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Workforce Sustainability Risk in A High-Retention it Infrastructure Services Firm: a Knowledge Management and Succession Planning Perspective

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Keywords:
workforce sustainability; knowledge management; succession planning; strategic workforce planning; client relationship dependency.

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Abstract

High employee retention is generally regarded as an indicator of organizational health; however, in knowledge-intensive firms, it may conceal increasing workforce continuity risks. This study examined how high employee retention and limited workforce regeneration coexisted within the maintenance and services department of an Indonesian information technology (IT) infrastructure services firm, how this imbalance affected knowledge continuity, and what organizational measures could mitigate the associated risks. A qualitative single-case study design was employed, involving semi-structured interviews with 14 informants representing field engineers, IT specialists, and functional managers. The data were examined using framework-based thematic analysis. The findings identified four interrelated contributing conditions: structural recruitment constraints, an organizational culture emphasizing employee loyalty, reliance on internal mobility as a substitute for workforce regeneration, and the absence of a formal strategic workforce planning function. These conditions contributed to knowledge concentration, succession planning gaps, and operational vulnerability. The study also identified dependence on individual client relationships as an emerging risk factor, whereby client trust concentrated in specific employees constrained staffing decisions, complicated succession efforts through resistance to personnel replacements, and potentially transformed workforce continuity risks into revenue-related vulnerabilities. Although these risks were recognized across organizational levels, no dedicated function assumed clear accountability for managing them. The findings highlighted workforce governance as a critical mechanism for addressing these challenges. Accordingly, the study proposed a three-horizon workforce sustainability strategy informed by the Asian Productivity Organization (APO) Knowledge Management Framework, supported by a permanent strategic workforce planning function and clearly defined workforce continuity indicators.

INTRODUCTION

Organizations operating in knowledge-intensive industries face workforce risks that differ from conventional financial and operational exposures. One critical risk involves the potential loss of specialized knowledge accumulated through years of professional experience when key employees leave the organization. Tacit knowledge, encompassing professional judgment, pattern recognition, and experiential understanding developed through practice, is particularly difficult to articulate, codify, and reconstruct once experienced personnel depart

(Polanyi, 1966). The extent to which employee departures disrupt organizational operations depends not only on the amount of knowledge accumulated but also on whether effective mechanisms for knowledge transfer, preservation, and organizational learning have been established and sustained over time (Nonaka & Takeuchi, 1995).

Workforce sustainability refers to an organization's long-term capacity to maintain the human capabilities necessary to achieve its strategic objectives (Boudreau & Ramstad, 2005). This perspective emphasizes the continuity and renewal of organizational capabilities rather than performance at a particular point in time. Consequently, an aging workforce with limited generational renewal may maintain satisfactory short-term performance while experiencing a gradual deterioration in its future capability base. Although employee retention is frequently interpreted as an indicator of workforce stability, organizational commitment research suggests that retention alone does not necessarily reflect workforce sustainability. Meyer and Allen (1991) distinguished between affective commitment, in which employees remain because of emotional attachment, and continuance commitment, in which employees remain because of the perceived costs of leaving. Employees whose retention is primarily associated with continuance commitment may demonstrate lower levels of discretionary effort (Meyer et al., 2002). This distinction is particularly relevant to knowledge-intensive organizations, where voluntary knowledge sharing, mentoring, and collaboration are essential for transferring specialized expertise across employee generations.

The knowledge management literature further explains why knowledge transfer may remain ineffective even when employees demonstrate a willingness to share their expertise. Szulanski (1996) conceptualized knowledge transfer difficulties as knowledge stickiness, arising from characteristics of the knowledge itself, the knowledge source, the recipient, and their organizational relationships. Fasbender and Gerpott (2022) demonstrated that age-related comparisons of current and anticipated organizational status could influence employees' willingness to engage in knowledge sharing. Similarly, long-tenured employees often develop established communities of practice that facilitate knowledge preservation among existing members but may create barriers to participation by newcomers (Wenger, 1998). In the absence of systematic knowledge transfer mechanisms, organizations may experience the gradual erosion of critical expertise without recognizing the associated vulnerabilities through conventional performance indicators (Massingham, 2019). These findings suggest that knowledge continuity requires deliberate organizational arrangements rather than reliance on employee tenure or informal interpersonal interactions.

Another important dimension concerns organizational accountability for identifying and managing workforce sustainability risks. Strategic workforce planning involves assessing existing workforce capabilities, anticipating future human resource requirements, and developing strategies to address potential capability gaps (SHRM, 2021). Ulrich (1997) distinguished the administrative responsibilities of human resource management from its strategic contributions, emphasizing the importance of aligning workforce capabilities with organizational objectives. Ulrich et al. (2017) further highlighted the strategic role of human resource functions in supporting organizational adaptability and long-term capability development. Cappelli (2008) argued that reactive approaches to filling vacancies could contribute to inefficient talent management and insufficient investment in workforce development. Succession planning research similarly emphasized that preparing employees for complex technical and managerial responsibilities may require substantial development periods, particularly when specialized expertise cannot be acquired rapidly (Rothwell, 2010). Informal succession arrangements may therefore leave organizations without adequately prepared replacements when experienced personnel retire or depart (McFadden, 2022; Suparman & Naibaho, 2021). From an organizational demography perspective, workforce structures characterized by limited diversity in age and tenure may constrain knowledge

exchange and organizational adaptability (Pfeffer, 1983; Kunze et al., 2011), potentially weakening the dynamic capabilities required to respond to changing business environments (Teece et al., 1997).

