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Optimizing IT Governance in BTS.id: A COBIT 2019-Based Analysis of Design Factors

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Abstract

Effective IT governance is critical for organizations to align technology with business objectives while ensuring risk management, compliance, and operational efficiency. As a technology-driven company, BTS.id faces challenges in managing IT risks, optimizing governance structures, and ensuring seamless alignment between IT initiatives and business strategy. This study analyzes IT governance implementation at BTS.id using the COBIT 2019 framework, focusing on assessing the organization's governance maturity level and identifying key design factors that influence IT governance effectiveness. The research employs document analysis, interviews, and surveys with key stakeholders to evaluate governance and management objectives, design factors, and capability levels. The findings indicate that while BTS.id has implemented IT governance practices, gaps remain in achieving an optimal governance structure. The highest priority areas include structured IT change management (BAI07), enterprise architecture (APO03), and project management (BAI11, BAI02), while risk management (APO12) and performance monitoring (MEA01) play a crucial supporting role. However, lower-priority governance objectives highlight areas for improvement, particularly in security management, vendor relationships, and compliance monitoring. The study underscores the importance of a structured approach to IT governance, emphasizing continuous performance monitoring, enhanced risk management, and strategic IT alignment. To further optimize governance maturity, BTS.id must refine its IT governance roadmap, strengthen risk assessment frameworks, and implement a more structured IT change and project management process. These improvements will ensure that BTS.id's IT governance framework remains resilient, adaptable, and aligned with industry best practices.

Keyword: BTS.id, COBIT 2019, Design Factors, IT Governance, IT Management

1. INTRODUCTION

The rapid advancement of information technology (IT) in recent years has significantly impacted various industries, particularly software development firms like BTS.id. IT plays a crucial role in boosting productivity, streamlining operations, and maintaining a competitive edge in an ever-evolving digital landscape. However, as companies increasingly rely on IT systems, they also face growing challenges in managing IT resources efficiently. These challenges include cybersecurity threats, complex data management, regulatory compliance, and aligning IT strategies with business goals. As a result, robust IT governance is essential to maximizing the benefits of technology while mitigating its risks [1], [2].

IT governance is a fundamental aspect of corporate governance that ensures IT investments align with business objectives. It involves setting policies, procedures, and frameworks that guide IT-related decision-making and resource allocation [3]. A well-implemented IT governance framework enables organizations to enhance efficiency, bolster security, and adhere to regulatory standards. Moreover, a strong IT governance structure ensures IT initiatives align with corporate strategies, fostering long-term growth and innovation [4].

One of the most widely adopted IT governance frameworks is Control Objectives for Information and Related Technology (COBIT). Developed by the Information Systems Audit and Control Association (ISACA), COBIT is a globally recognized framework that provides comprehensive guidelines for managing and governing enterprise IT. It helps organizations optimize IT resources, strengthen risk management, and achieve strategic business goals. COBIT has evolved over the years, with COBIT 2019 being the latest version, offering a more flexible and adaptable approach to IT governance. COBIT 2019 introduces a governance system that integrates key components such as governance and management objectives, processes,

organizational structures, policies, and corporate culture. It underscores the importance of achieving enterprise goals by ensuring IT governance aligns with business needs. The framework is structured around five governance and management objectives [5], [6]. The first objective, Evaluate, Direct, and Monitor (EDM), ensures that IT governance aligns with enterprise strategy and delivers value. The second, Align, Plan, and Organize (APO), focuses on IT strategy development, policy-making, and resource management. The third, Build, Acquire, and Implement (BAI), oversees IT project development, system implementation, and service delivery. The fourth, Deliver, Service, and Support (DSS), ensures efficient IT service operations and incident management. Lastly, Monitor, Evaluate, and Assess (MEA) focuses on performance measurement, compliance, and risk assessment [7].

As a leading software development company in Indonesia, BTS.id faces substantial IT governance challenges due to its reliance on advanced technologies. The company must ensure its IT infrastructure supports business expansion, encourages innovation, and remains resilient against cybersecurity threats. Given the competitive nature of the software development sector, BTS.id must adopt IT governance best practices to sustain its market position and operational efficiency [8], [9].

The selection of the COBIT 2019 framework in this study is grounded in its strong track record as a comprehensive and adaptive model for IT governance. COBIT has been widely recognized in previous research for its ability to enhance organizational performance by aligning IT strategies with business goals, strengthening risk management, and ensuring compliance with regulatory standards [10], [11]. Its latest version—COBIT 2019—introduces flexible design factors that allow organizations to tailor governance objectives based on specific needs and strategic priorities. For BTS.id, this adaptability is crucial. By applying COBIT 2019, the company can strengthen Strategic IT Alignment, ensuring that IT initiatives are consistently directed toward achieving long-term business objectives. The framework supports structured IT planning and investment, helping prevent misalignment between technology efforts and the broader organizational vision.

