2016). Moreover, the limited practice value is often considered the unique challenge faced by contractors, as it is because of failure to predict future performance. External factors such as changes in leadership or market conditions can significantly impact contractors' ability to deliver on a project. It has been discussed that implementing strategic approaches for contractors' prequalification governance decision-making can have a significant impact on project outcomes (Rashvand *et al.* 2015). Rigorously contractors based on strategic criteria, help the firm to select a capable contractor based on projects. This is due to reducing the likelihood of project delays, and cost overruns to lead to higher success rates. By assessing factors such as financial stability, and past performance construction firms can be able to mitigate the potential risk before the impact of the projects.

Based on the above analysis of results and themes, it has been discussed that the strategic approach for contractors' prequalification in governance decision-making is mainly influenced by several factors (Cristóbal *et al.*, 2023). The complexity and scope of the projects play a significant role in determining the strategic approach for contractors' prequalification. Based on large-scale, complex projects, and a more rigorous and detailed prequalification process, it is necessary to ensure that selected contractors have the proper requisite expertise and resources to ensure selected contractors. The risk management considerations heavily influenced the selection of a strategic approach for contractor's prequalification (Afolayan *et al.* 2018). The projects involved with high levels of risks such as those in hazardous environments or with

tight deadlines, may require a more stringent prequalification process to mitigate the risks associated with contractors' roles and performances.

The organization is mainly involved with various scrutiny during the prequalification process to ensure consistency and equity in contractor selection. Conversely, in markets with fewer competitors, the organization may have more flexibility in their pre-qualification criteria and approach. In addition, stakeholders may expect a transparent and accountable prequalification process that ensures the selection of reputable contractors with proven track records of success. According to Kukoy *et al.* (2021), the selection of a strategic approach for contractors' prequalification in governance decision-making might offer several benefits to construction firms. Through considering factors such as experience, and financial stability construction firms have been able to mitigate the risk of selecting contractors who are not able to meet the project requirements as well as pose the success of the project. Regardless, prequalifying contractors based on their financial stability and past performances helps to control costs by reducing the likelihood of budget overruns or cost delays due to contractors' issues. Similarly, the factors help to ensure that organizations comply with relevant legal and regulatory requirements to reduce the risk of legal disputes or regulatory penalties. The overall factors influencing the strategic approach selection for contractors' prequalification in governance decision-making contribute to the project's success by minimizing risks.

Considering the challenges, despite the efforts to establish objective criteria, there is often a degree of subjectivity involved in contractors (Yu *et al.* 2022). This is because of limited information such as past performance data and documentation provided by contractors. This may not provide a comprehensive understanding of contractors' capabilities, leading to potential misjudgements or oversights. Apart from this, with the efforts of a standardized prequalification process, there may still be inconsistencies in the way criteria are applied across the different projects (Alshamrani *et al.*, 2023). It has been identified through peers that, a lack of standardization can result in disparities in contractors' selections and potentially undermine the fairness and transparency expertise.

The strategic selection of contractors through prequalification helps in mitigating risks associated with various project executions. Thus, factors assessing financial stability, and safety records are mainly to identify the potential risks to address them accurately (Fard *et al.* 2015). The overall factors influencing the strategic approach for contractors' prequalification in governance decision-making have a far-reaching impact on project success, cost, and quality

that helps to prioritize carefully considering these factors are better positioned to achieve their project objectives and deliver successful outcomes.

Based on the above analysis of the theme, it has been discussed that the strategic approaches for project risk mitigation are essential for ensuring successful project outcomes consisting of time, cost, and quality. It has been discussed that strategic risk management begins with identifying and assessing potential risks to the project. This process involves analyzing various factors such as project scope, stakeholders, resources, and external influences (Aboelmagd, 2018). Additionally, his approach is effective in proactively identifying threats, its success largely depends on the thoroughness of risk identification and the accuracy of risk assessment. Once a risk has been identified and assessed the strategic approach is involved in developing risk response plans to mitigate transfers. Effective risk response planning requires a proactive and systematic approach to address the risks. Once the risks are identified and assessed, strategic approaches involve developing risk response plans to mitigate and accept. However, the risks of success mainly depend on plans based on implementations and integrations into project management. As opined by Naik *et al.*, (2021), the poorly risk-executed or inadequate resources allocated for risk mitigation can compromise their effectiveness, leading to project delays, cost overruns and quality issues. Similarly, it involves strategic project management to address unforeseen challenges that may arise during the project's executions. While contingency planning enhances the project's resilience and flexibility, the effectiveness depends on the accuracy of risk assessment and the robustness of contingency measures. As a result, the success of monitoring and control processes depends on the availability of real-time data and timely communication to delay the responsive risks that may escalate into larger issues. It has been discussed that the effectiveness of strategic approaches faced huge uncertainties and major events such as *Inherent uncertainties*. This uncertainty can make it challenging to fully anticipate and mitigate the potential risk effectively. As a result, the project manager may encounter risks during the planning phase, leading to unanticipated delays in cost overruns. Additionally, the construction firm may face *resource constraints* such as budget limitations, time constraints or limited availability of skilled personnel that impact their ability to implement comprehensive risk mitigation strategies (Marović *et al.* 2021). Despite this, the projects can be influenced by external factors such as changes in regulations, and market conditions that lead to huge external risks to amplify the existing ones and make it more challenging. Therefore, the project manager might adopt a proactive and adaptive approach to risk management. This includes monitoring project risks, engaging stakeholders, and fostering

