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Analyzing *the Analytic Hierarchy Process Method* in Winning Tenders at CV. Bumi Konstruksi

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ABSTRACT

Tender selection is a complex decision-making process that requires construction companies to evaluate multiple criteria objectively to improve their competitiveness. However, the application of systematic decision-making methods in tender selection remains an important challenge for construction firms. This study aimed to analyze the implementation of the Analytic Hierarchy Process (AHP) method in tender selection at CV. Bumi Konstruksi and evaluate its effectiveness in supporting the company's tender-winning performance. The study employed a descriptive qualitative approach. Data were collected through direct observation, in-depth interviews with 12 limited partnership representatives and employees of CV. Bumi Konstruksi selected using purposive sampling, and document analysis related to the tender process. The data were analyzed descriptively to examine the implementation of AHP and its contribution to tender decision-making. The findings showed that AHP helped the company identify and prioritize relevant tender criteria, including price, quality, and completion time, through four main principles: decomposition, comparative judgment, synthesis of priorities, and logical consistency. The study also reported an increase in the number of tenders won following the implementation of AHP. Nevertheless, the method remained susceptible to subjective judgments and potential bias during pairwise comparisons. This study contributes practical insights into the application of structured decision-making methods in construction tender selection. AHP can support more systematic and transparent tender evaluations, although its effectiveness depends on reliable data, consistent assessments, and appropriate criteria.

1. Introduction

The construction industry is a vital sector in a country's economy (Dewi & Wibowo, 2026). From infrastructure development to commercial property, construction activities are the foundation for sustainable economic progress and growth (Aini et al., 2026) . In this context, the tender winning process is a critical step in determining the continuity and success of construction companies. In general, tenders are an official mechanism used by governments, private institutions, and other organizations to submit construction projects to potential contractors (Dodi et al., 2025).

However, participating in the tender process is no easy task. Fierce competition, complex technical requirements, and rigorous qualification evaluations are some of the challenges construction companies must face to win tenders (Noe, 2020) . Companies must be able to offer competitive bids, anticipate potential risks, and accurately assess the needs and preferences of the tenderer (Petropoulos et al., 2025).

In an effort to improve efficiency and accuracy in the tender award process, construction companies are increasingly adopting sophisticated and structured analytical methods. One approach that has proven effective is the *Analytic Hierarchy Process* (AHP). Developed by Thomas L. Saaty in the 1970s, AHP is one of the most popular and trusted multi-criteria decision analysis techniques. This method allows decision-makers to evaluate and compare alternatives based on a number of relevant criteria, then assign relative weights according to their importance (Putra & Yanto, 2025).

In the context of tender winning, the application of the AHP method offers a systematic

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approach to assessing various aspects involved in the process (Suardi & Haeruddin Saleh, 2026). Criteria such as bid price, work quality, implementation schedule, and environmental sustainability can be comprehensively analyzed and assessed according to established preferences and priorities (Rosma et al., 2025). Thus, construction companies have a stronger foundation for making optimal decisions in the face of intense competition in the tender market (Bahri, 2025).

A visible phenomenon is how the application of AHP in the tender winning process can provide a competitive advantage. AHP provides a systematic approach to assessing various aspects involved in a tender, taking into account established priorities and preferences (Latifaturrohmah et al., 2026). This facilitates more structured and data-driven decision-making, which in turn increases a company's chances of winning a tender amidst intense competition (Maulana et al., 2024).

Although the use of the AHP method has proven effective in various applications, its application in the context of tender winning in the construction industry in Indonesia remains underexplored. Previous research shows that the AHP method has been used in various contexts, such as supplier selection and employee assessment, but often lacks in-depth understanding of how this method can be optimized for tender winning specifically. A previous study entitled "Implementation of *the Analytical Hierarchy Process Method* to Determine the Best Employees at CV. Diana Kosmetik Bandung (2023)" applied AHP for employee evaluation, but did not discuss its application in tender winning or the construction industry. This research gap is the main motivation for conducting this study.

Based on the background above, the problem formulation in this study is: (1) How is the process of applying the *Analytic Hierarchy Process method* in tender selection at CV. Bumi Konstruksi? (2) How effective is *the Analytic Hierarchy Process method* in helping CV. Bumi Konstruksi win the tender? The purpose of this study is to determine the process of applying the AHP method in tender evaluation and selection and to determine its effectiveness in helping CV. Bumi Konstruksi win the tender.

