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Study for the relationship between supplier evaluation criteria and its impact on the performance
of construction companies in the Kingdom of Saudi Arabia

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Abstract

This study explores the relationship between supplier evaluation criteria and their impact on the performance of construction companies in the Kingdom of Saudi Arabia (KSA). In a sector where procurement management is crucial, effective vendor evaluation processes are essential for ensuring project success. The research aims to develop a standardized and effective framework for vendor evaluation, considering various factors such as quality, cost, delivery time, past performance, financial stability, compliance with regulations, and sustainability practices. By analyzing survey data collected from project managers, site engineers, and procurement managers, this study identifies the current practices, challenges, and perspectives on vendor evaluation in the construction industry.

The survey results indicate that while a significant majority (86%) of respondents use a formalized process for vendor evaluation, there is considerable dissatisfaction with the current processes. Only 21% of respondents expressed satisfaction, highlighting a critical need for improvement. Key challenges identified include inconsistent vendor performance, difficulty in verifying compliance, and lack of transparency. The study also finds that issues with vendor performance are common, with 29% of respondents encountering problems often and 64% sometimes.

The importance of various evaluation criteria was assessed on a scale of 1 to 5, with quality of materials/services, cost, and delivery time being rated as the most critical factors. Regulatory compliance and sustainability practices were also deemed important, reflecting the industry's emphasis on adhering to legal standards and promoting sustainable development.

The study concludes that there is strong support (92%) among respondents for adopting a standardized vendor evaluation framework. Such a framework would enhance consistency, improve vendor performance, and ensure better compliance with industry standards. By addressing the identified challenges and leveraging the suggested improvements, construction companies in Saudi Arabia can enhance their vendor evaluation processes, leading to better project outcomes and overall performance. The adoption of a mixed-method approach will ensure that both quantitative and qualitative data are collected, offering a holistic view of the issues at hand.

Future research directions include conducting longitudinal studies to assess the long-term impact of changes in vendor evaluation processes, expanding data collection to include a larger and more diverse sample, and incorporating additional variables such as project success metrics, vendor feedback, and client satisfaction. Comparative studies across different industries will provide insights into innovative vendor evaluation practices that could be adapted to the construction sector in KSA.

In summary, this research provides valuable insights into the current state of vendor evaluation in the Saudi construction industry and outlines practical steps for developing a more effective and standardized framework. These findings are crucial for project managers, policymakers, and stakeholders aiming to improve procurement practices and achieve successful project outcomes in the construction sector.

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Tables of terminology

Behavioral Decision Theory	Acknowledges cognitive biases and limitations in decision-making.
Best Practices in Procurement	Industry standards for effective procurement.
Correlation Analysis	Examines relationships between variables.
Criteria Importance	Significance assigned to each evaluation criterion.
Data Collection	Gathers information through surveys, interviews, and documentation analysis.
Data Visualization	Graphical representation of data trends.
Evaluation Framework	Structured approach to assess and compare vendors.
Evaluation Metrics	Measures used to assess vendor performance.
Hypothesis Testing	Process of validating assumptions based on collected data.
Power BI	Interactive data analysis and visualization software
Procurement Management	Process of acquiring goods and services for projects.
Procurement Policies	Organizational rules governing procurement activities.
Survey Data Analysis	Examination of survey responses to derive insights.
Survey Platform	Online tool used for administering the survey.
Sustainability Criteria	Factors related to environmental and social responsibility.
Vendor Evaluation Models	Theoretical frameworks for assessing vendors.
Visualization	Uses charts and graphs to illustrate data trends.

Tables of abbreviations

AHP	Analytic Hierarchy Process
BI	Business intelligence
CSR	Corporate Social Responsibility
KSA	Kingdom of Saudi Arabic
MS	Microsoft Corporation
SCE	The Saudi Council for Engineers
SCM	Supply Chain Management
SPM	Supplier Performance Measurement

Chapter One: Introduction

Introduction

Setting a criterion for selecting an appropriate vendor for a construction project in Saudi Arabia, as well as evaluating their performance during the contract implementation, is essential for ensuring successful project outcomes. Taking such decision is critical and affect in life cycle of the project and cost which may break the limits of projects' budget; beside the schedule and time bounders. Purchasing started to become a headache and stress for companies' project management office and specially the projects managers taking care of vendors and managing the relation with them. In Saudi Arabia, the majority of the project related construction and represent the second largest industry the after oil and gas in matter of volume and size.

According to project management processes, the most important pillar among all knowledge area is the procurement; the impact of such delay or mismatch of requirements affect project cost, schedule, quality, customer satisfaction, and risks associated to the project which may cause ending of project or missing the project's contract.

The research focusing on the finding the most relevant criteria suitable for construction industry; mainly in Saudi Arabia; to select and evaluate vendors. Many factors can be considered while measuring their performance. But, the research will consider the basic factors tailored to the venders of construction materials.

The traditional approach to project implementation involves three main steps: planning, execution, and monitoring & control. In procurement management, these steps are applied across all projects but vary in the volume of tasks and effort depending on the project's nature and industry. In the construction industry, for instance, the success of a project is critically dependent on the efficiency of its procurement process.

Efficient and effective procurement approach affect all constrains (mentioned above) which project management working on it; including: cost to be with the budget, time to be within the schedule, and meeting the quality standards and policies. Mis leading the procurement is crucial to accomplish the project the propoer way and meet the business objectives.

Problem Statement and Significance

One of the main common challenges for most of the construction companies in Saudi Arabic is to maintain vender's relationship and improve projects progress. The local market of Saudi Arabia is growing in respect of number of construction companies beside the number and volume of construction project

The significance of developing set of criteria impact various stakeholders and improving the construction industry in KSA, including:

- Prioritizing high-quality vendors and ensuring the services and material meeting project quality needs to avoid waste and rework.
- Minizine the risks associated with financial impact resulting from wasting of time or money.
- Grantee project success and long-life relations with all sponsors and gaining future proposed projects which will resulting the prosperity of all construction companies.

The size of the construction market and numbers of construction companies lead to significant area of research with will come out with useful and valuable results. Number of construction companies nearby two hundred thousand companies, more than half of are small company witch there're more need for optimization and resource utilization, and two percent are large companies (SCA, 2024).

Study Importance

The research addresses a critical need in the construction industry in Saudi Arabia. Establishing a set of criteria for selecting and evaluating vendors is essential for ensuring successful project outcomes. This importance is underscored by several factors:

- **Project Lifecycle Impact:** The decision-making process in vendor selection and evaluation directly affects the project's lifecycle, including its budget, schedule, and overall success. Efficient procurement is crucial to keeping costs within budget and timelines on schedule.
- **Industry Significance:** Construction is the second-largest industry in Saudi Arabia after oil and gas. The success of construction projects, therefore, has significant economic implications. Enhancing procurement processes can lead to better project outcomes and contribute to the industry's growth and stability.
- **Project Management Challenges:** Procurement management is one of the most critical areas in project management. Delays or mismatches in procurement can adversely affect project cost, schedule, quality, and customer satisfaction. This research aims to mitigate these risks by identifying suitable criteria for vendor evaluation.
- **Quality and Risk Management:** Prioritizing high-quality vendors ensures that services and materials meet project quality standards, reducing waste and rework. This is vital for minimizing financial risks and ensuring project success.
- **Stakeholder Benefits:** Developing a robust set of criteria benefits various stakeholders by improving vendor relationships, enhancing project progress, and securing future projects.

In summary, this research is crucial for advancing the construction industry in KSA by providing a structured approach to vendor selection and evaluation, thereby improving project outcomes and contributing to the industry's overall growth and efficiency.

Study Purposes & Objectives

The research aims to achieve several key objectives:

- **Developing Vendor Selection Criteria:** To establish a comprehensive set of criteria tailored specifically for the construction industry in Saudi Arabia, ensuring the selection of high-quality vendors capable of meeting project requirements and standards.
- **Evaluating Vendor Performance:** To create a robust framework for the continuous evaluation of vendor performance throughout the project lifecycle, ensuring adherence to quality, timelines, and budget constraints.
- **Enhancing Procurement Processes:** To improve procurement management practices within the construction industry, thereby reducing risks associated with project delays, cost overruns, and quality issues.
- **Mitigating Financial and Operational Risks:** To set a base for identify strategies that minimize the financial and operational risks associated with vendor selection and management, ensuring smoother project execution and completion by ensuring consistent delivery of high-quality materials and services.
- **Supporting Project Success:** To contribute to the overall success of construction projects by ensuring that all procured materials and services meet the necessary quality standards, thereby reducing waste and rework.
- **Contributing to Industry Growth:** To support the growth and development of the construction industry in Saudi Arabia and all the world by providing a structured approach to vendor management, which can lead to increased efficiency, reduced costs, and improved project outcomes.
- **Ensuring Compliance with Standards:** To ensure that all procurement activities comply with relevant industry standards and policies, thereby maintaining high levels of quality and reliability in construction projects.
- **Facilitating Future Research:** To lay the groundwork for future studies in the field of procurement management in the construction industry, offering valuable insights and data for further academic and practical advancements.

By achieving these purposes, the research aims to significantly improve the efficiency and effectiveness of vendor management in the construction industry in Saudi Arabia, contributing to better project outcomes and overall industry prosperity.

Study Questions

The research titled "The Criteria of Vendors Evaluation for Construction Projects in KSA" seeks to answer several critical questions that will guide the study and provide valuable insights into the procurement management practices in the construction industry in Saudi Arabia. These questions include:

- What are the essential criteria for selecting vendors in the construction industry in Saudi Arabia? (specific criteria, attributes and qualifications should to be considered).
- How can vendor performance be effectively evaluated throughout the project lifecycle? (evaluation metrics and indicators to assess performance by continuous monitoring and control).
- What factors should be considered while measuring vendor performance specifically for construction materials? (influence of quality, delivery time, cost, and compliance with regulatory requirements and industry standards).
- What procurement practices are currently being used in the construction industry in Saudi Arabia and how do these practices could be?
- How can the findings can be applied to improve procurement management and What actionable recommendations can be derived achieve better project outcomes?

