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ROADMAP FOR IT GOVERNANCE MATURITY ENHANCEMENT WITH COBIT 2019 AT PT LEN TELEKOMUNIKASI INDONESIA

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Abstract

This study designs an IT governance roadmap using COBIT 2019 to raise PT Len Telekomunikasi Indonesia's IT maturity and support digital transformation. A qualitative case study combined the 2024 external assessment, internal documents, and stakeholder interviews. Baseline capability averaged 0.64, with critical gaps in risk (APO12), security (APO13), and vendor management (APO10). A three-year roadmap (2025–2027) is structured around quick wins, policy standardization, and staged evaluation. Clear targets anchor implementation: by 2027, average maturity ≥1.0, ≥90% SOP adoption, 100% role-based access control, 60% fewer security incidents, and 99.5% service uptime. Governance is operationalized through a lightweight RACI, an IT Steering Committee, and quarterly KPI reviews. The roadmap is expected to convert ad-hoc practices into repeatable processes and align IT with business objectives. The contribution is a practical, measurement-driven blueprint for accelerating governance uplift in low-maturity organizations.
Keywords: *IT Governance; IT Maturity; Digital Transformation; COBIT 2019; Quick Wins.*

1. PRELIMINARY

Digital transformation has become imperative for organizations to remain competitive in a rapidly evolving technological era [1]. Achieving effective digital transformation requires not only the adoption of new technologies but also readiness in human resources, organizational culture, and especially a structured and mature IT governance framework[2]. PT Len Telekomunikasi Indonesia (PT LTI), a subsidiary of a state-owned enterprise focused on national telecommunications infrastructure, faces increasing service complexity and stakeholder expectations. The company needs to accelerate its digital transformation initiatives to maintain operational efficiency and strategic relevance [3][4].

However, a recent external assessment of PT LTI's IT governance maturity (IT Maturity Level assessment in 2024) revealed that the organization's IT maturity remains at a basic stage, with an average capability score of only 0.64 [5]. This score indicates that many IT processes are still ad-hoc and undocumented. In fact, several critical processes in the COBIT 2019 domains such as risk management, vendor management, and information security were evaluated at maturity level 0, meaning no formal policies or documented procedures exist for those areas [6]. Such low IT maturity conditions reflect a significant governance gap that could hinder PT LTI's ability to support and sustain digital transformation.

Similar challenges have been observed in other organizations with low IT maturity. For example, Indrawati et al. noted that the COBIT 2019 framework by itself does not fully provide a comprehensive instrument to assess IT maturity beyond process capabilities[1]. Likewise, Luh (2023) found that varying capability levels across evaluated processes with an average gap of 2.25 highlight the need for a focused improvement roadmap to uniformly raise process maturity. These studies underline the urgency of a systematic approach to improve IT governance in organizations that, like PT LTI, exhibit low maturity levels.

To address these challenges, a strategic IT development roadmap aligned with the COBIT 2019 framework is proposed for PT LTI. COBIT 2019 is chosen because it provides a systematic approach to assess, design, and continuously improve IT governance capabilities. In formulating the roadmap, a Quick Wins strategy is also considered so that improvement initiatives can begin with small, high-impact changes that yield immediate visible results[7]. The goal of this study is to develop an IT roadmap that supports PT LTI's digital transformation by implementing COBIT 2019-based IT governance improvements. This roadmap is intended to serve as a foundation for effective IT governance at PT LTI, with the aim of increasing the company's IT maturity level and preparedness for future digital challenges.

2. RESEARCH METHODS

To understand the application of COBIT 2019 in enhancing IT governance, previous studies were reviewed. Table 1 highlights key insights and challenges from various organizational implementations.