2. Literature Review

2.1. Conceptual and Theoretical Foundations

2.1.1. Analytic Hierarchy Process (AHP)

The Analytical Hierarchy Process is a decision support model developed by Thomas L. Saaty. This model breaks down complex multi-factor or multi-criteria problems into a hierarchy. According to Saaty, a hierarchy is defined as a representation of a complex problem in a multi-level structure, where the first level is the objective, followed by the levels of factors, criteria, sub-criteria, and so on down to the final level, alternatives. With a hierarchy, a complex problem can be broken down into groups that are then arranged into a hierarchical form so that the problem appears more structured and systematic (Yelvita, 2022).

Wibowo et al. (2025) state that AHP is a method to help prioritize various options using various criteria. Meanwhile, Maulidiyah and Nikmah (2022) state that AHP essentially has a working principle of simplifying a complex, unstructured, strategic, and dynamic problem into parts arranged in a hierarchy. Ibrohim and Anshori (2025) emphasize that the AHP method is an approach to decision-making that builds a hierarchical system of various factors deemed important to consider.

Febriana et al. (2025) explain that AHP is a probabilistic-based decision-making and strategic planning model. This model is characterized by establishing a priority scale for various alternative choices through a hierarchical and structured analytical process based on decision variables. Kazakis added that AHP is a structured technique for analyzing complex problems in which multiple objectives or criteria are interrelated. The relative significance between criteria is evaluated on a scale of 1 to 9, indicating the level of importance from least to most important.

2.1.2. Basic Principles of the AHP Method

Decision-making in the AHP methodology is based on four basic principles. *First*, Decomposition, which breaks down a complete problem into its elements to form several levels. There are two types of hierarchies that can be formed: complete and incomplete hierarchies. *Second*, Comparative Judgment, involves assessing the relative importance between two elements at a certain level related to the criteria above it. The results of this assessment are presented in the form of a pairwise comparison matrix. Third, Synthesis of Priority, which searches for the eigenvectors of each comparison matrix to

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obtain local priorities, then synthesizes them to obtain global priorities. *Fourth*, Logical Consistency ensures that similar objects are grouped based on uniformity and relevance, as well as the consistency of relationships between objects based on certain criteria (Dewi & Wibowo, 2020) .

2.1.3. Advantages and Disadvantages of the AHP Method

The advantages of the AHP method include: unity (simplifying broad problems into easy-to-understand models), complexity (solving complex problems systematically and deductively), interdependence, hierarchical structure, measurement, logical consistency, synthesis, and consideration *of trade-offs*. The disadvantages of AHP include the inability to handle uncertainty when decision makers must provide definite values based on a number of criteria; manual calculations become difficult if the criteria are more than 10; and small changes in input data can have a large impact on the final result.

2.1.4. Tender

Substantially, a tender is defined as an offer to provide a price, carry out work, or provide goods and services (Purnomo et al., 2025). Before the tender is carried out, the initial step that must be taken is to prepare a plan and budget to obtain a clear understanding of the type and cost of goods and services needed. According to Article 22 of Law Number 5 of 1999, a tender is an offer to submit a price to contract a job, procure goods, or provide services. Eka et al. (2025) states that a tender is a series of bidding activities aimed at selecting, determining, and indicating which company is most suitable to carry out a work package.

In carrying out the work being tendered, providers of goods and services are required to comply with applicable provisions, including: complying with laws and regulations; having expertise, experience, and technical and managerial capabilities; not being under court supervision or bankrupt; having the legal capacity to sign contracts; fulfilling tax obligations; having experience providing goods/services in the last 4 years; having adequate human resources, capital, and equipment; not being blacklisted; and having a permanent and clear address.

2.2. Empirical Study Review

Several previous empirical studies have tested the application of AHP in various decision-making contexts. Thematically, these studies can be grouped into three main streams.

The first stream utilizes AHP for managerial decision-making outside the construction context. A 2016 study applied AHP to inventory control at PT. Sumber Rezeki Bersama and found that AHP was able to present criteria with varying weights. A 2019 study at the Rejowinangun Market Technical Implementation Unit (UPT) demonstrated that AHP can be effectively implemented in a decision support system for employee performance assessments. A 2023 study at Konveksi Vendor Kampus Indonesia also identified two key priority factors in AHP-based business development.

The second stream applies AHP to the selection of suppliers, contractors, and tender winners in the construction sector. Research at Mulawarman University's M-Merchandise (2020) combined AHP with TOPSIS to assess construction material suppliers based on quality, price, and delivery time.