a culture of risk awareness. Additionally, organizations can benefit from investing in training and development programs to increase risk management capabilities across their project teams (El Dean and Abdelalim, 2021).

Based on the above analysis of the theme, it has been discussed that insufficient project needs can lead to misalignment in contractor selection. Thus, it is important for stakeholder engagement in defining these needs to be equally vital. Despite the recommendation for objectives, there is a tendency for subjectivity to seep into the process. Factors such as experiences and technical expertise can be interpreted differently by different evaluators (Almohassen *et al.* 2023). It has been discussed that emphasizing financial stability during prequalification can sometimes disincentivize innovative or smaller contractors due to a lack of extensive financial reserves. Conversely, past performance is a valuable indicator that is not always predictive of future success. This might be relying on past performances or those undergoing positive transformation (Jung and Mills, 2015). Therefore, supplementing past performances with forward-looking ones could enhance the selection process. Based on the above analysis, there have been huge benefits of the prequalification process, as it reduces the likelihood of project delays and cost overruns. Moreover, it also helps to select the contractors to track the record of delivering high-quality workmanship and the likelihood of project success. The best practices ensure that only contractors with the necessary expertise and experience lead to better quality outcomes (Liu *et al.*, 2023). Therefore, selecting contractors through a fair and transparent prequalification process fosters a positive relationship between the project owner and contractors. Construction firms are mainly subject to constant change consistent with advances in technology, regulations, and market conditions. As a result, the prequalification criteria may become outdated or less relevant over time, requiring regular review and updates.

6. Limitations

The limitations of the systematic literature review include the possible bias in the findings of the selected studies focusing on the positive aspects of contractor pre-qualification and potentially overlooking the inherent complexities and delay. The limitations of the study also extend to the limited exposure of the strategic approaches to project governance decision-making and the effectiveness of contractor requalification due to the diverse availability of literature representing various contexts of contractor selection across different geographic locations. This impacts the comprehensiveness of the findings and the overall heterogeneity due to the combination of various methodological approaches.

7. Summary and Outlook

The investigation focused on conducting a systematic literature review over the last 10 years regarding the strategic approaches influencing the project governance decisions regarding contractor pre-qualification for construction undertakings. The systematic literature review has considered 45 articles in total published between 2014 and 2023 with the inclusion criteria solidifying the relevance and comprehensiveness of the findings. In the study, the finding indicates the application of various strategic approaches by the construction clients for contractor-free qualification depending on the risk appetite and performance criteria for meeting the specific project requirements. The utilization of a multi-criteria decision-making approach is found to be the most effective for efficient contractor pre-qualification considering both the qualitative and quantitative attributes for increasing the chances of project success.

The overall results and summary have been drawn based on the above analysis of results and themes. However, it has been found that the prequalification process plays an immense role in selecting talented contractors for construction projects. However, the best practices for strategic contractors are effective for selecting quality contractors for project success. Contractors may face huge issues based on the prequalification process such as inflexibility and limited resources. Additionally, it has been found that the construction industry is more subjected to constant change based on technology advancements and regulations. Therefore, the contractor needs to carefully consider the governance decision to ensure the project's success and foster effective collaboration between the project stakeholders.

8. References

- Abdul Razak, N., Ejohwomu, O., Fenn, P., Okedara, K., Dosumu, B. and Muhammad-Sukki, F., 2021. Identification of health and safety prequalification criteria for contractor selection in construction projects: a systematic review. *Energies*, 14(21), p.7244.
- Aboelmagd, Y.M., 2018. Decision support system for selecting optimal construction bid price. *Alexandria Engineering Journal*, 57(4), pp.4189-4205.
- Afolayan, A.H., Ojokoh, B.A. and Adetunmbi, A.O., 2020. Performance analysis of fuzzy analytic hierarchy process multi-criteria decision support models for contractor selection. *Scientific African*, 9, p.e00471.