Table 1. Relevant Previous Research

No.	Author(s)	Title	Strength	Weakness
1	Amir Bagja, Zaenul Amri, Khairul Imtihan, Muhamad Rodi, Siska Yuni R (2024)	Enhancing Public Sector IT Governance through COBIT 2019: A Case Study on Service Continuity and Data Management	Utilizes COBIT 2019 to evaluate service management and data security in the public sector	Focuses only on service and data aspects, lacking comprehensive IT governance
2	Baiq Yulia Fitriyani dan Muhammad Alva Hendi (2025)	COBIT 2019 for Enhanced ICT Governance: A Case Study at a Higher Education Institution	Demonstrates the effectiveness of COBIT 2019 in an educational environment with limited resources	Does not assess the long-term sustainability of the proposed governance implementation
3	Adila Safitri, Imam Syafii dan Kusworo Adi (2021)	Measuring the Performance of Information System Governance using Framework COBIT 2019	Evaluates IT governance in e-Government using COBIT 2019 in a structured manner	Limited to one regional institution, lacks broader applicability
4	Widia Febriyani, Muhammad Ilham Alhari dan Tien Fabrianti Kusumasari (2022)	Design of IT Governance based on COBIT 2019: A Case Study of XYZ Education Foundation	Designs a governance blueprint tailored to the specific needs of an educational institution	Implementation not tested in real-world settings
5	Juwina Mustaqfirah, Ima Dwitawati, Muhammad Syamsu Rizal (2025)	IT Governance Analysis at Sabang City's Diskominfo using COBIT 2019 Framework	Evaluates IT risk and security management in a local government context	Does not include a follow-up roadmap for continuous improvement
6	Ferdinandus Andrew Nurtjahjo, Bernardinus Harnadi dan G.Freddy Koeswoyo (2024)	Evaluation of IT Governance Implementation Using COBIT 2019 (Case Study at Harapan Maju University)	Detailed evaluation of IT governance in the educational sector using COBIT 2019	Only evaluates three COBIT domains, limiting overall assessment

The studies listed in Table 1 demonstrate that while COBIT 2019 has been widely utilized in both public and educational sectors, most studies focus solely on evaluating the current governance state without proposing a comprehensive improvement roadmap. This gap highlights the need for strategic planning to enhance IT maturity effectively.

This research employed a qualitative descriptive case study approach[9]. The case study method was appropriate because it enabled an in-depth understanding of PT LTI's actual organizational context, internal complexities, resource limitations, and the need for realistic, phased improvements [8]. The study is designed to systematically answer the research questions and achieve the stated objectives by following several stages of analysis and planning.

Data Collection and Assessment: The research began with an analysis of documents from an external IT maturity assessment conducted by an independent auditor for PT LTI [12]. This included reviewing the auditor's interview notes with PT LTI's IT staff and the completed COBIT 2019 assessment questionnaires. Internal interviews were held with PT LTI's IT manager and other relevant stakeholders to gather insights that would inform the IT governance roadmap design.

PROSES	KONDISI YANG DIBUTUHKAN	DESKRIPSI KONDISI SAAT INI	EVIDENCE PENDUKUNG	STATUS		NILAI
Management Objective: APO07 – Managed Human Resources						
KAPABILITAS LEVEL 2						**19,23%**
APO07.01 Acquire and maintain adequate and appropriate staffing						
1	Hasil pemantauan telah digunakan untuk menerapkan perbaikan dan memastikan bahwa anggaran mendatang lebih akurat, andal, dan hemat biaya.	Hanya ada satu orang yang menangani fungsi TI, tanpa unit khusus. Hal ini menyebabkan ketergantungan tinggi pada individu tersebut, terutama karena perencanaan kebutuhan staf belum dilakukan secara menyeluruh dan fungsi TI belum dianggap sebagai area strategis	Struktur Organisasi LTI	Partially	0,5	
2	Proses rekrutmen dan retensi personel bisnis dan TI telah terjaga agar sejalan dengan kebijakan dan prosedur personel perusahaan secara keseluruhan.	sudah di SDM	Penilaian Wawancara Seleksi	None	0	
APO07.02 Identify key IT personnel						
1	Ketergantungan pada satu individu yang melakukan fungsi pekerjaan penting telah diminimalisir melalui penangkapan pengetahuan (dokumentasi), berbagi pengetahuan, perencanaan suksesi, dukungan staf, pelatihan silang, dan inisiatif rotasi pekerjaan.	Hanya ada satu orang yang menangani fungsi TI, tanpa unit khusus. Hal ini menyebabkan ketergantungan tinggi pada individu tersebut, terutama karena perencanaan kebutuhan staf belum dilakukan secara		None	0	

