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Understanding the Integration of Performance Competencies and Professional Needs in Architectural Practice: A Study of Architects in Medan, Indonesia

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Abstract

This study explores how architectural performance attributes (APA) and professional needs (APN) are prioritized in practice, focusing on architects in Medan, Indonesia. It addresses a gap in existing research, where competencies and workplace conditions are often treated as separate issues, by examining them within a single analytical framework. Data were collected from 55 practicing architects through a structured questionnaire and analyzed using the Relative Importance Index (RII) to identify key priorities. The results show that competencies related to understanding client objectives and responding to user needs are ranked highest (RII = 0.94–0.95), followed by technical knowledge and communication skills. By contrast, attributes associated with detailed technical coordination and design standardization tend to receive lower rankings (RII ≈ 0.75–0.78). In terms of professional needs, open communication (RII = 0.97), autonomy (RII = 0.95), and a manageable workload (RII = 0.95) are the most influential conditions. At the same time, financial incentives and work disruptions are considered less critical (RII ≈ 0.65–0.75). These findings suggest that architectural performance is shaped not only by individual competencies but also by the conditions that support their application. The study contributes by offering an integrated, empirically grounded perspective that provides a more context-sensitive understanding of architectural practice, particularly in emerging and flexible professional environments.

1.0 INTRODUCTION

Architectural practice has evolved significantly over time, reflecting shifting professional expectations at different points in time. Historically rooted in the role of the "master builder," the profession has developed into a more complex and collaborative field shaped by technological, institutional, and socio-economic changes (Norouzi et al., 2015a). In contemporary practice, architects are no longer concerned solely with design. However, they are also expected to engage in coordination, client interaction, and regulatory processes across multiple stages of a project (Abdirad, 2016; Ogunnaike & Afolabi, 2025). As a result, architectural performance extends beyond individual expertise to include the broader conditions in which architects operate.

Most existing studies examine architectural performance through competency-based frameworks. Marisa and Yusof (2020) emphasize the importance of technical and communication skills, while Muszynska-Lanowy (2021) extends this discussion by focusing on coordination in complex project environments. Although these studies provide a useful basis for identifying key capabilities, they treat competencies as detached from the contexts in which they are applied.

In parallel, research in organizational and project management has emphasized the role of workplace conditions in shaping professional performance. Shammout (2022) draws attention to communication structures in collaborative environments, while Dumitriu et al. (2025) highlight the influence of workload and organizational support. However, these perspectives are often developed independently from competency-based approaches.

This separation limits the understanding of architectural performance in practice. Professional capability cannot be fully separated from the conditions that enable or constrain its application. Focusing on competencies alone, therefore, provides only a partial account of how architectural work is actually carried out.

This issue is particularly evident in context-specific settings. In Indonesia, architectural practice is shaped by institutional frameworks, including professional regulations established by the Ikatan Arsitek Indonesia (IAI) and national legislation (IAI, 2022). At the same time, practice in actual project environments is influenced by local project conditions, organizational structures, and client expectations. In Medan, these factors create a dynamic professional environment where formal standards coexist with practice-based adaptations.

Despite this complexity, empirical evidence remains limited on how architects in such contexts prioritize and relate performance competencies and professional needs in their daily work. This reflects both a theoretical gap, as existing models tend to treat these dimensions separately, and an empirical gap, particularly in non-Western settings.

To address this, the present study examines architectural practice by jointly analyzing Architect Performance Attributes (APA) and Architect Professional Needs (APN). Rather than testing causal relationships, the study focuses on how practitioners prioritize these dimensions based on their professional experience. Using data collected from architects in Medan and analyzed through the Relative Importance Index (RII), the study identifies key attributes that shape architectural performance in practice.

By integrating competency-based and context-based perspectives, this study offers a more grounded and context-sensitive understanding of architectural practice, with implications for both theory and professional development.

2.0 LITERATURE REVIEW

2.1 The Changing Role of Architects in a Global Context

Architectural practice has undergone a significant transformation, moving away from the traditional notion of the "master builder" toward a more collaborative and regulated professional role (Malone, 2016). In contemporary settings, architects operate in increasingly complex project environments involving multiple stakeholders, including clients, engineers, consultants, and contractors. As Emmitt & Gorse (2006) emphasize, effective communication is essential for coordinating these interactions, while Winch (011) highlights the importance of managing interdisciplinary relationships in project delivery. More recent discussions, such asthose by Mba et al. (2024), further underline the growing complexity of collaboration in contemporary architectural practice.

Across different regions, the structure of architectural practice is shaped by regulatory, educational, and institutional frameworks. In highly regulated contexts such as the United Kingdom and the United States, professional pathways are clearly structured through formal accreditation, training, and licensing systems (Architectural Experience Program Guidelines, 2024; Royal Institute of British Architects, 2023). In Europe, professional competencies are often aligned with broader regulatory directives that facilitate standardization across member states (User Guide Directive 2005/36/EC, 2020). In contrast, regions such as Asia and the Middle East tend to exhibit more flexible and evolving professional structures, influenced by rapid urban development and changing market conditions (Nicol, 2005; Salama, 2021).

These variations suggest that architectural practice is shaped by context rather than following a uniform model. The way competencies are defined, developed, and applied depends on institutional frameworks, regulatory systems, and professional expectations. This also affects how architects balance technical, managerial, and interpersonal responsibilities in their daily work.

In addition, distinctions between professional roles, such as architects and architectural engineers, reflect differences in educational pathways and areas of expertise. Architects are typically associated with design, spatial planning, and client engagement (Ogunnaike & Afolabi, 2025; Oyedele & Tham, 2007)

In contrast, architectural engineers tend to focus on structural systems and technical performance (Snyder, 2005). These differences influence not only professional responsibilities but also how competencies are prioritized in practice.

Overall, these variations indicate that architectural performance cannot be understood solely in terms of individual capabilities. Instead, it reflects the interaction between competencies and the professional context in which architects operate. This perspective is particularly relevant when examining performance attributes and professional needs, as broader institutional and practice-based conditions shape both.