Another key area is Risk Management and Compliance, where COBIT 2019 aids in identifying and mitigating IT risks, including cybersecurity threats, data breaches, and regulatory non-compliance. The framework provides guidance on risk assessment and incident response. Additionally, Process Optimization plays a vital role in improving operational efficiency by defining clear IT processes and responsibilities, reducing redundancies, increasing productivity, and streamlining software development workflows. Performance Measurement is another significant advantage of COBIT 2019, as it enables BTS.id to implement key performance indicators (KPIs) to assess IT effectiveness. The framework provides tools for evaluating IT performance and identifying areas for improvement. Furthermore, Innovation and Competitive Advantage are supported through COBIT 2019, which fosters a culture of continuous improvement in IT capabilities, enabling BTS.id to remain at the forefront of industry advancements [12].

Implementing COBIT 2019 at BTS.id involves several steps. First, the company must conduct an IT governance maturity assessment to evaluate its current IT governance practices. This assessment will help identify strengths, weaknesses, and areas requiring improvement. Next, BTS.id should develop an IT governance roadmap, outlining key initiatives, timelines, and resource allocations needed for COBIT 2019 implementation.

Moreover, the success of IT governance depends on effective stakeholder engagement. BTS.id must ensure its leadership team, IT managers, and employees recognize the importance of IT governance and actively participate in its execution. Providing training and awareness programs will help instill a governance-focused culture within the organization [13], [14]. A critical component of IT governance is continuous monitoring and improvement. COBIT 2019 emphasizes the need for regular assessments and audits to ensure IT governance practices remain relevant and effective. BTS.id should establish a governance oversight committee responsible for evaluating IT performance, addressing emerging risks, and making strategic adjustments as necessary.

Several prior studies have successfully implemented the COBIT 2019 framework to enhance IT governance in various organizational contexts. Tangka and Lompoliu [12] applied COBIT 2019 at PT. Pelindo TPK Bitung and emphasized the framework's effectiveness in identifying capability gaps and aligning IT processes with strategic business needs. In another study, the same authors focused on BPS Manado and demonstrated how COBIT 2019 can guide structured improvements through maturity assessments and roadmap development [13]. Additionally, Lompoliu and Tangka [14] explored IT governance at PT Bank Pembangunan Daerah Papua, highlighting the importance of continuous evaluation and executive commitment in sustaining governance outcomes. While these studies provide valuable frameworks and assessment results, this research presents a distinct contribution by applying COBIT 2019 to BTS.id—a rapidly growing digital startup. Unlike previous studies that centered on public institutions or state-owned enterprises, this research focuses on aligning governance design factors with startup-specific dynamics, proposing an adaptable implementation roadmap that emphasizes innovation, agility, and continuous stakeholder engagement.

By adopting COBIT 2019, BTS.id stands to gain numerous benefits. Enhanced operational efficiency can be achieved through optimized IT processes, leading to faster software development cycles and improved service delivery. Strengthened cybersecurity measures provide additional protection, as robust risk

management and compliance strategies help secure sensitive data and IT assets. Additionally, improved decision-making is facilitated through data-driven insights, allowing leadership to make informed strategic choices regarding IT investments. Lastly, sustainable business growth is supported by a well-governed IT environment that fosters scalability, innovation, and long-term success [15], [16].

BTS.id was chosen as the case study due to its rapid growth and strong reliance on IT, which brings unique challenges in governance, including weak change management, project oversight, and performance monitoring. While COBIT 2019 has been applied in public institutions and large enterprises, there is limited research on its use in dynamic startup environments. This study addresses that gap by applying COBIT 2019 to assess and optimize IT governance at BTS.id. Its customizable design factors make the framework highly relevant for aligning IT governance with the fast-paced nature of startups. Through this approach, the study contributes both a tailored governance roadmap for BTS.id and insights into the broader applicability of COBIT 2019 in the startup sector.

2. MATERIALS AND METHOD

The research was conducted through five key stages: (1) problem identification, (2) data collection, (3) data analysis, (4) evaluation using COBIT 2019, and (5) formulation of recommendations. These stages are outlined in Figure 1. First, Problem Identification focuses on recognizing IT governance challenges at BTS.id and reviewing relevant studies. Next, Data Analysis examines the first ten COBIT 2019 design factors to tailor the framework to BTS.id's needs. In the Data Collection phase, interviews with BTS.id personnel provide insights into current IT governance practices. The Findings and Analysis stage then evaluates how well these practices align with COBIT 2019, identifying strengths and areas for improvement. Finally, the Conclusion summarizes the findings and offers recommendations to enhance IT governance efficiency, risk management, and overall IT performance. Research Methodology can view at figure 1.

Figure 1. Research Methodology

Primary data were collected through semi-structured interviews with key stakeholders, including IT managers, project leads, and operational staff at BTS.id. A total of six participants were selected based on their involvement in IT governance processes. The interview questions were designed to capture information related to the organization's strategic goals, IT risks, and current governance practices. Additional data were gathered from internal documents, such as IT policies, project records, audit reports, and governance plans.