Afolayan, A.H., Ojokoh, B.A. and Adeyinka, S.A., 2018. Evaluation of Prequalification Decision Criteria for Selecting Contractors in Nigeria Using Analytic Hierarchy Process. *International Journal of Computer Applications*, 197(22), pp.0975-8887.

Almohassen, A.S., Alfozan, M., Alshamrani, O.S. and Shaawat, M.E., 2023. Evaluating construction contractors in the pre-tendering stage through an integrated-based model. *Alexandria Engineering Journal*, 82, pp.437-445.

Alptekin, O. and Alptekin, N., 2017, October. Analysis of criteria influencing contractor selection using the TOPSIS method. In *IOP conference series: materials science and engineering* (Vol. 245, No. 6, p. 062003). IOP Publishing.

Alptekin, O., 2014. Multi-criteria decision-making approach in contractor selection. *International Journal of Natural and Engineering Sciences*, 8(2), pp.6-9.

Alshamrani, O.S.D., Saleem, M., AlYousif, I.K. and Alluqmani, A., 2023. Development of a pre-qualification and selection framework for construction project contractors in Saudi Arabia. *Journal of Asian Architecture and Building Engineering*, 22(3), pp.1545-1563.

Alzoher, W. and Yaakub, A.R., 2014. Integrated model for selection the prequalification criteria of contractor. *Lecture Notes on Software Engineering*, 2(3), p.233.

Ameh, O.J., Kayode, I.O. and Ajayi, M.O., 2022. Impact of Contractors' Prequalification Criteria (CPC) on Time Performance in Construction Projects Execution. *Lagos Journal of Environmental Studies*, 11(1), pp.13-26.

Amireh, F., 2022. A study on the impact of contractor selection method and contractors' pre-qualifications on delays in Jordanian public construction projects.

Ayettey, D.N.A. and Danso, H., 2018. Contractor selection criteria in Ghanaian construction industry: Benefits and challenges. *Journal of Building Construction and Planning Research*, 6(4), pp.278-297.

Bakry, I. and Daoud, E., 2019. Contractor Prequalification Model for Lean Project Delivery. *Int. J Sup. Chain. Mgt Vol*, 8(4), p.1131.

Cristóbal, S., Fernández, J.R., Dominguez, V., Salinas, S.D. and Alvangonzález, R., 2023. Contractor selection for Project execution using multi-attribute decision-making. *Procedia Computer Science*, 219, pp.1760-1768.

El Dean, S.M. and Abdelalim, A.M., 2021. A Proposed System for Prequalification of Construction Companies & Subcontractors for Projects in Egypt. *International Journal of Management and Commerce Innovations*, 9(2), pp.290-304.

El-khalek, H.A., Aziz, R.F. and Morgan, E.S., 2019. Identification of construction subcontractor prequalification evaluation criteria and their impact on project success. *Alexandria Engineering Journal*, 58(1), pp.217-223.

Eriksson, P.E., Volker, L., Kadefors, A., Lingegård, S., Larsson, J. and Rosander, L., 2019. Collaborative procurement strategies for infrastructure projects: A multiple-case study. *Proceedings of the institution of civil engineers-management, procurement and law*, 172(5), pp.197-205.

Fard, M.M., Terouhid, S.A. and Jokar, M.R.A., 2015. Managerial evaluation of construction contractors in the selection process. *Sch J Econ Bus Manag*, 2, pp.145-158.

Jung, Y. and Mills, T., 2015. An Approach to Sustainable Standardization of Submittal Process through Illustrative Study in Construction. *Journal of Sustainability Research*, 6(2), pp.1-13.

Kapote, M., Patil, P. and Pimplikar, S., 2023. Effective pre-qualification systems—Are they essential for minimizing delays on road projects? *Organization, Technology, and Management in Construction: an International Journal*, 15(1), pp.213-220.

Khoso, A.R., Memon, N.A., Sohu, S., Siddiqui, F. and Khan, J.S., 2020. Decision criteria for assessment of contractors in the prequalification phase of public projects. *International Journal of Advanced Science and Technology*, 29(11s), pp.2624-2635.

Koçak, S., Kazaz, A. and Ulubeyli, S., 2018. Subcontractor selection with additive ratio assessment method. *Journal of Construction Engineering, Management & Innovation*, 1(1), pp.18-32.

Kog, F. and Yaman, H., 2014. A meta classification and analysis of contractor selection and prequalification. *Procedia Engineering*, 85, pp.302-310.

Kog, F. and Yaman, H., 2016. A multi-agent systems-based contractor pre-qualification model. *Engineering, Construction and Architectural Management*, 23(6), pp.709-726.