Despite these contributions, existing research has frequently examined employee retention, knowledge transfer, succession planning, and strategic workforce planning as distinct organizational concerns. Their interdependencies, particularly in firms characterized by high employee retention and limited workforce regeneration, remain insufficiently integrated into workforce sustainability assessments. Two specific issues warrant further investigation. The first concerns a two-layer succession vulnerability, in which employees expected to replace retiring senior personnel may themselves possess concentrated institutional knowledge, face approaching retirement, or lack sufficient preparation to assume broader responsibilities. This condition creates overlapping succession risks that cannot be adequately addressed through conventional replacement planning. The second concerns the concentration of client relationships among individual employees. Although relational capital is generally recognized as a valuable organizational resource, dependence on specific personnel for maintaining client trust and service continuity may restrict workforce mobility, complicate succession arrangements, and expose organizations to operational and financial vulnerabilities. Examining these interconnected conditions provides an opportunity to extend knowledge management and succession planning perspectives toward a more comprehensive understanding of workforce sustainability risk.

This study investigated these issues at PT ABC, a pseudonym for an established Indonesian information technology (IT) infrastructure services firm providing maintenance and technical support for servers, storage systems, and related infrastructure across the banking, manufacturing, and insurance sectors. The company's maintenance and services department employed 87 personnel, comprising one country manager, four functional managers, 18 IT specialists, 35 field engineers, and 29 monitoring team members. Employee tenure ranged from 10 to 30 years, while most technical personnel were between 40 and 55 years old, with relatively few employees younger than 30. External recruitment was limited by multilevel authorization requirements, resulting in frequent reliance on internal reassignment to address staffing vacancies. Human resource responsibilities were primarily concentrated on payroll administration, regulatory compliance, and recruitment procedures, whereas functional managers independently determined staffing and employee development requirements without a formal strategic workforce planning mandate. A preliminary why-why analysis suggested that ineffective knowledge transfer, limited recognition of emerging succession risks, and fragmented workforce planning responsibilities were associated with an underlying governance gap. Specifically, the absence of an institutionalized strategic workforce planning function emerged as a potential contributor to workforce continuity vulnerabilities. Against this background, the study aimed to examine how high employee retention and limited workforce regeneration contributed to knowledge concentration and succession risks, identify the organizational and relational conditions underlying these vulnerabilities, and develop an integrated workforce sustainability strategy informed by knowledge management and succession planning principles.

METHOD

The study adopted an interpretivist research philosophy and an inductive approach within a qualitative single-case study design, employing a cross-sectional time horizon and semi-structured interviews for data collection (Saunders et al., 2007). This approach was considered appropriate for examining workforce sustainability risks at PT ABC, where knowledge concentration, succession readiness, and workforce regeneration were not systematically documented or measured. Consequently, the investigation relied on participants' experiences,

perceptions, and organizational knowledge to understand these conditions (Creswell & Poth, 2018). The case was selected for its potential to provide critical insights into the coexistence of multiple workforce sustainability risk factors within a single organizational setting (Yin, 2014).

The study focused on two of the department's four product lines: enterprise servers and enterprise storage. These product lines relied on proprietary legacy platforms characterized by restricted technical documentation, limited formal training opportunities, and a relatively small pool of experienced practitioners. Technical competencies were therefore developed primarily through extensive practical experience. The remaining product lines were excluded because they supported third-party technologies with more accessible training resources and a broader external talent pool. The Monitoring Team was also excluded because its responsibilities were predominantly standardized and procedure-based. As the Country Manager and human resources personnel were unavailable for interviews, functional managers provided the primary managerial perspective on workforce planning and governance.

The Workforce Sustainability Risk Framework (WSRF) was developed before data collection and served as the initial analytical framework. It comprised four proposed contributing conditions: structural recruitment constraints (T1), organizational loyalty culture (T2), reliance on internal mobility as a substitute for workforce regeneration (T3), and the absence of strategic workforce planning (T4). The first two conditions were conceptualized as enabling factors, while the latter two were considered mechanisms that sustained workforce vulnerabilities. The absence of strategic workforce planning was provisionally identified as the underlying governance issue. Four theoretical propositions (TP1–TP4) connected these conditions to three anticipated consequences: knowledge concentration (C1), succession planning gaps (C2), and operational fragility (C3). The proposed relationships were illustrated in Figure 2.

Participants were recruited through purposive sampling to ensure maximum variation in employee tenure, age, technical specialization, recruitment cohort, and career progression (Patton, 2015). The study involved 14 informants, comprising six field engineers, six IT specialists, and two functional managers representing the selected product lines. Data collection continued until successive interviews yielded no substantially new codes or insights relevant to the research themes, consistent with the principle of thematic saturation (Guest et al., 2006). Saturation was assessed across the principal analytical themes to determine the adequacy of the collected qualitative evidence.