The analysis applied the COBIT 2019 Design Factors, which include enterprise strategy, goals, risk profile, IT issues, threat landscape, compliance, IT role, sourcing, implementation methods, and technology adoption. Each factor was evaluated through stakeholder responses and organizational documents to determine its influence on governance objectives. The Governance and Management Objectives (GMOs) were prioritized based on their alignment with business strategy and current maturity level.

The capability level for each objective was assessed based on COBIT's performance management guidelines, which range from Level 0 (Incomplete) to Level 5 (Optimizing). Maturity ratings were supported by interview feedback and document analysis. The evaluation focused on identifying gaps between the current state and the desired state for each objective.

2.1. Understanding the Company's Context and Strategy

Understanding the company's context and strategy enhances its ability to compete and achieve business goals more efficiently and effectively. This section provides a detailed explanation of IT strategy and management, covering current challenges and the business objectives of the IT department at BTS.id using COBIT 2019 [17].

2.1.1 Defining the Initial Scope of the Governance (Design Factor 1-4)

Defining the initial scope of the IT governance system is essential for aligning governance practices with business needs and objectives. A well-defined scope helps organizations assign clear roles and responsibilities, identify necessary resources, and measure the system's effectiveness in achieving organizational goals. Several factors influence the development of IT governance, including financial governance, strategic planning, and regulatory policies. The first key factor, Enterprise Strategy, focuses on how a company aligns its IT governance with its business strategy [5].

It includes four main approaches: growth and acquisition, innovation and differentiation, cost leadership, and client service and stability. Companies assess these aspects using a scale to determine their priority level.

The second factor, Enterprise Goals, evaluates how IT governance supports the company's strategic objectives. It emphasizes aspects such as security, compliance, operational efficiency, and digital transformation, ensuring that IT plays a crucial role in achieving business success [18], [19].

The third factor, IT Risk Profile, examines risk management in IT governance by assessing 19 different criteria. These include IT investment decisions, project lifecycle management, cost oversight, IT-related competencies, compliance, and data management. Understanding these risks helps organizations mitigate potential threats and enhance governance effectiveness. The fourth factor, IT-Related Issues, involves identifying and analyzing challenges related to IT operations. This includes assessing current and potential risks to develop proactive solutions. By addressing IT-related challenges effectively, organizations can strengthen their governance framework and enhance long-term resilience. Overall, defining the scope of IT governance through these factors helps organizations establish a structured and strategic approach, ensuring IT aligns with business priorities, mitigates risks, and enhances operational efficiency [20].

2.1.2 Expanding the Scope of the Governance System (Design Factor 5-10)

Expanding IT governance helps companies adapt to business changes and strengthen their IT framework. Key factors include assessing security risks (normal or high), regulatory compliance (low, normal, or high), and IT's role (Support, Factory, Turnaround, or Strategic). The sourcing model determines whether IT services are outsourced, cloud-based, or insourced. Companies also evaluate software development methods (Agile, DevOps, or Traditional) and their technology adoption strategy (First Mover, Follower, or Slow Adopter). By analyzing these aspects, BTS.id can improve IT governance, enhance security, ensure compliance, and optimize IT operations for long-term success [21], [22], [23].

3. RESULTS AND DISCUSSION

This chapter explains the results of the Design Factors based on interviews conducted with BTS.id using COBIT-2019. From the findings, we obtained these following design factors result:

3.1. Enterprise Strategy

Table 1. Enterprise Strategy

Value	Importance (1-5)	Baseline
Growth/ Acquisition	5	3
Innovation/ Differentiation	4	3
Cost Leadership	1	3
Client Service/ Stability	1	3

Table 1 outlines BTS.id's enterprise strategy, highlighting Growth/Acquisition (5) and Innovation/Differentiation (4) as key priorities, while Cost Leadership (1) and Client Service/Stability (1) hold lower significance. Despite this strategic emphasis, all categories maintain a moderate baseline score of 3, indicating room for improvement in execution. From an IT governance perspective, this suggests that BTS.id's digital initiatives should prioritize scalability and innovation-driven investments, aligning with COBIT 2019's focus on value delivery and strategic alignment. However, the relatively low priority on cost efficiency and stability implies potential governance challenges, particularly in balancing rapid expansion with sustainable IT operations. To ensure long-term success, BTS.id must strengthen its IT risk management and capability maturity while maintaining agility in its digital transformation strategy.