2.2 Architectural Education and Professional Distinctions

The relationship between architectural education and professional identity plays a central role in shaping how competencies are developed and applied in practice. Hejazi & Shafaei (2021) highlight how educational experiences influence the formation of professional perspectives, while Chohan & Awad (2023) emphasize the role of professional bodies in defining standards, ethics, and accreditation systems that guide both education and practice.

Architectural education has traditionally emphasized design thinking, creativity, and spatial reasoning, alongside technical knowledge related to construction and environmental systems. Snyder (2005) highlights the longstanding focus on design and spatial competence, while more recent studies, such as Zidan & Hajahjah (2025), suggest that these competencies continue to evolve in response to changing professional demands. However, a persistent gap between academic training and professional practice remains evident. Grafström et al. (2025)point out that competencies in project management, communication, and collaboration are often underdeveloped in formal education despite their importance in practice.

Professional institutions, including the American Institute of Architects (AIA), the Royal Institute of British Architects (RIBA), and the Ikatan Arsitek Indonesia (IAI), further shape these competencies by defining professional standards and ethical responsibilities. Through accreditation and regulatory processes, these institutions influence how architects understand their roles and responsibilities. As a result, competencies emerge from the interaction between academic training, professional regulation, and practical experience.

Differences in educational pathways also contribute to variations in professional roles. Architecture programs typically emphasize design, spatial thinking, and client engagement. In contrast, architectural engineering programs focus more on structural systems and technical performance (Snyder, 2005). These distinctions influence how competencies are prioritized in practice.

These variations become more apparent when architectural practice is examined across different regional contexts. Differences in regulatory frameworks, educational pathways, and institutional arrangements shape how competencies are defined and applied. Table 1 provides a comparative overview of selected regions, highlighting how these factors influence professional roles, competency priorities, and practice characteristics.

Table 1. Comparative Overview of Architectural Practice Across Regions

Region	Regulatory Framework	Educational Structure	Competency Focus	Practice Characteristics	Representative Sources
United States	NCARB (AXP, ARE)	NAAB-accredited + internship + exam	Technical competence, ethics	Highly regulated	(Architectural Experience Program Guidelines, 2024)
United Kingdom	RIBA	Structured academic + exam	Design, communication	Strong integration	(Royal Institute of British Architects, 2023)
Europe	EU Directive	Harmonized	Mobility, collaboration	Cross-border practice	(User Guide Directive 2005/36/EC, 2020)
Asia	IAI, JIA	Mixed systems	Contextual design	Diverse	(IAI, 2022; The Japan Institute of Architects, 2025)

(Source: Author, 2026)

The comparison presented in Table 1 indicates that architectural practice is not governed by a single universal model, but is shaped by diverse institutional and contextual conditions. Variations in regulatory systems, educational structures, and professional frameworks shape how competencies are defined, developed, and applied across regions.

These differences suggest that the prioritization of competencies and professional needs is context-dependent rather than standardized. In highly regulated environments, competencies tend to be formally structured and aligned with accreditation systems. In contrast, in more flexible contexts, professional roles are often shaped by project demands, market conditions, and organizational practices.

This perspective highlights the importance of examining architectural practice within specific local settings. In Indonesia, architectural practice is influenced by institutional frameworks, such as the Ikatan Arsitek Indonesia (IAI), and by national legislation governing the profession (IAI, 2022). At the same time, these formal structures operate alongside local project conditions and organizational arrangements.

In cities such as Medan, where professional roles tend to be more flexible and project environments are diverse, the relationship between competencies and professional needs may differ from more standardized contexts. This indicates that understanding architectural performance requires attention not only to competencies themselves, but also to the conditions in which they are applied.

Taken together, these observations suggest that architectural practice cannot be adequately explained through competency-based perspectives alone. Instead, it requires an approach that considers how competencies and professional needs interact within specific contexts. This provides the foundation for the integrated approach adopted in this study.

2.3 Identification of Architect Performance Attributes

Architect Performance Attributes (APA) were developed through a synthesis of established literature on architectural practice, project delivery, and professional competencies. Rather than treating each attribute as an isolated construct, the attributes are grouped into broader conceptual dimensions to reflect how competencies are applied in practice. Prior studies consistently indicate that architectural performance is shaped by a combination of design capability, technical knowledge, communication skills, and coordination capacity(Emmitt & Gorse, 2006; Marisa & Yusof, 2020; Winch, 2011).

User-oriented design and responsiveness to client needs are widely recognized as central to architectural practice (Kiyanenko, 2022; Van der Linden et al., 2018. Mba et al. (2025) also emphasize the importance of focusing on clients' needs and requirements to deliver successful projects. Technical competencies remain essential for ensuring constructability and design quality (Lappalainen et al., 2022). Communication and coordination competencies are also critical, particularly in multidisciplinary project environments (Norouzi et al., 2015b; Tzortzopoulos & Cooper, 2007).

Therefore, based on the literature, 37 APAs were chosen and are organized into four dimensions, as presented in Table 2. The grouping of performance attributes reflects how competencies are applied in practice, with design, technical, communication, and coordination capabilities interdependent rather than isolated.