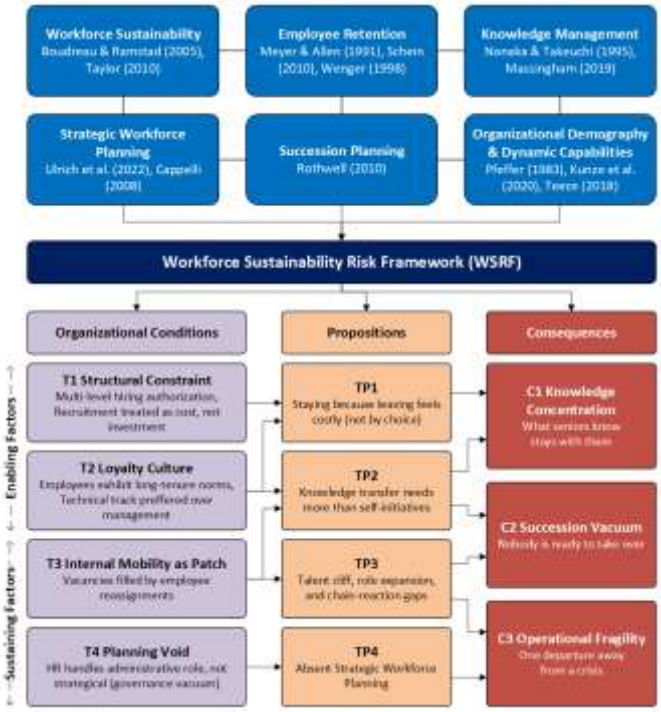

Figure 1. Workforce Sustainability Risk Framework (WSRF) diagram for PT ABC

The causal-condition themes stopped showing new variation by the sixth and seventh technical interviews, while themes on consequences and structural obstacles kept developing until the managerial interviews were complete. Table 1 shows the informant profile.

Table 1. Demographic profile of the informants

Code	Age	Position	Tenure (years)
FE-01	35	Field Engineer	11
FE-02	52	Field Engineer	28
FE-03	54	Field Engineer	29
FE-04	34	Field Engineer	9
FE-05	37	Field Engineer	13
FE-06	41	Field Engineer	16
ITS-01	33	IT Specialist	11
ITS-02	38	IT Specialist	12
ITS-03	54	IT Specialist (Advisory)	29
ITS-04	26	IT Specialist	5
ITS-05	41	IT Specialist	9
ITS-06	32	IT Specialist	10
FM-01	40	Functional Manager	18
FM-02	43	Functional Manager	18

Three semi-structured interview guides were developed, comprising 23 questions for field engineers, 21 for IT specialists, and 26 for functional managers. Two common probing questions were incorporated across all participant groups to identify informal knowledge-sharing networks and assess potential knowledge loss associated with employee departures. All interviews were conducted in Bahasa Indonesia, audio-recorded with participants' consent,

and transcribed verbatim. Information on participants' ages and employment tenure was obtained from interview responses and internal organizational records.

The interview transcripts were examined using framework-based thematic analysis, integrating the analytical approach of Ritchie and Spencer (1994) with the inductive coding principles of Braun and Clarke (2006). The analysis involved four stages. First, transcripts were subjected to open coding to identify emerging patterns without imposing predetermined theoretical categories. Second, the initial codes were mapped onto the four proposed contributing conditions (T1–T4) and three anticipated consequences (C1–C3), while emerging themes outside the initial framework were retained for further examination. Third, the coded data were organized into cross-participant matrices corresponding to the research questions to identify similarities, differences, and recurring patterns across participant groups. Finally, the identified themes were synthesized, supported by relevant interview quotations, and evaluated against the theoretical propositions. A structured codebook documented coding categories, analytical decisions, and revisions to ensure transparency and consistency throughout the analysis.

Research trustworthiness was established using the criteria proposed by Lincoln and Guba (1985). Credibility was strengthened through triangulation across the three participant groups and systematic consideration of contradictory evidence. Transferability was supported by detailed descriptions of the organizational context and participant characteristics. Dependability was enhanced through the maintenance of a codebook, analytical matrices, and research memos, while confirmability was supported by reflexive notes prepared after each interview. Member checking was not conducted because concerns regarding participants' awareness of their organizational knowledge dependencies could have complicated the validation of certain interpretations; this omission was acknowledged as a methodological limitation. The researcher's employment within one of the selected product lines and involvement in the informal knowledge-sharing network were explicitly recognized as potential sources of positional bias. To mitigate these risks, reflexive documentation was maintained to distinguish participants' accounts from the researcher's interpretations. Confidentiality was preserved through organizational anonymization, participant identification codes, and the use of the pseudonyms Platform A and Platform B for the proprietary technologies examined.

RESULTS AND DISCUSSION

Context of the Informants

Most of the workforce joined a predecessor entity, anonymized as PT XYZ, and moved into PT ABC when the business changed hands. One informant was hired directly by PT ABC in 1997 and one joined externally in 2020. Several findings on career prospects, pay, and hiring follow this cohort structure closely. The results below are organized by the causal conditions, the consequences, the emergent condition, the evaluation of the propositions, and the business solution.