A third stream developed methodological variants of the AHP to address greater complexity. A 2013 study used *the Fuzzy-Analytical Hierarchy Process* to select tender winners for large infrastructure projects with complex criteria, and was able to identify the most suitable bids in terms of sustainability and long-term cost.

A synthesis of these studies demonstrates a convergence of findings that AHP is effective in structuring multi-criteria decision-making. However, most studies focus on large-scale objects (infrastructure projects, state-owned enterprises, national-scale construction companies), while applications to medium-scale CVs (limited partnerships) in the local construction industry are still limited in depth.

2.3. Identifying Research Gaps

Based on the synthesis of the theoretical foundations and empirical findings above, this study identifies three research gaps that motivate this study.

First, there is a context gap. Although AHP has been widely applied to supplier selection, employee performance appraisal, inventory control, and contractor selection on large-scale projects, studies specifically analyzing the AHP process and

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effectiveness in tender winning for medium-sized construction companies operating in local markets are still very limited.

Second, there is a methodological gap. Most previous studies are quantitative, focusing on calculating pairwise comparison matrices and priority weights, without deeply exploring how these methods translate into practice for decision-makers on the ground.

Third, there is a gap in integration between the technical aspects of AHP and the strategic effectiveness of tender winning. Few studies have explicitly linked AHP implementation to tender success indicators (increased win rates, efficiency of the evaluation process, and reduction of subjective bias) at the small-to-medium business unit level in the Indonesian construction industry. These gaps underscore the urgency of this research and provide the academic basis for its contribution.

2.4. Development of a Framework for Thinking

The conceptual framework in this study illustrates the relationship between the application of the AHP method through its four main principles and the effectiveness of tender winning at CV. Bumi Konstruksi. The conceptual framework can be seen as follows:

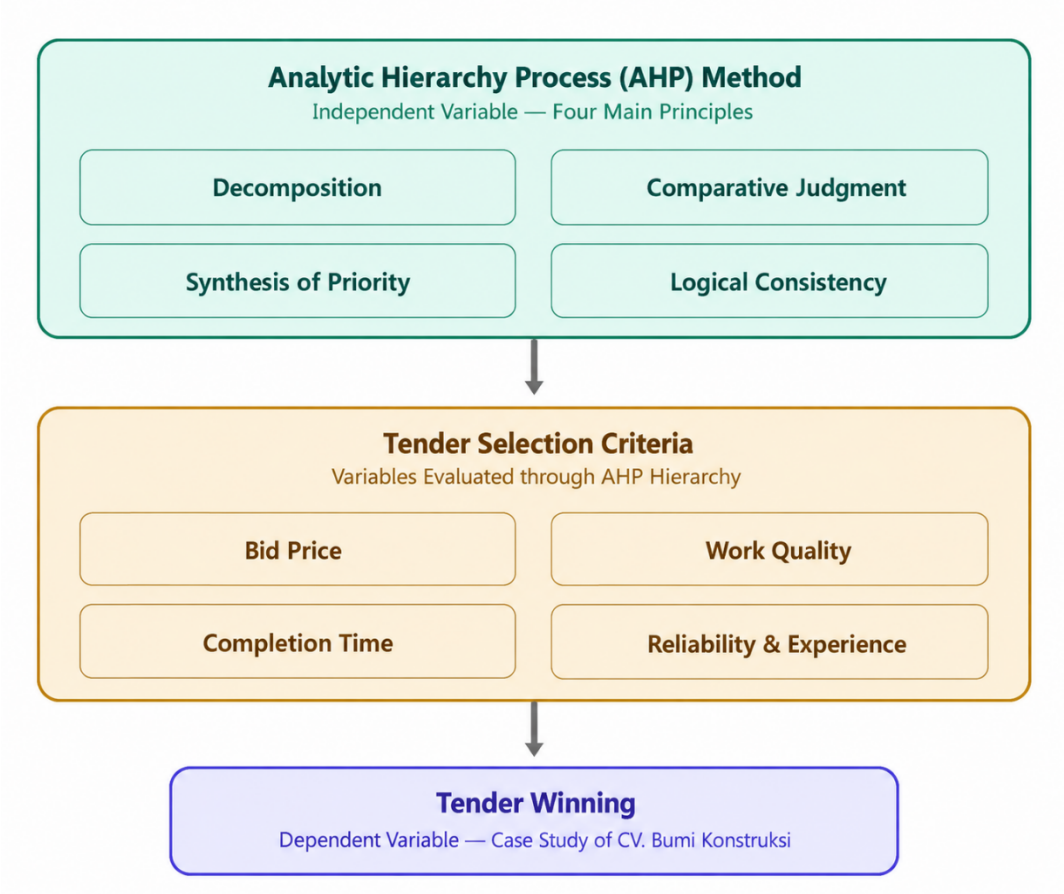


Fig. 1. Framework of Thought

2.5. Hypothesis or Research Proposal

The framework above describes the research thinking flow: the application of the AHP Method with its four main principles (*Decomposition*, *Comparative Judgment*, *Synthesis of Priority*, *Logical Consistency*) is used to compile and evaluate the Tender Selection Criteria (bid price, quality of work, completion time, and reliability & experience), which ultimately contributes to the Tender Winning at CV. Bumi Konstruksi.

3. Research methods

3.1. Research Design

This research adopts a descriptive qualitative approach that relies on in-depth analysis of the phenomena under study. This approach aims to understand the complex context in which the research subjects operate. Through this approach, researchers explore the meanings, perceptions, and experiences of the subjects, focusing on the descriptive and interpretive richness of the collected

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data (Sugiyono, 2021b) . A qualitative approach allows researchers to capture nuances, complexities, and dynamics that cannot be measured quantitatively.

3.2. Research Context and Background

This paragraph outlines the context and setting in which the research is conducted, including the sector, organization, or geographic region. The justification for choosing the research context is provided to highlight its relevance and potential contribution to the literature. A clear description of the research setting enhances its contextual validity and allows readers to understand the scope and applicability of the findings.

3.3. Population and Sample / Research Participants

The population in this study is all parties involved in the tender process at CV. Bumi Konstruksi. The sampling technique used is *non-probability sampling* with a *purposive sampling type*, which is a technique used if the researcher has certain considerations in sampling. The sample that became the data source was the Head of Limited Partnership and employees of CV. Bumi Konstruksi, totaling 12 people, with the main informants being Mr. Mochamad Adam Mahlouv (Limited Partnership) and Mr. Khoirul Marom (employee).

3.4. Data Sources and Data Collection

This study uses qualitative data based on an inductive mindset, based on participatory objective observations of social phenomena (Hayati et al., 2026) . Primary data was obtained directly from the field through interviews and observations, while secondary data was obtained from tender documents, company reports, and supporting literature.

3.5. Measurement of Research Variables and Instruments

The instruments used include: (1) Interview instruments as a guideline for gathering information from CV. Bumi Konstruksi employees, conducted outside of working hours with a voice recorder and validated by a construction expert; (2) Observation instruments as a guideline for systematic observation of the company's situation and conditions; and (3) Documentation instruments to collect information in the form of documents, activity photos, and interview transcripts. Data collection techniques were carried out through observation triangulation, in-depth interviews, and documentation.

3.6. Data Analysis Techniques

Data analysis used the Miles and Huberman Model (Sugiyono, 2021a) , which encompasses four main activities. *First*, data collection through observation, in-depth interviews, and documentation. *Second*, data reduction, which involves summarizing, selecting key points, focusing on important points, and identifying themes and patterns. *Third*, data presentation in the form of brief descriptions, charts, relationships between categories, or narrative text. *Fourth*, conclusions are drawn and verified based on the analyzed data.

3.7. Validity, Reliability, and Trustworthiness

Because this research uses a qualitative approach, the quality of the research is guaranteed through trustworthiness criteria *which* include four aspects: credibility, transferability, dependability, and confirmability.

Credibility was maintained through triangulation of data sources and collection techniques. The researchers combined three instruments—in-depth interviews, participant observation, and a documentary study of 12 limited partners and employees of CV. Bumi Konstruksi. This triangulation allowed for cross-checking of results from one source with those from another, minimizing bias. Furthermore, the interview instrument was validated by construction experts before being used in the field to ensure that the questions posed were relevant and accurately captured the phenomenon under study.

Transferability is achieved by providing a thick description *of* the research context, including the profile, history, organizational structure, and business areas of CV Bumi Konstruksi. A detailed contextual description allows readers to assess the extent to which the research findings can be applied to other construction CVs with similar characteristics.