By addressing these questions, the research aims to provide a comprehensive understanding of vendor selection and evaluation in the construction industry in Saudi Arabia, offering practical solutions and recommendations to enhance procurement practices and contribute to the industry's overall growth and success.

Research Hypotheses

How project manager in the field of project management can deal with procurement base on standardized criteria for evaluation vendors and avoid all losses in the cost and time.

This come up with, what is the appropriate methodology for controlling the selecting the vendors and managing the relationship for success of all parties. Beside insuring of more practical methodology to be deployed in projects in kingdom of Saudi Arabia. The main research hypotheses are as follows:

1. Establishing a comprehensive set of criteria for vendor selection significantly improves the quality and efficiency of construction projects in Saudi Arabia.
2. Continuous evaluation of vendor performance throughout the project lifecycle leads to improved project success rates.
3. Effective procurement management practices are positively correlated with project cost control and adherence to schedules.
4. Strong vendor relationships enhance overall project quality and reduce rework and waste.

5. The construction industry in Saudi Arabia faces unique challenges in vendor management that require specialized criteria and evaluation methods.
6. Implementing a structured vendor management framework reduces the risks associated with financial and operational aspects of construction projects.
7. Compliance with industry standards and policies in procurement processes leads to higher levels of customer satisfaction and project success.
8. Long-term partnerships with vendors contribute to the sustainable growth and prosperity of construction companies in Saudi Arabia.

Theoretical Model

The theoretical model employed in this research is based on the principles of action research, which were initially developed by Kurt Lewin in the mid-1940s. This model involves a cyclical process of planning, acting, reflecting, and evaluating (Dickens, 1999). The study uses qualitative research methods, including semi-structured interviews and document analysis, to gather rich data specific to the case organization. The action research strategy, as described by Saunders et al. (Saunders, 2012), consists of four iterative steps: diagnosing, planning, taking action, and evaluating. This model is particularly suited to addressing real organizational problems and working towards practical outcomes, making it ideal for the development and implementation of a supplier evaluation tool in a practical setting (Bernd, 2022).

Action research is a practical, problem-solving approach that integrates theory and practice. It is participatory in nature, involving stakeholders directly in the research process. The goal is to produce actionable knowledge that can lead to meaningful change within an organization. This approach is particularly suited to dynamic and complex environments, where traditional research methodologies may not effectively address the nuances and immediate needs of the situation.

The four stages of action research model, as described by Saunders et al. (Saunders, 2012), consists of four iterative steps:

1. **Diagnosing:** This initial phase involves identifying and defining the problem within the organizational context. For this study, diagnosing included understanding the current state of supplier evaluation and performance measurement practices within the case company. Through surveys and workshops, key issues such as inconsistent evaluation criteria, lack of performance measurement systems, and the need for reliable suppliers were identified.
2. **Planning:** In the planning phase, the researcher collaborates with stakeholders to develop strategies and interventions to address the identified problems. For this study, the planning phase involved reviewing academic literature on supplier evaluation and performance measurement, identifying best practices, and designing a comprehensive framework that could be tailored to the case company's needs.
3. **Taking Action:** This phase involves implementing the planned interventions. In this study, the action phase included the development and pilot testing of a supplier evaluation tool and a Supplier Performance Measurement (SPM) system. These tools were designed to provide a structured approach to evaluating and managing supplier performance, with the aim of improving overall supply chain efficiency and effectiveness.
4. **Evaluating:** The final phase involves assessing the outcomes of the interventions and reflecting on their effectiveness. Feedback from stakeholders, including category

managers and the COO, was collected and analyzed to refine the tools and processes. This phase is crucial for ensuring that the interventions lead to sustainable improvements and for identifying areas for further development.

The application of action research in this study provided a robust framework for developing and implementing a supplier evaluation and performance measurement system. The participatory nature of action research ensured that the tools developed were closely aligned with the practical needs and expectations of the case company.

- **Data Collection:** Qualitative research methods, including semi-structured surveys and workshops, were used to gather data from category managers who are directly involved in supplier evaluation and management. This data provided insights into current practices, challenges, and expectations, which informed the development of the evaluation and measurement tools.
- **Tool Development:** The supplier evaluation tool was designed to provide a structured and consistent approach to evaluating potential and existing suppliers. It included criteria such as quality, delivery performance, cost competitiveness, and innovation capability. The SPM system was developed to measure and track supplier performance over time, allowing for proactive management and continuous improvement.
- **Pilot Testing:** The tools were pilot-tested with selected suppliers to assess their effectiveness and gather feedback for further refinement. This iterative process ensured that the tools were practical and user-friendly, and that they addressed the specific needs of the case company.

The role of theory in action research, while action research is inherently practical and focused on solving real-world problems, it is also grounded in theoretical principles. The theoretical underpinnings of this study included concepts from supply chain management, supplier evaluation, and performance measurement.

- **Supply Chain Resilience and Flexibility:** The importance of supply chain resilience and flexibility in today's fast-changing environment was a key theoretical concept guiding this study. The ability to choose the right suppliers and manage their performance effectively is critical for mitigating risks and ensuring continuity of supply.
- **Supplier Evaluation and Selection:** Theories and models related to supplier evaluation and selection provided a framework for developing the evaluation tool. Key concepts included the importance of criteria such as quality, cost, delivery performance, and innovation capability, as well as the need for a structured and consistent approach to supplier evaluation.
- **Performance Measurement:** Theories on performance measurement and management were applied to develop the SPM system. This included identifying relevant performance metrics, designing a system for tracking and analyzing performance data, and using this data to drive continuous improvement.

A key aspect of action research is the emphasis on reflection and continuous improvement. Throughout the study, feedback from stakeholders was actively sought and used to refine the tools and processes. This iterative process ensured that the interventions were effective and sustainable, and that they led to meaningful improvements in supplier performance and overall supply chain management.

In conclusion, the theoretical model of action research provided a robust and flexible framework for developing and implementing a supplier evaluation and performance measurement system. The participatory and iterative nature of action research ensured that the

tools developed were closely aligned with the practical needs of the case company, and that they led to sustainable improvements in supplier performance and supply chain management. This approach not only addressed the immediate business challenges but also contributed to the ongoing development of the organization's capabilities and resilience in a dynamic and uncertain environment.

To examine how supplier evaluation criteria impact the performance of construction companies in Saudi Arabia, focusing on the development and implementation of a comprehensive Supplier Performance Measurement System (SPMS) (Tozun, 2017). The model combines qualitative and quantitative measures to offer a thorough assessment of supplier performance, with key criteria including quality, on-time completion, documentation, operational efficiency, price management, cooperation, health and safety compliance, innovation, and competence. It outlines the process of developing and piloting the SPMS, which aims to enhance supplier performance and, consequently, improve overall company performance. Regular communication and feedback are emphasized to foster collaborative relationships and align supplier performance with organizational goals. The model also addresses industrial, research, and sustainability implications, underscoring the importance of integrating diverse performance measures and promoting sustainable practices to achieve long-term success in the construction sector.

The theoretical model for this study integrates key elements from Supply Chain Management (SCM) Theory, Project Management Theory, Organizational Behavior and Decision-Making Theory, and Sustainability and Corporate Social Responsibility (CSR) Theory. The model aims to provide a comprehensive framework for evaluating vendors in construction projects in Saudi Arabia.

Theoretical model for vendor evaluation in construction projects components are:

1. Supply Chain Management (SCM) Theory:
 - Transactional Cost Economics (TCE)
 - Resource-Based View (RBV)
2. Project Management Theory:
 - Project Success Criteria
 - Stakeholder Theory
3. Organizational Behavior and Decision-Making Theory:
 - Rational Decision-Making Model
 - Behavioral Decision Theory
4. Sustainability and CSR Theory:
 - Triple Bottom Line (TBL)
 - Stakeholder Theory in CSR

<i>Theory</i>	<i>Criteria</i>	<i>Results</i>
Supply Chain Management (SCM) Theory	Transactional Cost Economics (TCE)	Emphasizes minimizing transaction costs by selecting vendors based on criteria such as cost, quality, and reliability.
	Resource-Based View (RBV)	Focuses on selecting vendors that provide unique resources or capabilities, such as technological innovation and sustainability practices.
Project Management Theory	Project Success Criteria	Incorporates the "Iron Triangle" of time, cost, and quality as key criteria for vendor evaluation.
	Stakeholder Theory	Considers the needs and interests of all stakeholders in the project, ensuring vendor selection aligns with stakeholder expectations.
Organizational Behavior and Decision-Making Theory	Rational Decision-Making Model	Involves a structured and logical approach to evaluate vendors based on predefined criteria such as financial stability, compliance with regulations, and technological capabilities.
	Behavioral Decision Theory	Acknowledges cognitive biases and limitations in decision-making, integrating subjective aspects like satisfaction with the evaluation process and perceived challenges.
Sustainability and CSR Theory	Triple Bottom Line (TBL)	Balances economic, environmental, and social performance in vendor evaluation.
	Stakeholder Theory in CSR	Integrates stakeholder expectations into corporate actions, advocating for social and environmental criteria in vendor selection.

