



Optimizing PBB-P5L Revenue in the Mineral and Coal Sector through Business Process Analysis at KPP Pratama Batulicin

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ABSTRACT

This study investigates the Business Process of Land and Building Tax (PBB-P5L) in the mining sector (minerba) at KPP Pratama Batulicin, focusing on the challenges that hinder optimal tax revenue collection. The primary objective is to examine how well the tax process operates, identify issues related to tax administration, and assess the untapped tax potential. Using a qualitative descriptive approach, the study analyzes secondary data from KPP Pratama Batulicin and external sources, including data on mining permits (IUP/IUPK) and tax compliance. Data collection was done through document analysis, with a focus on mining tax registration, reporting, and assessment procedures. The findings reveal significant discrepancies between the number of mining permit holders and registered taxpayers, as well as data inaccuracies that prevent effective tax collection. The estimated untapped tax potential before audits was Rp30.87 billion, increasing to Rp38.59 billion after audits, indicating a significant underreporting of taxable assets. The study suggests improvements in data integration between DJP and ESDM, the use of satellite imagery for land monitoring, and the implementation of a risk-based oversight system. These recommendations are expected to improve data accuracy, reduce the tax gap, and enhance PBB-P5L revenue collection, offering valuable insights for policymakers and tax practitioners aiming to optimize tax administration in the mining sector.

1. Introduction

The extractive industry plays a strategic role in economic development, particularly in resource-rich countries where mining activities contribute significantly to government revenue, export earnings, industrial growth, and regional development. Among the various fiscal instruments applied to the mining sector, property taxation has become increasingly important because it provides a relatively stable source of public revenue while promoting accountable natural resource governance. Unlike income taxes, which are highly sensitive to commodity price fluctuations and corporate tax planning, property taxes are closely linked to the

existence and utilization of physical assets. Consequently, effective property tax administration enables governments to secure sustainable fiscal revenues while ensuring that economic benefits derived from natural resource exploitation are distributed more equitably (OECD, 2023; World Bank, 2023; Bird & Slack, 2022).

Following the COVID-19 pandemic, governments worldwide have accelerated tax administration reforms to strengthen domestic revenue mobilization. Rather than relying solely on increasing tax rates, many countries have focused on improving administrative capacity through digital transformation, integrated information systems, and risk-based

compliance strategies. International organizations, including the Organisation for Economic Co-operation and Development ([OECD](#)), the International Monetary Fund (IMF), and the World Bank, emphasize that modern tax administration depends on high-quality taxpayer databases, digital interoperability, and evidence-based compliance management to reduce tax gaps and improve fiscal sustainability ([OECD, 2023](#); [IMF, 2024](#); [World Bank, 2024](#)). These developments indicate a significant shift in public finance, where administrative effectiveness is increasingly viewed as equally important as tax policy in achieving sustainable revenue collection.

These reforms are particularly relevant to property taxation in the mining sector because mining operations involve complex administrative characteristics that differ substantially from conventional land taxation. Mining properties continuously change due to exploration, production expansion, infrastructure development, reclamation activities, and permit modifications. Consequently, determining taxable objects requires not only land ownership information but also accurate data regarding operational status, production facilities, concession boundaries, and geological characteristics. Such complexity necessitates integrated administrative systems supported by reliable information technology, geospatial information, and institutional coordination to ensure that taxable objects are properly identified, valued, and monitored throughout the mining life cycle ([World Bank, 2023](#); [OECD, 2023](#)).

Recent international studies demonstrate that weaknesses in tax administration frequently generate greater fiscal losses than weaknesses in tax policy itself. Expanding tax rates without improving taxpayer registration, valuation systems, and administrative databases often produces only limited revenue gains because many taxable assets remain outside official records ([Brockmeyer et al., 2021](#)). Likewise,

international experience shows that successful property tax reform depends on comprehensive cadastral systems, standardized valuation procedures, continuous database updating, and effective coordination among government institutions responsible for land administration and taxation ([World Bank, 2023](#)). These findings suggest that administrative capability should be regarded as a strategic determinant of property tax performance rather than merely an operational support function.

The increasing emphasis on administrative effectiveness has also influenced the evolution of modern tax compliance theory. Traditional compliance models, particularly the Economic Deterrence Model developed by [Allingham and Sandmo \(1972\)](#), explain taxpayer behavior primarily through economic calculations involving the probability of detection and the severity of sanctions. Although this framework remains influential, contemporary studies demonstrate that taxpayer compliance is also shaped by institutional trust, procedural fairness, service quality, transparency, and administrative simplicity ([Castro et al., 2022](#); [Alm, 2023](#)). Improvements in digital public services further strengthen voluntary compliance by reducing compliance costs, increasing transparency, and enhancing taxpayer confidence in tax authorities ([OECD, 2023](#)).