Figure 1. Assessment Form

Participants and Context: The case study focuses on PT LTI, a telecommunications infrastructure company, and involved key IT personnel, external auditors, and internal stakeholders [11]. This multi-source engagement helped ensure a comprehensive view of the IT governance situation.

3. RESULT AND DISCUSSION

3.1 Current IT Governance Maturity at PT LTI

The initial assessment results confirmed that PT LTI's IT governance maturity was very low, with an overall average maturity score of approximately 0.64[7]. In practical terms, this indicates that many IT processes are incomplete or performed in an ad-hoc, inconsistent manner. For instance, the domains APO12 (Managed Risk) and APO13 (Managed Security) both scored 0, revealing the absence of formal IT risk management practices [6]. Similarly, the domain APO10 (Managed Vendors) was at level 0, indicating a lack of standardized vendor management procedures. This profile is symptomatic of an organization in the very early stages of IT governance maturity [13].

Table 2. IT Maturity Level 2024

ID COBIT	Control Objective	Score
EDM03	Ensured Risk Optimization	1
APO01	Managed I&T Management Framework	1
APO06	Managed Budget and Cost	1
APO07	Managed Human Resources	1
APO09	Managed Service Agreement	0
APO10	Managed Vendors	0
APO12	Managed Risk	0
APO13	Managed Security	0
BAI06	Managed IT Changes Acceptance and Transitioning	0
BAI07	Managed IT Change Acceptance and Transitioning	0
BAI11	Managed Projects	1
DSS01	Managed Operations	1
DSS02	Managed Service Requests and Incidents	0
MEA03	Managed Compliance with External Requirements	0

3.2 Current Challenges Underlying the Low IT Maturity.

The low IT governance maturity at PT LTI stems from several internal shortcomings across strategic planning, governance processes, human resources, information security, and financial management.

At the strategic level, the company lacks a formalized IT strategy or documented roadmap, resulting in ad-hoc decision-making and uncoordinated IT initiatives. This absence of clear policy guidance means that IT investments are often reactive rather than proactive, leading to suboptimal allocation of the limited IT budget. In terms of governance processes, there is no comprehensive IT governance framework or consistently enforced standard operating procedures (SOPs). Consequently, critical processes such as risk management and change management remain immature and reactive. For instance, IT risk management is handled in a firefighting manner (issue by issue) without proactive mitigation measures or regular audits, and operational IT procedures are applied inconsistently across different units. These gaps indicate that PT LTI's IT practices are largely undocumented and lack the oversight needed for repeatable, efficient management.