Table 1 : Theoretical models

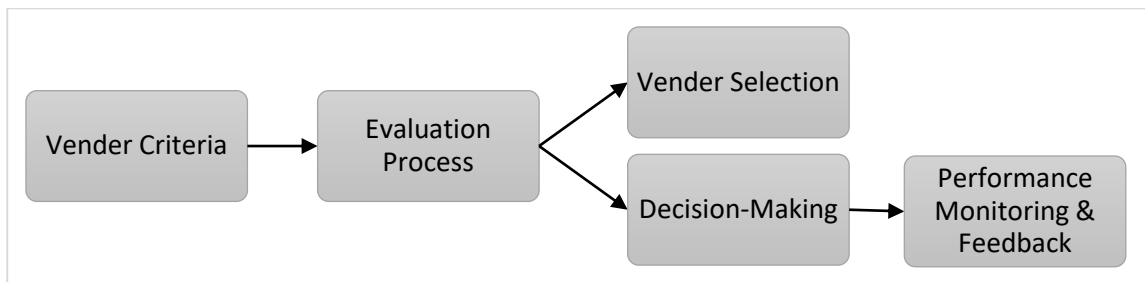


Figure 1: Theoretical Model Diagram

The theoretical model diagram details as follow:

Inputs:

- Vendor Criteria: Quality, cost, delivery time, past performance, financial stability, compliance with regulations, sustainability practices, technological capabilities.
- Project Characteristics: Type of construction project, project scale, project timeline.
- Stakeholder Expectations: Requirements and expectations from project managers, engineers, procurement personnel, and other stakeholders.

Processes:

- Evaluation Process:
 1. Data Collection: Surveys, interviews, and documentation analysis to gather information on vendor performance and criteria.
 2. Criteria Weighting: Assigning importance to each criterion based on stakeholder inputs and project needs.
 3. Vendor Scoring: Using statistical and qualitative methods to score vendors against the criteria.
- Decision-Making:
 1. Rational Decision-Making: Systematic evaluation of vendor scores to select the best vendor.
 2. Behavioral Adjustments: Considering cognitive biases and subjective inputs in the final decision.

Outputs:

- Vendor Selection: Identifying the vendor(s) that best meet the project requirements and criteria.
- Vendor Performance Monitoring: Ongoing assessment of vendor performance throughout the project lifecycle.
- Feedback and Improvement: Continuous improvement of the vendor evaluation process based on project outcomes and stakeholder feedback.

This theoretical model provides a structured and comprehensive approach to vendor evaluation in construction projects. By integrating multiple theories, it ensures that all relevant aspects, including economic, environmental, and social criteria, are considered. This model will guide the data collection, analysis, and decision-making processes, leading to improved vendor selection and project outcomes in the construction industry in Saudi Arabia.

Chapter Two: Literature Review

Literature review

The selection and evaluation of vendors in construction projects is a critical process in Saudi Arabia where the construction industry is a major economic driver. Evaluation criteria provides valuable insights into how these practices influence project outcomes that examines existing research to identify key themes, methodologies, and gaps related to vendor evaluation in construction projects.

With a focus on the context of Saudi Arabia, the construction is the major industries with spread of the companies on middle, western and eastern geographical locations. The main companies work in construction of building, specialized construction activities, and services to building and land scape activities (SCA, 2024).

The financial stability of a vendor is another critical criterion. A vendor's financial health ensures that they have the necessary resources to complete projects without delays or financial difficulties. Studies by (Enshassi, 2006) highlight that financial stability is a key factor in vendor selection to mitigate risks associated with project execution.

Compliance with local regulations and standards is essential. Vendors must adhere to safety standards, environmental regulations, and other legal requirements. Research by (Zawawi, 2014) indicates that regulatory compliance is a key criterion that ensures vendors meet the legal and safety standards required for construction projects in Saudi Arabia.

The literature reveals a preference for empirical research methods, including case studies, surveys, and statistical analyses, to investigate vendor evaluation criteria. These methods provide a comprehensive understanding of the factors influencing vendor selection and performance. For example, the use of multicriteria decision-making techniques such as the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) are common in evaluating and prioritizing vendor criteria (Saaty, 1980) (Hwang, 1981).

While there is substantial research on vendor evaluation criteria, specific studies focusing on the construction industry in Saudi Arabia are limited. The existing literature highlights the need for more context-specific research that addresses the unique challenges faced by the construction industry in Saudi Arabia. Additionally, there is a call for developing comprehensive frameworks and models that can guide procurement practices and vendor management in this region (Assaf, 2006).

This systematic review of literature underscores the critical role of vendor evaluation criteria in ensuring the success of construction projects. Key themes such as quality, financial stability, technical capability, past experience, and regulatory compliance emerge as significant factors in the vendor selection process. Future research should focus on addressing the gaps identified and developing tailored approaches that cater to the specific needs of the construction industry in Saudi Arabia. This will not only improve project outcomes but also contribute to the sustainable growth of the construction sector in the region.

Summary of past studies

The research explores the main dimensions in supplier selection, including sourcing strategy, decision scope, selection criteria, and solution approaches. The results indicate that constructions supplier selection regarding items with a high purchasing importance should lead to holistic selection criteria. In addition, items comprising a high complexity of supply and

production activities should require integrated selection and different sources of uncertainty associated with decision scope. There are still many research opportunities in the supplier selection area, particularly in the integrated selection problems and hybrid solution methods, as well as in the risk mitigation, sustainability goals, and new technology adoption.

This research aims to contribute to literature in different ways. to expand the preceding literature by providing an updated and comprehensive review of supplier selection in constructions industry in Saudi Arabia and its relationship on the industry and broader than prior reviews. We'll also understand how supplier selection should be formulated in different contexts. Third, to connect four different supplier selection dimensions (sourcing strategy, decision environment,

Theoretical Framework of the Study

The theoretical framework for this study is grounded in a thorough literature review that provides context and background on supplier evaluation tools and the factors influencing supplier performance. This framework is informed by previous research on supplier performance evaluation and measurement systems, including the identification of relevant criteria and approaches for supplier segmentation and prioritization. The framework was applied to build a proposal for a Supplier Performance Measurement (SPM) (Bernd, 2022) system for the case company, focusing on the evaluation of important and strategic suppliers. This system incorporates methods for data collection, analysis, and the application of performance metrics to measure supplier efficiency and effectiveness (Toivakka, 2023). The framework also guided the design of the research process, including the development and validation of the supplier evaluation tool (Tuononen, 2023).

The theoretical framework for this study is grounded in a comprehensive review of the literature on supplier evaluation and performance measurement. This framework provides the context and background for the research, guiding the development and implementation of the supplier evaluation tool and the Supplier Performance Measurement (SPM) system.

Supplier evaluation and selection are critical processes in supply chain management. The ability to choose the right suppliers can significantly impact an organization's performance, affecting factors such as cost, quality, delivery reliability, and innovation capability.

- **Supplier Evaluation Criteria:** The literature identifies several key criteria for supplier evaluation, including quality, cost, delivery performance, and innovation capability (Monczka et al., 2016). These criteria provide a structured approach to assessing potential suppliers and making informed selection decisions.
- **Evaluation Methods:** Various methods for supplier evaluation are discussed in the literature, including qualitative assessments, quantitative scoring models, and multi-criteria decision-making approaches (Dickson, 1966; Weber et al., 1991). These methods provide a systematic way to evaluate suppliers based on multiple criteria and to compare them objectively.
- **Strategic Importance:** The strategic importance of supplier selection is emphasized in the literature, with a focus on building long-term, collaborative relationships with key suppliers (Kraljic, 1983). This strategic approach to supplier management can enhance supply chain resilience and provide competitive advantages.

Measuring and managing supplier performance is essential for maintaining and improving supply chain efficiency and effectiveness. The literature provides various frameworks and

models for supplier performance measurement, emphasizing the importance of continuous monitoring and improvement.

- **Performance Metrics:** The literature identifies several key performance metrics for supplier evaluation, including on-time delivery, quality performance, cost performance, and flexibility (Neely et al., 1995). These metrics provide a basis for assessing supplier performance and identifying areas for improvement.
- **Measurement Approaches:** Various approaches to supplier performance measurement are discussed in the literature, including the balanced scorecard, key performance indicators (KPIs), and performance dashboards (Kaplan & Norton, 1996). These approaches provide structured methods for tracking and analyzing supplier performance data.
- **Continuous Improvement:** The importance of continuous improvement in supplier performance management is emphasized in the literature. This involves regularly reviewing performance data, identifying performance gaps, and implementing corrective actions to drive improvements (Deming, 1986).

The development of a Supplier Performance Measurement (SPM) system for the case company was guided by the theoretical framework. This involved applying concepts and methods from the literature to design a system that met the specific needs of the organization.

- **Framework for SPM System:** The framework for the SPM system was developed based on best practices identified in the literature. This included defining performance metrics, designing data collection and analysis methods, and developing tools for tracking and reporting performance.
- **Tool Development:** The supplier evaluation tool was developed to provide a structured approach to assessing suppliers based on multiple criteria. This tool included a scoring model that allowed for objective comparison of suppliers and facilitated informed decision-making.
- **Implementation and Testing:** The SPM system was pilot-tested with selected suppliers to assess its effectiveness and gather feedback for further refinement. This iterative process ensured that the system was practical and user-friendly, and that it addressed the specific needs of the case company.

The application of the theoretical framework in this study provided a structured approach to developing and implementing a supplier evaluation and performance measurement system. The framework guided the research process, ensuring that the tools developed were based on best practices and supported by robust theoretical principles.

- **Literature Review:** A comprehensive literature review was conducted to identify relevant concepts, models, and methods for supplier evaluation and performance measurement. This review provided the foundation for the theoretical framework and informed the development of the evaluation and measurement tools.
- **Data Collection and Analysis:** Data collection methods, including surveys and workshops, were designed based on the theoretical framework. This ensured that the data collected was relevant and comprehensive, providing a basis for developing effective tools and processes.
- **Tool Development and Testing:** The development and testing of the supplier evaluation tool and SPM system were guided by the theoretical framework. This ensured that the tools were aligned with best practices and supported by robust theoretical principles, enhancing their effectiveness and sustainability.