Dependability was ensured by systematically documenting all stages of the research process, from planning and *purposive sampling* to conducting interviews and analyzing data using the Miles and

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Huberman Model. Recording interviews using a voice recorder and recording observations allowed for an audit trail *if* re-verification was necessary.

Confirmability is maintained through a clear separation between field data and the researcher's interpretation. Direct quotes from informants are presented as empirical evidence to support each analytical claim, allowing readers to verify that the findings are derived from the data, not the researcher's personal assumptions.

3.8. Ethical Considerations

This study upholds ethical research principles in its interactions with all participants. *First*, the principle of *informed consent* was implemented by conveying the purpose, scope, and procedures of the study to the limited partners and employees of CV. Bumi Konstruksi before the interviews were conducted. Participation was voluntary, and informants were given the freedom to refuse to answer certain questions or withdraw at any time without any consequences.

Second, the principles of confidentiality and data protection apply to all sensitive information, particularly that related to the company's internal business strategy, bid value, and tender evaluation criteria. Data is used for academic purposes only, and the identities of informants who wish to remain anonymous are not published in the report.

Third, interviews were scheduled outside of working hours to avoid disrupting company operations and to respect the informants' professional time. Furthermore, the use of voice recording devices was carried out only after obtaining the informants' explicit consent.

Fourth, the principle of academic integrity is applied by citing each library source correctly in accordance with scientific writing rules and conveying research results honestly, including acknowledging limitations found during the research process.

3.9. Research Procedures

The research procedure is systematically structured in five interconnected stages, thus ensuring methodological transparency and enabling future replication.

The first stage is research planning, including problem identification, formulation of research questions, determination of research objects (CV. Bumi Konstruksi), and preparation of a conceptual framework based on a literature review on AHP and tenders.

The second stage was the development of research instruments, which included interview guidelines, observation guidelines, and documentation guidelines. The interview instruments were validated by construction experts to ensure the relevance and accuracy of the questions.

The third stage is field data collection. The sample was selected using *purposive sampling* from a population of 12 people at CV. Bumi Konstruksi, consisting of the heads of limited partnerships and employees. Data collection was conducted through three techniques: (a) in-depth interviews using a voice recorder outside of working hours; (b) observation of the company's situation and conditions and the tender decision-making process; and (c) documentation including photographs of company activities and interview transcripts.

The fourth stage is data analysis using the Miles and Huberman Model (Sugiyono, 2021a) which consists of four continuous activities: (a) collecting data from the field; (b) data reduction by summarizing, selecting the main points, and focusing on important things; (c) presenting data in the form of narrative descriptions, charts, or relationships between categories; and (d) drawing conclusions and verification based on consistent evidence from the field.

3.10. Methodological Limitations

This study acknowledges several methodological limitations that need to be considered when interpreting the findings. *First*, limited data availability. This study relies on data willingly shared by CV Bumi Konstruksi. Incomplete data availability, particularly detailed information regarding tender criteria and internal company assessments, may impact the depth of the analysis.

Second, limitations on generalizability. The research design, a single case study of a medium-sized construction company, limits the generalizability of the findings to other companies with different characteristics, such as project scale, construction type, and market conditions.

Third, limitations in measuring subjectivity. Although the AHP is designed to provide more objective assessments through a pairwise

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comparison matrix, the process still involves subjective judgment from decision-makers. The AHP's consistency test is capable of detecting logical inconsistencies, but it cannot completely eliminate the personal bias inherent in individual judgments.

Fourth, limitations in criteria variation. This research is limited to criteria that have been used or deemed important by CV. Bumi Konstruksi. Other criteria that may be relevant in the context of more complex projects or different industries are not explored in depth.

Fifth, time and resource limitations. Observations covering all stages of AHP implementation were not fully feasible, so some of the analysis relied on interviews and secondary data. Furthermore, the qualitative approach, using semi-structured interviews, opened up the possibility of interpretive bias, although triangulation was implemented to minimize this risk. These limitations serve as input for further research to expand the scope, deepen the criteria, and combine qualitative approaches with quantitative verification.

4. Results and Discussion

4.1. Research Results

4.1.1. Sample Description and Descriptive Statistics

CV Bumi Konstruksi was founded in 2005 by a group of young professionals with experience and expertise in the construction and civil engineering fields. Starting as a small company focused on local projects, CV Bumi Konstruksi gradually grew and expanded its project portfolio, working on various types of infrastructure developments, including housing, commercial buildings, and government projects. In 2015, CV Bumi Konstruksi won several regional awards for its dedication to delivering quality work.