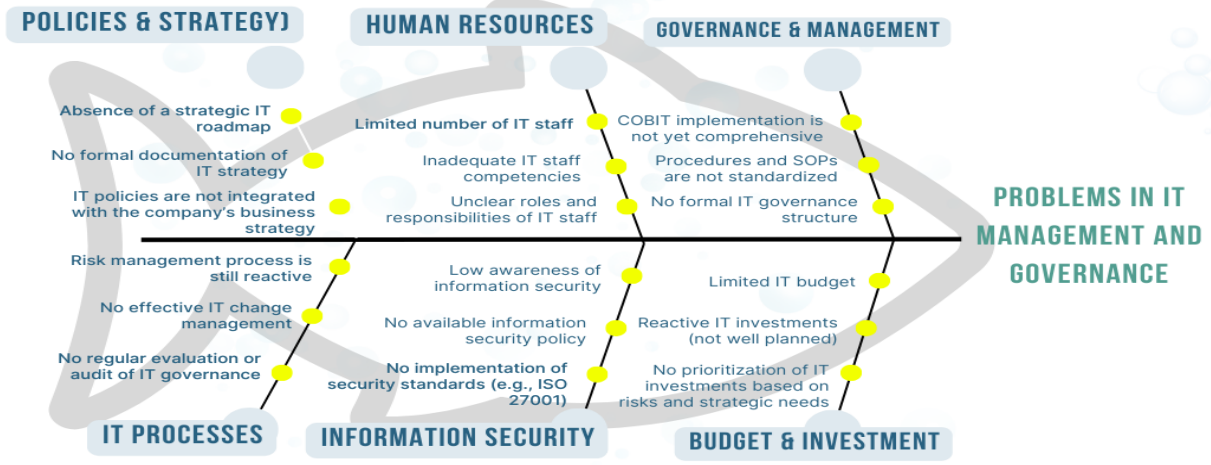

Figure 2. Ishikawa Diagram: Factors Contributing to Weak IT Management

In addition to policy and process weaknesses, organizational factors further contribute to the low maturity level. The IT department is understaffed and faces capability constraints, with a limited number of personnel who are often overextended. This shortage of skilled human resources, compounded by insufficient training in IT governance frameworks (e.g., COBIT 2019) and unclear role definitions, has led to inefficiencies and difficulty in implementing improvements. Information security is another critical area of concern: the company has no formal information security policy in place, and security awareness among employees is low. There are no proactive mechanisms for early detection of cybersecurity threats, leaving the organization vulnerable to incidents and data breaches. Finally, IT funding and investment practices are not aligned with strategic needs. Budget planning is driven by immediate operational demands rather than long-term risk-based priorities, resulting in underinvestment in foundational areas like security infrastructure and governance tools. These factors collectively explain the organization's low IT maturity and underscore the need for a structured improvement strategy moving forward.

3.3 Governance Gaps and COBIT Mapping

A detailed gap analysis focused on the Align-Plan-Organize (APO) domain processes in COBIT 2019[5]. This approach was chosen because the APO domain addresses strategic planning, governance frameworks, human resources, risk management, and security core areas where PT LTI demonstrated significant deficiencies. The gap analysis revealed that five key APO processes were at level 0: APO01 (Governance Framework), APO02 (IT Strategy), APO07 (Human Resource Management), APO12 (Risk Management), and APO13 (Information Security). Addressing these gaps is crucial, as these processes are fundamental to achieving structured IT governance [1].

3.4 Strategic IT Roadmap (2025–2027)

The proposed roadmap aims to improve IT maturity at PT LTI through a phased approach: 2025 (foundation setting), 2026 (policy expansion), and 2027 (evaluation and enhancement)[9]. This staged model is designed to address critical gaps with targeted interventions while balancing resource constraints[12][14].

Table 3. Program Timeline 2025–2027

Program	2025	2026	2027
Development of IT Strategic Plan	V		
Formation of IT Governance Committee	V		
Initial Implementation of IT SOP	V	V	
Optimization of IT Governance	V	V	
Full Implementation of IT Governance Policies		V	
Automation and Efficiency of IT Operations		V	
Evaluation & Measurement of COBIT 2019 Maturity Level			V
IT Strategy Development 2028-2030			V

3.4.1 Phase 1: Foundation Setting (2025)

During this phase, the primary focus is on establishing governance frameworks and creating foundational IT policies. Quick wins include developing an IT strategic plan, formulating an IT governance framework, and implementing basic security policies [6]. The expected outcome of this phase is to move core governance processes from level 0 to level 1, indicating that formal procedures are initiated [11].