The theoretical framework also emphasized the importance of reflection and continuous improvement in supplier performance management. This involved regularly reviewing

performance data, gathering feedback from stakeholders, and making iterative improvements to the tools and processes.

The theoretical framework for the study on vendor evaluation criteria for construction projects in Saudi Arabia is grounded in multiple theories and models from procurement and supply chain management, project management, and organizational behavior. This framework provides the basis for understanding the determinants of effective vendor evaluation and the impact of various criteria on project success.

1. Supply Chain Management (SCM) Theory:

- **Transactional Cost Economics (TCE):** This theory examines the cost of transactions between buyers and suppliers. It emphasizes minimizing transaction costs by selecting vendors based on criteria such as cost, quality, and reliability. This theory supports the evaluation of financial stability and past performance/reputation of vendors.
- **Resource-Based View (RBV):** This perspective focuses on gaining a competitive advantage by leveraging firm-specific resources. Applying this to vendor evaluation, firms seek to partner with vendors that provide unique resources or capabilities, such as technological innovation and sustainability practices.

2. Project Management Theory:

- **Project Success Criteria:** According to project management literature, project success is often measured by the "Iron Triangle" of time, cost, and quality. This study incorporates these criteria into the vendor evaluation process, emphasizing the importance of delivery time, cost, and quality of materials/services.
- **Stakeholder Theory:** This theory highlights the importance of considering the needs and interests of all stakeholders in the project. By evaluating vendors on multiple criteria, project managers can ensure that the selected vendors align with stakeholder expectations and contribute to overall project success.

3. Organizational Behavior and Decision-Making Theory:

- **Rational Decision-Making Model:** This model suggests that decision-makers use a structured and logical approach to evaluate alternatives and select the best option. In the context of vendor evaluation, this involves systematically assessing vendors based on predefined criteria such as financial stability, compliance with regulations, and technological capabilities.
- **Behavioral Decision Theory:** This theory acknowledges that decision-makers are influenced by cognitive biases and limitations. Understanding the subjective aspects of vendor evaluation, such as satisfaction with the evaluation process and perceived challenges, helps in designing more effective evaluation frameworks.

4. Sustainability and Corporate Social Responsibility (CSR) Theory:

- **Triple Bottom Line (TBL):** This framework emphasizes the need to balance economic, environmental, and social performance. In vendor evaluation, this translates to considering sustainability practices, such as environmental impact and use of sustainable materials, alongside traditional economic criteria.
- **Stakeholder Theory in CSR:** This perspective integrates stakeholder expectations into corporate actions, advocating for the inclusion of social and

environmental criteria in vendor selection to ensure long-term sustainability and ethical business practices.

The theoretical model of this research, grounded in action research, extends its utility by setting specific criteria for selecting appropriate vendors for construction projects in Saudi Arabia and evaluating their performance during contract implementation. This extension is crucial due to the significant impact of vendor selection and management on the overall success of construction projects, which are a major component of the Saudi Arabian economy.

The construction industry in Saudi Arabia is the second-largest industry after oil and gas, representing a substantial portion of the nation's economic activity. The procurement process in construction projects is particularly critical because delays, mismatches of requirements, or quality issues can have severe repercussions on project cost, schedule, and overall success. This study's theoretical model addresses these challenges by providing a structured approach to vendor selection and performance evaluation.

The study will integrate these theories into the research design and analysis as follows:

1. Survey Design:

- Develop survey questions that reflect the key criteria from SCM, project management, and CSR theories.
- Include questions on transactional costs, resource capabilities, project success factors, stakeholder interests, and sustainability practices.

2. Data Analysis:

- Use descriptive and inferential statistics to analyze the importance of different vendor evaluation criteria.
- Apply factor analysis to identify underlying dimensions of vendor evaluation, aligning with the theoretical constructs.

3. Interpretation of Results:

- Interpret the findings in the context of the theoretical framework, discussing how each criterion impacts vendor selection and project success.
- Provide recommendations based on SCM and project management best practices to improve the vendor evaluation process.

4. Practical Implications:

- Discuss the practical implications for construction project managers, emphasizing the need to balance cost, quality, and sustainability.
- Suggest ways to integrate stakeholder expectations and CSR principles into vendor evaluation frameworks.

Conclusion, by grounding the study in these established theories, the research will provide a comprehensive understanding of vendor evaluation criteria and offer actionable insights for improving procurement practices in construction projects in Saudi Arabia. The theoretical framework ensures that the study is methodologically sound and its findings are relevant to both academia and industry practitioners.

Chapter Three: Research Methodology

Introduction

The study employed various research methods and techniques, using questionnaire results and feedback, to collect data on the crucial issue of vendor evaluation criteria for construction projects in Saudi Arabia. The data available from project managers, engineers, and related personnel to procurement, helped to understand and contextualize the different situations encountered during the study. This extensive data provided a significant advantage, offering numerous examples of how to formulate and test hypotheses in the context of vendor evaluation in construction projects. The study involved documentation analysis, statistical methods, and observation to collect, analyze, and interpret data.

Research Design

This research is statistical survey designed to investigate the vendor evaluation criteria for construction projects in Saudi Arabia. By employing a mixed-method approach, the study aims to gather comprehensive data from various stakeholders involved in procurement management to formulate and test hypotheses relevant to vendor evaluation for selecting vendors and managing effective relationship along the project lifecycle.

Data collected will be used as primary source and there're secondary sources including reports from official institutions and government bodies.

After that, data analysis with statistical methods to identify patterns and relationships beside the hypotheses tested to determine the significance of various vendor evaluation criteria.

Population of the study

The questionnaire structured targeting all relevant stakeholders in the construction procurement process including project managers (responsible and accountable persons), site managers (dealing on daily bases), and procurement managers (the direct point of contact).

Total count of civil engineers in construction is 49,865 (SCE, 2024) and estimated the total number of potential respondents, such as construction project managers, engineers, and procurement personnel in Saudi Arabia as will be shown in coming parts of the research.

Sample Characteristics

The questionnaire targets engineers in various roles within construction projects, such as project managers, engineers, and procurement personnel with an experience so, every respondent with an experience less than three years has been excluded to avoid any outliers' results.

The sample covered all type of construction commercial, residential, and infrastructure regardless the industry or the business sector as public or private to so that engineers can provide all the information and offering the diversity of their experience.

The survey inquires participants currently use formalized processes for vendor evaluation, helping to assess the prevalence of structured evaluation methods covering whole procurement

process including evaluation practice and important criteria beside related risks, regulatory, technology capability and innovation.

Sample Size Determination

The sample size for this questionnaire is 140 respondents, covering the project managers in responsibilities positions and frontline managers. The questionnaire considered the population size, desired confidence level, margin of error, and expected response distribution. Here is a step-by-step guide to calculate the sample size:

- Level of confidence 95% (Z-value is 1.96)
- Error margin is 5% (E=0.05)
- Expected response distribution 90% (P 0.9)
- The sample size is 134 based on formulas below:

$$\circ \quad n = \frac{Z^2 \cdot P \cdot (1-P)}{E^2}$$

$$\circ \quad n = \frac{n}{1 + \left(\frac{n-1}{N}\right)}$$

Therefore, the sample size needed for this questionnaire, considering a finite population of 49,865 (SCE, 2024) with a 95% confidence level and a 5% margin of error, is approximately **134** respondents to camper it with the total count of actual respondents to the questionnaire is **140** as a sample to represents the population.

Data Collections Procedures

Responses selection targeting construction project personnel related to procurement and vendors using structured questionnaire designed to elicit detailed information on vendor evaluation criteria. The sampling technique is stratified random sampling to ensure representation from different roles and experiences within the construction industry

Study Determinants

The inclusion criteria for the study encompass all project managers currently engaged in construction projects throughout Saudi Arabia and in direct contact with procurement process and vendors evaluation. This estimate provides a basis for determining sample size and conducting the study within a defined population.

The participant must have direct contact with the main elements of the procurement process including: quality of materials/services, cost, delivery time, past performance/reputation, financial stability, compliance with regulations, sustainability practices, and technological capabilities.

The survey inquires whether participants currently use formalized processes for vendor evaluation, helping to assess the prevalence of structured evaluation methods.

Exclusion project managers and engineers not currently involved in construction projects or those working outside Saudi Arabia.

These determinants helped to structure the questionnaire and ensure that all relevant aspects of vendor evaluation in construction projects are thoroughly investigated. This comprehensive approach provided valuable insights and practical recommendations for improving vendor evaluation processes in Saudi Arabia's construction industry.

Method of Analysis

The study utilized an online form platform for data collection (forms.google.com), leveraging the educational level of the targeted group to select appropriate technical tools that were user-friendly and easy for them to use.

The tools used for analysis was MS Excel and MS Power BI for data analysis, and for data visualization including graphs and charts used MS Power Point and MS Power BI for more effective presentation of the results.

Research steps followed:

- Reading key and secondary source texts for theoretical perspectives. Write up literature review.
- Initial gathering of procurement processes criteria and related texts, with preliminary analysis. Produce initial primary source analysis. Continue secondary source text reading. Survey completion and collecting data.
- Survey results study and final data analysis.
- Writing up.