Causal Conditions of the Retention and Regeneration Imbalance

The framework expected structural constraints (T1) to limit hiring. The data show something closer to contraction. No informant could name an external hire into the two lines since ITS-04 joined in September 2020. FM-02 said that during his time in the role he had never hired anyone new, and that new people stopped arriving after his first eight to ten years. Before a hiring request can be raised, a manager must show that existing staff cannot absorb the work, and FM-02 estimated that only about half of his backfill requests succeed. When hiring does happen, it favors candidates from the predecessor subsidiary because their background is already known. FM-01 stated the underlying rule directly, which is that headcount follows revenue. “Ketika kita nggak bisa growth seperti yang diharapkan, ya harus

ada yang dilepas" (when we cannot grow as expected, someone has to be let go). FE-06 reported that active recruitment ran from about 2012 to 2016 and reductions have continued since 2017. T1 therefore works as a mechanism that ties capability to current revenue and closes the entry point for a new generation, which is consistent with the reactive pattern Cappelli (2008) describes.

The loyalty culture (T2) is real, but it is a spectrum split by generation. Time flexibility was the strongest single reason for staying and was named at every level. FE-05 said he would not accept an outside offer where any part of the package became worse, even with a higher salary. Genuine affective commitment is also present. ITS-03 planned to stay four years and stayed twenty-nine because the firm kept offering new technology to learn. ITS-05 left for seven years, worked at three client organizations, and came back because he found PT ABC the most comfortable of five employers. At the other end, ITS-04, the youngest informant, described his stay in transactional terms and plans to leave after further study. ITS-06 offered a threshold, saying that people who do not leave within four to five years tend to stay for good. The culture that produced today's stability sits mostly in the cohort that will retire, so it cannot be assumed to reproduce itself (Schein, 2010).

Internal mobility as substitution (T3) is a rule rather than a habit. Reallocation to existing staff is the mandatory first step before any hiring request. FM-02 described the extra load as a chance for staff to grow, while the people receiving it described accumulated duties with no pay adjustment. Both managers confirmed that pay follows proven performance and not expanded scope. The absorbers already carry full loads, and during fieldwork two absorptions were under way, one due to illness and one due to study leave. The arrangement reaches the managers too, since FM-02 returned to field work when two engineers resigned close together. Both managers also questioned the self-reported utilization data used to judge staffing. FM-01 called it "nggak pure valid" (not entirely valid). The metrics that drive headcount decisions measure volume and do not register concentration, succession depth, or client dependency.

The planning void (T4) is the most strongly evidenced theme. All fourteen informants placed HR outside workforce capability. FM-01 explained that the department has only two divisions, sales and delivery, so no function is assigned to workforce capability. When asked whether any process looks at workforce needs three to five years ahead, FM-01 said he did not see one. Retirement dates are held in the HR system, but he had never looked them up. FM-02 added that an earlier attempt to assign a manager to coordinate capability work failed because that manager was overwhelmed by his main job. Figure 3 shows the pattern of delegated confidence found across the layers. Each level assumes the level above is handling the risk, and the chain ends where no function exists.

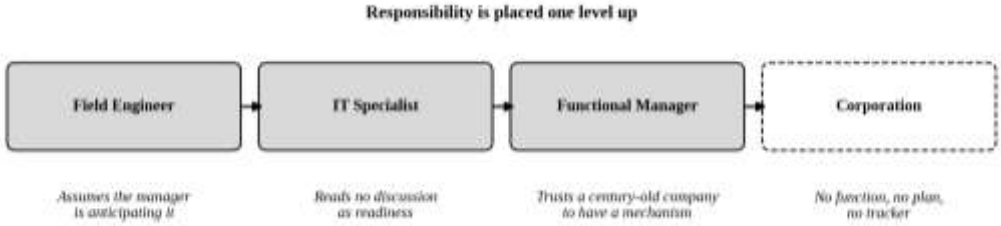

Figure 2. The delegated confidence chain across the workforce layers

FM-01 described the posture as "Manage by exception, maksudnya kalau kejadian, baru dipikirin" (things are only considered once they happen). FM-02 said that when someone leaves the organization is either afraid of someone leaving or just leave it to fate, with no readiness in place. The disconfirming evidence is substantial. Both managers act on the risk personally. FM-01 asks staff near retirement whom they have taught, and FM-02 runs structured mentoring with assigned pairs and a monitored timeline. Empowering others is also

one of the firm's formal manager values. FM-01 gave the qualification that matters, saying there has never been a tracker for it. The gap is not intent or awareness. It is the absence of a system that tracks the risk and acts on it, which matches the governance gap described by Ulrich et al. (2017). The void is also a regression, because documentation mandates, succession discussions, and a monitored learning platform existed under the predecessor entity and have lapsed. Table 2 summarizes how each condition was refined.