3.4.2 Phase 2: Policy Expansion (2026)

In this phase, policies introduced during Phase 1 are standardized and expanded. This includes comprehensive risk management policies, vendor management procedures, and enhancing IT staff competencies through structured training programs[2]. By the end of 2026, the goal is to achieve maturity level 2 for APO12 (Risk Management) and APO13 (Information Security), signifying that these processes are managed and documented [1][15].

3.4.3 Phase 3: Evaluation and Enhancement (2027)

The final phase emphasizes evaluating implemented changes and optimizing IT governance practices. Key activities include auditing IT policies, refining SOPs, and monitoring compliance levels. The ultimate objective is to reach level 3 (established process) for core APO processes, ensuring consistent and repeatable practices[3][16].

3.5 Impact of the Roadmap

By adhering to the structured roadmap, PT LTI is expected to enhance IT governance maturity, particularly within the APO domain. The phased implementation allows for gradual improvement without overburdening resources. As highlighted by Ahyani & Dhuhani (2024), the Quick Wins approach increases early stakeholder buy-in, while the focus on strategic policy development ensures long-term sustainability [9]. The roadmap's success will be measured by improvements in maturity scores, reduced IT incidents, and enhanced alignment between IT and business strategy.

3.6 Comparative Analysis

Similar roadmap implementation strategies in other organizations have demonstrated substantial improvements in IT governance. For instance, in a study by Indrawati et al. (2023), the phased adoption of COBIT 2019 led to a maturity increase from level 0 to level 2 within two years. Likewise, Luh et al. (2023) found that prioritizing risk management and IT strategy significantly enhanced governance consistency. These findings align with the expectations for PT LTI's roadmap, which similarly prioritizes strategic alignment and proactive risk management.

By systematically addressing the identified gaps and implementing targeted improvements, PT LTI can expect to transition from reactive, ad-hoc IT management to a more structured, governance-driven approach. This transformation not only supports digital transformation initiatives but also ensures that IT capabilities are more resilient and better aligned with organizational goals.

3.7 Implementation Considerations & Limitations

Implementation considerations. Given PT LTI's baseline maturity and the phased design of the roadmap, implementation should prioritize governance foundation and policy standardization before tooling expansion. Treat the 2025–2027 stages as gates: do not progress to automation until minimum controls and SOP conformance are evidenced, especially in APO01/02/12/13. This disciplined gating acknowledges the ad□hoc starting point (average maturity 0.64), reducing change fatigue and budget risk while building credibility through early, verifiable wins.

Evaluation design and success metrics. To ensure the roadmap delivers measurable value, operationalize the proposed indicators as quarterly KPIs tied to owners and evidence sources. Targets for maturity uplift, SOP adoption, RBAC coverage, incident response, and service uptime should be embedded into an MSLA/OKR cadence and audited via logs and board□level dashboards. Elevating incident response time and uptime as north□star metrics demonstrates user□visible impact while governance capabilities scale.

Threats to validity and limitations. Findings should be interpreted in light of the case□study context and data□collection constraints. The maturity baseline and gap mapping rely on a single organization with external auditor instruments and limited internal interviews; this may restrict transferability and introduce informant bias. Future work should broaden respondents, triangulate with independent process audits, and complement capability scores with outcome metrics (e.g., incidents avoided, change success rates).

Practical implications and quick wins. Emphasize short□cycle wins to sustain momentum: publish basic ISMS policies, enforce minimal RBAC, standardize incident categorization, and adopt a lightweight vendor□risk checklist. These steps fit existing constraints and immediately reduce operational variance, creating organizational buy□in for subsequent standardization and optimization waves aligned with digital transformation.

Change management and stakeholder engagement. Successful execution depends on deliberate change management that makes new controls and processes simple, visible, and rewarding to adopt. PT LTI should appoint change champions in each unit, run short recurring enablement sessions (≤60 minutes) focused on practical how to over policy theory, and publish a bi□weekly rollout bulletin that lists what changed, why it matters, and where to get help. Early pilots should be scoped to low□risk areas to generate credible internal references before organization□wide scaling. Resistance is best handled through one□page job aids and embedded prompts in tools, so the desired behavior is easier

than the old way. Capturing adoption signals attendance, SOP□step completion, and ticket metadata allows leaders to steer interventions in near real time.