The company's vision is to become a leading, reliable, innovative, and trusted construction company. CV. Bumi Konstruksi's services include commercial and residential building construction, infrastructure development, building renovation and rehabilitation, industrial facility development, construction project management, design and planning, and *green building*.

4.1.2. Data Quality and Preliminary Analysis

The study employed a descriptive qualitative approach using direct observation, in-depth interviews, and document analysis. The collected information was examined to understand how AHP was implemented in tender selection and how the method supported decision-making. The analysis focused on the four principal AHP stages: decomposition, comparative judgment, synthesis of priorities, and logical consistency.

The findings also identified practical challenges in applying AHP, particularly uncertainty in assigning pairwise comparison values and the increasing difficulty of manual calculations when more than ten criteria are involved. No numerical reliability coefficients, consistency ratios, or other statistical preliminary test results were reported in the original findings.

4.1.3. Main Analytical Results

a. The Process of Implementing the AHP Method in Tender Selection at CV. Bumi Konstruksi

Based on an interview with Mr. Mochamad Adam Mahlouv, the Limited Partner of CV. Bumi Konstruksi, the AHP implementation process begins with a clear definition of the problem, namely the main objective of the tender selection. He stated:

"We use the Analytical Hierarchy Process method to simplify and prioritize tender selection. The process begins with clearly defining the problem, which is the primary objective of the tender selection."

Once the tender selection objectives are established, the next stage is the *decomposition process* , which involves breaking down complex problems into smaller elements such as key factors, criteria, and sub-criteria, which are then arranged in a hierarchy. However, not all elements can be arranged in the same hierarchy, depending on the type of project or the criteria used.

Next, the Comparative Judgment principle is applied, making pairwise comparisons between elements at each hierarchical level based on the criteria above them. These assessments are then entered into a pairwise comparison matrix. This step is crucial because it significantly influences the final prioritization of the elements.

The next stage is Priority Synthesis. From each pairwise comparison matrix, *eigenvectors are found* to obtain local priorities. Then, synthesis is performed to obtain global priorities for all elements in the hierarchy by multiplying the local priorities by the priorities of the criteria at the upper level. However, the process presents challenges in the form of

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uncertainty in providing definitive assessments, especially when decision-makers are faced with multiple criteria. Manual calculations become difficult if more than ten criteria are used.

b. The Effectiveness of the AHP Method in Helping CV. Bumi Konstruksi Win the Tender

The AHP method has been a highly effective tool for CV. Bumi Konstruksi in winning tenders. AHP allows for more systematic and objective prioritization, ultimately helping to make more informed and targeted decisions in the tender process. Mr. Mochamad Adam Mahlouv emphasized:

"The Analytical Hierarchy Process method has been a very effective tool for us at CV. Bumi Konstruksi in winning tenders. AHP allows us to prioritize more systematically and objectively."

The AHP process begins by identifying and outlining the most important criteria for tender selection. The criteria are then arranged in a hierarchy, allowing companies to view each element in a structured manner. By comparing elements in pairs, companies can determine which priorities are most crucial for winning the tender. The results of the AHP process provide very clear guidance on the steps to be taken. For example, when a particular element has a higher priority, companies can focus on that aspect in their bids to be more competitive and meet the tenderer's expectations.

One significant example is when CV. Bumi Konstruksi won a tender for a major construction project the previous year. Using AHP, the company was able to identify the client's key desired criteria—timeliness, material quality, and cost—and then tailor its bid to emphasize these aspects. As a result, the bid was superior to competitors.

Mr. Khoirul Marom, an employee at CV. Bumi Konstruksi, added that overall, AHP is very effective. While there are challenges, such as calculation difficulties if there are too many criteria, the benefits far outweigh them. AHP helps avoid decisions based solely on intuition or experience, allowing for more structured and systematic analysis.

4.1.4. Hypothesis Testing Results / Key Findings

Because this study used a descriptive qualitative approach, it did not report formal statistical hypothesis testing. The main findings addressing the research objectives are summarized as follows:

a. **Implementation process:** AHP was implemented through problem definition, decomposition, pairwise comparison, synthesis of priorities, and logical consistency.
b. **Tender evaluation criteria:** The company considered factors such as price, material quality, and completion time when evaluating tender requirements.
c. **Decision-making support:** AHP provided a structured framework for comparing criteria and determining priorities, reducing dependence on intuition alone.
d. **Reported effectiveness:** The informants described AHP as useful in helping the company tailor its bids to client requirements. The study also reported a successful major tender following the method's application.
e. **Implementation challenges:** Uncertainty in pairwise comparisons and the complexity of manual calculations when numerous criteria were involved remained important limitations.