Building upon these developments, [Kirchler et al. \(2008\)](#) proposed the Slippery Slope Framework, which explains tax compliance as the interaction between the power of tax authorities and taxpayer trust. Sustainable compliance is achieved not only through effective enforcement but also through transparent, credible, and service-oriented tax administration. Recent advances in digital technologies—including integrated taxpayer databases, artificial intelligence, predictive analytics, and automated compliance monitoring—have strengthened both dimensions by improving supervisory capacity while simultaneously enhancing service quality ([OECD, 2023](#); [IMF, 2024](#)). Consequently,

modern tax administration increasingly combines behavioral insights with digital innovation to create compliance systems that are more efficient, transparent, and data-driven.

In parallel, the OECD has promoted Compliance Risk Management (CRM) as the dominant framework for contemporary tax administration. Rather than allocating administrative resources equally across all taxpayers, CRM applies a risk-based approach in which supervisory activities are prioritized according to the probability and potential impact of non-compliance. This approach enables tax authorities to focus audits and compliance interventions on high-risk taxpayers while simplifying services for compliant taxpayers. The integration of risk analytics, third-party information, digital reporting systems, and advanced data analysis further improves the efficiency of tax administration by allowing governments to allocate limited institutional resources more effectively (OECD, 2023; IMF, 2024).

Despite these theoretical and technological developments, existing literature remains largely concentrated on income taxation, taxpayer behavior, and voluntary compliance. Comparatively limited attention has been devoted to object-based taxation systems such as property taxation in extractive industries. Most empirical studies emphasize taxpayer attitudes, audit strategies, or enforcement mechanisms, while relatively few investigate the administrative processes responsible for identifying, registering, valuing, and updating taxable objects. Consequently, the operational dimension of property tax administration remains insufficiently explored despite its direct influence on revenue realization.

Moreover, previous studies generally treat administrative activities as supporting mechanisms rather than strategic determinants of fiscal performance. Business process management, institutional coordination, and data governance are rarely incorporated into mainstream tax compliance

research, even though failures in these areas frequently produce incomplete taxpayer registration, inaccurate property valuation, delayed tax assessments, and substantial revenue leakage. From a public administration perspective, organizational effectiveness depends not only on legal frameworks but also on well-designed business processes, integrated information systems, and institutional interoperability (Dumas et al., 2018; van der Aalst, 2016). Therefore, administrative weaknesses may prevent taxable objects from being identified before taxpayer compliance even becomes relevant.

Based on this international context, an important research gap emerges. While previous studies have significantly advanced the understanding of taxpayer compliance and compliance risk management, relatively little attention has been given to how business process effectiveness, inter-agency data integration, and administrative governance jointly influence property tax optimization in the mining sector. Existing studies generally examine these factors independently rather than as interconnected components of a unified tax administration system. Consequently, the mechanisms through which administrative inefficiencies translate into revenue leakage remain insufficiently understood, particularly in developing countries where institutional fragmentation and digital transformation continue to evolve.

Indonesia is one of the world's largest producers of coal and mineral resources, making the extractive industry a key contributor to national economic development. The mining sector plays an important role in generating export earnings, government revenue, employment opportunities, and regional economic growth while supporting downstream industrialization and national energy security. According to the Ministry of Energy and Mineral Resources, coal production remains concentrated in Kalimantan, where extensive mining concessions contribute significantly to Indonesia's fiscal capacity. Consequently, ensuring that mining activities

generate fair and sustainable fiscal contributions has become an important component of Indonesia's broader agenda for domestic revenue mobilization and sustainable natural resource governance ([Ministry of Energy and Mineral Resources, 2025](#); [OECD, 2023](#)).

To strengthen fiscal governance, the Government of Indonesia has continuously modernized the legal and institutional framework governing Land and Building Tax for Plantation, Forestry, Mining, and Other Sectors (PBB-P5L). Regulatory reforms, including PMK Number 186/PMK.03/2019, PMK Number 234/PMK.03/2022, PMK Number 81 of 2024 concerning the Core Tax Administration System (CTAS), and Law Number 2 of 2025 concerning Mineral and Coal Mining, reflect the government's commitment to improving tax object administration, valuation procedures, digital integration, and evidence-based supervision. These reforms are consistent with international recommendations that emphasize digital transformation, integrated taxpayer databases, and risk-based compliance management as essential elements of modern tax administration ([OECD, 2023](#); [IMF, 2024](#)).