Table 2. Architect Performance Attributes (APA)

Dimensions	Code	Attributes
Design and Client-Oriented	APA 1	Ability to understand client objectives
	APA 2	Ability to consider user needs in the design process
	APA 3	Ability to analyze design concepts and project requirements
	APA 4	Ability to design within budget constraints
	APA 5	Ability to identify and prioritize project objectives
	APA 6	Ability to adapt design solutions to client needs
	APA 7	Ability to produce high-quality and aesthetically sound design solutions
	APA 8	Ability to produce flexible and adaptable design solutions
Technical and Construction	APA 9	Ability to ensure clarity and consistency between drawings & specifications
	APA 10	Ability to support quality management strategies
	APA 11	Ability to guide construction and testing phases
	APA 12	Ability to develop quality guidelines for construction work
	APA 13	Ability to complete design work with minimal revisions and errors
	APA 14	Ability to comply with relevant regulations and standards
	APA 15	Ability to simplify and refine design solutions
	APA 16	Ability to coordinate design elements dimensionally
	APA 17	Ability to standardize design elements
	APA 18	Knowledge of material and component performance characteristics
	APA 19	Ability to conduct constructability reviews effectively
	APA 20	Ability to participate effectively in site reviews and inspections
Communication	APA 21	Ability to communicate effectively with clients
	APA 22	Ability to translate ideas clearly into drawings
	APA 23	Ability to communicate design intent clearly to contractors
	APA 24	Ability to collaborate effectively with other professionals
	APA 25	Ability to communicate clearly
	APA 26	Ability to communicate accurately
	APA 27	Ability to communicate concisely
	APA 28	Ability to communicate comprehensively
Coordination and Management	APA 29	Ability to deliver design work within agreed timelines
	APA 30	Ability to conduct effective pre-design meetings
	APA 31	Ability to coordinate design phases
	APA 32	Ability to contribute to project strategy development
	APA 33	Ability to coordinate between design and construction
	APA 34	Ability to engage other professionals during the design process
	APA 35	Ability to facilitate effective project review meetings
	APA 36	Ability to organize people and work activities
	APA 37	Ability to provide advice on contractual provisions

(Source: Marisa, 2018)

2.4 Identification of Architect Professional Needs

This subsection presents the Architect Professional Needs (APN), which capture workplace conditions and organizational factors that influence architectural performance. These needs were identified through a synthesis of the literature on organizational behavior, construction management, and design practice, particularly studies on autonomy, communication, work environment, motivation, and job satisfaction.

Rather than treating each item as an isolated construct, the identified needs are conceptually grouped to reflect how professional conditions are experienced in practice. Previous research consistently shows that performance is shaped not only by individual competencies but also by the quality of the work environment, including organizational support, team dynamics, and job-related conditions (López-Cabarcos et al., 2021; Shammout, 2022; Sonnentag, 2017)

Autonomy, feedback, and opportunities for participation are widely recognized as important factors influencing motivation and effectiveness (Behravesh et al., 2020; Piperca & Floricel, 2023). Similarly, communication and coordination within teams play a critical role in supporting project delivery and professional satisfaction (Collopy et al., 2019; Wang, 2024). Organizational factors such as workload, supervision, and policy structures further shape work performance and job satisfaction (Menon, 2024; Sang et al., 2009). Similarly, Damayanti & Darmawan (2025) highlighted the importance of organizational commitment for the development of individuals and their work motivation by providing rewards such as incentives, fair treatment, recognition, achievement support, and job security, which can improve productivity. Therefore, work environment conditions that support task implementation can ensure optimal architect performance.

Based on previous studies, 36 APNs were identified as important working environments for architects in the project delivery process. The full list of APNs is shown in Table 3.

Table 3. Architect Professional Needs (APN)

Dimensions	Code	Attributes
Autonomy and Work Design	APN 1	Work performance improves with sufficient autonomy and flexibility
	APN 2	Challenging work is important for professional engagement.
	APN 3	Opportunities to participate in decision-making improve performance.
	APN 4	Task variety enhances work effectiveness.
	APN 5	Opportunities to exercise influence and authority enhance performance.
	APN 6	Opportunities for creativity and innovation are important.
Work Environment and Organizational Support	APN 7	Adequate resources (e.g., software, hardware) support effective work performance.
	APN 8	A supportive work environment improves performance.
	APN 9	Organizational commitment to employee safety and well-being is important.
	APN 10	Organizational support for professional development enhances job satisfaction.
	APN 11	Appropriate feedback mechanisms during projects are essential.
	APN 12	Adequate supervision improves work performance.
	APN 13	Effective organizational policies support project performance.
	APN 14	A clear organizational structure improves task coordination.
Communication and Team Dynamics	APN 15	Open communication between supervisors and staff improves performance
	APN 16	Harmonious working relationships within the design team enhance performance.
	APN 17	Effective communication within the design team improves job satisfaction.
	APN 18	Good coordination within the design team enhances performance.
	APN 19	Competent team members are essential for effective work.
	APN 20	Strong team commitment enhances project performance.
Project Conditions and Work Pressure	APN 21	Minimal work disruptions support effective project delivery
	APN 22	Clear project objectives and planning enhance job satisfaction.
	APN 23	Reasonable workload and low pressure improve job satisfaction.

Dimensions	Code	Attributes
	APN 24	Alignment between design decisions and project goals is important.
	APN 25	Realistic client expectations are important for project success.
	APN 26	Realistic project timelines support effective performance.
	APN 27	Frequent design changes reduce work satisfaction.
Rewards and Job Security	APN 28	Clear goal-setting and achievement support job satisfaction
	APN 29	Fair treatment by supervisors supports performance.
	APN 30	Meaningful work contributes to job satisfaction.
	APN 31	Fair financial compensation is important relative to the effort put in.
	APN 32	Additional incentives improve work motivation.
	APN 33	Job security is important.
	APN 34	Work that supports employee retention and organizational stability is important.
	APN 35	Recognition of contributions enhances motivation.
	APN 36	Appreciation of effort improves work performance.

(Source: Authors, 2026)

2.5 Performance Competencies and Professional Needs in Architectural Practice

Research on architectural performance has generally followed two main lines of inquiry. One strand focuses on competencies, viewing professional performance as individual capabilities such as technical expertise, communication, coordination, and decision-making. Studies in this area consistently show that these competencies play a central role in shaping how architects deliver design outcomes(Marisa & Yusof, 2020; Oyedele & Tham, 2007).

Client and user considerations are particularly emphasized within this perspective, as project management research highlights client satisfaction as a key indicator of project success that requires continuous attention throughout the design process (Coşkun & Sancar, 2021). Technical knowledge also remains fundamental, particularly in relation to materials and building components, which not only support structural performance but also influence the character and quality of built environments (Wastiels & Wouters, 2012). However, this perspective tends to concentrate on what architects are expected to do, often without fully considering the conditions in which their work takes place.