3.2. Enterprise Goals

Table 2. Enterprise Goals

Value	Importance (1-5)	Baseline
EG01—Portfolio of competitive products and services	4	3
EG02—Managed business risk	3	3
EG03—Compliance with external laws and regulations	4	3
EG04—Quality of financial information	5	3
EG05—Customer-oriented service culture	5	3
EG06—Business-service continuity and availability	5	3
EG07—Quality of management information	3	3
EG08—Optimization of internal business process functionality	5	3
EG09—Optimization of business process costs	1	3
EG10—Staff skills, motivation and productivity	4	3
EG11—Compliance with internal policies	5	3
EG12—Managed digital transformation programs	4	3
EG13—Product and business innovation	5	3

Table 2 presents BTS.id's Enterprise Goals, emphasizing key strategic objectives in alignment with IT governance under the COBIT 2019 framework. The highest priority goals include Quality of Financial Information (EG04), Customer-Oriented Service Culture (EG05), Business-Service Continuity (EG06), Optimization of Internal Business Process Functionality (EG08), Compliance with Internal Policies (EG11), and Product & Business Innovation (EG13)—all rated at 5 in importance. These goals indicate a focus on financial transparency, customer satisfaction, operational resilience, and digital transformation. However, despite these strategic priorities, the baseline scores remain at 3, suggesting a need for enhanced IT governance implementation to bridge the gap between strategic ambition and current capabilities. The lower importance assigned to business process cost optimization (EG09: 1) further reinforces BTS.id's commitment to growth and service excellence over cost-cutting measures, aligning with its enterprise strategy from Table 1. To enhance governance maturity, BTS.id should strengthen performance monitoring, IT-enabled innovation, and compliance frameworks to ensure sustainable growth in a competitive digital landscape.

3.3. Risk Profile

Table 3. Risk Profile

Risk Scenario Category	Impact (1-5)	Likelihood (1-5)	Risk Rating	Baseline
IT investment decision making, portfolio definition & maintenance	3	1	3	9
Program & projects life cycle management	4	3	12	9
IT cost & oversight	4	3	12	9
IT expertise, skills & behavior	5	2	10	9
Enterprise/IT architecture	5	3	15	9
IT operational infrastructure incidents	5	1	5	9
Unauthorized actions	5	2	10	9
Software adoption/usage problems	5	2	10	9
Hardware incidents	5	3	15	9
Software failures	5	1	5	9
Logical attacks (hacking, malware, etc.)	5	1	5	9
Third-party/supplier incidents	5	3	15	9
Noncompliance	5	2	10	9
Geopolitical Issues	5	2	10	9
Industrial action	1	1	1	9
Acts of nature	5	2	10	9
Technology-based innovation	1	1	1	9
Environmental	5	1	5	9
Data & information management	5	1	5	9

From table 3, BTS.id's risk assessment highlights Enterprise/IT Architecture, Hardware Incidents, and Third-Party/Supplier Incidents as the highest risks (Rating: 15). Other significant risks include Program & Project Lifecycle Management, IT Cost & Oversight, and IT Expertise & Behavior (Ratings: 10-12). Despite high impact, logical attacks, software failures, and IT operational incidents have low likelihood, keeping their risk ratings moderate (5-10). Noncompliance (Rating: 10) is a key governance concern. With a baseline score of 9 across all risks, BTS.id should focus on strengthening IT governance, vendor management, and compliance to mitigate critical risks.

3.4. I & T Related Issues

Table 4. I & T Related Issues

IT-Related Issue	Importance (1-3)	Baseline
Frustration between different IT entities across the organization because of a perception of low contribution to business value	3	2
Frustration between business departments (i.e., the IT customer) and the IT department because of failed initiatives or a perception of low contribution to business value	3	2
Significant IT-related incidents, such as data loss, security breaches, project failure and application errors, linked to IT	3	2
Service delivery problems by the IT outsourcer(s)	3	2
Failures to meet IT-related regulatory or contractual requirements	3	2
Regular audit findings or other assessment reports about poor IT performance or reported IT quality or service problems	3	2

IT-Related Issue	Importance (1-3)	Baseline
Substantial hidden and rogue IT spending, that is, IT spending by user departments outside the control of the normal IT investment decision mechanisms and approved budgets	3	2
Duplications or overlaps between various initiatives, or other forms of wasted resources	3	2
Insufficient IT resources, staff with inadequate skills or staff burnout/dissatisfaction	3	2
IT-enabled changes or projects frequently failing to meet business needs and delivered late or over budget	3	2
Reluctance by board members, executives or senior management to engage with IT, or a lack of committed business sponsorship for IT	3	2
Complex IT operating model and/or unclear decision mechanisms for IT-related decisions	3	2
Excessively high cost of IT	3	2
Obstructed or failed implementation of new initiatives or innovations caused by the current IT architecture and systems	3	2
Gap between business and technical knowledge, which leads to business users and information and/or technology specialists speaking different languages	3	2
Regular issues with data quality and integration of data across various sources	3	2
High level of end-user computing, creating (among other problems) a lack of oversight and quality control over the applications that are being developed and put in operation	3	2
Business departments implementing their own information solutions with little or no involvement of the enterprise IT department (related to end-user computing, which often stems from dissatisfaction with IT solutions and services)	3	2
Ignorance of and/or noncompliance with privacy regulations	3	2
Inability to exploit new technologies or innovate using I&T	3	2