The findings therefore address the research questions concerning the implementation of AHP and its perceived contribution to tender selection at CV. Bumi Konstruksi. However, the original data do not provide numerical comparisons of the company's tender success rate before and after AHP implementation.

4.2. Research Discussion

4.2.1. Interpretation of Key Findings

a. Application of AHP in Decision Making: Simplifying Complexity

Based on research results and previous research reviews, the AHP method has been widely used to simplify complex decision-making. Research at PT. Sumber Rezeki (Andi et al., 2026) used AHP for inventory control. AHP helps decompose complex inventory control problems into structured parts, according to the *decomposition principle*. This is consistent with findings at CV. Bumi Konstruksi, where AHP helps break down tender selection problems into more easily analyzed elements.

b. Priority Comparison and Synthesis: Enhancing Objectivity in Alternative Selection

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Technical Implementation Unit (UPT Pasar Rejowinangun) on the application of AHP in employee performance assessments reinforces the principles of *Comparative Judgment* and *Synthesis of Priorities*. AHP helps assess the relative importance of various criteria, enabling objective and consistent assessments (Wibowo et al., 2026). This finding aligns with the practice at CV. Bumi Konstruksi, which uses pairwise comparisons to ensure each tender criterion is considered objectively.

c. Consistency in Decision Making: Reducing Bias in Evaluation

The success of AHP in improving logical consistency is also reflected in research at PT. DSS Serang, which implemented AHP in contractor selection. The pairwise comparison matrix minimizes bias and ensures evaluation consistency. This aligns with the principle of *logical consistency*, which emphasizes the importance of logical consistency in setting priorities (Icha et al., 2026) .

d. Overcoming Limitations by Combining Methods

Research combining AHP with TOPSIS in supplier selection at Mulawarman University (2020) showed that combining the methods can overcome AHP's weaknesses, such as its inability to handle uncertainty. Kazakis also stated that combining techniques within AHP can improve assessment accuracy.

e. Effectiveness of AHP in CV. Bumi Konstruksi

The AHP method has proven effective in helping CV. Bumi Konstruksi win tenders. This is in line with (Petropoulos et al., 2025) who emphasized AHP's ability to simplify complex problems into an easily understood hierarchy. The application of *the Decomposition* principle allows companies to view each element in a structured manner, while *the Comparative Judgment principle* assigns appropriate weight to each element. However, the challenge of uncertainty in assigning values is also in line with the identified weaknesses of AHP (Haksama et al., 2024). Nevertheless, the benefits of using AHP far outweigh its limitations.

Overall, the integration of theory and research findings shows that AHP is a highly useful and effective tool in helping CV Bumi Konstruksi win tenders. This method enables the company to make more structured decisions based on in-depth and systematic analysis of various criteria.

4.2.2. Comparison with Previous Studies

The findings are consistent with research at PT. Sumber Rezeki, where AHP was applied to inventory control to structure complex decision problems into manageable components (Andi et al., 2026). Similarly, research on employee performance assessment at the Rejowinangun Market Technical Implementation Unit found that AHP supports comparative judgment and priority synthesis in evaluating criteria systematically (Wibowo et al., 2026).

The application of AHP in contractor selection at PT. DSS Serang also highlights the importance of consistency in pairwise comparisons to support structured evaluations (Icha et al., 2026). Research combining AHP and TOPSIS in supplier selection at Mulawarman University (2020) further suggests that integrating decision-making methods may help address limitations associated with uncertainty. Kazakis also argued that combining techniques within AHP can improve assessment accuracy. In addition, the findings align with Petropoulos et al. (2025), who emphasized AHP's ability to organize complex problems into an understandable hierarchy. However, the challenges identified in this study concerning subjective judgments and uncertainty are consistent with the limitations discussed by Haksama et al. (2024).

4.2.3. Theoretical Contributions

This study contributes to the application of multi-criteria decision-making theory in construction tender selection by illustrating how AHP organizes complex evaluations into hierarchical structures and establishes priorities through pairwise comparisons. The findings demonstrate the practical relevance of decomposition, comparative judgment, synthesis of priorities, and logical consistency in tender decision-making. The study also highlights the importance of judgment quality and consistency when applying structured decision-making methods in organizational settings.