Governance operating model and RACI. To convert policies into consistent practice, the operating model should define who decides, who designs, and who runs. A lightweight RACI aligned to APO, BAI, DSS, and MEA can anchor this clarity: the IT Steering Committee sponsors prioritization and funding, the Architecture/Change Advisory Board reviews design and risk, Process Owners maintain SOPs and controls, and Service Owners commit to SLAs and escalation paths. Quarterly control□health reviews should verify evidence artifacts and logs rather than slideware, while exception handling follows a standard template that records rationale, compensating controls, and an expiry date. This model keeps decision latency low, prevents policy theater, and synchronizes roadmapping, budgeting, and risk management.

Resource plan and cost rationale. Roadmap feasibility improves when resources are framed as capacity, not just headcount or licenses. PT LTI can stage a mix of internal capability building and selective vendor support: internal teams lead SOP standardization and RBAC hardening, while vendors assist with targeted activities such as penetration tests or data□migration tooling. A cost narrative should emphasize consolidation and reuse: rationalize overlapping subscriptions, prefer open□standards components, and defer noncritical automation until foundational controls are green. Budget should be justified with outcome□linked metrics reduced mean time to resolve, fewer failed changes, higher uptime and scenario plans that show minimal, base, and accelerated options.

Data governance and security controls. Given integration needs, clear data ownership and lifecycle rules are essential. Classify information into a small number of sensitivity tiers, map each tier to access, encryption, and sharing requirements, and enforce periodic access recertification for systems holding sensitive data. Operational safeguards should include tested backup and recovery with defined RTO/RPO, standardized incident categorization to speed triage, and a vendor□risk checklist embedded at procurement to prevent shadow integrations. Where possible, controls should be built□in role□based policies, secure defaults, logging by design rather than bolted□on, reducing manual effort and drift.

Risk register highlights and mitigations. The most material risks are change fatigue, skill gaps in process ownership, legacy system dependencies, fragmented data definitions, and budget compression. Mitigations include pacing rollouts via stage□gates, pairing each SOP with a named owner and backup, documenting decommission paths for legacy components, establishing a shared data glossary with stewardship roles, and protecting funding for a small set of reliability keystones monitoring, backups, and identity. Each risk should carry a leading indicator such as pilot adoption below 70 percent or failed□change rate above 10 percent, a trigger threshold, and a predefined response.

Sustainability and scalability. Sustainability comes from simplifying the operating environment while creating a runway for future automation. Favor modular building blocks with clear interfaces, maintain an explicit stop□doing list to retire low□value tasks, and standardize observability so incidents reveal causes quickly. As maturity improves, layer automation where toil is measurable and stable access provisioning, backup verification, and standard change deployments so scarce expert time shifts to higher□leverage work. This balance ensures the roadmap scales without collapsing under coordination cost and that improvements persist beyond the initial push.

3.8 Evaluation

To ensure the effectiveness of the proposed IT governance roadmap, specific success indicators and evaluation methods have been established. These indicators are designed to measure the progress and impact of IT governance improvements at PT LTI. Table 4 presents the key success metrics and their respective evaluation methods, with targeted outcomes set for 2027.