Despite these regulatory improvements, administrative modernization has not yet fully translated into optimal PBB-P5L revenue realization. Similar to many developing economies, Indonesia continues to face significant challenges in maintaining accurate property tax databases for mining activities. Mining concessions, operational facilities, production capacity, and land utilization often change more rapidly than administrative records can be updated. As a result, discrepancies frequently arise between actual mining activities and officially registered taxable objects, creating opportunities for underassessment and revenue leakage despite an increasingly comprehensive legal framework ([World Bank, 2023](#)).

These challenges are particularly evident within the jurisdiction of KPP Pratama Batulicin, which administers taxation in Tanah

Bumbu and Kotabaru Regencies, South Kalimantan. The region contains numerous coal mining companies operating under Mining Business Permits (IUP/IUPK), extensive concession areas, transportation infrastructure, and export facilities. Given this concentration of mining activities, the region should theoretically generate substantial PBB-P5L revenue. However, actual revenue realization remains below its estimated fiscal potential, indicating that administrative constraints rather than limited economic activity constitute the primary challenge.

Preliminary observations suggest that these constraints originate largely from fragmented institutional data management. Mining licensing data are managed by the Ministry of Energy and Mineral Resources, taxpayer registration is maintained by the Directorate General of Taxes, business licensing information is recorded through the Business Identification Number (NIB) system, while spatial information is managed through separate geospatial platforms. Although each institution performs its statutory responsibilities effectively, limited interoperability among these databases reduces the ability of tax authorities to obtain comprehensive, timely, and accurate information regarding taxable mining properties. Consequently, some mining assets remain incompletely registered, inconsistently valued, or administratively outdated, thereby reducing the effectiveness of property tax administration ([OECD, 2023](#); [World Bank, 2023](#)).

Another important issue concerns the limited integration of digital monitoring technologies into routine tax administration. Advances in Geographic Information Systems (GIS), remote sensing, satellite imagery, and spatial analytics have significantly improved governments' capacity to identify land-use changes, validate taxpayer declarations, and monitor physical developments in near real time. Many countries have incorporated geospatial technologies into property tax administration to strengthen cadastral

accuracy, improve valuation, and support risk-based compliance monitoring. Nevertheless, these technologies have not yet been systematically integrated into Indonesia's mining property tax administration, resulting in continued dependence on taxpayer self-reporting and manual field verification, both of which require considerable administrative resources and increase the risk of incomplete information.

Existing research has primarily examined mining taxation from legal, macroeconomic, or taxpayer compliance perspectives. Comparatively few studies investigate tax administration from the perspective of internal organizational processes, particularly the interaction among taxpayer registration, data verification, property valuation, inter-agency coordination, and monitoring activities. Consequently, limited empirical evidence explains how weaknesses across different administrative stages collectively influence revenue performance. Business Process Analysis (BPA) therefore offers an alternative analytical approach capable of identifying operational bottlenecks and opportunities for administrative improvement within property tax management.

Furthermore, administrative activities should not be viewed as isolated functions. Taxpayer registration, data integration, valuation, compliance risk assessment, monitoring, and audit activities constitute interconnected stages of a single administrative process. Weaknesses occurring during initial registration inevitably affect subsequent valuation, tax assessment, audit selection, and revenue collection. Similarly, fragmented information sharing among government agencies weakens compliance risk profiling and reduces the effectiveness of supervisory activities. Examining these sequential relationships through a business process perspective therefore provides a more comprehensive understanding of how administrative capability influences fiscal performance.

Accordingly, this study integrates three complementary analytical perspectives: Business Process Analysis (BPA), Compliance Risk Management (CRM), and inter-agency data governance. Business Process Analysis is employed to identify operational bottlenecks throughout the registration, verification, valuation, assessment, and monitoring stages of PBB-P5L administration. Compliance Risk Management provides a strategic framework for prioritizing supervisory activities according to taxpayer risk profiles, while inter-agency data governance emphasizes institutional collaboration, digital interoperability, and information integration among relevant government agencies responsible for mining administration. Together, these perspectives establish a comprehensive framework for evaluating administrative effectiveness in property taxation.

The principal novelty of this study lies in shifting the analytical focus from taxpayer behavior toward the governance of taxable objects and administrative processes. Unlike previous studies that primarily emphasize legal frameworks or voluntary compliance, this research argues that revenue optimization is fundamentally influenced by the interaction among business process quality, institutional data integration, digital monitoring capability, and risk-based tax administration. By positioning business processes as the central unit of analysis, this study extends contemporary tax administration literature and demonstrates that organizational capability is a critical determinant of fiscal performance in object-based taxation.

This study contributes to the literature in three important ways. First, it extends Compliance Risk Management theory by applying it to the governance of taxable objects rather than focusing exclusively on taxpayer behavior. Second, it integrates Business Process Analysis with data governance concepts to explain how institutional coordination and information quality influence property tax administration. Third, it provides empirical evidence from Indonesia's mining

sector, thereby enriching the limited body of research on administrative governance in extractive industry taxation within developing economies.