4.2.4. Practical and Policy Implications

For CV. Bumi Konstruksi, AHP provides a practical framework for evaluating tender

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requirements and aligning bid preparation with client priorities. The company can strengthen its implementation by defining relevant criteria clearly, documenting pairwise judgments, checking consistency, and using decision-support software when the number of criteria makes manual calculations difficult. These practices may improve transparency and reduce avoidable inconsistencies in tender evaluations. However, AHP should complement rather than replace professional judgment, technical feasibility assessments, and compliance with tender requirements.

4.2.5. Integration with the Research Gap

This study addresses the practical need to understand how a structured multi-criteria decision-making method is implemented in the tender selection activities of a construction company. While previous studies have applied AHP to inventory control, employee performance assessment, contractor selection, and supplier selection, this research examines its application at CV. Bumi Konstruksi, focusing on the stages of implementation, the criteria considered, and the challenges experienced by company personnel. Its contribution lies in describing how AHP is used in a real construction tender context and how the method is perceived to support bid preparation. The findings provide contextual insights, although comparative performance data would be required to establish the extent of improvement in tender-winning outcomes.

4.2.6. Acknowledgement of Study Limitations

This study focuses on a single construction company, CV. Bumi Konstruksi, which limits the transferability of its findings to companies operating under different conditions. The findings rely on qualitative accounts and do not include numerical comparisons of tender success rates before and after AHP implementation. In addition, the original results do not report consistency ratios, detailed pairwise comparison matrices, or a quantitative assessment of decision accuracy. The identified challenges concerning subjective judgments and the complexity of manual calculations also indicate that AHP implementation requires careful assessment and appropriate supporting procedures.

5. Conclusion

5.1. Summary of Key Findings

The process of implementing *the Analytic Hierarchy Process method* at CV. Bumi Konstruksi is carried out by outlining important criteria in tender selection into a structured hierarchy through four main principles: *decomposition*, *comparative judgment*, *synthesis of priority*, and *logical consistency*. Each criterion is broken down and compared in pairs to determine priorities with a systematic deductive approach. This application allows the company to analyze each relevant aspect in more depth, providing a strong basis for decision-making, and ensuring that each element is considered objectively.

The AHP method has proven effective in helping CV. Bumi Konstruksi win tenders by providing a clear framework for prioritizing based on identified criteria. AHP enables the company to more accurately evaluate and compare alternatives, optimize decisions, and increase the chances of winning the tender. While there are challenges in assigning scores to each criterion, the overall benefits of implementing AHP are significant, as evidenced by the company's increased success in winning tenders.

5.2 Theoretical Contributions

The application of the AHP method in the tender selection process at CV. Bumi Konstruksi requires the company to have a thorough understanding of the most relevant and influential criteria in tender assessment. This requires the company to systematically identify and prioritize the most critical aspects and train the evaluation team in the method's use. With a clear hierarchical structure, the AHP also facilitates more measured decision-making, allowing the company to optimize resources and time in the tender selection process.

5.3 Practical and Policy Implications

The effectiveness of the AHP method in helping CV. Bumi Konstruksi win a tender indicates that this approach can be an important strategic tool in improving the company's competitiveness. The implication of this success is that CV. Bumi Konstruksi can consider applying the AHP method more broadly to other projects to improve efficiency and accuracy in decision-making. Furthermore, the company may need to continuously update and refine its evaluation criteria according to changing market conditions and client needs, to ensure that the AHP method remains relevant and effective in

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supporting the company's future success.

5.4 Limitations of the Study

This study has several limitations: (a) limited data and information related to the details of tender criteria; (b) limited generalization because the results are specific to CV. Bumi Konstruksi and may not be fully applicable to other companies with different characteristics; (c) limited measurement of subjectivity because *pairwise comparison* can introduce bias; (d) limited variation in criteria, considering that focusing on existing criteria can ignore other factors; and (e) limited time and research resources.

5.5 Future Research Directions

Based on the research results, it is recommended that research on the application and effectiveness of the AHP method in tender selection be developed in other companies involved in tender selection. The researchers also hope that this research can continue, both with the same and different perspectives, in construction companies that are accustomed to participating in tender auction activities. Future research can also explore combining AHP with other methods such as TOPSIS, ANP, or *fuzzy logic* to overcome limitations in handling uncertainty and subjectivity.

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