Table 2. Causal conditions before and after the empirical findings

Condition	Expectation before fieldwork	Refinement from the data
T1 Structural constraint	Hiring is slow and difficult	Headcount follows revenue, absorption comes before any hiring, and known internal candidates are preferred
T2 Loyalty culture	Loyalty sustains retention	Retention runs from affective attachment among seniors to calculation among the youngest
T3 Internal mobility	Reassignment hides the gap	Reallocation is a mandatory rule, pay does not follow it, and staffing metrics measure only volume
T4 Planning void	No function owns the problem	The void is a regression, and responsibility is delegated upward with no end point
T5 Client relationship dependency	Not in the framework	Client trust held by individuals locks staffing, defeats succession, and turns personnel risk into revenue risk

Consequences for Knowledge Continuity

Knowledge concentration (C1) is confirmed, but only in part of the knowledge system. Global product knowledge is well supported, with good documentation, a layered escalation path, and unlimited learning platforms. What has no owner is the local, tacit, and client-related knowledge that continuity depends on. There is no documentation mandate, and existing notes are personal and scattered. ITS-03 described the value of this knowledge directly. “Yang tidak tertulis itu memang lebih sedikit dari yang tertulis. Tapi di PT ABC itu yang tidak tertulis itu harganya akan lebih tinggi” (there is less unwritten knowledge than written knowledge, but at PT ABC the unwritten part is worth more). Concentration was triangulated on one person. Three informants from different layers named ITS-06 as the cross-platform node they depend on, and his breadth was built through self-directed learning rather than any program. Five informants, including ITS-06, did not consider themselves critical. Knowledge loss has already occurred. ITS-03 described a deletion in a production environment caused by a departed senior's undocumented naming convention, and FM-02 reported staff who left without notice while critical work sat on personal laptops. These findings are consistent with the depreciation risk described by Massingham (2019).

The succession vacuum (C2) was confirmed by both managers. Asked whether critical staff have successors, FM-01 laughed and said “nice try sih, tapi kayaknya belum sih” (nice try, but not yet). FM-02 said no equivalent replacement exists. Two failure modes were documented. In the first, the candidate is developed and then rejected by the client. FE-03 prepared three successors over about a year each, and each time the client asked for him again. In the second, the candidate is developed successfully and then leaves. ITS-06 returned from leave to find that the junior he had prepared had resigned. The second mode also wears down the mentor. ITS-05 and ITS-06, the two most active mentors in the study, both described losing the will to teach. This echoes the finding of Fasbender and Gerpott (2022) that willingness to share depends on how people read their own position relative to others.

The largest measurable gap concerns time to readiness. Figure 4 shows that managers and the technical layer broadly agree on basic technical independence, but their estimates diverge sharply once the object of measurement becomes deep expertise or client acceptance. Management measures technical readiness, which its tools can see. The technical layer measures client acceptance and depth, which no tool measures. FM-01 added that transfer takes longer while the incumbent is still available, because neither the client nor the successor is forced to adapt.

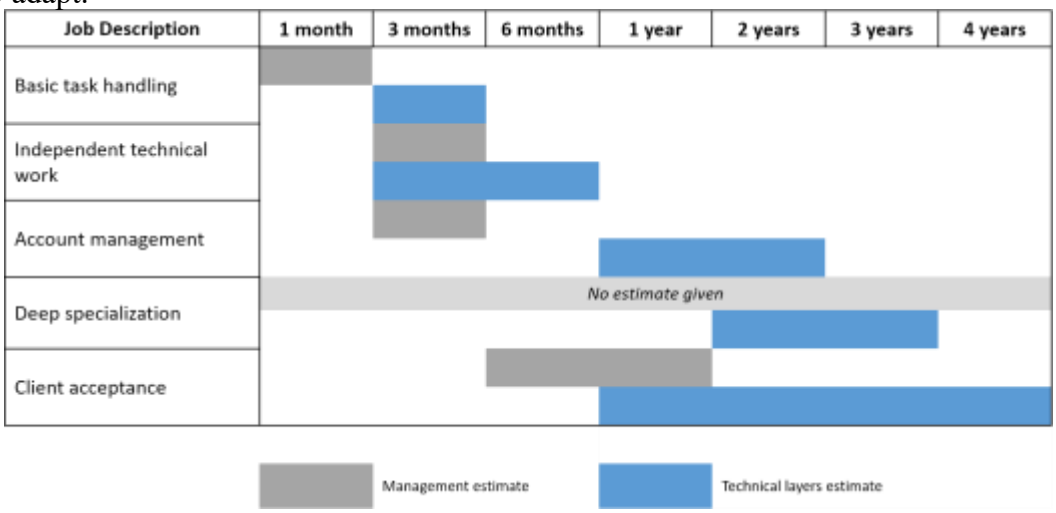

Figure 3. Time to readiness estimated by Functional Managers and by the technical layer

Operational fragility (C3) has moved from projection to precedent. ITS-04 described how a retirement wave would unfold. Client dissatisfaction would follow the loss of trusted staff, the remaining staff would absorb the load without compensation, and because banking work often happens between two and five in the morning, the load would become unsustainable and trigger further resignations. Three sources show the risk is already real. After a corporate separation, the firm's Malaysian operation was left with no mainframe specialists and had to borrow staff from other countries. FE-06 described an outage at a banking client that lasted longer than necessary because the colleague on call lacked the expertise, and he had to be recalled from another assignment. The case of staff leaving without notice adds a third. FM-02 also identified a structural cause. Field staff now attend client sites through dispatched work orders, whereas specialists used to spend whole days at client premises and built closeness as a by-product. The path from Field Engineer to account owner has narrowed because of this change in the operating model.

The Emergent Condition of Client Relationship Dependency

The main finding of this study was not anticipated by the framework. Across all fourteen interviews, the most critical and least replaceable asset was client trust held by specific individuals, not technical knowledge. Clients have vetoed replacements to the point of senior-level meetings, contacted individuals in hospital and during pilgrimage, asked for particular engineers through sales, and refused unfamiliar staff on production systems. FM-01 confirmed that clients refuse engineers often, and said that requests for a named individual are even more common than refusals.