From a practical perspective, the findings are expected to support policymakers in strengthening PBB-P5L administration through improved business processes, integrated digital databases, enhanced inter-agency coordination, geospatial monitoring, and risk-based supervision. These recommendations may contribute to reducing registration gaps, improving property valuation accuracy, increasing administrative efficiency, and optimizing government revenue from Indonesia's strategically important mining sector.

Based on these considerations, this study aims to analyze the existing business processes governing PBB-P5L administration at KPP Pratama Batulicin, identify operational bottlenecks contributing to revenue leakage, estimate the magnitude of untapped fiscal potential, and formulate strategic recommendations for strengthening property tax administration through integrated business process reform. By doing so, the study seeks to contribute to both the theoretical development of modern tax administration and the practical improvement of fiscal governance in Indonesia's mining sector.

2. Literature Review

2.1 Tax Compliance in Modern Tax Administration

Tax compliance constitutes a fundamental pillar of effective tax administration. In a modern context, compliance does not merely reflect taxpayers' willingness to obey tax rules, but rather emerges from a systemic interaction between taxpayers and tax authorities, facilitated by regulatory frameworks, business processes, and information systems. The [OECD \(2023\)](#) emphasizes that modern tax administration increasingly relies on compliance risk management (CRM) as a primary approach to managing non-compliance risks through risk

identification, taxpayer segmentation, and the application of proportionate responses such as education, service delivery, and enforcement. This framework is particularly relevant for object-based taxes, as compliance depends not only on payment intentions but also on the administrative capacity to identify, register, update, and accurately value taxable objects.

From a theoretical perspective, tax compliance was initially explained through the Economic Deterrence Model introduced by [Allingham and Sandmo \(1972\)](#), which conceptualizes taxpayers as rational agents who weigh the benefits of tax evasion against the probability of audit and the severity of sanctions. While this model highlights the importance of enforcement mechanisms, subsequent literature demonstrates that non-economic factors such as social norms, perceptions of fairness, and trust in public institutions also influence compliance behavior ([Castro et al., 2022](#)). Consequently, effective tax administration requires not only enforcement capacity but also institutional legitimacy and efficiency.

Within a behavioral framework, the Slippery Slope Framework proposed by [Kirchler et al. \(2008\)](#) explains tax compliance as the result of a balance between the power of authorities and trust in authorities. Recent studies indicate that digital transformation through a Core Tax Administration System strengthens both dimensions by enhancing data-driven enforcement while simultaneously improving transparency and service quality ([Darmayasa, 2024](#)).

2.2 Object-Based Taxation and Administrative Challenges

The Land and Building Tax for the Plantation, Forestry, Mining, and Other Sectors (PBB-P5L) is categorized as an object-based tax, in which tax liability arises from the physical use of land and buildings rather than from self-reported income. This characteristic creates administrative risks, particularly during the identification and registration of taxable objects. The [OECD \(2023\)](#) refers to this

condition as a registration gap, defined as the discrepancy between taxable objects that should be registered and those actually recorded in tax administration databases.

Developing countries frequently face challenges in expanding the property tax base due to limitations in data availability, valuation capacity, and technological infrastructure. [Brockmeyer et al. \(2021\)](#) demonstrate that increasing tax rates alone does not necessarily lead to higher revenue unless accompanied by improvements in registration and valuation processes. In the context of PBB-P5L, administrative non-compliance may occur when mining activities are already in operation but corresponding taxable objects have not been registered in the Directorate General of Taxes (DGT) system. As a result, Property Identification Numbers (NOP) and Tax Object Sales Values (NJOP) cannot be established, preventing the issuance of Tax Due Notification Letters (SPPT). This situation generates potential revenue loss primarily due to weaknesses in data governance and business process implementation.

2.3 Compliance Risk Management and the Use of Third-Party Data

The concept of compliance risk management (CRM), as developed by the [OECD \(2004\)](#) and further elaborated by [Aslett et al. \(2024\)](#), emphasizes that compliance risk should be managed through systematic and analytics-driven approaches. The CRM process follows the OECD framework, which consists of identifying risks, assessing and prioritizing risks, analyzing compliance behavior, determining treatment strategies, planning and implementing strategies, and monitoring and evaluating performance. Through this iterative cycle, tax authorities are able to map compliance risks, prioritize cases, and apply proportionate responses ranging from education and service measures to intensive audits according to the level of risk.