Chapter Four: Practical Study Results & Recommendation

Data Analysis

Based on the analysis, several insights can be drawn regarding the relationship between supplier evaluation criteria and the performance of construction companies in Saudi Arabia:

- **Role Distribution:** The majority of respondents are project managers, indicating a high level of decision-making authority among respondents.
- **Experience:** Respondents have varied experience levels, with a significant proportion having over 15 years of experience, indicating a seasoned respondent pool.
- **Project Types:** A balanced distribution between residential and infrastructure projects, with fewer commercial projects.
- **Formalized Processes:** A large majority use a formalized process for vendor evaluation, yet dissatisfaction with the current processes is high.
- **Satisfaction:** Most respondents are dissatisfied with current vendor evaluation processes, highlighting a need for improvement.
- **Performance Issues:** Issues with vendor performance are frequently encountered, suggesting that existing evaluation methods may not be effective.
- **Adoption of Standardized Framework:** There is a strong willingness to adopt a standardized vendor evaluation framework, indicating openness to change and improvement.

This questionnaire is designed to examine the relationship between supplier evaluation criteria and their impact on the performance of construction companies in the Kingdom of Saudi Arabia (KSA). The survey targets construction project managers, site engineers, and procurement managers to gather comprehensive insights into their current practices, challenges, and perspectives on vendor evaluation. The responses will contribute to the development of a standardized and effective framework for vendor evaluation in construction projects in KSA. The main analysis responses in sections as follow:

1. Role in the Construction Project

- **Project Manager:** The majority of respondents are project managers (86%), indicating that the survey predominantly reflects the views of individuals with significant decision-making authority.
- **Site Engineer:** Represents 14% of the respondents, providing insights from those involved in the technical and on-site aspects of projects.
- **Procurement Manager:** Not specified in the provided data but is an essential role for future analysis.

2. Years of Experience in the Construction Industry

- Respondents have a diverse range of experience, from 3 years (21%) to 29 years (7%).
- This range ensures that the survey captures both seasoned professionals' insights and those of relatively newer entrants in the industry.

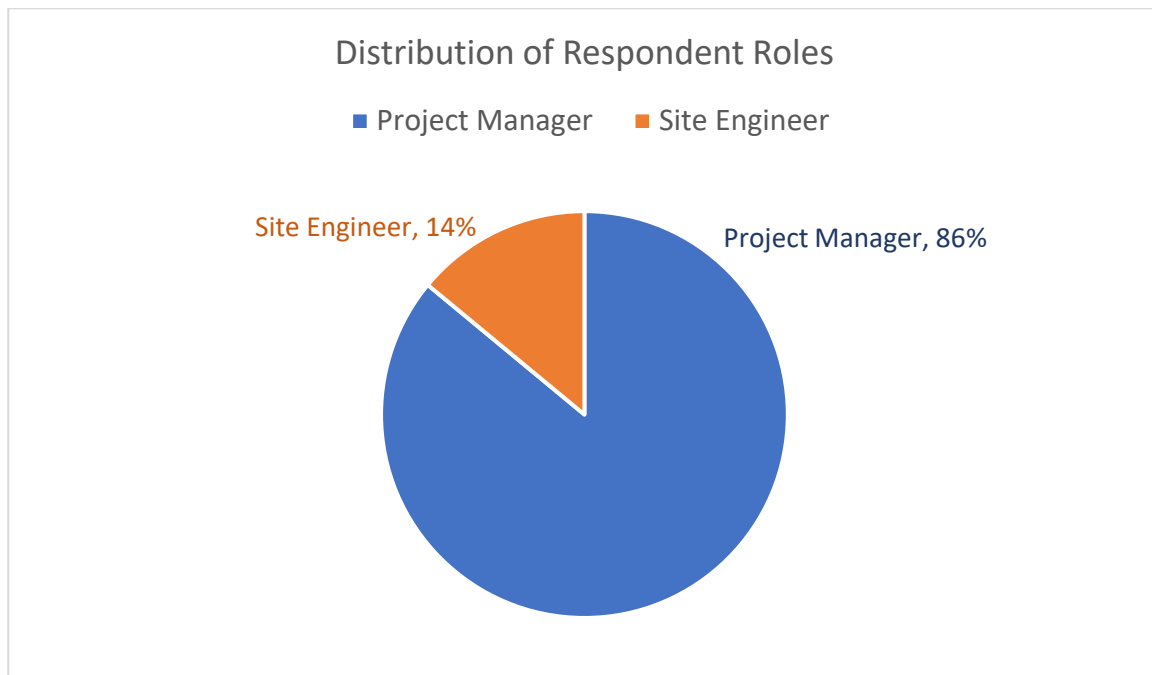


Figure 2: Distribution of Respondent Roles

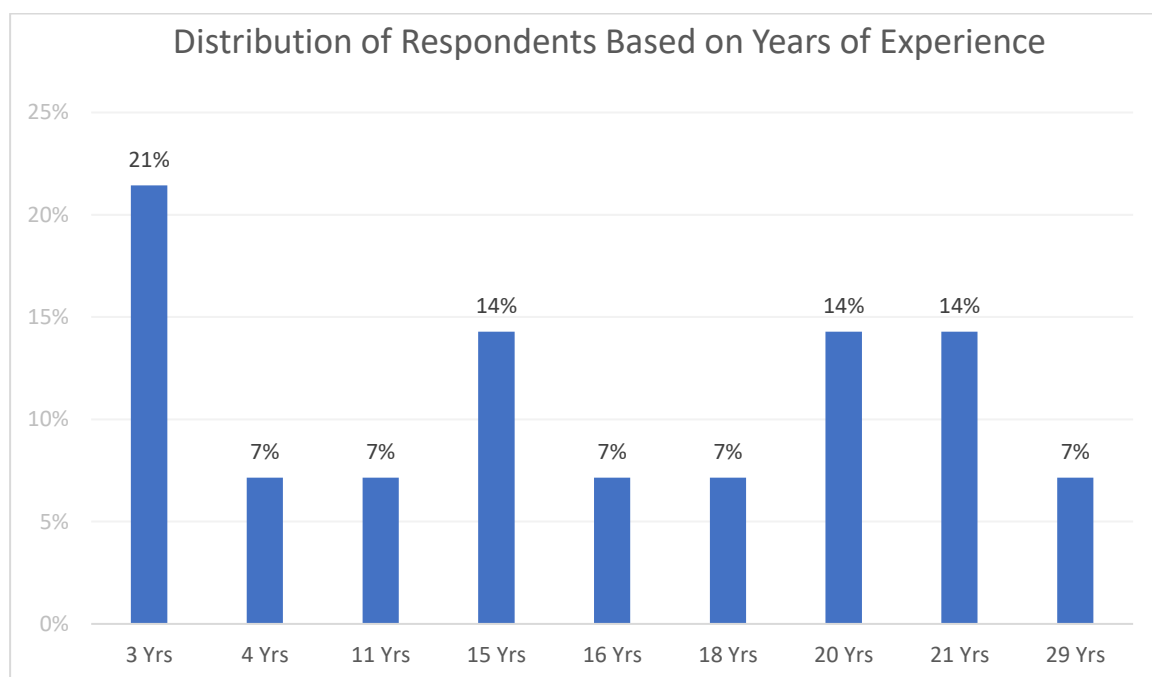


Figure 3 : Distribution of Respondents Based on Years of Experience

3. Types of Construction Projects Managed

- **Residential:** 50%
- **Commercial:** 14%
- **Infrastructure:** 36%

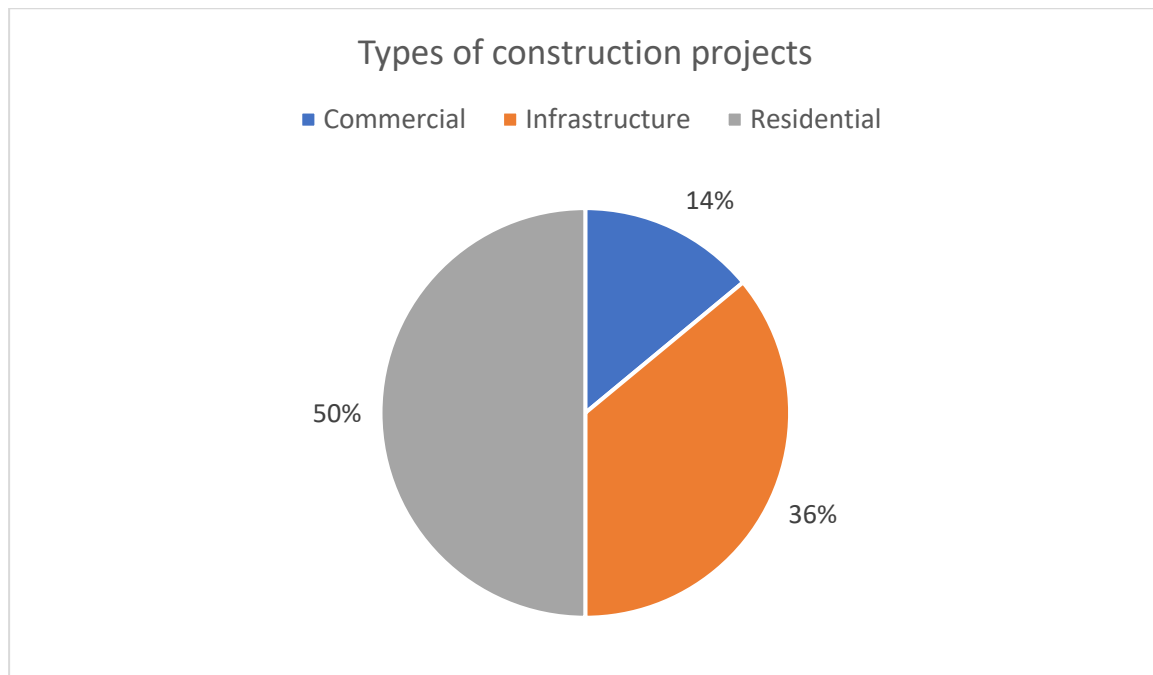


Figure 4 : Types of construction projects

This distribution indicates a balanced focus on various types of construction projects, with a notable emphasis on residential and infrastructure projects, reflecting current trends in Saudi Arabia's construction industry. But from vender practice:

1. Use of Formalized Process for Vendor Evaluation

- **Yes:** 86%
- **No:** 14%

A significant majority use a formalized process for vendor evaluation, suggesting a high level of procedural rigor in vendor selection.