A second strand, more closely linked to organizational behavior and project management, shifts attention toward the work environment. Hackman & Oldham (1976) highlight how factors such as autonomy, feedback, and task significance influence individual motivation and work effectiveness. In architectural and construction settings, similar patterns have been observed, where communication structures, workload, and team organization shape how professionals carry out their roles in practice (Rowlinson et al., 2011; Shammout, 2022).

While both perspectives offer valuable insights, they are rarely brought together coherently. Competency-based approaches emphasize what individuals are capable of. In contrast, organizational perspectives focus on the conditions under which work is performed. As a result, existing approaches often provide only a partial view of architectural performance, overlooking how these two dimensions interact in real-world practice. This limitation becomes more apparent in context-specific settings, where institutional arrangements and market conditions shape professional roles differently.

In Medan, Indonesia, architectural practice reflects a combination of formal standards and everyday adaptations. Variations in project types, client expectations, and organizational arrangements shape how architects apply their competencies and how they prioritize their professional needs. In this context, performance cannot be understood in isolation from competencies or work conditions, but rather by considering how they are experienced together in practice.

To address this gap, this study proposes a conceptual framework that integrates Architect Performance Attributes (APA) and Architect Professional Needs (APN) as closely related dimensions of architectural practice (Figure 1). APA refers to the set of competencies that enable architects to perform their roles. At the same time, APN captures the conditions that support or constrain the use of those competencies. 37 APAs were selected based on the core competencies of architects in performing their work on the project, while 36 APNs were chosen to ensure architects perform optimally and demonstrate their competencies in delivering the project. The framework in Figure 1 is intended to provide a structured way of examining how practitioners prioritize these dimensions based on their experience.

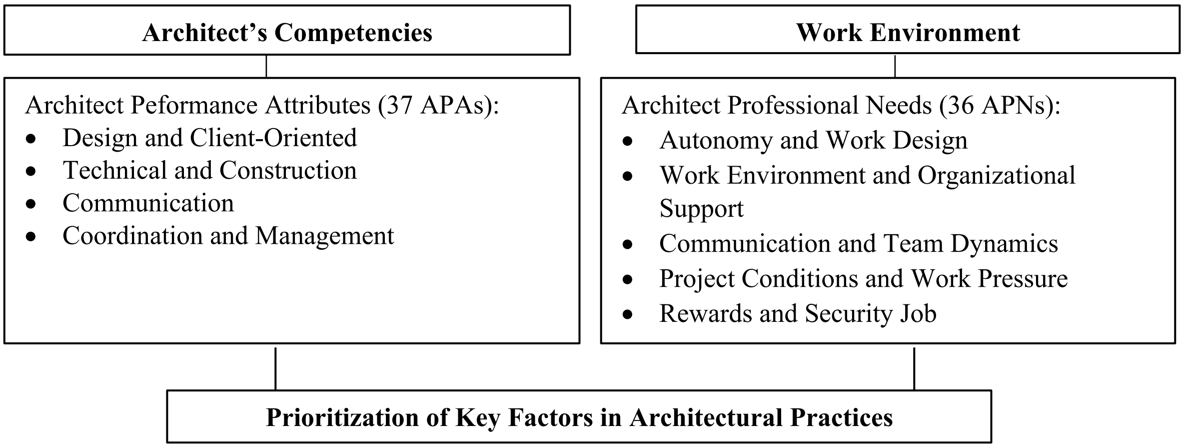

Figure 1. Conceptual framework for the prioritization of architect performance attributes (APA) and professional needs (APN) in architectural practice.

By considering these two dimensions together, the framework offers a more grounded understanding of architectural practice, particularly in contexts where professional roles and working conditions are not fully standardized. It suggests that performance is shaped not only by what architects know and can do, but also by the environment in which those abilities are applied.

3.0 METHODOLOGY

3.1 Research Design and Data Collection

This study adopts a quantitative approach to examine how architects prioritize performance attributes and professional needs in practice. The analysis focuses on prioritization rather than causal relationships, making the Relative Importance Index (RII) an appropriate method. RII enables the ranking of multiple factors based on respondents' or experts' perceptions. As noted by Tholibon et al. (2021), the index provides a clear indication of each factor's relative importance, allowing priority attributes to be identified. Similarly, Irankunda et al. (2025) applied RII to rank factors contributing to project delays, demonstrating its relevance for evaluating the relative significance of performance-related variables.

A purposive sampling strategy was employed to ensure that respondents possessed relevant professional experience. This approach is widely used in studies that rely on expert judgment and experience-based insights (Memon et al., 2024; Tajik et al., 2024). Therefore, the purposive sampling technique is considered appropriate for the current study. Some of the criteria used to obtain responses from architects with sufficient experience and knowledge to evaluate performance attributes and professional needs include: respondents must have at least 3 years of professional experience, involvement in at least 3 completed projects, and active engagement in architectural design practice. In addition, respondents were expected to have experience working collaboratively within design teams.

The APA attributes were derived from established theories of architects' roles and responsibilities in the project delivery process. In contrast, the APN attributes were informed by literature on individual needs and working conditions in design firms and the construction industry. Given the study's focus on professional perspectives, the classification of architects was not considered a determining factor, as the emphasis was placed on practical experience rather than formal designation.

Before the main data collection, a pilot study was conducted with 15 architects, with an average of 8 years of professional experience. The pilot test was used to assess the clarity, relevance, and structure of the questionnaire. Based on the feedback received, some questions (items) were refined to improve clarity and ensure consistent interpretation among respondents.

Data collection was conducted by contacting 40 architectural firms listed in the directories of the Ikatan Nasional Konsultan Indonesia (INKINDO) and the Ikatan Arsitek Indonesia (IAI). A total of 80 architects expressed willingness to participate. Of these, 62 responses were collected through a combination of online (Google Forms) and offline distribution. After screening for eligibility and completeness, seven responses were excluded for incomplete or inconsistent answers, leaving 55 valid responses for analysis.