BTS.id faces a range of persistent IT-related issues that significantly impact its operational efficiency and strategic alignment. From table 4, a major challenge stems from frustration between different IT entities and business departments due to misaligned expectations and a perception that IT initiatives contribute little to business value. This disconnect results in failed projects and inefficiencies in IT decision-making. Additionally, significant IT-related incidents, such as data loss, security breaches, project failures, and application errors, have been identified as critical risks, particularly when linked to outsourced IT services. Service delivery problems with IT vendors further exacerbate operational inefficiencies, leading to delays and suboptimal system performance. Another pressing concern is poor IT governance, which manifests in various ways, including hidden IT spending by business units outside of approved investment processes, duplication of IT initiatives that lead to wasted resources, and reluctance from senior leadership to fully engage with IT strategies. This lack of oversight and strategic alignment weakens the organization's ability to leverage technology effectively. Furthermore, a shortage of IT resources, coupled with staff burnout and inadequate technical expertise, hampers the execution of IT projects, often resulting in delays, budget overruns, and dissatisfaction among employees. Regulatory compliance and data security also present significant risks. Regular audit findings highlight issues related to IT performance, data quality, and integration across various sources. High levels of end-user computing create additional challenges, as employees often implement their own IT solutions outside the enterprise IT framework, leading to fragmented systems and security vulnerabilities. The lack of compliance with privacy regulations further exposes the organization to legal and reputational risks. Moreover, BTS.id struggles with the high cost of IT, inefficient decision-making processes, and a rigid IT architecture that obstructs innovation. The gap between business and technical knowledge further complicates communication, making it difficult for business users and IT specialists to collaborate effectively. These issues, combined with an inability to exploit new technologies, limit the organization's potential for digital transformation.

3.5. Threat Landscape

Table 5. Threat Landscape

Value	Importance (100%)	Baseline
High	90%	33%
Normal	10%	67%

Table 5 shows the threat landscape for BTS.id distinguishes between high-value and normal threats based on importance and occurrence. High-value threats are deemed critical, with 90% importance but only 33% of the baseline, indicating their lower frequency but significant impact. In contrast, normal threats, though

more frequent (67% baseline), hold only 10% importance. This suggests BTS.id should prioritize mitigating high-impact threats while maintaining safeguards for more common risks to ensure business resilience.

3.6. Compliance Requirement

Table 6. Compliance Requirements

Value	Importance (100%)	Baseline
High	100%	100%
Normal	0%	0%
Low	0%	0%

The compliance requirements for BTS.id is show in table 6, it emphasizes that only high-value compliance holds significance, with 100% importance and baseline. Normal and low compliance values are deemed irrelevant, both marked at 0%. This suggests that BTS.id must fully adhere to critical compliance standards while deprioritizing lesser regulations.

3.7. Role of IT

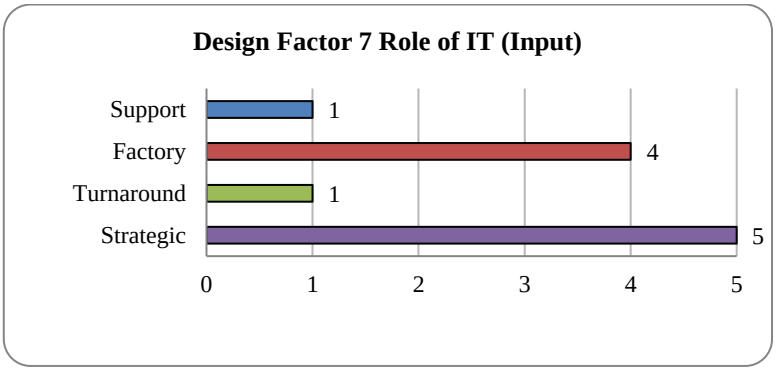

Figure 2. Role of IT

Figure 2 shows the role of IT in BTS.id is predominantly strategic, as indicated by the highest score of 5. This suggests that IT is deeply integrated into the organization's long-term planning and is used as a key driver of competitive advantage, innovation, and digital transformation. The second highest score, 4, for the factory role, implies that IT also plays a significant part in ensuring operational efficiency, automation, and reliability, supporting core business processes with a focus on standardization and cost-effectiveness. In contrast, the support and turnaround roles have much lower scores, both at 1. A low support score suggests that IT is not primarily used for basic administrative tasks or maintenance but rather for higher-level strategic functions. Similarly, the low turnaround score indicates that IT is not being heavily leveraged for rapid, short-term business changes or crisis-driven transformations. Overall, BTS.id relies on IT primarily for strategic growth and operational excellence, with minimal focus on reactive or maintenance-related roles. This alignment highlights the organization's commitment to using technology as a long-term enabler rather than just a functional necessity.

