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PGAN: AN INTEGRATED ECOSYSTEM MODEL FOR RESEARCH, ADVISORY, MENTORING, AND TALENT NETWORKING IN GLOBAL CONSTRUCTION KNOWLEDGE TRANSFER

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ABSTRACT
Background: The global construction industry continues to face fragmented pathways for knowledge transfer, with research, advisory services, executive mentoring, professional training, talent networking, and cross-border collaboration typically delivered by separate, uncoordinated providers. This fragmentation limits the diffusion of applied knowledge from experienced practitioners to emerging professionals and constrains the international mobility of construction expertise. Objective: This paper proposes and evaluates a conceptual model, the Papple Global Advisory Network (PGAN), that integrates six functions, applied research and foresight, advisory services, executive mentoring, professional training, talent networking, and international collaboration, into a single, governed knowledge-transfer ecosystem. Methodology: The study uses a design-science research approach, synthesising peer-reviewed literature on construction knowledge transfer, open-talent platforms, and executive coaching with practitioner-informed design drawn from an operating multi-entity advisory network spanning the United Arab Emirates, United States, United Kingdom, and Canada. Findings: The resulting model organises the six functions around a shared governance core, an open-talent advisor pipeline, and a continuous feedback loop that routes field-level knowledge back into research and curriculum design. Comparative analysis against single-function platforms in the literature indicates the integrated model addresses coordination gaps that isolated mentoring, training, or talent-matching platforms do not resolve individually. Conclusion: The PGAN model offers construction organisations and advisory networks a replicable architecture for cross-border knowledge transfer; the paper proposes a performance-evaluation framework and outlines an empirical validation agenda for future research.

Keywords:
knowledge transfer; construction industry; advisory ecosystem; executive mentoring; open talent network; international collaboration

INTRODUCTION

Construction remains one of the least digitally mature and most knowledge-fragmented sectors of the global economy. Knowledge in construction organisations is disproportionately tacit: it resides in the judgement of experienced site managers, estimators, and directors rather than in codified systems, and it is transferred primarily through direct supervision, apprenticeship, and informal mentoring (Wenger, 1998; Nonaka & Takeuchi, 1995). When experienced professionals retire, change employer, or relocate across borders, the organisation frequently loses the tacit knowledge that underpinned project performance, a problem intensified in an industry facing a documented ageing workforce and a widely reported skills shortage (Autodesk, 2024).

A parallel literature has developed around each of the individual mechanisms an organisation might use to counter this loss. Studies of knowledge transfer within international construction projects emphasise open communication, diverse team structures, and structured mentoring as critical enablers of project collaboration and reduced knowledge hoarding (as cited in recent construction-management research). Research on intergenerational and reverse knowledge transfer shows that digital-era knowledge increasingly flows from younger to older workers, moderated by age-inclusive human-resource practice, and that this reverse-mentoring dynamic is itself an underexplored channel for organisational learning in construction firms (Luo et al., 2025). Separately, mentorship-

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focused studies argue that the persistent shortage of skilled construction artisans cannot be resolved without deliberate mentoring investment aimed at younger and transitioning workers (Emerald Publishing, 2024).

A second, largely separate stream of literature addresses the rise of open-talent and skills-based platforms. Winsor and Paik's account of the open-talent economy documents an estimated global network of digital talent platforms connecting hundreds of millions of independent professionals to organisations on a project basis (McKendrick, 2024). Talent-marketplace research reports measurable returns from structured internal and external talent matching, including reductions in recruitment and contractor-dependency costs (JobsPikr, 2025), while broader gig-economy research documents the growing role of fractional executives, advisors, and consultants operating outside conventional employment structures (Solvecube, 2024). A third stream, on executive coaching and mentoring effectiveness, offers robust meta-analytic evidence that structured coaching produces measurable behavioural and attitudinal change in leaders, particularly when delivered consistently over time (de Haan & Nilsson, 2023; Bozer & Jones, 2018; Wang et al., 2021).

These three literatures, construction knowledge transfer, open-talent platforms, and executive coaching/mentoring, rarely intersect. Knowledge-transfer studies in construction focus on within-firm or within-project mechanisms and seldom address how an external, cross-border advisory network might be structured to support them. Talent-platform research is largely sector-agnostic and does not address the specific governance, credentialing, and technical-competency requirements of construction advisory work. Coaching and mentoring research is typically organisation-internal rather than network-based. No published model, to the authors' knowledge, integrates applied research, advisory delivery, executive mentoring, professional training, talent networking, and international collaboration into a single governed ecosystem purpose-built for the construction sector.