Previous research in architecture and construction management with an exploratory purpose relied on relatively small, expert-based samples to capture informed professional judgments. For example, Oyedele (2010) analyzed responses from 37 architects and 14 design engineers to identify critical performance factors, while Vergara et al. (2025) used 8 responses from experienced professionals in the architecture, engineering, and construction industry to validate the selected performance indicators for the design phase of high-rise building projects using RII. These approaches emphasize depth of professional insight rather than statistical generalization. Thus, given the exploration nature of the current study, the sample size of 55 is considered appropriate to capture key factors relevant to architects' needs and performance in delivering the project.

3.2 Instrument Development

The instrument was developed into two parts. The first part of the questionnaire aims to screen and select appropriate respondents for the study. The second part defines the study's objectives and is structured into three sections. The first section captured respondent characteristics, while the second and third sections focused on Architect Performance Attributes (APA) and Architect Professional Needs (APN), respectively.

3.2.1 Measurement of Constructs

The following sections assessed Architect Performance Attributes (APA) and Architect Professional Needs (APN) using two types of five-point Likert scales. The use of Likert scales is well established in survey-based research for measuring perceptions and attitudes (Robinson, 2014). In architectural studies, similar scaling approaches have been applied to assess both performance attributes and professional needs (Marisa & Talarosha, 2020).

For APA, an importance scale ranging from 1 (not important) to 5 (extremely important) was used to assess the perceived significance of each attribute. For APN, an agreement scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to capture respondents' views on professional needs and workplace conditions, as presented in Table 4.

Table 4. Constructs and Sources

Constructs	Dimensions	Items	Scale	Sources
Architects' Performance Attributes (APA)	Design and Client-Oriented	8	Five-point scale from 1-not important to 5 – extremely important.	Oyedele (2010); Norouzi et al., (2015b); Marisa & Yusof (2020); Kiyanenko (2022); Van der Linden et al. (2018); Lappalainen et al. (2022); Mba et al. (2025)
	Technical and Construction	12		
	Communication	8		
	Coordination and Management	9		
Total		37		
Constructs	Dimensions	Items	Scale	Sources
Architects' Professional Needs (APN):	Autonomy and Work Design	6	Five-point scale from 1-strongly disagree to 5 – strongly agree.	Sang et al., (2009); Sonnentag (2017); Collopy et al. (2019); Behravesh et al. (2020); López-Cabarcos
	Work Environment and Organizational Support	8		

Constructs	Dimensions	Items	Scale	Sources
	Communication and Team Dynamics	6		et al. (2021); Shammout, (2022); Piperca & Floricel (2023). Menon, (2024); Damayanti & Darmawan (2025)
	Project Conditions and Work Pressure	7		
	Rewards and Job Security	9		
Total		36		

(Source: Authors, 2026)

3.3 Validity and Reliability Test

Before the questionnaire was distributed, a pilot test was conducted to assess the validity of each item. According to Bolarinwa (2016), a questionnaire is considered valid when its items effectively capture the construct it is intended to measure. In other words, each statement should accurately reflect a component of the concept under investigation. Validity testing is essential to ensure that the measurement instrument accurately measures what it claims to measure, thereby enhancing the credibility of research findings.

The validity test was carried out using the Bivariate Correlation feature in IBM SPSS Statistics. The Pearson correlation method was selected, and a two-tailed significance level was set to determine whether each item correlated meaningfully with the total score (Gravetter et al., 2021; Zaiontz, 2020). With a sample size of 15 respondents (architects), the degrees of freedom (df) were calculated as $n - 2$, resulting in $df = 13$. Based on the critical value table, the threshold for significance at $\alpha = 0.05$ (two-tailed) is 0.5140.

Any item with a Pearson correlation coefficient (r-count) ≥ 0.5140 was considered valid, as it showed a statistically significant relationship with the total score. In this context, an item is regarded as valid when r-count > r-table, indicating that it contributes meaningfully to the construct being measured.

Table 5. Results of Validity Test on Architect Performance Attributes (APA)

Dimensions	APA	r value	Validity
Design and Client-Oriented	APA 1	0.947	Valid
	APA 2	0.664	Valid
	APA 3	0.788	Valid
	APA 4	0.795	Valid
	APA 5	0.947	Valid
	APA 6	0.825	Valid
	APA 7	0.776	Valid
	APA 8	0.881	Valid
Technical and Construction	APA 9	0.782	Valid
	APA 10	0.826	Valid
	APA 11	0.733	Valid
	APA 12	0.898	Valid
	APA 13	0.889	Valid
	APA 14	0.933	Valid
	APA 15	0.915	Valid
	APA 16	0.848	Valid
	APA 17	0.861	Valid
	APA 18	0.813	Valid
	APA 19	0.720	Valid
	APA 20	0.895	Valid
Communication	APA 21	0.753	Valid
	APA 22	0.881	Valid
	APA 23	0.795	Valid
	APA 24	0.874	Valid
	APA 25	0.775	Valid
	APA 26	0.933	Valid
	APA 27	0.805	Valid
	APA 28	0.916	Valid

Dimensions	APA	r value	Validity
Coordination and Management	APA 29	0.892	Valid
	APA 30	0.789	Valid
	APA 31	0.923	Valid
	APA 32	0.775	Valid
	APA 33	0.904	Valid
	APA 34	0.904	Valid
	APA 35	0.652	Valid
	APA 36	0.728	Valid
	APA 37	0.728	Valid

(Source: Authors, 2026)

Table 6. Results of Validity Test on Architect Professional Needs (APN)