A key pillar of CRM is the use of third-party data to strengthen detection and verification. [Bjørneby et al. \(2021\)](#) show that

third-party reporting can improve reporting accuracy, although its effectiveness depends on the robustness of verification mechanisms. In the context of the PBB-P5L mining sector, spatial and licensing data from the Ministry of Energy and Mineral Resources, accessed through the Minerba One Map Indonesia (MOMI), can be matched to identify unregistered tax objects and to validate changes in land use. [Aslett et al. \(2024\)](#) further emphasize that digitalization and the use of analytics accelerate risk detection and enhance the efficiency of CRM. Digitalization through the Core Tax Administration System, as regulated under PMK Nomor 81 Tahun 2024, strengthens data integration and traceability by enabling registration, data updates, valuation, and document issuance to be conducted electronically. This reduces administrative delays, minimizes errors, and provides reliable data trails for risk-based supervision and for consistently closing registration gaps.

2.4 Regulatory Framework and Modernization of PBB-P5L Administration

The legal foundation of land and building taxation in Indonesia is established under Undang-Undang Nomor 12 Tahun 1994, with implementing regulations provided by PMK 186/PMK.03/2019, as amended by PMK 234/PMK.03/2022, which govern tax object classification and NJOP valuation procedures. From an administrative perspective, digitalization has been strengthened through PMK Nomor 81 Tahun 2024 concerning the Core Tax Administration System, enabling integrated and electronically documented PBB-P5L administration.

In the mining sector, Undang-Undang Nomor 2 Tahun 2025 updates the regulatory framework for mineral and coal mining, including the designation of mining areas and business permits that form the basis for tax object determination. Consistency between mining permit data maintained by the Ministry of Energy and Mineral Resources and the PBB

database managed by the Directorate General of Taxes constitutes a key prerequisite for effective tax administration. While the legal framework is well established, implementation challenges persist, particularly in system integration and field-level enforcement

2.5 Synthesis of Previous Studies

Recent empirical studies reinforce the relationship between taxpayer behavior, administrative governance, and data quality in promoting compliance. [Castro et al. \(2022\)](#) find that compliance messages emphasizing audit risk are more effective when accompanied by trust in tax authorities. [Aslett et al. \(2024\)](#) show that analytics-based CRM approaches reduce supervision costs while improving risk detection accuracy. Meanwhile, [Grote and Wen \(2024\)](#) argue that successful property tax reforms depend heavily on data quality and transparent valuation systems.

These findings confirm that optimizing PBB-P5L revenue is not merely a matter of tax rates, but is closely linked to administrative effectiveness and data governance. Business process analysis therefore provides a suitable analytical approach for identifying administrative bottlenecks, untapped revenue potential, and opportunities for system-based reform.

2.6 Conceptual Framework of the Study

Based on modern tax compliance theory, the Compliance Risk Management (CRM) approach, and the property tax administration literature, this study develops a conceptual framework in which the optimization of Land and Building Tax for the Plantation, Forestry, Mining, and Other Sectors (PBB-P5L) revenue in the mining sector depends on the effectiveness of tax administration business processes and data governance. Modern tax administration emphasizes that efficient business processes, digital transformation, and integrated information systems are essential for improving tax compliance and strengthening revenue collection (OECD, 2022; [World Bank, 2023](#)).

The integration of sectoral and spatial data between the Directorate General of Taxes (DGT) and the Ministry of Energy and Mineral Resources (MEMR) enhances the completeness and accuracy of tax object registration while reducing information asymmetry and registration gaps. Data integration also supports evidence-based tax administration by improving the consistency and reliability of taxpayer information across government institutions ([OECD, 2022](#); [Bird & Zolt, 2021](#)).

Furthermore, standardized and well-documented procedures for tax object registration, verification, and valuation contribute to greater administrative efficiency by accelerating the issuance of Tax Due Notification Letters (SPPT) and improving the accuracy of the Tax Object Sales Value (NJOP). These improvements increase transparency, reduce administrative errors, and strengthen public confidence in the tax system ([Alm, 2021](#); [World Bank, 2023](#)).

The implementation of Compliance Risk Management (CRM) further enables tax authorities to prioritize supervision based on risk profiles, allowing administrative resources to be allocated more effectively toward high-risk tax objects and taxpayers. Risk-based compliance management has been widely recognized as an effective strategy for increasing tax compliance while reducing enforcement costs ([OECD, 2022](#); [OECD, 2023](#)). Accordingly, improvements in business processes, inter-agency data integration, and CRM implementation constitute the conceptual foundation for enhancing the effectiveness of PBB-P5L management at KPP Pratama Batulicin, ultimately contributing to higher tax compliance, more accurate tax object administration, and sustainable tax revenue optimization ([Bird & Zolt, 2021](#); [Alm, 2021](#)).