This paper addresses that gap by proposing the PGAN (Papple Global Advisory Network) model. The specific objectives of the study are: (1) to synthesise the construction knowledge-transfer, open-talent, and executive-coaching literatures into a unified conceptual architecture; (2) to describe the structural components, governance mechanisms, and process flow of an integrated advisory-and-talent-network ecosystem; (3) to illustrate the model's operation using a multi-entity advisory network currently operating across the UAE, United States, United Kingdom, and Canada; and (4) to propose a performance-evaluation framework that can guide future empirical validation of the model.

The significance of the study is twofold. Academically, it contributes a design-science artefact, an integrated ecosystem model, that bridges three literatures that have developed largely in isolation from one another, and it offers testable propositions for future empirical work. Practically, it offers construction firms, independent advisors, and policy-oriented industry bodies a replicable architecture for organising research, advisory, mentoring, training, and talent mobility functions that are frequently procured separately and inefficiently, particularly for small and medium-sized construction enterprises operating across multiple regulatory jurisdictions (López et al., 2024).

2. NOMENCLATURE

Abbreviation	Definition
PGAN	Papple Global (Holdings) Advisory Network
GCLM	Global Construction Leadership Model
DSR	Design Science Research (methodology)
BIM	Building Information Modelling
KM	Knowledge Management
SME	Small and Medium-sized Enterprise
ROI	Return on Investment
KPI	Key Performance Indicator
PGAN-Core	The shared governance and knowledge-integration layer of the PGAN model

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3. MATERIALS AND METHODS

3.1 Research Design

This study adopts a design-science research (DSR) approach, appropriate for developing and evaluating a purposeful artefact intended to solve an identified organisational problem (Peffers et al., 2007). The 'artefact' produced is the PGAN integrated ecosystem model itself, a conceptual and organisational framework rather than a physical or software system. The design process followed the standard DSR cycle: problem identification (fragmentation of construction knowledge-transfer mechanisms, Section 1), definition of objectives for a solution, design and development of the model, demonstration through an operating case illustration, and specification of an evaluation framework for future empirical testing.

3.2 Study Context

The study context is Papple Holdings Advisory Network (PGAN), an emerging multi-entity advisory network founded and operated by the corresponding author across four jurisdictions: Madeen Building Contracting LLC OPC and Pappleworld FZE LLC in the United Arab Emirates, Papple Holdings Advisory Group LLC in the United States, Papple Global Limited in the United Kingdom, and Papple Inc. in Canada. The network is organised around four advisory verticals, real estate advisory, infrastructure and construction advisory, business consulting, and international expansion advisory, and engages advisors under an open-talent structure in which independent professionals join the network and receive a negotiated share of advisory fees rather than fixed employment. This operating structure provides the practitioner-informed basis for the model's design; it is used here as an illustrative case rather than as a source of statistically generalisable empirical data.

3.3 Data Sources and Collection

Two categories of input informed model development. First, a structured review of peer-reviewed and industry literature was conducted across three domains: (a) knowledge transfer and mentoring in construction organisations, (b) open-talent and skills-based talent-marketplace platforms, and (c) executive coaching and mentoring effectiveness. Sources were retrieved from academic databases and publisher platforms (Emerald, ScienceDirect, Wiley, Frontiers, Academy of Management) and industry reports (Deloitte/Autodesk, JobsPikr), prioritising publications from the past ten years. Second, descriptive documentation of the PGAN network's existing operating structure, its advisory verticals, its open-talent fee-split model, and its cross-jurisdictional entity structure, was reviewed to ground the model in an implementable organisational form.

3.4 Model Development and Analysis

The literature was thematically synthesised to identify recurring structural components across the three domains (governance/quality assurance, matching mechanisms, knowledge codification, feedback loops, and cross-border coordination). These components were then mapped onto six functional pillars, applied research and foresight, advisory services, executive mentoring, professional training, talent networking, and international collaboration, and organised around a shared governance core (PGAN-Core) responsible for credentialing, quality assurance, and knowledge codification across all six pillars. The resulting structure was represented as a conceptual ecosystem diagram (Figure 1) and a process-flow model describing how an individual advisor or knowledge item moves through the network (Figure 2). No statistical or experimental data were generated in this stage; the analysis is qualitative and framework-based, consistent with DSR's design-and-development activity (Peffers et al., 2007).