Dimensions	APA	r value	Validity
Autonomy and Work Design	APN 1	0.803	Valid
	APN 2	0.886	Valid
	APN 3	0.739	Valid
	APN 4	0.566	Valid
	APN 5	0.810	Valid
	APN 6	0.705	Valid
Work Environment and Organizational Support	APN 7	0.884	Valid
	APN 8	0.733	Valid
	APN 9	0.779	Valid
	APN 10	0.901	Valid
	APN 11	0.913	Valid
	APN 12	0.891	Valid
	APN 13	0.880	Valid
	APN 14	0.925	Valid
Communication and Team Dynamics	APN 15	0.766	Valid
	APN 16	0.891	Valid
	APN 17	0.870	Valid
	APN 18	0.880	Valid
	APN 19	0.823	Valid
	APN 20	0.892	Valid
Project Conditions and Work Pressure	APN 21	0.925	Valid
	APN 22	0.802	Valid
	APN 23	0.898	Valid
	APN 24	0.553	Valid
	APN 25	0.548	Valid
	APN 26	0.811	Valid
	APN 27	0.794	Valid
Rewards and Job Security	APN 28	0.823	Valid
	APN 29	0.832	Valid
	APN 30	0.870	Valid
	APN 31	0.769	Valid
	APN 32	0.659	Valid
	APN 33	0.860	Valid
	APN 34	0.881	Valid
	APN 35	0.810	Valid
	APN 36	0.706	Valid

(Source: Authors, 2026)

The questionnaire items' validity was assessed using the Pearson correlation coefficient. As shown in Tables 4 and 5, all items exceeded the required threshold (r ≥ 0.5140), indicating that they are valid and appropriately represent the constructs being measured.

Following this, a reliability test was conducted for the 37 Architect Performance Attributes (APA) and 36 Architect Professional Needs (APN). Reliability reflects the consistency of the measurement, with values of 0.70 or higher generally considered acceptable (Hair et al., 2019).

Table 7. Results of the Reliability Test on Architect Professional Needs (APN)

Attributes	Number of Items	Cronbach's Alpha	Interpretation
APA	37	0.989	Excellent
APN	36	0.985	Excellent

(Source: Authors, 2026)

Reliability was assessed using Cronbach's Alpha to evaluate the internal consistency of the measurement scales. As shown in Table 6, both APA and APN demonstrate excellent reliability, with values well above the commonly accepted thresholds (Taherdoost, 2016). These results suggest that the instrument performs consistently and provides dependable measurements across the assessed attributes, supporting its use for further analysis.

3.4 Data Analysis Technique

The data were analyzed using IBM SPSS Statistics to ensure systematic and reliable processing. Descriptive statistics were first employed to summarize respondent characteristics and provide an overview of the data distribution.

To assess the relative importance of each attribute, the Relative Importance Index (RII) method was applied. This method is commonly used in construction and architectural research to rank factors based on perceived significance (Alshahrani et al., 2023; Jarkas, 2013). In this study, RII is used to identify priority attributes rather than to examine causal relationships.

The RII values were calculated using the following formula:

$$RII(\%) = \frac{\sum w}{A \times N} \qquad (1)$$

Where w represents the weighting assigned to each item, A is the highest possible score (5), and N is the total number of respondents.

Table 8. Classification of RII Value

RII Value Range	**Level of Importance**
0,8 ≤ RII ≤ 1	High (H)
0,6 ≤ RII ≤ 0,8	High-Medium (H-M)
0,4 ≤ RII ≤ 0,6	Medium (M)
0,2 ≤ RII ≤ 0,4	Medium-Low (M-L)
0 ≤ RII ≤ 0,2	Low (L)

(Source: Tholibon et al. (2021)

This approach provides a structured basis for identifying the most critical attributes from the practitioners' perspective.

4.0 RESULTS AND DISCUSSIONS

4.1 Respondent Characteristics

This section summarizes the demographic and professional profiles of the respondents to provide context for interpreting the findings. The distribution of respondents is presented in Table 8.

Table 9. Respondent Characteristics

Category	Classification	Frequency	Percentage (%)
Gender	Male	34	61.8
	Female	21	38.1
Age	25-34	25	45.5
	35-44	18	32.7
	45-54	10	18.2
	>54	2	3.6
Educational Background	Bachelor's Degree	49	89.09
	Master's Degree	5	9.09
	Doctoral Degree	1	1.82
Position	Architect	49	89.09
	Lecturer in Architecture	6	10.31
Work Experience	< 5 years	17	31.5
	5-9 years	15	27.8
	10-19 years	15	27.8
	≥20 years	8	12.9
Project Type	Housing/Settlement	19	34.5
	Office	15	27.3
	Interior	7	12.7
	Urban Planning	6	10.9
	Landscape	6	10.9
	Commercial	2	4.5
Project per Year	1-2	17	30.9
	3-5	22	40.0
	6-10	12	21.8
	>10	4	7.3

(Source: Authors, 2026)

Table 8 presents the demographic and professional profiles of the respondents. The sample is predominantly composed of practicing architects (89.09%), with a smaller proportion combining professional practice and academic roles (10.91%). Most respondents hold a bachelor's degree (89.09%), indicating a professionally trained sample.

In terms of age and experience, the respondents are largely concentrated in the early to mid-career stages, with 45.5% aged 25–34 and 32.7% aged 35–44. This distribution is consistent with their professional experience, where a substantial proportion has less than 10 years of practice, alongside a smaller group of more experienced practitioners.

Regarding project involvement, housing and settlement projects (34.5%) and office developments (27.3%) represent the primary areas of practice. Most respondents handle 3-5 projects annually (40.0%), suggesting moderate project engagement.

Overall, the sample reflects a range of professional backgrounds in terms of age, experience, and project exposure, providing a suitable basis for examining architects' performance attributes and professional needs.

4.2 Architect Performance Attributes (APA)

The relative importance of architect performance attributes (APA) was assessed using the Relative Importance Index (RII). As shown in Table 9, most attributes fall within the high-importance range, indicating strong agreement among respondents.