ITS-06 explained the mechanism, and FM-02 confirmed it independently. Clients resolve routine issues by contacting a known person directly without opening a ticket. Once that person is gone, the same issue enters formal escalation. A problem that took ten or fifteen minutes may take half an hour. The contractual service level is still met, but the client experiences worse service. ITS-06 called this the non-formal service level. FM-02 added that escalation spreads in several directions when a trusted person is absent, because no one present can explain the

situation with the authority the client expects, even when the substitute is skilled. Figure 5 shows this mechanism.

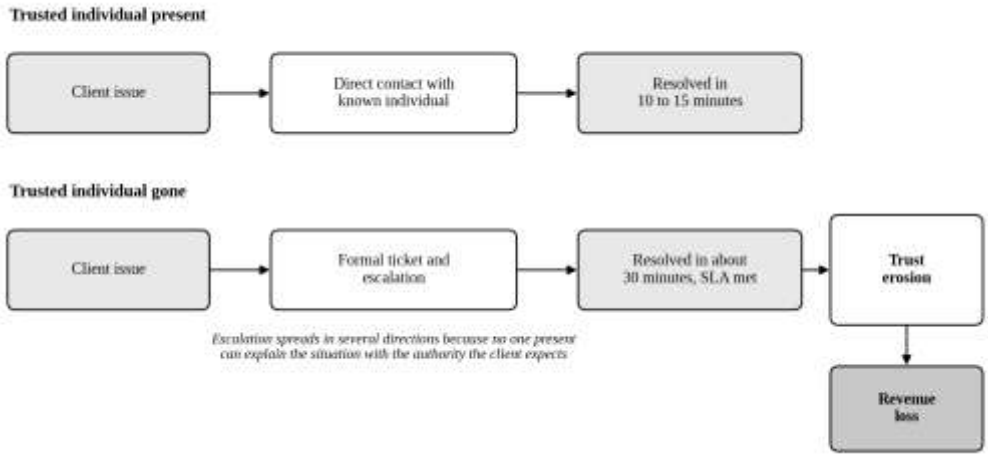

Figure 4. The informal service level and how its loss becomes revenue risk

The commercial consequence is documented. Hours before his interview, ITS-05 saw a client withdraw purchasing commitments after an error by another division, and a nearly won service deal was lost. He put the chain in one sentence. “Ketika trust customer hilang, artinya apa? Revenue ini hilang. Dan ini kejadian” (when the customer's trust is gone, the revenue goes with it, and it just happened). FM-01 already uses the concept of revenue at risk per account when justifying hiring, so the firm has a way to price this exposure but applies it only to workload.

Two counter-cases shape how the finding should be stated. FE-05 said his departure would have no effect, because the account that once made him critical shrank from hundreds of machines to three non-production units. FE-06, who has no fixed account, saw no dependency anywhere. Client dependency is therefore a property of the account relationship rather than of the person. This framing is more useful for management, because a relationship can be managed through portfolio design, planned introductions, and shared coverage. The managers also raised one genuine dispute. FM-01 held that client connections can be rebuilt, partly because client personnel also rotate. ITS-05 held that a replacement is received politely while the client quietly withdraws confidence, and FE-03's three rejected successors support this view. The study leaves this dispute open. Both positions agree that the asset is relational. Relationship depth is monitored on a scale in the Platform B line and remains unmanaged in the Platform A line, so the same asset is governed differently within one department.

This finding extends the literature in a specific way. The APO framework classifies knowledge that sits in relationships with external stakeholders as a relational knowledge asset (Young, 2020). The present case shows that when this asset is held by individuals in a high-retention firm, it stops acting as a resource and starts acting as a cause of workforce risk. It determines who can be moved, blocks succession through client rejection, and converts the loss of a person into a loss of revenue. Existing succession models, which treat readiness as a matter of the successor's competence (Rothwell, 2010), do not account for a client's veto over who counts as ready.

Evaluation of the Theoretical Propositions

All four propositions are supported, which raises the concern that the framework may be unfalsifiable. The refutation conditions were therefore stated in advance. TP1 would fail if development continued at pace despite the absence of performance consequences. TP2 would fail if tacit transfer worked well without a recipient cohort. TP3 would fail if the specialist layer

showed depth and a working intake from the field layer. TP4 would fail if any informant could show a workforce planning artifact, a named owner, or a tracker. None of these conditions was met, and each proposition was refined by the data.

TP1 is raised from the individual to the system level. ITS-05 observed that performance is measured but carries no consequence, saying “achieve gak achieve, kita tetap dapet segitu-segitu aja” (achieve or not, we get the same pay). FM-01 confirmed that consequences attach to policy violations rather than performance. TP1 is therefore restated as retention combined with the absence of performance consequences producing organizational inertia. TP2 is confirmed in all four preconditions of socialization, namely a recipient, a willing mentor, mentor time, and access to the learning environment. The recipient cohort barely exists, mentor willingness has eroded, mentor time competes with delivery, and clients now refuse to let production environments be used for training. TP3 is confirmed, and the compounding is sharper than expected because the path from the field layer to the specialist layer has narrowed through work-order dispatch and through a troubleshooting mindset that has not shifted toward account management. TP4 is corrected. The risk is not invisible. ITS-04 and ITS-05 raised it with management and received acknowledgement without a plan, and FM-01 noticed on an HR dashboard that several seniors share nearly identical service dates, raised it in a managers' meeting, and saw nothing follow. The risk is perceived at every level and owned by no function.