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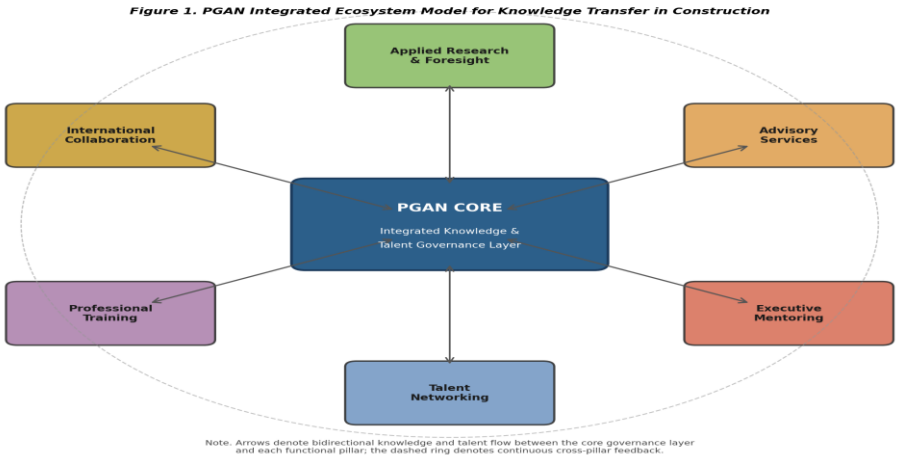

Figure 1. PGAN Integrated Ecosystem Model for Knowledge Transfer in Construction

Table 1. Mapping of PGAN Functional Pillars to Literature-Derived Success Factors

Pillar	Literature-Derived Success Factor	Representative Source(s)
Applied research & foresight	Systematic literature synthesis feeding practice; codification of tacit knowledge	Nonaka & Takeuchi (1995); López et al. (2024)
Advisory services	Structured, credentialed access to specialised expertise on a project basis	Solvecube (2024); Outsource Accelerator (2024)
Executive mentoring	Sustained, relational coaching produces measurable behavioural change	de Haan & Nilsson (2023); Bozer & Jones (2018)
Talent networking	Skills-based matching reduces recruitment cost and time-to-fill	JobsPikr (2025); 365Talents (2024)
Professional training	Mentoring-embedded training addresses artisan and mid-career skill gaps	Emerald Publishing (2024, mentorship study)
International collaboration	Age-inclusive, cross-jurisdictional practice supports digital-era knowledge flow	Luo et al. (2025)

RESULTS AND DISCUSSION

4.1 The PGAN Ecosystem Model

Figure 1 presents the six functional pillars organised around PGAN-Core, the shared governance and knowledge-integration layer. Unlike single-function platforms identified in the literature, whether pure talent marketplaces (JobsPikr, 2025), pure coaching platforms (de Haan & Nilsson, 2023), or pure training providers, the PGAN model treats each pillar as an input to, and output of, every other pillar. An advisor engaged through the talent-networking pillar, for example, may simultaneously deliver advisory services, mentor a junior professional, and contribute field observations back into applied research, a multiplicity of roles that isolated platforms in the reviewed literature do not accommodate within a single governance structure.

This design directly addresses the coordination gap identified in Section 1. Construction-specific knowledge-transfer research has repeatedly found that open communication, diverse team structures, and mentoring initiatives are critical to reducing knowledge hoarding on international projects, but that literature stops short of specifying how such mechanisms could be organised across firms and borders rather than within a single project team. PGAN-Core is designed to fill precisely that coordination role: it applies consistent credentialing and quality-assurance criteria across all six pillars, regardless of which legal entity (Madeen, Pappleworld, Papple Holdings Advisory Group, Papple Global, or Papple Inc.) is contracting with the client.

4.2 Open-Talent Process Flow

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Figure 2 illustrates how an individual advisor moves through the network: intake and credential verification, matching to a client or project need, engagement delivery (which may take the form of advisory work, executive mentoring, or training delivery), knowledge capture and codification, and feedback into research and curriculum design. This process embeds the open-talent model documented in the gig-economy and talent-marketplace literature, in which independent professionals are matched to discrete engagements rather than employed on a fixed-term basis (Solvecube, 2024; Outsource Accelerator, 2024), while adding a codification and feedback step that is largely absent from generic talent-marketplace descriptions but is central to organisational knowledge-transfer theory (Wenger, 1998; Argote & Ingram, 2000).