Kukoyi, P.O., Osuizugbo, I.C., Yohanna, H.S., Edike, U.E. and Ohiseghame, I.E., 2021. Pre-qualification of Selecting Construction Project Contractors Using Health and Safety Criteria. *Journal of Engineering, Project & Production Management*, 11(1).

Kunkcu, H., KOÇ, K. and Gürkün, A., 2022. Multi-criteria decision-making methods for contractor selection: A review. *Proceedings of International Structural Engineering and Construction*, 9(1) pp.1-6.

Lees, T., Segar, D., Whyte, A. and Urquhart, S., 2022. Cost and Time Overruns in Western Australian Government Projects: Procurement Decision-Making Antecedents. *Transactions on Science and Technology*, 9(2-2), pp.86-96.

Liang, H., Zhang, S. and Su, Y., 2018. Using leading and lagging indicators to select safe contractors at the prequalification stage of construction projects. *International journal of occupational and environmental health*, 24(1-2), pp.61-74.

Liu, X., Chen, S., Ding, Z. and Xu, B., 2023. Bidding evaluation and contractor selection using balance index model and comprehensive input efficiency based on data envelopment analysis. *Systems*, 11(5), p.245.

Marović, I., Perić, M. and Hanak, T., 2021. A multi-criteria decision support concept for selecting the optimal contractor. *Applied Sciences*, 11(4), p.1660.

Modupe, O.M. and Ola, A.A., 2016. Relevance of contractors' prequalification criteria to time performance of civil engineering project. *American Journal of Civil Engineering*, 4(5), pp.225-232.

Mohamed, S.R. and Majeed, R.A., 2016. Using Analytical Network Process to Find Priorities Weights of Contractors Pre-Qualification. *Journal of Construction Engineering, Technology and Management*, 6(2), pp.88-93.

Naik, M.G., Kishore, R. and Dehmourdi, S.A.M., 2021. Modeling a multi-criteria decision support system for prequalification assessment of construction contractors using CRITIC and EDAS models. *Operational Research in Engineering Sciences: Theory and Applications*, 4(2), pp.79-101.

Nurjaman, I. and Listyantoko, R.A., 2023. ANALYTIC HIERARCHY PROCESS FOR DETERMINATION OF DECISION MAKING IN THE SELECTION OF CONTRACTORS. *Industry Xplore*, 8(1), pp.229-237.

Ola, A.A., 2016. Potential attributes of contractors' prequalification criteria for civil engineering project: Essential tools for project administration. *American journal of construction and building materials*, 1(1), pp.15-23.

Ola, A.A., Michael, A.O. and Akinloye, O.M., 2017. Assessment of Factors Responsible for the Choice of Contractors' Prequalification Criteria for Civil Engineering Project: Consultants' Perspective. *International Journal of Advanced Engineering Research and Science*, 4(9), p.237255.

Osurua, I., Ekpene, I. and Osurua, I.E., 2017. Determinants of Contractors' Pre-Qualification Criteria in a Recessed Economy Nigeria. *International Journal*, 5(1).

Patel, M., Pitroda, J. and Bhavshar, J.J., 2016. To study the factors affecting contractors perspective in risk management. International Conference on: "Engineering: Issues, opportunities and Challenges for Development". Pp.99-113.

Patil, S., Konnur, B., Devthanekar, P. and Patil, K., 2020. Review of Contractor Prequalification Criteria and their Impact on Project Success Factors. *International Journal of Research in Engineering, Science and Management*, 3(7), pp.298-302.

Plebankiewicz, E., 2014. Modelling decision-making processes in bidding procedures with the use of the fuzzy sets theory. *International Journal of Strategic Property Management*, 18(3), pp.307-316.

Puri, D. and Tiwari, S., 2014. Evaluating the criteria for contractors' selection and bid evaluation. *International journal of engineering science invention*, 3(7), pp.44-48.

Rashvand, P., Abd Majid, M.Z. and Pinto, J.K., 2015. Contractor management performance evaluation model at prequalification stage. *Expert Systems with Applications*, 42(12), pp.5087-5101.

Rashvand, P., Abd Majid, M.Z., Baniahmadi, M. and Ghavamirad, F., 2015. Contractor selection at prequalification stage: current evaluation and shortcomings. *Jurnal Teknologi*, 77(16), pp.81-89.

Ulubeyli, S. and Kazaz, A., 2016. Fuzzy multi-criteria decision-making model for subcontractor selection in international construction projects. *Technological and Economic Development of Economy*, 22(2), pp.210-234.

Yu, V.F., Chiang, F.Y., Le, T.H.A. and Lin, S.W., 2022. Using the ISM method to analyze the relationships between various contractor prequalification criteria. *Applied Sciences*, 12(8), p.3726.