3.8. Sourcing Model of IT

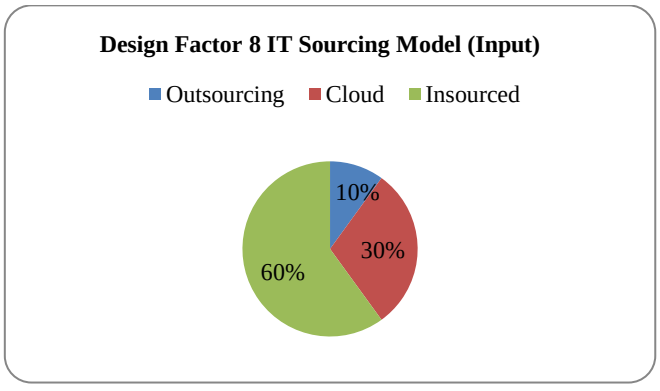

Figure 3. Sourcing Model of IT

From figure 3, we can see the IT sourcing model at BTS.id is primarily insourced, accounting for 60% of the total sourcing strategy. This indicates that the organization prefers to develop and manage its IT resources internally, likely to maintain greater control, security, and customization over its IT operations. The second most significant sourcing method is cloud computing, making up 30%, which suggests that BTS.id leverages cloud solutions for scalability, cost-effectiveness, and flexibility while still maintaining control over critical IT functions. Outsourcing plays the smallest role, at only 10%, implying that BTS.id does not heavily rely on external vendors for IT services. This could indicate a strategic decision to minimize dependency on third parties and retain in-house expertise. Overall, BTS.id's IT sourcing model reflects a strong preference for internal IT management while strategically integrating cloud services to enhance efficiency and agility.

3.9. IT Implementation Method

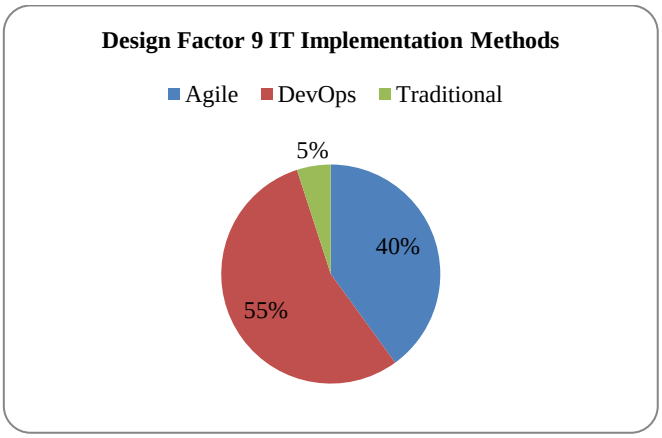

Figure 4. IT Implementation Methods

The IT implementation methods at BTS.id are primarily driven by DevOps, which accounts for 55% of the approach. This indicates a strong emphasis on continuous integration, automation, and collaboration between development and operations teams to enhance efficiency and speed in IT deployment. Agile methodologies follow closely at 40%, highlighting the organization's commitment to iterative development, flexibility, and responsiveness to changing requirements; respectively shown in figure 4. Traditional implementation methods are minimally used, comprising only 5% of the total, suggesting that BTS.id has largely moved away from rigid, linear project management approaches. This overall distribution reflects a modern IT strategy focused on adaptability, automation, and collaboration, enabling BTS.id to rapidly develop and deploy IT solutions while maintaining efficiency and innovation.

3.10. Technology Adaption Strategy

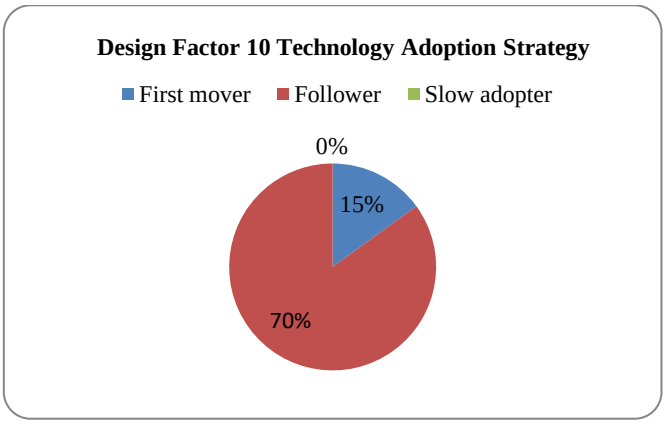

Figure 5. Technology Adaption Strategy

Figure 5 shows the technology adoption strategy at BTS.id is predominantly that of a *Follower*, making up 70% of the organization's approach. This suggests that rather than being at the cutting edge of technology innovation, BTS.id strategically waits for technologies to mature, observing industry trends before implementing proven solutions. Meanwhile, 15% of the adoption strategy aligns with a *First Mover* approach, indicating that in some cases, BTS.id is willing to take risks by adopting new technologies early to gain a

competitive edge. However, there is no representation (0%) in the *Slow Adopter* category, which implies that BTS.id does not delay technology adoption to the extent that it falls behind industry standards. Overall, BTS.id balances cautious technology adoption with some willingness to embrace innovation, ensuring stability while still leveraging new advancements when necessary.