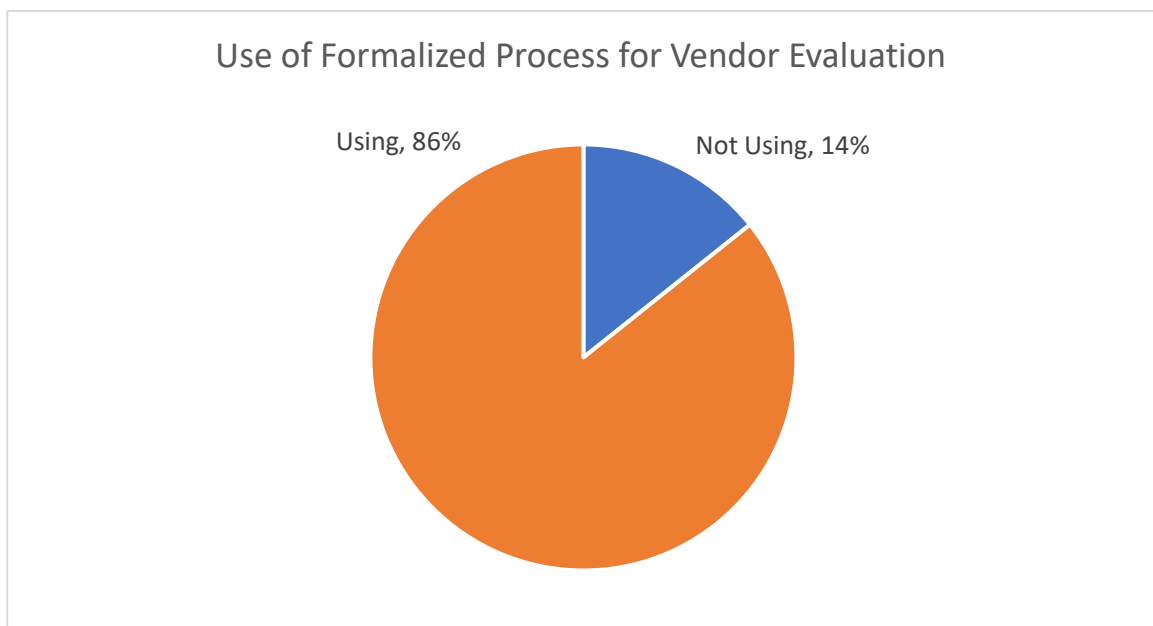


Figure 5 : Use of Formalized Process for Vendor Evaluation

2. Criteria Used to Evaluate Vendors

- **Quality of materials/services**
- **Cost**
- **Delivery time**
- **Past performance/reputation**
- **Financial stability**
- **Compliance with regulations**
- **Sustainability practices**
- **Technological capabilities**

These criteria highlight the multi-faceted approach taken by project managers to ensure comprehensive vendor evaluation.

3. Satisfaction with Current Vendor Evaluation Process

- **Very Dissatisfied: 0%**
- **Dissatisfied: 78%**
- **Neutral: 0%**
- **Satisfied: 21%**
- **Very Satisfied: 0%**

A substantial majority are dissatisfied with the current vendor evaluation processes, indicating a significant gap between current practices and desired outcomes.

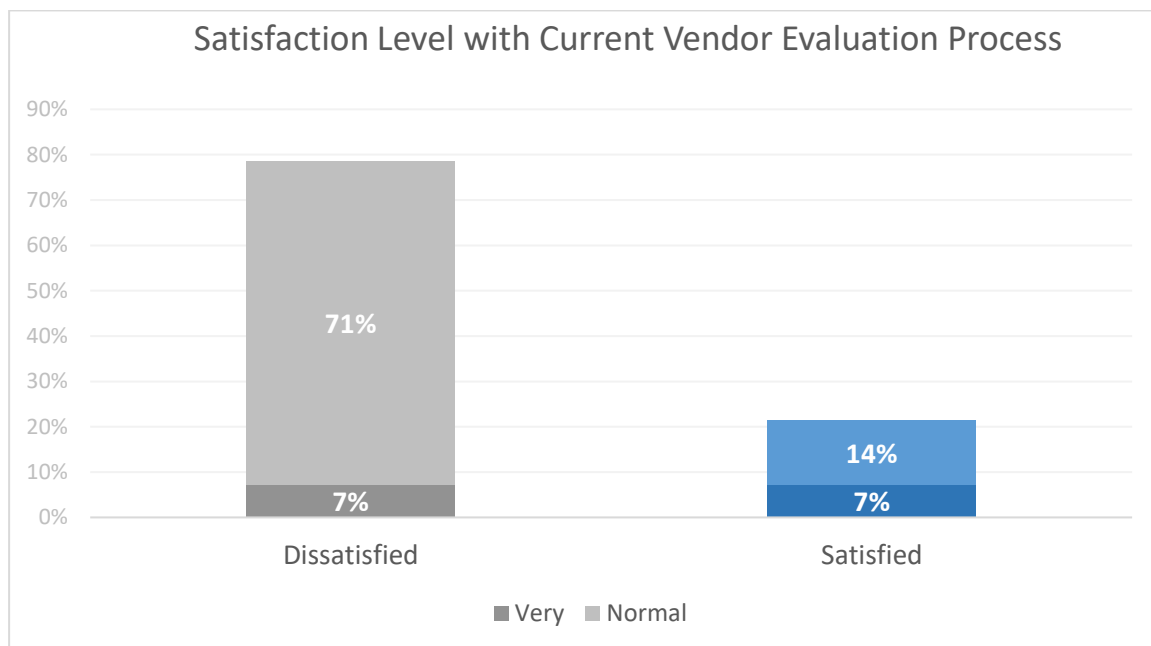


Figure 6 : Satisfaction Level with Current Vendor Evaluation Process

4. Main Challenges in Evaluating Vendors

Respondents highlighted various challenges, such as inconsistent vendor performance, difficulty in verifying compliance with regulations, and lack of transparency in vendor operations.

5. Importance of Evaluation Criteria (Scale of 1 to 5)

- **Quality of materials/services:** Highly important
- **Cost:** Highly important
- **Delivery time:** Important
- **Past performance/reputation:** Important
- **Financial stability:** Important
- **Compliance with regulations:** Important
- **Sustainability practices:** Fairly important
- **Technological capabilities:** Important

The emphasis on quality, cost, and delivery time underscores their critical impact on project success. On other hand from risk management:

1. Frequency of Issues with Vendor Performance

- **Always:** 7%
- **Often:** 29%
- **Sometimes:** 64%

Issues with vendor performance are common, with a significant portion of respondents encountering problems often or sometimes.

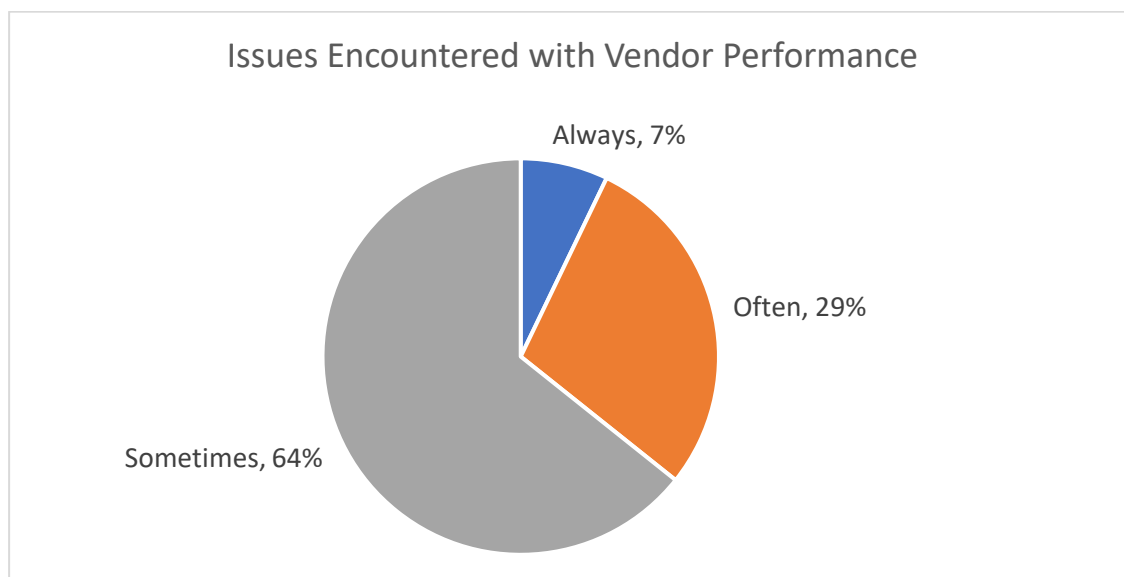


Figure 7 : Issues Encountered with Vendor Performance

2. Types of Risks Considered When Selecting a Vendor

- **Financial risks**
- **Operational risks**
- **Compliance risks**
- **Reputational risks**
- **Environmental risks**

These responses indicate a broad awareness of potential risks associated with vendor selection.

3. Mitigation Strategies for Vendor Performance Risks

Respondents employ various strategies, such as thorough vetting processes, regular performance reviews, and contractual safeguards to mitigate risks.

