
Strategic Readiness of 6G Implementation in Indonesian Telco Company : an Internal And External Environment Analysis

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ABSTRACT

The emergence of 6G technology marks a crucial turning point for telecommunications companies, especially in developing markets striving for rapid digital transformation. This study assesses the strategic readiness of a leading Indonesian telecommunications company to implement 6G technology and enhance its Business-to-Business (B2B) service portfolio. As Indonesia moves toward a digitally driven economy, integrating 6G connectivity becomes vital for fostering innovation in B2B telecommunications. Employing a qualitative exploratory approach, this research combines semi-structured interviews with six key stakeholders across strategic, technological, and enterprise domains, supported by secondary data from annual reports and industry publications. Internal factors were analyzed through SWOT analysis, while PESTEL and Porter's Five Forces frameworks identified external opportunities and threats. Findings reveal that strong infrastructure capabilities and institutional synergy as a state-owned enterprise are core strengths; however, challenges persist in talent development, ROI clarity, and competitive agility. The study highlights the necessity for enhanced strategic foresight and investment frameworks to ensure sustainable 6G deployment and market monetization. By integrating internal and external analyses, this research contributes a diagnostic framework offering actionable insights for telecom operators in emerging markets to optimize technological readiness and policy alignment for next-generation connectivity.

KEYWORDS

6G readiness, strategic analysis, SWOT, PESTEL, B2B services, telecommunications, Indonesia



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INTRODUCTION

The global telecommunications industry stands at the threshold of a transformative era as 6G technology emerges as the next frontier in wireless connectivity (Wessel et al., 2021). According to recent projections, the global 6G market is expected to reach \$1.7 trillion by 2040, with Asia-Pacific countries leading adoption rates at 45% (GSMA Intelligence, 2023). This technological evolution arrives at a critical moment for Indonesia's digital economy ambitions. Indonesia is currently at a crucial juncture in its digital development as the country strives to achieve a future of hyper-connectivity, smart industries, and innovation through the active implementation of the Indonesia Digital Roadmap 2021–2024 policies and Making Indonesia 4.0. By employing these measures, the nation aims to progress toward becoming a competitive digital economy (Benzaghta et al., 2021). However, the transition from the current 5G infrastructure to 6G systems represents not merely a technical upgrade but a fundamental

restructuring of business models, operational mechanisms, and value creation paradigms that will define the nation's competitive position in the global digital economy (Goggin & Villanueva-Mansilla, 2024).

This study focuses on analyzing both internal organizational capabilities and external environmental factors that influence 6G implementation readiness in Indonesian telecommunications companies (Jiang et al., 2021; Wang et al., 2022). Specifically, we examine internal factors including technological infrastructure, human resource capabilities, organizational structure, and innovation capacity, alongside external factors such as regulatory frameworks, market dynamics, global technology trends, and competitive pressures (Hanelt et al., 2021). One of the telco companies in Indonesia holds the most influence in leading the 6G transformation, especially with regard to implementation in B2B services. If the company can shift from traditional services supported by the current 5G infrastructure to an envisioned 6G system, it will greatly enhance the competitiveness, productivity, and industrial digitization of the country (Hutajulu et al., 2021). However, empirical evidence suggests significant implementation challenges. Recent data indicate that only 23% of Indonesian telecommunications professionals possess the advanced digital skills required for next-generation networks (McKinsey, 2023), while the sector requires approximately \$15 billion in infrastructure investment for 6G deployment (GSMA, 2023). Additionally, B2B digital services penetration remains at 34% among Indonesian enterprises, highlighting substantial market development needs (IDC Indonesia, 2023).

The existing literature on 6G readiness reveals critical research gaps that this study addresses. Previous research has predominantly focused on technical specifications and infrastructure requirements (Zhang et al., 2023; Kumar et al., 2022), while organizational readiness assessments remain limited. Chen and Wang (2023) examined 6G deployment strategies in developed markets but overlooked emerging market contexts. Similarly, Rahman et al. (2023) analyzed regulatory frameworks for 6G but did not integrate organizational capability assessments. Park and Lee (2022) investigated B2B service innovations in telecommunications but lacked comprehensive strategic diagnostic frameworks. This study addresses these gaps by providing an integrated analysis of both internal organizational capabilities and external environmental factors specific to emerging market contexts.