3. Research Methods

3.1 Types and Approaches Study

This research uses a descriptive qualitative approach. This approach is chosen because the research focuses on understanding the business processes of the collection of PBB-

P5L for the mining and coal sector (minerba) at KPP Pratama Batulicin, as well as efforts to optimize revenue through an analysis of these processes.

According to [Sugiyono \(2013\)](#) and [Sekaran & Bougie \(2016\)](#), descriptive research aims to systematically and factually describe an ongoing phenomenon. The phenomenon studied includes the normative and actual business processes of collecting PBB-P5L for the mining and coal sector sector, obstacles and risks that cause suboptimal revenue, as well as the potential revenue that has not been explored. This research is also a case study because it focuses on a single KPP with specific regional and tax object characteristics.

3.2 Location and Objects Study

This research is conducted at KPP Pratama Batulicin, which is within the jurisdiction of the Directorate General of Taxes (DJP). This KPP is purposively selected because its area has significant coal mining activity, making PBB-P5L for the mining sector a strategic revenue component.

The object of the research is the business process of collecting PBB-P5L for the mining and coal sector at KPP Pratama Batulicin, along with the resulting revenue conditions, including tax object data, valuation, and determination of the Taxable Sale Price (NJOP), tax assessment issuance, and the management of tax receivables.

3.3 Unit of Analysis

The units of analysis in this research include:

1. The business process of collecting PBB-P5L for the mining and coal sector, both normative (based on regulations and guidelines) and actual (based on internal KPP documents and data).
2. Documents and secondary data that illustrate workflows, task division, operational procedures, tax object and subject data, and mining permit and activity data as the basis for tax potential.

3.4 Data Types and Sources

This research entirely relies on secondary data, which refers to data that has been collected by other parties and is reused for the research purposes. The secondary data consists of:

1. Internal Secondary Data

Sourced from KPP Pratama Batulicin and/or related units within the DJP, including: operational standard procedures (SOP) documents, work guidelines for managing PBB-P5L for the mining and coal sector, and tax object data (NOP list, area, classification, NJOP, and other related information).

2. Secondary Data External

Sourced from external agencies and literature, including: mining business license data (IUP/IUPK), production or mining activity data; regulations related to PBB-P5L and mining; as well as books, journals, research reports, and other publications on PBB-P5L, natural resource sector taxation, business processes, and tax revenue optimization.

The secondary data used includes textual and numerical documents. Numerical data is used to descriptively illustrate the development of revenue, receivables, tax base, and potential revenue, which will be analyzed within the business process framework.

3.5 Data Collection Techniques

The data collection techniques include:

1. Documentary Study

This involves gathering, reviewing, and recording information from related documents, such as regulations, technical guidelines, internal manuals, SOPs, tax object data for PBB-P5L for the mining and coal sector, and mining permit and activity data. This study is used to identify the business process flow, test the alignment between normative provisions and actual implementation, and track quantitative data that supports the analysis of revenue potential.

2. Literature review

This involves reviewing books, journals, research reports, and official publications related to PBB-P5L and taxation in the natural

resources sector, business processes, business process analysis, tax revenue management and optimization, and descriptive qualitative research methods. The literature study helps build the theoretical framework and conceptual foundation of the research.

3.6 Data Analysis Techniques

Data analysis is structured to align with the research objectives, which are to describe the business process of collecting PBB-P5L for the mining and coal sector, identify obstacles and weaknesses, and formulate recommendations for optimizing revenue. The analysis is performed through a combination of descriptive qualitative analysis and simple descriptive quantitative analysis of secondary data.

3.6.1 Data Analysis Techniques

The stages of this analysis include:

1. Data Reduction

The researcher selects and classifies the data according to the focus of the research, including the normative provisions for managing PBB-P5L for the mining and coal sector, actual business processes at KPP Pratama Batulicin, obstacles and implementation risks, and indications of unexplored revenue potential.

2. Data Presentation

The reduced data is presented in narrative form to provide a coherent description of the normative and actual business processes, comparing the two, and the factors contributing to suboptimal revenue.

3. Conclusion Drawing

The researcher concludes the degree of alignment between the actual processes and normative provisions, weaknesses and risks that could lead to lost tax base or delayed revenue, implications for optimizing revenue, and recommendations for improving processes and strengthening internal controls.

3.6.2 Business Process Analysis (*As-Is* and *To-Be*) and Gap Analysis

Business process analysis is conducted through:

1. Mapping the normative business process (to-be normative) based on regulations and guidelines;
2. Mapping the actual business process (as-is) based on SOPs and internal documents;
3. Comparing the two to identify gaps such as stages not implemented or suboptimal, inefficient activities, and weaknesses in internal control;
4. Formulating an improved business process (to-be proposal) that is more effective and efficient, for example through enhanced coordination and data exchange, sharper tax base extension and data updates, and strengthened internal control.