Business Solution and Implementation

The solution is built on the Asian Productivity Organization (APO) Knowledge Management Framework, in which four accelerators, namely people, process, technology, and leadership, drive a five-step knowledge process of identify, create, store, share, and apply (Young, 2020). The framework fits the case because PT ABC identifies, stores, and applies global product knowledge well but fails to create and share local tacit and client knowledge. It also states that knowledge management cannot be run by HR alone and requires leadership that assigns ownership across functions. Table 3 shows the assessment of PT ABC against these elements, based on the interview evidence rather than a survey instrument.

Table 3. Knowledge management assessment of PT ABC against the APO framework

Element	Rating	Main basis for the rating
People	Medium	Mentoring capability and a buddy system exist, but no new joiners have arrived for six years and the most active mentors are withdrawing
Process	Medium	Global processes and escalation are strong, while local documentation has no mandate
Technology	High	Documentation, escalation, learning platforms, a skill matrix, and HR retirement data are already in place
Leadership	Low	No function owns workforce capability, no planning process exists, and personal action by managers is not tracked
Identify	Medium-low	Knowledge is mapped by platform rather than by person, and critical staff do not see their own criticality
Create	Low	Expertise is rarely converted into a form the firm can hold, and the one systematic case was an individual initiative
Store	Medium-low	Global documentation is well stored, while local records are personal and scattered
Share	Low	Transfer depends on individual initiative, and succession has failed in two documented ways
Apply	High	Knowledge is applied well at the client, and service execution is not the failure point

The technology rating matters to the argument. If the tools are capable and local knowledge is still lost, the failure must sit with process and leadership. The solution therefore targets the leadership accelerator together with the create and share steps, because these fail through the same mechanism of missing structure, protected time, and accountability. Four constraints shape the design. Headcount follows revenue, so every proposal must be argued as revenue protection using the revenue-at-risk concept managers already use. Mentor time must be protected explicitly. Training access in client environments must be written into service agreements. Some knowledge is withheld for legitimate commercial reasons, so documentation must go into access-controlled repositories.

The plan runs over sixty months in three horizons, summarized in Table 4. Horizon 1 acts on the consequences already present, Horizon 2 acts on the sustaining mechanisms, and Horizon 3 acts on the root cause. The sequence runs the causal chain of the preliminary why-why analysis in reverse. The durations come from the evidence. The audit uses data the firm already holds, so it is bounded to one quarter. The mentoring cycle of twelve months follows ITS-06's estimate of six months under intensive mentoring and a year when teaching is fitted around delivery. Hiring starts in Horizon 2 because FM-01 reports an approval lead time of two to three months and because the revenue case needs the audit figures first. A junior hired early in Horizon 2 would reach client acceptance between month 37 and month 60, given the one to four years reported by the technical layer, so sixty months is the period needed to show one completed regeneration cycle. Figure 5 shows the gannt chart for the implementation plan of the business solution for PT ABC.

Table 4. Summary of the three-horizon implementation plan

Horizon	Main actions	Target by end of horizon
Horizon 1, Stabilize (months 1 to 12)	Knowledge and relationship risk audit, baseline of seven continuity metrics, shadowing before exit with a set withdrawal date, documentation mandate for critical accounts, introduction of alternates to clients	All metrics baselined by month 6, every qualifying departure covered by a completed handover, one alternate named for every critical account
Horizon 2, Rebuild (months 13 to 36)	Interim coordinator for the metrics, resumed junior external hiring, standardized mentoring with protected time, restored learning platform, training access in service agreements, revived sharing sessions	At least two external entrants per year, median successor readiness of 24 months or less, 60 percent of critical clients working with more than one named individual
Horizon 3, Govern (months 37 to 60)	Standing Strategic Workforce Planning function, permanent ownership of the metrics, common instruments across both lines, annual workforce sustainability report	Knowledge concentration at or below 20 percent of critical accounts, successor coverage and client relationship redundancy at 100 percent

Seven metrics carry the accountability of the plan. They are the knowledge concentration ratio, the transfer completion rate, the successor coverage ratio, the successor readiness timeline, the retirement and exit exposure forecast, the junior intake rate, and the client relationship redundancy ratio. They are instituted in Horizon 1 rather than deferred, because the failure the study diagnoses is the absence of measurement. Ownership moves from the Functional Managers to an interim coordinator and then to the standing function. The standing function is kept separate from line management because the evidence shows that capability work given as a side duty fails. FM-02 tried to run such monitoring himself and could not sustain it, and a previously assigned manager was overwhelmed by his primary role. FM-02 proposed the same remedy on his own, a dedicated team that monitors skill transfer so the firm becomes attrition proof. The plan carries two dependencies outside the department, namely

regional headcount approval and client agreement to training access. Its outcome targets for Horizons 2 and 3 stay provisional until the Horizon 1 baseline exists.