From regulatory compliance and sustainability, analysis as follow:

1. Importance of Regulatory Compliance in Vendor Selection

- **Not Important:** 0%
- **Slightly Important:** 0%
- **Neutral:** 0%
- **Important:** 57%
- **Fairly Important:** 43%

Regulatory compliance is highly valued, reflecting the industry's need to adhere to legal and industry standards.

2. Verification of Vendor Compliance

Methods include regular audits, documentation reviews, and on-site inspections to ensure vendors meet regulatory requirements.

3. Importance of Sustainability Practices in Vendor Evaluation

- **Not Important:** 0%
- **Slightly Important:** 0%
- **Neutral:** 0%
- **Important:** 64%
- **Fairly Important:** 36%

Sustainability is increasingly recognized as crucial in vendor evaluation, with an emphasis on sustainable materials, waste management, energy efficiency, and environmental impact.

From overall evaluation and improvement:

1. Effectiveness of Current Vendor Evaluation Process

- **Very Ineffective:** 0%
- **Ineffective:** 78%
- **Neutral:** 0%
- **Effective:** 21%
- **Very Effective:** 0%

The majority view the current processes as ineffective, underscoring the need for improvements.

2. Suggested Improvements for Vendor Evaluation Process Suggestions include adopting more standardized evaluation frameworks, increasing transparency, and incorporating more rigorous performance metrics.

3. Benefits of a Standardized Vendor Evaluation Framework Respondents believe such a framework would enhance consistency, improve vendor performance, and ensure better compliance with industry standards.

4. Willingness to Adopt a Standardized Vendor Evaluation Framework

- **Yes:** 92%
- **No:** 8%

There is strong support for adopting a standardized framework, indicating a readiness for systemic changes in vendor evaluation practices.

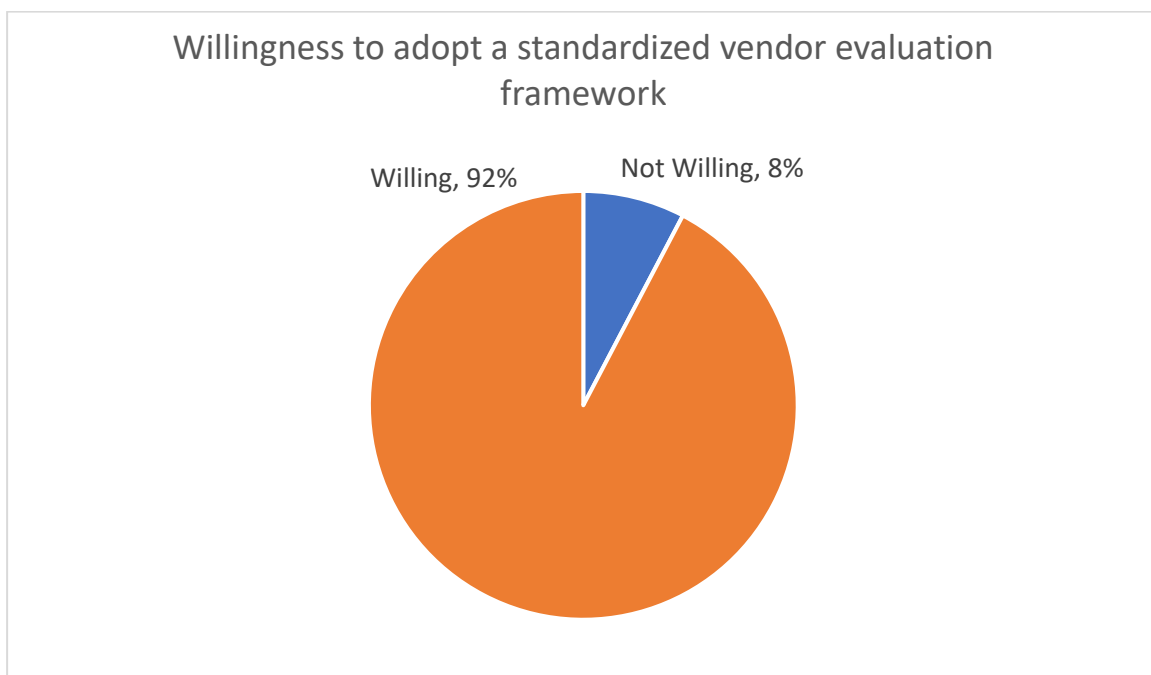


Figure 8 : Willingness to adopt a standardized vendor evaluation framework

The survey reveals critical insights into the current state of vendor evaluation practices in the construction industry in Saudi Arabia. While there is a high level of procedural rigor, significant dissatisfaction exists with the effectiveness of these processes. Common challenges include issues with vendor performance, difficulties in verifying compliance, and the need for more transparent operations. There is strong support for adopting a standardized vendor evaluation framework, reflecting a desire for more consistent and effective practices. By addressing these challenges and leveraging the suggested improvements, construction companies in Saudi Arabia can enhance their vendor evaluation processes, leading to better project outcomes and overall performance.

Research Findings

The dataset has been successfully cleaned with the following steps completed:

1. **Standardized Column Names:** Column names have been converted to lowercase and spaces replaced with underscores.
2. **Checked for Missing Values:** There are no missing values in the dataset.
3. **Converted Categorical Variables:** Categorical variables have been converted to the 'category' data type.

Here is the summary of the dataset:

- Number of entries: 14
- Number of columns: 40

As exploratory analysis from statistics summary for numerical and categorical variables to understand their distributions and basic statistics.

1. Years of Experience in the Construction Industry:
 - Mean: 14.21 years
 - Standard Deviation: 8.27 years
 - Min: 3 years
 - Max: 29 years
2. Score of Satisfaction with Current Vendor Evaluation Process (1: Very Dissatisfied - 5: Very Satisfied):
 - Mean: 3.14
 - Standard Deviation: 0.86
 - Min: 1
 - Max: 5
3. Importance of Regulatory Compliance in Vendor Selection Process (1: Not Important - 5: Very Important):
 - Mean: 3.93
 - Standard Deviation: 1.27
 - Min: 1
 - Max: 5

Based on the advanced analyses, key finding summary derived are:

- The distribution of years of experience shows a wide range of expertise among the respondents.
- The satisfaction with the current vendor evaluation process varies, with an average score of around 3.14.
- Regulatory compliance is generally considered important in the vendor selection process.

In more details as follow:

1. Enhanced Training Programs

- 1.1. **Cluster-Based Training:** Develop training programs tailored to the specific needs of different respondent clusters identified in the cluster analysis.
- 1.2. **Role-Specific Workshops:** Conduct workshops focusing on the unique challenges faced by different roles (e.g., Project Managers, Site Engineers).

2. Process Optimization

- 2.1. **Standardized Evaluation Framework:** Implement a standardized vendor evaluation framework across the organization to ensure consistency.
- 2.2. **Continuous Feedback Loop:** Establish a continuous feedback loop to regularly gather and incorporate feedback from all roles about the vendor evaluation process.

3. Technological Integration

- 3.1. **Advanced Tools:** Invest in advanced digital tools and software that streamline the vendor evaluation process.
- 3.2. **Data Analytics:** Utilize data analytics to monitor vendor performance and make data-driven decisions.

4. Sustainability and Compliance

- 4.1. **Sustainable Practices:** Promote the adoption of sustainable materials and practices in all projects.
- 4.2. **Regulatory Compliance:** Ensure that all vendors adhere to regulatory requirements to minimize risks and improve compliance scores.

Conclusion

As conclusion there some points to consider:

- Standardize the vendor evaluation process across different roles to ensure consistency.
- Focus on improving areas where satisfaction scores are lower, possibly by incorporating more feedback from experienced professionals.
- Continue to emphasize regulatory compliance and other important criteria in the vendor selection process.

In more details:

1. Standardize Vendor Evaluation Process:

- Develop a standardized framework that incorporates the most valued criteria (quality, cost, past performance) to ensure consistency across roles and project types.

2. Increase Satisfaction with Vendor Evaluation:

- Collect feedback on specific pain points and areas for improvement in the current evaluation process. Consider introducing training or better tools to support the evaluation process.

3. Focus on Regulatory Compliance:

- Ensure that all vendors meet regulatory standards to maintain high levels of compliance and reduce risks.

4. Promote Sustainable Practices:

- Encourage the use of sustainable materials and practices in construction projects to align with environmental goals and industry trends.

These insights underscore the critical need for a robust, standardized vendor evaluation framework to improve vendor performance and project outcomes in the Saudi Arabian construction industry.

Research Recommendations

The research on the relationship between supplier evaluation criteria and its impact on the performance of construction companies in the Kingdom of Saudi Arabia (KSA) provides significant insights. However, to further enrich the understanding and applicability of the findings, several future directions are recommended. These directions aim to deepen the analysis, broaden the scope, and enhance the methodologies used in vendor evaluation processes.

1. Longitudinal Studies

1.1. Assessing Long-Term Impact: To comprehensively understand the long-term effects of changes in the vendor evaluation process on project outcomes, it is essential to conduct longitudinal studies. Such studies should track the performance of construction projects over extended periods, examining how modifications in vendor evaluation criteria influence project success. By following projects from inception to completion and beyond, researchers can identify patterns and causal relationships that short-term studies might overlook. This long-term perspective will provide robust evidence on the sustainability and efficacy of vendor evaluation improvements.

1.2. Trend Analysis: Regularly updating time series analysis will be crucial for observing trends and changes in vendor evaluation practices over time. By maintaining a continuous flow of data, researchers can detect shifts in the effectiveness of different evaluation criteria, the emergence of new challenges, and evolving best practices. Trend analysis will help in forecasting future needs and adjustments required in the vendor evaluation process, ensuring it remains relevant and effective.