The 6th Generation (6G) telecommunications networks mark a new era of transformational change in underlying frameworks, services, policies, and business strategies. Scholars have begun framing 6G as not only an ultra-high-speed communication technology but also as a propelling force for intelligent, self-immersive systems (Saad et al., 2020). The transition from 5G to 6G is a systematic change involving network densification, edge intelligence, and the integration of AI and quantum computing, necessitating strategic planning for readiness assessment (Latva-aho & Leppänen, 2019).

A means of gauging a company's readiness for disruptive technologies is through strategic diagnostic approaches. SWOT analysis is a foundational and widely used framework to determine internal capabilities and positions while simultaneously examining external capabilities and competitors (Gürel & Tat, 2017). Likewise, in highly regulated sectors such as telecommunications, where technology acceptance may be restricted, PESTEL analysis enables executives to monitor macro-environmental changes that can either accelerate or impede technological adoption (Yüksel, 2012).

Apart from frameworks, recent research has focused on the development of digital talent and strategic foresight into new network generation challenges (Lokuge et al., 2019). Prasad et al. (2021) recommend that telecom operators in Asia not only enhance infrastructure but also strengthen soft drivers such as incentives, regulatory frameworks, and data governance for compliance and competitiveness.

In Indonesia, national digital strategies like Making Indonesia 4.0 and Indonesia Digital Roadmap 2021–2024 aim to prepare the country for Industry 5.0. These policies emphasize the importance of cooperation between government and the private sector in defining boundaries, benchmark levels, and innovative frameworks that would enable the deployment of 6G (Kominfo, 2023). Thus, tactical compliance with national strategies is an example of how telecom incumbents can optimally capitalize on their government-supported positioning for infrastructural synergy and regulatory alignment.

This paper evaluates the strategic diagnostic of the firm's readiness for 6G implementation in B2B services. What distinguishes this research from previous studies is its integrated application of three complementary strategic frameworks—SWOT, PESTEL, and Porter's Five Forces—to provide a holistic assessment of 6G readiness in an emerging market context. While previous studies have employed these tools in isolation, this research synthesizes their insights to develop a comprehensive readiness diagnostic specifically tailored for telecommunications operators in developing economies. These strategic insights are anticipated not only to steer the company's direction but also to ready telecom operators for the emergence of 6G in emerging markets. The theoretical contribution of this study lies in advancing strategic readiness assessment frameworks for disruptive technology adoption, while its practical significance includes providing actionable insights for telecommunications executives, policymakers, and investors navigating the transition to 6G-enabled business models. The findings will inform evidence-based strategies for resource allocation, capability development, and competitive positioning in the evolving telecommunications landscape.

RESEARCH METHOD

This study employed a qualitative exploratory research design to examine the strategic readiness of an Indonesian telecommunications company for 6G implementation. The research was conducted at a leading state-owned enterprise headquartered in Jakarta, operating nationwide across multiple industry verticals within the B2B segment.

Data collection combined primary and secondary sources. Primary data were gathered through semi-structured interviews conducted between March and May 2024 with six purposively selected informants representing strategic, technological, and enterprise functions. The participants included two senior executives from strategic planning, two technology directors responsible for network infrastructure, and two managers overseeing B2B services. Each interview lasted approximately 60 to 90 minutes and followed a structured protocol addressing organizational capabilities, resource readiness, and strategic positioning for 6G adoption. Secondary data were drawn from company annual reports (2020–2023), industry publications by GSMA and IDC Indonesia, regulatory documents from the Ministry of Communication and Information Technology, and relevant academic literature. Triangulation of these data sources enhanced the validity and reliability of the findings.

Data analysis followed Braun and Clarke's (2006) thematic coding framework. Interview transcripts were systematically coded to identify key themes related to strategic readiness. The analysis incorporated three strategic frameworks: SWOT for assessing internal capabilities, PESTEL for examining external influences, and Porter's Five Forces for evaluating competitive positioning. This integrated approach provided a comprehensive understanding of the company's readiness for 6G implementation.