Table 10. Mean, Relative Importance Index (RII), and Ranking of APA

Attributes	Code	Mean	RII	Rank	Level
Design and Client-Oriented	APA 1	4.73	0.94	2	H
	APA 2	4.76	0.95	1	H
	APA 3	4.64	0.92	4	H
	APA 4	4.45	0.89	9	H
	APA 5	4.29	0.85	16	H
	APA 6	4.55	0.90	5	H
	APA 7	4.36	0.87	15	H
	APA 8	4.00	0.84	17	H
Technical and Construction	APA 9	4.40	0.88	12	H
	APA 10	4.09	0.81	23	H
	APA 11	3.93	0.78	30	H-M
	APA 12	3.96	0.79	29	H-M
	APA 13	3.91	0.78	32	H-M
	APA 14	4.20	0.84	19	H
	APA 15	3.76	0.75	36	H-M
	APA 16	3.80	0.76	35	H-M
	APA 17	3.82	0.76	34	H-M
	APA 18	4.24	0.94	3	H
	APA 19	4.15	0.80	27	H
	APA 20	4.18	0.82	22	H
Communication	APA 21	4.40	0.83	20	H
	APA 22	4.56	0.88	11	H
	APA 23	4.51	0.91	6	H
	APA 24	4.33	0.90	8	H
	APA 25	4.47	0.86	14	H
	APA 26	4.38	0.89	10	H
	APA 27	4.22	0.87	13	H
	APA 28	4.18	0.84	18	H
Coordination and Management	APA 29	4.05	0.83	20	H
	APA 30	4.09	0.81	25	H
	APA 31	3.84	0.81	23	H
	APA 32	4.36	0.76	33	H-M
	APA 33	4.04	0.87	16	H
	APA 34	3.93	0.80	26	H
	APA 35	4.00	0.78	30	H-M
	APA 36	4.05	0.80	27	H
	APA 37	4.05	0.80	27	H

(Source: Authors, 2026)

The highest-ranked attributes are mainly related to design and client-oriented competencies, particularly understanding client objectives (APA 1), considering user needs (APA 2), and knowledge of materials and components (APA 18). This indicates that architects prioritize aligning design outcomes with user expectations, supported by technical knowledge. Communication competencies also rank consistently high, reflecting the need for clear interaction and collaboration in multi-stakeholder project environments.

In contrast, attributes related to technical coordination and management tend to rank lower. These include simplification of design (APA 15; RII = 0.75), dimensional coordination (APA 16; RII = 0.76), standardization (APA 17; RII = 0.76), as well as coordination tasks such as project strategy contribution (APA 32; RII = 0.76) and project review meetings (APA 35; RII = 0.78). While still important, these are perceived as supporting rather than core competencies.

This pattern likely reflects the distribution of responsibilities in practice, where detailed technical and coordination tasks are often shared with engineers and other specialists. As a result, architects focus more on design development and client engagement. The respondent profile, dominated by practicing architects, further supports this interpretation.

Previous studies provide a relevant comparison. Emmitt & Gorse (2006) emphasize communication as central to design coordination, while Winch (2011) positions coordination within broader project management roles. The present findings align with these perspectives but suggest that, in this context, coordination is recognized as necessary without being seen as a primary performance driver.

Context also plays a role. In more regulated environments, architects are more directly involved in coordination and contract administration, increasing the importance of these tasks. In contrast, in more flexible settings such as Indonesia, responsibilities are distributed across actors, leading to greater emphasis on design and communication.

Overall, architectural performance is primarily driven by design capability, communication, and technical knowledge. At the same time, coordination and administrative tasks serve as supporting elements within the project system.

4.3 Architect Professional Needs (APN)

The relative importance of APN was evaluated using the Relative Importance Index (RII). As shown in Table 10, most items fall within the high-importance range, indicating that workplace conditions are considered essential in supporting architectural performance.

Table 11. Mean, Relative Importance Index (RII), and Ranking of APN

Attributes	Code	Mean	RII	Rank	Level
Autonomy and Work Design	APN 1	4.04	0.95	2	H
	APN 2	4.05	0.85	12	H
	APN 3	4.05	0.86	11	H
	APN 4	4.05	0.79	23	H-M
	APN 5	3.05	0.77	26	H-M
	APN 6	4.49	0.80	21	H
Work Environment and Organizational Support	APN 7	4.15	0.91	6	H
	APN 8	4.16	0.73	31	H-M
	APN 9	4.31	0.81	19	H
	APN 10	4.36	0.91	5	H
	APN 11	4.11	0.74	30	H-M
	APN 12	3.76	0.82	18	H
	APN 13	4.25	0.87	8	H
	APN 14	4.09	0.82	17	H
Communication and Team Dynamics	APN 15	4.35	0.97	1	H
	APN 16	4.49	0.90	7	H
	APN 17	4.49	0.83	15	H
	APN 18	4.71	0.80	20	H

Attributes	Code	Mean	RII	Rank	Level
	APN 19	4.24	0.66	35	H-M
	APN 20	4.09	0.65	36	H-M
Project Conditions and Work Pressure	APN 21	3.11	0.67	34	H-M
	APN 22	4.22	0.94	4	H
	APN 23	3.31	0.95	3	H
	APN 24	4.25	0.79	24	H-M
	APN 25	4.29	0.86	10	H
	APN 26	4.20	0.74	29	H-M
	APN 27	3.56	0.69	33	H-M
Rewards and Job Security	APN 28	4.20	0.82	16	H
	APN 29	3.93	0.87	9	H
	APN 30	4.02	0.73	32	H-M
	APN 31	4.07	0.75	28	H-M
	APN 32	3.98	0.78	25	H-M
	APN 33	4.05	0.77	26	H-M
	APN 34	4.11	0.80	22	H
	APN 35	3.87	0.84	14	H
	APN 36	3.58	0.85	13	H

(Source: Authors, 2026)

The highest-ranked needs are primarily related to communication and organizational support. Open communication between supervisors and staff (APN 12), harmonious working relationships (APN 21), and support for professional development (APN 10) consistently appear among the top priorities. This suggests that architects place strong value on environments that facilitate interaction, shared understanding, and continuous learning. Needs related to autonomy also rank highly, particularly autonomy in task execution (APN 1) and participation in decision-making (APN 3), indicating a preference for working conditions that allow professional judgment and active involvement in project processes.