In the PGAN network's current operating practice, advisors joining under this open-talent structure receive a negotiated 65-85% share of advisory fees generated through the platform, a compensation range broadly consistent with fractional-executive and advisory arrangements documented elsewhere in the gig-economy literature (Solvecube, 2024). This figure is reported here as descriptive operating information about the illustrative case rather than as a validated performance outcome; it has not been benchmarked against a control condition and should not be read as evidence of the model's effectiveness.

4.3 Addressing the Construction Skills and Digital-Adoption Gap

A second contribution of the integrated model is its direct response to the digital-skills gap repeatedly documented in construction-industry surveys. Deloitte's 2024 digital-adoption survey found that a substantial share of construction businesses experience measurable skills gaps in artificial intelligence, Building Information Modelling, and construction-management software, and that firms adopting new digital tools report measurable revenue and profitability gains (Autodesk, 2024). Because the PGAN model routes training and mentoring through the same governed pipeline as advisory delivery, digital-competency content (for example, BIM literacy or AI-assisted estimating) can be embedded directly into mentoring and training engagements rather than delivered as a separate, disconnected initiative, an integration that single-purpose training providers are structurally unable to offer.

4.4 Comparison with Existing Models

Table 2 compares the PGAN model against three categories of existing provision identified in the literature: pure talent marketplaces, pure executive-coaching/mentoring programmes, and traditional professional-training providers. The comparison is qualitative and derived from the characteristics reported in the reviewed sources rather than from a controlled empirical test.

Table 2. Qualitative Comparison of PGAN Against Single-Function Provision Models

Feature	Talent Marketplace	Coaching / Mentoring Programme	Traditional Training Provider	PGAN Model
Cross-border entity structure	Rare	Rare	Rare	**Core design feature**
Shared credentialing across functions	No	No	No	**Yes (PGAN-Core)**
Feedback loop into research/curriculum	Limited	Limited	Limited	**Explicit (Figure 2)**
Construction-sector specificity	Low	Low	Moderate	**High**
Revenue model for advisors	Per-gig fee	Fixed programme fee	Fixed programme fee	**Fee-split (open talent)**

The comparison suggests the principal contribution of the PGAN model is structural rather than functional: none of its six individual pillars is novel in isolation, each has an established literature and established platforms, but the shared governance core and explicit feedback loop connecting research, advisory delivery, mentoring, and training are not, to the authors' knowledge, jointly implemented elsewhere in construction-sector advisory provision.

4.5 Governance and Quality-Assurance Considerations

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Because the model relies on independent, geographically dispersed advisors rather than salaried employees, governance and quality assurance are structurally important rather than incidental. The talent-marketplace literature identifies data security, labour-law compliance, and credential verification as persistent challenges of open-talent models (Solvecube, 2024), and these concerns apply with particular force in construction, where advisory error carries safety and regulatory consequences. PGAN-Core's credential-verification stage (Figure 2) is designed to address this directly, but the present study does not empirically test the adequacy of that verification process; this is identified as a priority for future validation in Section 6.

5. EXPERIMENTAL SETUP (PILOT IMPLEMENTATION CONTEXT)

As a conceptual, design-science contribution, this study does not involve a laboratory experiment. The term is used here to describe the pilot organisational context in which the model's components are currently being implemented and iterated. The PGAN network's four advisory verticals, real estate advisory, infrastructure and construction advisory, business consulting, and international expansion advisory, function as the pilot deployment environment. Advisors are onboarded through a documented intake and verification process, engagements are tracked by vertical and jurisdiction, and mentoring relationships are paired manually by network administrators pending the development of an automated matching instrument. No controlled comparison group, randomisation, or quantitative outcome data collection has yet been implemented; the pilot is presently descriptive and operational rather than experimental. A staged empirical evaluation, outlined in Section 6, is proposed as the next phase of this research programme.