Table 4. Success Indicators and Evaluation Methods

Success Indicator	Evaluation Method	Target 2027
IT Maturity Improvement Level	Annual assessment based on the COBIT 2019 framework	Minimum average IT Maturity score of 1.0
Implementation of IT Governance SOP	Compliance audit of SOP & implementation reports	≥ 90% of business units follow the established SOP

User Access Security	Access system evaluation & user audit	100% authorization-based and role-based access control (RBAC)
IT Risk Management Effectiveness	System monitoring & incident mitigation	Reduce security incidents by 60% compared to the 2024 baseline
Incident Response Time	MSLA for incident handling & resolution time monitoring	Reduce average incident response time by 50%
Efficiency of IT Infrastructure and Services	System uptime monitoring & network evaluation	Increase service uptime to 99.5%

3.9 Discussion

The results indicate that a COBIT-2019–anchored, phased roadmap can accelerate governance uplift even from a very low baseline (average capability 0.64). Interpreted substantively, moving APO12 (Risk), APO13 (Security), and APO10 (Vendors) from level 0 toward documented and repeatable practice requires not only artifacts (policies, SOPs) but also an operating model that assigns ownership and enforces evidence of use. The quick-wins emphasis in Phase 1 (2025) functions as a commitment device: early, visible control improvements help reduce resistance and create momentum for standardization and evaluation in subsequent phases.

These findings align with prior work showing that COBIT 2019 provides a useful scaffold but often lacks an execution path without a tailored roadmap and adoption levers [1], while sectoral studies in government and education also report heterogeneous capabilities that benefit from staged improvement programs [2][9][11]. Compared with those contexts, the PT LTI case foregrounds reliability constraints typical of critical infrastructure: tying governance to operational outcomes (incident reduction, RBAC coverage, uptime) appears to sharpen prioritization and sustain executive sponsorship.

Practically, three mechanisms seem pivotal: (1) a lightweight RACI that clarifies who designs, decides, and runs each process; (2) an IT Steering Committee that sequences initiatives and shields core reliability "keystones" (monitoring, backups, identity); and (3) quarterly KPI reviews that verify adoption with evidence (logs, tickets, audit trails) rather than slideware. The stage-gate approach—requiring minimum control health before tooling expansion—constrains scope creep and mitigates change fatigue, which are common failure modes in low-maturity environments.

The contribution for comparable state-owned or resource-constrained organizations is a measurement-driven blueprint that couples governance design with operational metrics. By specifying concrete targets (maturity ≥ 1.0, $\geq 90\%$ SOP adoption, 100% RBAC, -60% security incidents, 99.5% uptime) and mapping them to accountable owners and evidence sources, the roadmap translates abstract governance goals into observable, auditable practice. This framing can be replicated in other settings were budget and capacity limit large-scale transformation.

Limitations remain. As a single-organization case, external validity is constrained, and informant or instrument bias may affect the baseline and progress readings. Future work should broaden respondents, triangulate with independent process audits, and extend outcome measures beyond capability scores (e.g., failed-change rate, mean time to resolve, avoidable incidents). Nonetheless, the consistency between early adoption signals and targeted outcomes supports the claim that disciplined, staged governance can materially improve capability in low-maturity contexts.

4. CONCLUSION

This study demonstrated that PT LTI's IT governance maturity was initially very low (average 0.64), indicating largely undocumented and reactive processes. By developing a COBIT 2019-aligned roadmap and implementing targeted governance SOPs, significant improvements were achieved. The structured roadmap – focusing on strategic planning, policy deployment, risk/security controls, and capacity building – provided clear direction and quick wins that raised process capability across the organization. Filling the major gaps in information security, risk management, and access control led to greater operational efficiency and stronger internal controls. Ultimately, the roadmap enabled PT LTI

to meet its goal of moving from an ad-hoc/level 0 maturity level toward at least defined/level 2 within the two-year implementation period.

In summary, the COBIT-based governance roadmap not only increased IT maturity but also enhanced PT LTI's preparedness for future digital demands. Formalizing IT strategy and governance, improving risk and security practices, and developing human resources were key to this success. These measures should be maintained and periodically evaluated to sustain progress. The findings underscore that even organizations with very low initial maturity can achieve rapid governance improvement through a systematic, framework-driven roadmap. This case demonstrates that even very low-maturity organizations can accelerate governance uplift through a disciplined, framework-driven roadmap.

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