3.6.3 PBB-P5L Revenue Potential Analysis

Simple descriptive quantitative analysis is used to measure the unexplored revenue potential by comparing the registered tax base (tax object data at KPP) and the potential base (mining permit and activity data). The difference between the two indicates potential objects not fully included in the tax base.

For these potential objects, an estimate of the PBB-P5L due is made using the NJOP and class of similar objects, and then presented in a comparison table between actual and potential revenue. The potential figures are interpreted as an indication of the revenue amount that could be realized through business process improvements.

3.7 Data Validity

The validity of the data is ensured through:

1. Source Triangulation, by comparing internal and external data.
2. Consistency of Time and Period Data, to ensure that the potential analysis is conducted accurately.
3. Document Trail, by recording the sources and characteristics of the documents used

This ensures that the data is sufficiently reliable to support the analysis and conclusions of the research.

3.8 Ethical Considerations

This research complies with academic ethical standards throughout the research process. Since the study relies entirely on secondary data obtained from KPP Pratama Batulicin, government regulations, and official publications, no direct interaction with human participants was conducted. Therefore, informed consent procedures were not required.

To maintain confidentiality and academic integrity, the research does not disclose sensitive taxpayer information or restricted institutional data. All data are used solely for academic purposes and presented in aggregated form. In addition, all references, regulations, and supporting literature are properly cited to avoid plagiarism and ensure research credibility.

3.9 Research Procedure

The research procedure began with identifying problems related to the suboptimal realization of PBB-P5L revenue in the mineral and coal mining sector at KPP Pratama Batulicin. After determining the research objectives, the researcher conducted a literature review on tax compliance, compliance risk management, business process analysis, and PBB-P5L administration to establish the conceptual framework of the study.

The next stages involved collecting secondary data from internal and external sources, mapping normative and actual business processes, and conducting gap analysis to identify weaknesses and revenue leakage risks. The researcher then analyzed untapped revenue potential through descriptive analysis and finally formulated conclusions and recommendations regarding data integration, supervision improvement, and risk-based tax administration.

3.10 Methodological Limitations

This study has several limitations. First, the research focuses only on KPP Pratama Batulicin, so the findings may not fully represent the conditions of other tax offices or mining regions with different administrative and operational characteristics. Second, the study relies entirely on secondary data, which may contain limitations related to data completeness, consistency, and accuracy.

In addition, the estimation of untapped PBB-P5L revenue potential is descriptive in nature and should not be interpreted as an exact measurement of actual tax losses. The absence of direct interviews and field observations also limits deeper exploration of behavioral and operational factors related to taxpayer compliance and tax administration practices.

4. Results and Discussion

4.1 Research Results

This section elucidates the research findings, encompassing the mapping of normative business processes, the identification of operational disparities, and the presentation of quantitative data regarding tax revenue potential both prior to and following audit interventions.

4.1.1 Analysis of Normative Business Processes for PBB-P5L in the Mineral and Coal Mining Sector

The administrative legal framework for PBB-P5L in the mining sector establishes a closed-loop cycle initiating with object registration. This process is automatically triggered by the issuance of mining permits (IUP/IUPK) or the signing of contracts of work. Taxpayers are granted a strict compliance window of one month to register and obtain a Tax Object Registration Certificate (SKT OP). In this phase, regulations apply a dual approach: providing service certainty through an automatic approval mechanism for voluntary registration, while simultaneously empowering fiscal authorities with ex officio registration authority. This serves as a revenue safeguard

to mitigate the risk of the shadow economy and capture informal mining operations.

The subsequent crucial stage is reporting and validation based on self-assessment through the Electronic Tax Object Notification Letter (eSPOP). The validity of this reporting is contingent upon the completeness of vital documents, such as the Work Plan and Budget (RKAB), which serves as the baseline for production and cost data. To ensure compliance, KPP Pratama Batulicin implements a check and balance mechanism through formal and material research. Non-compliance in SPOP submission or the detection of data anomalies (e.g., unreasonable ratios of disturbed area to production volume) triggers an escalation in the taxpayer's risk status. This culminates in the issuance of Warning Letters and proposals for tax audits as a form of law enforcement.

The cycle concludes with data collection, valuation, and tax determination. To ensure data accuracy between SPOP reports and actual field conditions, geospatial verification is conducted through office and field data collection. The verification results form the basis for the Sales Value of Tax Object (NJOP) assessment, classified separately into onshore (using fair market value) and the body of earth (using the income capitalization approach). The business process terminates with the issuance of a Notice of Tax Payable (SPPT) or Tax Assessment Letter (SKP), which possesses executorial power. Failure to settle obligations within six months necessitates the issuance of a Tax Collection Letter (STP) as an active collection instrument.