6. PERFORMANCE EVALUATION FRAMEWORK

Because no controlled empirical trial of the PGAN model has yet been conducted, this section proposes a performance-evaluation framework, rather than reporting results, to guide future validation. The proposed indicators are derived from the ROI and outcome categories reported in the reviewed talent-marketplace and coaching literature (JobsPikr, 2025; de Haan & Nilsson, 2023) and are presented as candidate metrics with illustrative benchmark ranges drawn from that literature; they are not outcomes of the present study and should not be read as PGAN's measured performance.

Table 3. Proposed Key Performance Indicators for Future Empirical Evaluation of the PGAN Model

KPI Category	Proposed Metric	Illustrative External Benchmark (Literature)
Advisor utilisation	% of onboarded advisors with ≥1 completed engagement per quarter	Not yet benchmarked; to be established via pilot data
Recruitment cost avoidance	Reduction in external agency/contractor fees attributable to network matching	25-35% agency-fee reduction reported for talent marketplaces generally (JobsPikr, 2025)
Mentoring behavioural impact	Pre/post change in mentee self-rated leadership behaviours	Coaching shows strongest effects on behavioural outcomes (de Haan & Nilsson, 2023)
Knowledge codification rate	Number of engagement learnings formally logged into the research/curriculum repository per quarter	No external benchmark identified; PGAN-specific baseline required
Cross-border engagement share	% of engagements involving an advisor and client in different countries	No external benchmark identified; PGAN-specific baseline required

Future empirical work should establish PGAN-specific baselines for each indicator before and after structural changes to the model, using a time-series or staged-rollout design across the network's advisory verticals, rather than relying on the illustrative external benchmarks shown in Table 3.

7. FUTURE WORK

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Three research priorities follow from this study. First, the model requires empirical validation: a staged rollout with pre/post measurement of the indicators proposed in Table 3 across at least two advisory verticals would test whether the integrated structure produces measurable gains over single-function provision. Second, the credential-verification and governance mechanisms embedded in PGAN-Core warrant dedicated study, particularly regarding how quality assurance for technical construction advice can be maintained across jurisdictions with differing licensure requirements. Third, future research should examine the model's applicability beyond the founding network, testing whether the six-pillar architecture transfers to other construction advisory networks or to adjacent sectors such as infrastructure and real estate development.

8. CONCLUSION

This paper has proposed the PGAN model, an integrated ecosystem that organises applied research, advisory services, executive mentoring, professional training, talent networking, and international collaboration around a shared governance core, as a response to the coordination gap between three literatures, construction knowledge transfer, open-talent platforms, and executive coaching, that have developed largely in isolation from one another. Using an operating multi-jurisdictional advisory network as an illustrative case, the study described the model's structural components (Figure 1), its advisor-level process flow (Figure 2), and a qualitative comparison against existing single-function provision (Table 2). The principal contribution is architectural: none of the six pillars is individually novel, but their integration under shared credentialing and an explicit research-practice feedback loop addresses a coordination problem the existing literature has not resolved.

The study's main limitation is that it presents a conceptual model illustrated by a single, self-operated case rather than an empirically validated framework; the performance data reported (such as the 65-85% advisor fee-split range) are descriptive of current operating practice rather than measured outcomes, and the proposed KPI framework (Table 3) has not yet been tested against a comparison condition. The model's generalisability beyond the founding network is therefore untested. Future research, outlined in Section 7, should prioritise staged empirical validation across multiple advisory networks and jurisdictions. Subject to that validation, the PGAN architecture offers construction organisations, independent advisors, and policy-oriented industry bodies a replicable design for consolidating research, advisory, mentoring, training, and talent-mobility functions that are presently procured separately and inefficiently across the global construction sector.

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CONFLICT OF INTEREST

The corresponding author is the founder and operator of the Papple Global Advisory Network (PGAN) and its affiliated entities (Madeen Building Contracting LLC OPC, Pappleworld FZE LLC, Papple Holdings Advisory Group LLC, Papple Global Limited, and Papple Inc.), which are used as the illustrative case in this study. This constitutes a potential conflict of interest; readers should interpret the case-based descriptive claims accordingly, and the authors have sought to distinguish descriptive operating information from validated empirical findings throughout the paper.

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DATA AVAILABILITY STATEMENT

This is a conceptual design-science study; no new quantitative dataset was generated or analysed. The descriptive operating information referenced regarding the PGAN network's structure is available from the corresponding author on reasonable request, subject to commercial confidentiality restrictions.

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