RESULTS AND DISCUSSION

To capture some of the external factors that are likely to impact the implementation of 6G in the expansion of the firm's B2B services, a PESTEL analysis was prepared. This method allows for an organized assessment of Political, Economic, Sociocultural, Technological, Environmental, and Legal

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elements that may impact future scenarios. The data obtained for this part was collected through primary data collection (interviews) with the executives who provided strategically relevant insights based on the organization's internal realities and anticipatory visions. These data are further complemented and improved by other information available in academic journals, industry publications, and exploratory research undertaken on global and regional trends. This blended method captures the comprehensive view of the micro-environmental factors influencing the operative and strategic decisions of the company in relation to the 6G architecture in the mid to long term. Listed below are the forces and analysis gathered during the interview:

Table 1. PESTLE Analysis

	Analysis
Political	Regulatory changers (eg. Merger approvals, spectrum policy) Global political conflicts affecting cybersecurity and supply chain
Economic	Inflation and macroeconomic instability (reducing ARPU and purchasing power) ROI uncertainty due to high infrastructure investment New model of monetisation
Socio-Cultural	Shift in customer behaviour Increased demand for personalised, seamless digital services AI-& real-time based services Adoption rate of digital services
Technological	Rapid advancement of AI, IOT, quantum computing, and metaverse Demand for new infrastructure Vendor dependency Use case expansion of complex technology enhancement
Environment	ESG demand from B2B customer
Legal	Spectrum / frequency regulation for 6G Government policies on telco roles, digital ecosystem, and foreign partnerships Regulations regarding data sovereignty

Political

The deployment of 6G is considered a massive change that impacts not only technological infrastructure, but also legal and business frameworks. As noted by Respondent 1 through the interview, *“6G is a major technological shift that will not only impact network technology, but also on business processes and regulation. This needs to be jointly prepared by both the corporation and government”*. This underscores the need for synchronized proactive collaboration between the firm and the governing authorities to facilitate the transition to 6G.

Indonesia's political stability and its national roadmap on digital transformation (e.g., Making Indonesia 4.0 and the Digital Indonesia Vision) offer a supportive backdrop for 6G development (PESTLEanalysis Team, 2023). Nonetheless, there are politically induced global risks. As Respondent 3 argues, *“Geopolitical conditions—like sanctions, export tariffs, or tech nationalism—can restrict our access to crucial components or platforms”*. This echoes concerns raised internationally in the U.S.-China tech war of the 2010s that resulted in procurement blockades for network equipment due to stringent semiconductor and 5G technology export control restrictions (6G-IA, 2025).

Economic

Economic viability questions remain a primary challenge. “As ARPU stays stagnant, the ROI becomes more ambiguous. We cannot simply depend on conventional monetization; we need to shift towards outcome-based models for B2B,” Respondent 3 stressed. The general sentiment across the industry is that the infrastructure costs are rising, while the strategies for monetization are changing at a very slow pace. This concern is also supported by The Cellular Operators Association of India (COAI) who noted that low ROI from 5G services is likely to slow down the adoption of 6G. (Business Standard, 2025).

Socio – Cultural

The socio-cultural shift in expectation of services from the digital world is transforming enterprise needs. Solutions-based products are no longer enough as Respondent 5 quotes “Corporate clients expect integrated bundled offerings that include connectivity, security, cloud, analytics, and device management”. This is revealing the gap towards the next generation expectation and the existing infrastructure.

Technological

Many experts have pointed out that technology is moving ahead of infrastructure readiness. Respondent 2 noted, *“We’re not just talking about telco towers—6G is about AI, automation, machine-to-machine communication. The architecture has to be completely rebuilt”*. This change also creates the need to redefine alliance design, ecosystem frameworks, and vendor management models. In addition, the partnership with ZTE for the implementation of AI-based systems and modern network technologies tailored to new connectivity demands illustrates these strategic shifts (RCR Wireless, 2025).

Environmental

Though not a primary focus, the environment related to 6G was touched on. Respondent 6 recalled, “Energy efficiency will be a big issue, especially when clients are starting to demand ESG alignment with their solutions”. The future deployment of 6G should be considered alongside sustainability objectives.

Legal

Respondent 4 remarked, *“As we grow our services that deal with hyperscalers and cross-border data flows, legal compliance with data handling becomes critical. That will also include the enforcement of data sovereignty laws pertinent to spectrum policy governance.”* Forming legally compliant policies will be fundamental in fostering customer confidence as well as customer partnerships. Indonesia has been leveraging investment opportunities due to the increased availability of technologies as well as advancing infrastructure within the country. This rapid-development is a result of government strategies targeting foreign investments focused on new technologies. (Gerbang Bisnes, 2025).