In contrast, several lower-ranked items are associated with project pressure and external rewards. These include minimal work disruptions (APN 20), frequent design changes (APN 26), and factors related to financial incentives and job security (APN 30–APN 32). While these aspects remain relevant, they appear to have a less direct influence on routine professional activities. One possible explanation is that architects tend to prioritize conditions that shape how work is carried out in practice, such as communication and autonomy, rather than external or longer-term considerations.

This pattern may also reflect the professional profile of the respondents, who are predominantly practicing architects. Compared to managerial roles, architects are more directly engaged in design processes and team interaction, which may explain the stronger emphasis on communication and work environment over financial or organizational incentives. In this sense, the findings reflect not only general workplace preferences but also role-specific priorities within architectural practice.

From an international perspective, similar tendencies have been reported, although with some variation. Senen & Edisa (2020) highlight the role of autonomy and feedback in supporting work effectiveness, while Shammout (2022) emphasizes the importance of communication and organizational support in construction teams. However, studies in more structured professional environments tend to place greater emphasis on job security and formal incentives. The relatively lower ranking of these factors in this study suggests that, in this context, intrinsic and relational aspects of work may be more influential than formal organizational rewards.

Contextual conditions may explain these differences. In settings where project roles are more flexible and organizational structures less rigid, such as in Indonesia, professional performance is often shaped by immediate working relationships and project dynamics. In contrast, in more regulated environments, institutional factors such as contracts, compensation systems, and job stability tend to play a more prominent role.

Overall, the findings indicate that architectural performance is shaped not only by individual competencies but also by the conditions that enable their application. Professional needs, particularly those related to communication, autonomy, and organizational support, function as key enabling factors within architectural practice.

5.0 DISCUSSIONS

This study examines architectural practice by considering performance attributes (APA) alongside professional needs (APN), providing a more grounded view of how architects operate in real project environments. Rather than functioning independently, these two dimensions appear closely intertwined, linking professional capabilities with the conditions that shape their application.

The findings indicate that architectural performance is largely driven by design capability, communication, and technical understanding. In practice, these are not experienced as separate competencies but as interconnected aspects that support interaction with clients, users, and other stakeholders. This reflects the changing nature of architectural work, in which design expertise is increasingly embedded in collaborative processes (Salama, 2021). Related findings by Mba et al. (2025) further show that a strong understanding of client needs allows architects to respond more effectively to design changes, reinforcing the importance of client-oriented competencies observed in this study.

In contrast, competencies associated with detailed technical coordination and formal management processes tend to be less emphasized. This does not suggest that such tasks are unimportant, but rather that they are often positioned as supporting roles within a broader project system. As noted byHasan et al. (024), coordination responsibilities are typically shared among multiple actors, which may reduce the extent to which architects perceive these tasks as central to their role. As a result, architects tend to focus more on design development and stakeholder engagement.

A similar pattern can be observed in the analysis of professional needs. Conditions such as communication, autonomy, and organizational support are perceived as particularly influential, as they directly affect how work is carried out in practice. In contrast, factors related to external rewards or broader organizational constraints appear less immediate in their influence. Team-related aspects, such as team commitment, are also rated as moderately important despite their recognized role in project success. This may reflect relatively stable working environments among respondents, where collaboration challenges are less pronounced. Lee et al. (2018) show that team commitment becomes more critical in situations involving conflict or coordination difficulties, suggesting that its perceived importance depends on project conditions. Similarly, Bukth & Fatima (2024) emphasize that intrinsic and relational factors often play a more significant role in shaping professional effectiveness than purely extrinsic incentives.

Taken together, these findings suggest that architectural performance is best understood as a relationship between what architects can do and the conditions that shape how they work. Competencies provide the capacity for action, while professional needs influence how effectively that capacity is realized in practice.

This relationship can be interpreted through several theoretical perspectives. The importance of autonomy and communication reflects key ideas from the Job Characteristics Model. At the same time, the role of technical knowledge aligns with the Resource-Based View. At the same time, the emphasis on client and user considerations aligns with Stakeholder Theory, underscoring the need to respond to diverse expectations in project delivery.

The professional environment also shapes how these patterns appear in practice. In settings where responsibilities are shared among multiple actors, architects tend to focus more on design development and stakeholder interaction than on detailed coordination or administrative tasks. This distribution of roles helps explain why certain competencies and professional needs are prioritized differently across professional settings.

Although sustainability is not directly examined in this study, several identified competencies, particularly those related to user-oriented design and communication, point to more integrated, context-responsive approaches. However, these connections remain indirect and warrant further investigation.

6.0 CONCLUSIONS

This study examines architectural practice by analyzing performance attributes (APA) alongside professional needs (APN) within the context of Medan, Indonesia. The findings indicate that architectural work is shaped not only by professional capabilities but also by the conditions that influence how those capabilities are applied.

Key competencies, particularly those related to understanding client objectives, responding to user needs, and applying technical knowledge, remain central to practice. At the same time, their effectiveness depends on supportive working conditions, including clear communication, professional autonomy, and manageable workloads.

The main contribution of this study lies in framing architectural performance as a relationship between capability and context. By examining these dimensions together, the study offers a more grounded understanding of architectural work, especially in settings where roles and responsibilities are distributed across multiple actors.

From a practical perspective, improving performance requires attention not only to skill development, but also to the quality of the work environment. Strengthening communication practices, supporting autonomy, and managing workload are likely to improve architects' performance in practice. For education and professional institutions, this suggests the importance of integrating technical, interpersonal, and organizational aspects within training and professional development.

This study is limited by its focus on a specific regional context and a relatively small, experience-based sample. While this allows for deeper insight into practitioners' perspectives, the findings may not be directly transferable to other contexts with different institutional and professional conditions.

Future research could extend this work by examining similar relationships across different settings. Comparative studies, in particular, would help clarify how institutional, cultural, and market factors shape architectural practice in different contexts.

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