3.11. IT Governance Design Result

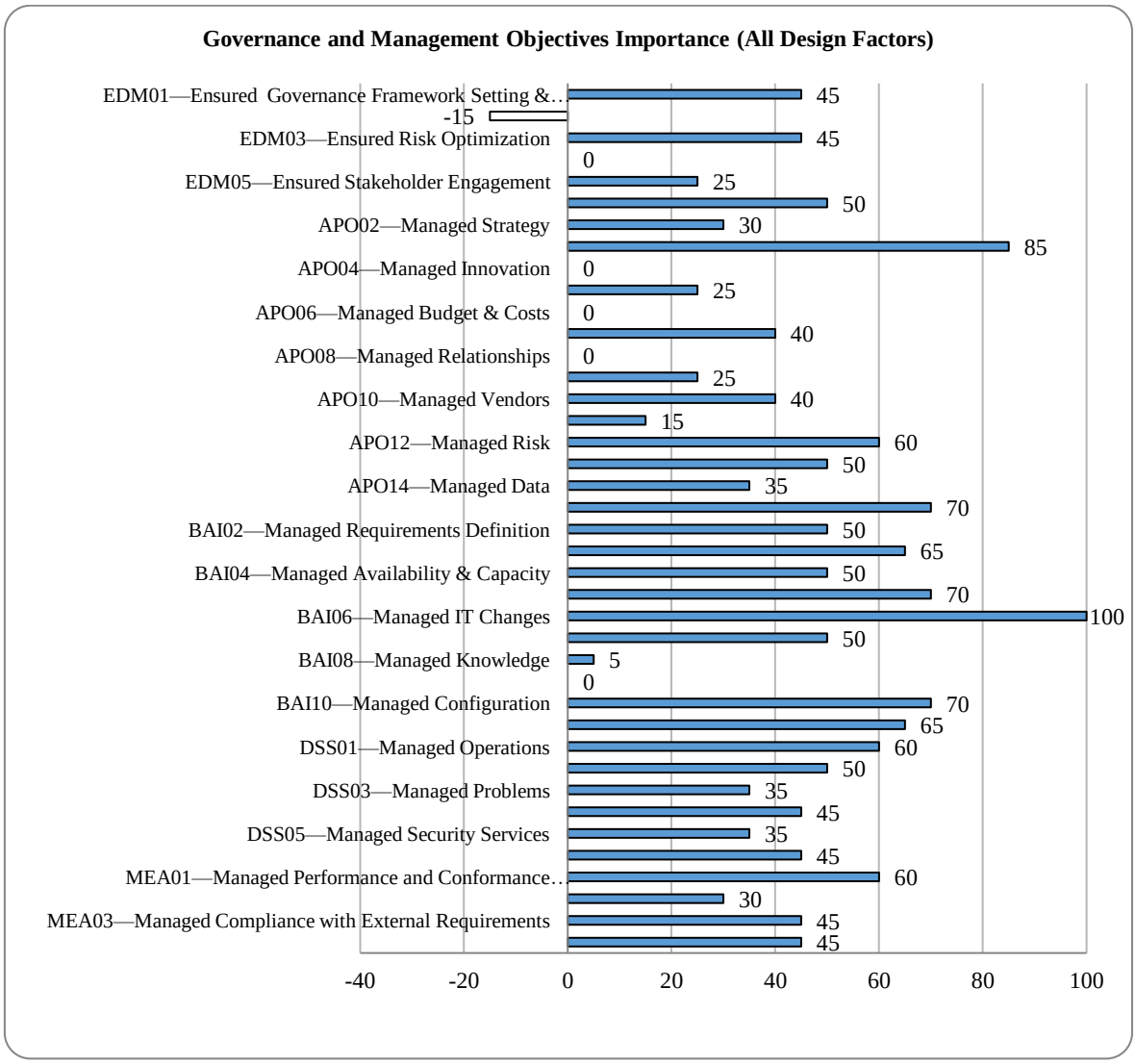

Figure 6. Governance and management objectives importance

After conducting the analysis, the importance levels of Governance and Management Objectives in BTS.id have been identified based on COBIT 2019. Figure 6 presents the importance of Governance and Management Objectives based on all design factors, likely structured using COBIT 2019.

The highest priority is given to BAI07 (100), which suggests that the IT governance framework at BTS.id strongly emphasizes structured change management. This aligns with BTS.id's goal of progressive IT governance maturity. A well-managed IT change process ensures that digital transformation initiatives, system upgrades, and technology deployments occur smoothly, minimizing operational disruptions. Similarly, APO03 (85) reflects the need for a well-defined IT architecture that aligns with business objectives, which is crucial for maintaining strategic alignment—one of BTS.id's key governance objectives.

Other high-priority objectives include BAI11 (70) and BAI02 (70), reinforcing the importance of clear project management frameworks and well-defined IT requirements. This corresponds with BTS.id's structured IT investment policies, ensuring that IT initiatives deliver value and align with corporate strategies. Two other objectives with significant importance are BAI10 (65) and BAI05 (65). The emphasis on BAI10 highlights the need for strict control over IT assets, ensuring system stability and minimizing risks associated with

misconfigured technology. Meanwhile, BAI05 underscores BTS.id's focus on enabling a smooth transition for employees and stakeholders when adopting new technologies, reducing resistance and maximizing adoption.