Porter’s Five Forces framework was used to analyze the competitive structure and the future prospects in the context of the 6G-enabled B2B market . This model considers the buyer and supplier’s bargaining power, new entrants and substitutes threats, and competitive rivalry. Primary data was obtained through interviews with selected personnel from corporate planning and enterprise units, which captured the strategic risks and market dynamics. Secondary data, such as journal articles, updates from regulatory bodies, and industry reports, was also collected to strengthen and validate the findings, particularly regarding the technology policy trends, policy issues, and international telecommunications company strategies. This approach enables

a comprehensive analysis of the company's competitive position within the scope of 6G technology.

Table 2. Porter's Five Forces Analysis

Forces	Analysis
New Entrants	Big tech players (eg. Amazon, Google) to build their own network infrastructure High entry barrier (big investment, regulations, and high complexity of infrastructure)
Power of customers	Customer high demand of more than connectivity (more into solutions – IOT, AI, etc)
Power of suppliers	Dependence on vendors for infrastructure (eg. Hardware for 6G, lack of clarity in ecosystem readiness) Patent domination by tech-based country like China (68% patent 5G)
Substitute products	OTT services taking over telco value chain
Existing competitors	Intensed mergers of Indosat-Hutch, XL-Smartfren Value creation competition (beyond connectivity)

New Entrants (Moderate)

Telco companies are at risk of losing relevance due to the growing threat of technology corporations. *“Amazon and Google don't need fiber—they build solutions straight from their cloud. That's a serious threat to our legacy model,”* remarked Respondent 1. It is imperative for the firm to develop strategies to compete within the industry and also shift their focus to new innovations. The Technology-Organization-Environment (TOE) framework's environmental component analyzes market shifts due to new digital competitors and a distributed infrastructure. Organization innovation is required of the firm to defend its position against cloud-native players that seek to circumvent traditional telco frameworks.

Buyer Power (High)

Seen from the telco landscape, the buyers have truly evolved overtime. *“Clients don't just want a network—they want results. If you can't deliver business outcomes, they'll go elsewhere,”* Respondent 5. With buyers gaining keen insights, a more holistic approach will need to be taken in order to ensure tailored expectations are met.

Supplier Power (Moderate)

Dependency on a supplier is perceived as an opportunity for strategic exploitation. Respondent 6 remarked, *“China dominates patents, especially in 5G. If we stay dependent, we will remain to be followers when it comes to standards and pricing.”* Thus, diversification towards partnerships and infestation in local R&D are essential for future action plans. This is also supported by the TOE framework which states that, in order to increase strategic independence, reliance on certain suppliers must be minimized, and internal talents as well as innovation systems are needed to evolve.

Substitutes (High)

In this digital era, basic telco-based services such as calls and messaging are highly substituted by OTT players. Stated by Respondent 2, *“Communication services like Zoom and Teams mean clients no longer require our services. OTT players have already taken over the telco roles. If we can't offer insights or integration, we're at risk of being edged out.”* This

highlights the importance for telco players to enhance their value-added services in retaining customers and increase revenue stream.

Industry Rivalry (High)

The intensity of telco competition is rising as local operators are moving through merger and acquisition. Respondent 4 pointed out, “The merging of Indosat-Hutch or XL-Smartfren is not necessarily to attack B2C customers. Hence, it is also bundling digital value for B2B clients. That’s our battleground too.” This emphasizes the need for the firm to focus on innovation and increase differentiation on offerings. Competitive impact is managed through structural adaptability and strategic flexibility which pose greater focus on sustaining competitive intensity. According to Baker, firms need to build integrated market and sales innovation processes that allow cross-functional teams to respond dynamically to changes in the market (Baker, 2012).

SWOT Analysis

A SWOT analysis was used to evaluate the firm’s internal capabilities and strategic posture relative to external opportunities and threats. This analysis attempts to provide comprehensive 6G readiness gaps in the B2B segment by delineating strengths, weaknesses, opportunities, and threats pertaining to them. The SWOT structure draws from primary data gathered through interviews with the company’s leadership, and as such, captures the qualitative aspects of internal operations, organizational resources, and strategic control precisely the firm’s decision making processes. This primary data also include desk research and scholarly material about the industry’s innovation readiness and competitive capabilities, which help inform some of the contextual and comparative benchmarks. This balance of primary and secondary information enables a pragmatic and optimistic internal analysis curriculum grounded, flexible scenario analysis.