2. Expanded Data Collection

2.1. Larger Sample Size: Expanding the data collection to include a larger and more diverse sample of respondents is vital for increasing the generalizability of the findings. A broader sample will encompass a variety of perspectives from different roles within construction projects, such as site engineers, procurement managers, and project managers across various regions in KSA. This inclusivity will lead to a more comprehensive understanding of the vendor evaluation process and its impact on project performance.

2.2. Additional Variables: Incorporating additional variables into the research will provide a more nuanced analysis of the vendor evaluation process. These variables could include:

- **Project Success Metrics:** Quantifiable measures of project success, such as adherence to budget and timelines, quality of completed work, and overall project profitability.
- **Vendor Feedback:** Insights directly from vendors regarding the evaluation process, challenges faced, and suggestions for improvement.
- **Client Satisfaction:** Feedback from clients on their satisfaction with the project outcomes, which can be correlated with the vendor evaluation criteria used.

3. Cross-Industry Comparisons

3.1. Comparative Studies: Conducting comparative studies across different industries will help in understanding how vendor evaluation practices vary and what lessons can be learned from other sectors. For example, industries such as manufacturing, IT, and healthcare often have advanced vendor management systems that could offer valuable insights for the construction industry. These comparisons can reveal innovative practices, risk management strategies, and efficiency improvements that could be adapted to the construction context in KSA.

3.2. Adoption of Innovative Practices: Investigating the adoption of innovative vendor evaluation practices from other industries can provide practical solutions for the construction sector. For instance, lean management techniques, just-in-time procurement, and advanced analytics used in other industries could be tailored to meet the specific needs of construction projects. Understanding the successes and challenges faced by other industries in implementing these practices will guide their effective integration into the construction vendor evaluation framework.

4. Enhanced Data Collection Methods

4.1. Real-Time Data Collection: Implementing real-time data collection methods will capture immediate feedback and improve the responsiveness of the vendor evaluation process. Tools such as mobile applications, online dashboards, and automated data entry systems can facilitate the real-time gathering of data from project sites. This immediacy will enable project managers to quickly identify and address issues, thereby enhancing the overall efficiency and effectiveness of the evaluation process.

4.2. Surveys and Interviews: Using a combination of surveys and in-depth interviews will enrich the data collected. Surveys can provide a broad overview of trends and common issues, while interviews can delve deeper into specific challenges and experiences. Qualitative data from interviews will complement the quantitative analysis, offering a more holistic view of the vendor evaluation process. This mixed-method approach will ensure that both the breadth and depth of insights are captured.

Conclusion

Future research directions aim to build on the current study's findings by adopting a more comprehensive, long-term, and inclusive approach. Longitudinal studies will provide insights into the lasting impact of changes in vendor evaluation processes. Expanding data collection to larger and more diverse samples, and incorporating additional variables, will enhance the robustness of the findings. Cross-industry comparisons will offer valuable lessons and innovative practices that can be adapted to the construction sector. Enhanced data collection methods, including real-time data gathering and a combination of surveys and interviews, will improve the accuracy and depth of the analysis.

By pursuing these future directions, researchers can develop a more detailed and actionable understanding of how supplier evaluation criteria impact the performance of construction companies in KSA. This, in turn, will lead to the creation of more effective and standardized vendor evaluation frameworks, ultimately contributing to the success and sustainability of construction projects in the region.

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Appendices

Questionnaire Content

Section A: Introduction

Study for the relationship between supplier evaluation criteria and its impact on the performance of construction companies in the Kingdom of Saudi Arabia

These survey questions are designed to gather comprehensive insights from construction project managers regarding their current practices, challenges, and perspectives on vendor evaluation. The responses will help in developing a standardized and effective framework for vendor evaluation in construction projects in KSA as part of master research study MBA, School of Management, Mid Ocean University.

Section B: Demographics and Background

What is your role in the construction project?

- Project Manager
- Site Engineer
- Procurement Manager

How many years of experience do you have in the construction industry?

[number]

What types of construction projects have you managed?

- residential
- commercial
- infrastructure

Section C: Vendor Evaluation Practices

Do you currently use a formalized process for vendor evaluation?

Yes/No

If yes, what criteria do you use to evaluate vendors? (Check all that apply)

Quality of materials/services

Cost

Delivery time

Past performance/reputation

Financial stability

Compliance with regulations

Sustainability practices

Technological capabilities

Other [text]

How satisfied are you with your current vendor evaluation process?

Very Dissatisfied, Dissatisfied, Natural, Satisfied, Very Satisfied

What are the main challenges you face in evaluating vendors?

[text]

Importance of Evaluation Criteria

On a scale of 1 to 5, how important are the following criteria in evaluating vendors for construction projects?

	Not at all important	Slightly important	Natural important	Important	Fairly important	No Opinion
Quality of materials/ services	☐	☐	☐	☐	☐	☐
Cost	☐	☐	☐	☐	☐	☐
Delivery time	☐	☐	☐	☐	☐	☐
Past performance/reputation	☐	☐	☐	☐	☐	☐
Financial stability	☐	☐	☐	☐	☐	☐
Compliance with regulations	☐	☐	☐	☐	☐	☐
Sustainability practices	☐	☐	☐	☐	☐	☐
Technological capabilities	☐	☐	☐	☐	☐	☐

Are there any other criteria you consider important for vendor evaluation? (Please specify)
[text]

Section D: Risk Management

How often do you encounter issues with vendor performance (e.g., delays, poor quality, non-compliance)?

Always, Often, Sometimes, Rarely, Never

What types of risks do you consider when selecting a vendor? (Check all that apply)

Financial risks

Operational risks

Compliance risks

Reputational risks

Environmental risks

Other [text]

How do you mitigate risks associated with vendor performance? (specify)
[text]

Section E: Regulatory Compliance and Sustainability

How important is regulatory compliance in your vendor selection process?

Not Important, Slightly important, Natural, important, Fairly important, No Opinion

How do you verify that vendors comply with local regulations and industry standards?
[text]

How important are sustainability practices in your vendor evaluation process?

Not Important, Slightly important, Natural, important, Fairly important, No Opinion

What sustainability criteria do you consider when evaluating vendors? (Check all that apply)

Use of sustainable materials

Waste management practices

Energy efficiency

Environmental impact

Other [text]

Section E: Technological Capabilities and Innovation

How important is the vendor's technological capability in your evaluation process?

Not Important, Slightly important, Natural, important, Fairly important, No Opinion

What types of technological capabilities do you look for in a vendor? (Check all that apply)

Use of advanced construction techniques

Integration of digital tools and software

Innovative product offerings

Other [text]

How do you assess a vendor's ability to innovate and adopt new technologies?

[text]

Section F: Overall Evaluation and Improvement

Overall, how effective do you believe your current vendor evaluation process is?

Very Ineffective, Ineffective, Natural, Effective, Very Effective

What improvements would you suggest for the vendor evaluation process in your organization?

[text]

How do you think a standardized vendor evaluation framework could benefit your projects?

[text]

Would you be willing to adopt a standardized vendor evaluation framework if it were available? (Yes/No)

Yes/No

Do you have any additional comments or suggestions regarding vendor evaluation in construction projects?

[text]

Thank you,

Your response has been recorded.

Abstract

This study explores the relationship between supplier evaluation criteria and their impact on the performance of construction companies in the Kingdom of Saudi Arabia (KSA). In a sector where procurement management is crucial, effective vendor evaluation processes are essential for ensuring project success. The research aims to develop a standardized and effective framework for vendor evaluation, considering various factors such as quality, cost, delivery time, past performance, financial stability, compliance with regulations, and sustainability practices. By analyzing survey data collected from project managers, site engineers, and procurement managers, this study identifies the current practices, challenges, and perspectives on vendor evaluation in the construction industry.

The survey results indicate that while a significant majority (86%) of respondents use a formalized process for vendor evaluation, there is considerable dissatisfaction with the current processes. Only 21% of respondents expressed satisfaction, highlighting a critical need for improvement. Key challenges identified include inconsistent vendor performance, difficulty in verifying compliance, and lack of transparency. The study also finds that issues with vendor performance are common, with 29% of respondents encountering problems often and 64% sometimes.

The importance of various evaluation criteria was assessed on a scale of 1 to 5, with quality of materials/services, cost, and delivery time being rated as the most critical factors. Regulatory compliance and sustainability practices were also deemed important, reflecting the industry's emphasis on adhering to legal standards and promoting sustainable development.

The study concludes that there is strong support (92%) among respondents for adopting a standardized vendor evaluation framework. Such a framework would enhance consistency, improve vendor performance, and ensure better compliance with industry standards. By addressing the identified challenges and leveraging the suggested improvements, construction companies in Saudi Arabia can enhance their vendor evaluation processes, leading to better project outcomes and overall performance. The adoption of a mixed-method approach will ensure that both quantitative and qualitative data are collected, offering a holistic view of the issues at hand.

Future research directions include conducting longitudinal studies to assess the long-term impact of changes in vendor evaluation processes, expanding data collection to include a larger and more diverse sample, and incorporating additional variables such as project success metrics, vendor feedback, and client satisfaction. Comparative studies across different industries will provide insights into innovative vendor evaluation practices that could be adapted to the construction sector in KSA.

In summary, this research provides valuable insights into the current state of vendor evaluation in the Saudi construction industry and outlines practical steps for developing a more effective and standardized framework. These findings are crucial for project managers, policymakers, and stakeholders aiming to improve procurement practices and achieve successful project outcomes in the construction sector.

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**Study for the relationship between supplier evaluation criteria and its impact on the performance
of construction companies in the Kingdom of Saudi Arabia**

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