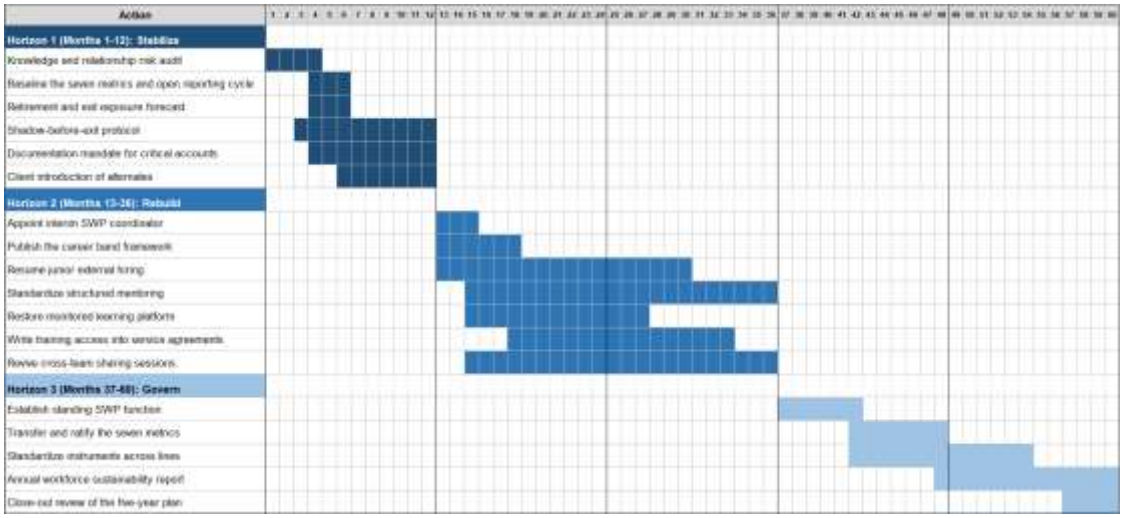

Figure 5. Gannt chart of the implementation plan of the business solution for PT ABC

These results align with and extend earlier work. They support Ulrich's (1997) distinction between administrative and strategic HR and Cappelli's (2008) warning about reactive staffing, and they match the Indonesian finding of Suparman and Naibaho (2021) that informal succession does not produce ready successors in time. They also confirm McFadden's (2022) argument that succession-critical tacit knowledge moves mainly through socialization. The study adds two points that these works do not address. The expected successor layer can be as exposed as the layer it is meant to replace, and the client can act as a gatekeeper over succession through the trust it places in specific people.

CONCLUSION

High employee retention and limited workforce regeneration at PT ABC were associated with four interrelated organizational conditions, each further clarified by the empirical findings. Recruitment constraints were linked to revenue considerations, organizational loyalty varied across employee generations, internal mobility was routinely used to fill vacancies, and the absence of strategic workforce planning created fragmented accountability for workforce continuity. These conditions contributed to substantial knowledge concentration among key personnel, succession planning vulnerabilities, and increased operational risks. Succession challenges were further intensified by client resistance to replacement personnel and the departure of employees who had been prepared for critical roles. Evidence of operational disruptions within the broader corporate group also highlighted the potential consequences of inadequate knowledge transfer and succession planning.

The study's principal contribution was the identification of client relationship dependency as an additional condition influencing workforce sustainability risk. Client trust concentrated in individual employees constrained staffing flexibility, complicated succession arrangements, and created potential revenue vulnerabilities when established service relationships depended heavily on specific personnel. These findings suggested that client relationship continuity should be managed as an organizational responsibility through structured client introductions, shared account coverage, and coordinated succession arrangements. Furthermore, although workforce continuity risks were recognized across organizational levels, responsibility for addressing them remained insufficiently defined. This

indicated that the central challenge extended beyond risk awareness to weaknesses in workforce governance and organizational accountability.

The findings also revealed that PT ABC possessed several existing practices that could support workforce sustainability, including mentoring initiatives, competency matrices, client relationship monitoring, and an organizational commitment to developing successors. However, these practices remained fragmented and lacked coordinated implementation. Establishing a dedicated strategic workforce planning function with clearly assigned responsibilities, seven workforce continuity indicators, and sufficient decision-making authority was therefore recommended to integrate knowledge management, succession planning, and workforce regeneration initiatives. Future research should prioritize examining client relationship dependency across comparable organizations, conducting longitudinal assessments of planned client account transitions to evaluate the transferability of client trust, and investigating the applicability of the proposed framework across different technical product lines and organizational contexts. These directions could strengthen the empirical understanding of workforce sustainability risks and support the development of more effective knowledge continuity and succession planning strategies.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest whether personal, commercial, or financial that could influence the conduct and results of this study.

AUTHOR CONTRIBUTION

Marchio Kevin Abdul Azis[1] and Hary Febriansyah[2] contributed to the research design, data collection and processing, system development, analysis of results, and manuscript preparation.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

In the preparation of this article, the author utilized generative artificial intelligence (AI) as a tool to assist with language refinement, structuring the text, and correcting grammar. The use of AI was limited and remained under the author's supervision. All data, analyses, interpretations, and scientific content within this article have been reviewed and verified by the author. The author bears full responsibility for the accuracy, originality, and final content of the manuscript.

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