Table 3. SWOT Analysis

Forces	Analysis
Strengths	5G pioneer Member of SOEs Existing innovation institutions (Entertainment, EduTech, Innovation) High capability to serve B2B market
Weakness	Talent gap in digital transformation ROI uncertainty for large tech investments Low impact innovation products
Opportunity	6G as a platform for vertical B2B expansion National agenda on industry 5.0 and digital economy Demand for cloud, AI, cybersecurity integration Potential to build digital ecosystem through super-apps
Threat	Sudden regulatory or political shifts Market readiness and adoption gaps in B2B services Lack of infrastructure clarity

Strength

The integration within the Parent Group along with the pertinent infrasture, fiber networks, and being a state owned enterprise, helps develop the firm’s core strength. This synergy, as Respondent 1 pointed out, facilitates the execution of 6G orchestrating initiatives framework. This claim is further reinforced by vast B2B capabilities the firm has along with

deep rooted connections in various other industries such as finance, healthcare, and logistics which are vital for 6G's vertical use cases as stated by Respondent 2.

Moreover, the company has developed innovation through several business units, which focuses on consumer engagement. While these platforms initially focused on consumer attention, they offer tremendous opportunities for repositioning into enterprise applications like video analytics and content delivering through the cloud. According to Respondent 6, this advancement signals readiness on their part to spearhead digital transformation when 6G capabilities mature. All these advantages make the firm as one of the most ready telecom industries to innovate in Indonesia's transition towards the 6G digital economy.

Weakness

The lack of cross-functional talents in modern digital skills stands out as one of the internal weaknesses of the firm as a company. The firm suffers from a shortage of skilled people in tech and business integration working with B2B models, to put it lightly. This is a strategic risk. Most of the enterprise solutions that the firm offers are incorporating technology, but not really commercialized, which makes them hard to grow. Indeed, Respondent 3 disclosed this information during the interview. Besides, even in the consumer space, there is a lot of work remaining to be done increasing B2B uptake, which informationally smoothens business expansion gaps. The lack of adequate talent alongside the company's preemptive integration and innovation harms its capacity in fully exposing the core prospects of 6G in enterprise verticals.

Opportunities

There is a chance to target specific verticals for 6G-enabled solutions in healthcare, logistics, and energy. Respondent 6 also added: *"With 6G, we can provide smart logistics, smart ports, and smart mining. These are no longer sci-fi—they're real B2B opportunities"*. In addition, the national focus on Industry 5.0 and the digital economy is already being pursued by Indonesian companies.

Threat

Industry changes and client preparedness remain persistent issues. *"If clients aren't prepared to embrace the new technology or if regulations change during the project, the ROI collapses rapidly"* stated Respondent 2. This illustrates the need to calibrate technological development with timing of regulations and market readiness. Respondent 1 also added that *"The threat from technology firms skipping over traditional telco infrastructure buildouts is tangible. As tech firms don't require fiber optics, they construct their solutions directly from cloud and infrastructure services"*.

CONCLUSION

This study provides a comprehensive assessment of strategic readiness for 6G implementation in Indonesian telecommunications companies through an integrated analysis of internal capabilities and external environmental factors. The research findings reveal that while the examined company possesses substantial strengths in infrastructure assets, institutional synergies, and market positioning as a state-owned enterprise, significant challenges persist in talent development, ROI clarity, and innovative monetization strategies. The PESTEL analysis highlights critical external pressures including geopolitical uncertainties affecting technology supply chains, evolving regulatory frameworks, and shifting customer

expectations toward integrated digital solutions. Porter's Five Forces assessment reveals intensifying competitive dynamics from both traditional telecommunications rivals pursuing consolidation strategies and emerging threats from cloud-native technology companies bypassing conventional infrastructure. The SWOT synthesis demonstrates that successful 6G deployment requires more than technological capabilities—it demands organizational transformation, strategic agility, and ecosystem orchestration capabilities. This research contributes to telecommunications strategy literature by demonstrating the value of integrated diagnostic frameworks in assessing readiness for disruptive technology adoption in emerging markets. The practical implications suggest that telecommunications operators must pursue simultaneous capability development across multiple dimensions: investing in digital talent acquisition and development, establishing innovative outcome-based business models, fostering strategic partnerships to reduce vendor dependencies, and aligning technology deployment with market readiness indicators. Future research should examine longitudinal patterns of 6G adoption across different market segments, investigate the effectiveness of alternative business models for 6G monetization, and develop quantitative metrics for measuring organizational readiness for next-generation telecommunications technologies. As Indonesia advances toward its digital economy aspirations, the strategic choices made by telecommunications companies in preparing for 6G will fundamentally shape the nation's competitive position in the global digital landscape.

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