Risk management also plays a vital role, as indicated by APO12 (60). The importance of APO12 reflects BTS.id's proactive approach to identifying and mitigating IT-related risks, ensuring resilience against uncertainties. Additionally, MEA01 (60) is essential for continuous IT performance evaluation and compliance assurance, ensuring that BTS.id maintains governance efficiency. DSS01 (60) plays a crucial role in sustaining reliable IT services, aligning operational performance with strategic goals. The other Governance and Management Objectives identified in the analysis include APO13, APO10, APO04, APO05, APO06, APO07, APO08, APO09, BAI08, BAI09, DSS02, DSS03, DSS04, DSS05, DSS06, MEA02, MEA03, and MEA04. While these objectives are still relevant within BTS.id's governance framework, they do not hold the same level of strategic priority as those with higher scores.

Overall, the data suggests that BTS.id's IT governance priorities revolve around structured change management, risk mitigation, compliance, and performance monitoring, aligning with its enterprise strategy and governance roadmap outlined in Section 3.11.

3.12. Discussion

The implementation of the COBIT 2019 framework at BTS.id highlights several key findings related to the enhancement of IT governance in startup environments. The maturity assessment revealed that while BTS.id has established foundational IT practices, there are significant opportunities for alignment between IT operations and strategic business goals. These findings align with the results of Tangka and Lompoliu [12], who also identified capability gaps and misalignments in state-owned enterprises, and further affirm the diagnostic utility of COBIT 2019 in evaluating IT governance readiness. Unlike prior studies conducted in more bureaucratic or public institutions [13], [14], the current research demonstrates that startups like BTS.id require a more agile and adaptable governance model. The governance roadmap proposed in this study is tailored to the dynamic nature of startups, emphasizing stakeholder engagement, simplified oversight mechanisms, and iterative improvement cycles. This contrasts with the more formalized governance implementation strategies observed in public organizations, which often follow rigid structures and timelines.

One significant implication of this study is the demonstration that COBIT 2019 can be flexibly applied to fit the culture and pace of digital startups. The research also underlines the importance of organizational culture in governance success, particularly the need to foster awareness and participation across non-technical stakeholders.

Nevertheless, the study has some limitations. First, it focuses on a single startup case, which may affect the generalizability of the proposed roadmap. Second, while the roadmap was developed based on COBIT design factors and best practices, it has not yet been validated through longitudinal implementation. Future research should explore comparative studies across multiple startups and consider quantitative validation of governance outcomes.

When compared with IT governance practices in public institutions and state-owned enterprises—such as those studied by Tangka and Lompoliu [12], [13]—BTS.id exhibits a stronger emphasis on agility and innovation but shows relative weaknesses in compliance monitoring and vendor management. Unlike mature organizations that often reach Level 3 or 4 in capability assessments, BTS.id remains at an average of Level 2–3, reflecting its early-stage maturity and startup characteristics. This comparison highlights the need for a tailored governance roadmap that balances structure with flexibility, which COBIT 2019 design factors help to achieve.

4. CONCLUSION

This study evaluated the IT governance maturity of BTS.id using the COBIT 2019 framework, focusing on design factors and governance objectives to identify improvement areas. The findings reveal that while BTS.id has initiated IT governance practices, critical gaps remain in structured IT change management (BAI07), enterprise architecture (APO03), and project oversight (BAI11 & BAI02). Other areas, such as risk management (APO12), performance monitoring (MEA01), and IT service delivery (DSS01), were found to be moderately developed but still require reinforcement to achieve governance excellence.

The findings reveal that BTS.id prioritizes structured IT change management (BAI07), enterprise architecture (APO03), and project management (BAI11 & BAI02) as key governance objectives. These areas align with BTS.id's strategic emphasis on digital transformation and operational efficiency. Additionally, risk management (APO12), performance monitoring (MEA01), and IT service operations (DSS01) play a vital role in ensuring resilience and governance compliance. However, several governance and management objectives—such as security management, vendor relationships, and IT-related compliance—were identified as less prioritized, indicating areas where improvements could further strengthen BTS.id's IT governance maturity.

The implications of these findings are significant for digital startups like BTS.id. By implementing a structured and customized governance roadmap based on COBIT 2019 design factors, BTS.id can enhance IT

alignment, increase operational efficiency, and mitigate strategic risks. Practical steps such as forming a governance oversight committee, refining project management workflows, and establishing continuous performance monitoring systems will support these goals. Looking forward, future research should focus on longitudinal studies to track the impact of the proposed governance roadmap over time. In particular, implementation trials within BTS.id could provide empirical evidence of performance improvements, stakeholder engagement, and business alignment. Comparative studies across multiple startups or small enterprises could also expand understanding of how COBIT 2019 can be adapted to different organizational models and maturity levels. By contributing a tailored governance approach for a startup environment, this research extends the applicability of COBIT 2019 and provides a practical reference for similar organizations striving to balance agility with governance control.

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