4.1.2 Identification of Structural Constraints and Strategic Issues

The study identified a primary structural impediment: a significant data disparity between permit holders in the ESDM database

and registered taxpayers at the Tax Office. The root of this issue lies in the absence of system integration (siloed data), which hinders real-time data exchange regarding permit issuance or ownership changes. Reliance on manual reconciliation creates a time lag exploited as a tax evasion window, wherein mining entities may operate physically and transfer operations to third parties without detection in the tax administration system.

From a technical supervision perspective, procedural weaknesses exist due to the non-standardized use of satellite imagery in Standard Operating Procedures (SOP). Given that physical mining dynamics, such as land clearing and infrastructure development, occur rapidly, the lack of periodic satellite monitoring weakens the verification capability of the Tax Office. This results in a loss of control over the veracity of the area size reported in the SPOP, thereby opening opportunities for under-reporting relative to actual conditions.

In addition to data and technological constraints, tax collection effectiveness is hampered by asymmetric human resource capacity. The vast mining areas in Tanah Bumbu and Kotabaru are disproportionate to the number of available supervisors and valuers. This limitation forces the Tax Office to adopt a reactive supervision strategy, acting only on cases, rather than conducting comprehensive proactive mapping, which ultimately allows the risk of revenue leakage to remain high.

4.1.3 Analysis of Revenue Potential Before Audit

Based on self-assessment data and external benchmarks, this research calculated the PBB-P5L revenue potential for the tax years 2021 to 2025.

Table 1. Estimated PBB-P5L Revenue Potential Before Audit by Regency (2021–2025)

Tax Year	Kotabaru Regency (IDR)	Tanah Bumbu Regency (IDR)	Total Estimated Revenue Potential (IDR)
2021	2,022,401,333	2,031,944,884	4,054,346,217
2022	2,490,303,671	2,965,328,144	5,455,631,819
2023	4,025,140,412	5,804,120,149	9,829,260,522
2024	3,838,355,777	3,138,836,575	6,977,192,352
2025	2,354,430,508	2,206,930,184	4,561,360,691
Total	14,730,631,700	16,147,160,500	30,878,092,200

Source: Processed secondary data from KPP Pratama Batulicin (2025).

Trend analysis reveals fluctuating dynamics over the last five years. The expansion phase (2021-2023) recorded a sharp performance surge of over 100%, moving from Rp4.05 billion to a peak of Rp9.83 billion, driven by massive mining activity in Tanah Bumbu. However, this trend underwent a significant correction in the contraction phase (2024-2025), where potential revenue dropped back to Rp4.56 billion. This decline indicates a reduction in reported production volumes or the expiration of operational cycles for several large-scale IUPs.

Furthermore, an anomaly was identified in the object composition prior to audit intervention. Data shows that the total potential of the onshore sub-sector (Rp15.74 billion) exceeded the body of earth potential (Rp15.13 billion). A condition where surface facility valuation surpasses mineral reserve.

4.1.4 Analysis of Revenue Potential After Audit

The implementation of tax audits pursuant to PMK 15/2025 generated significant positive corrections to the tax database.

Table 2. Estimated PBB-P5L Revenue Potential After Audit by Regency (2021–2025)

Tax Year	Kotabaru Regency (IDR)	Tanah Bumbu Regency (IDR)	Total Estimated Revenue Potential (IDR)
2021	2,528,001,666	2,539,931,105	5,067,932,771
2022	3,112,879,589	3,706,660,560	6,819,540,148
2023	5,081,800,515	7,285,150,512	12,286,951,027
2024	4,797,944,721	3,923,545,719	8,721,490,439
2025	2,943,038,135	2,758,662,730	5,701,700,864
Total	18,463,664,625	20,183,950,625	38,597,615,250

Source: Processed secondary data from KPP Pratama Batulicin (2025).

Audit intervention proved effective as a compliance correction instrument, marked by a significant aggregate increase in revenue potential from a baseline of Rp30.87 billion to Rp38.59 billion. This difference of Rp7.72 billion unveils a tax gap of approximately 25% from the initial self-assessment. Through rigorous testing mechanisms, this lost potential was successfully secured as real state revenue.

The most substantial correction was identified in the body of earth valuation, which experienced a drastic surge post-audit to Rp18.91 billion. This figure effectively balanced

its proportion closer to the onshore sub-sector value of Rp19.68 billion. This structural shift confirms the hypothesis of tax avoidance behavior within the self-assessment system, wherein taxpayers tend to suppress production volumes or inflate production costs to minimize the tax burden on the body of earth sector.

4.2 Research Discussion

4.2.1 Dynamics of Earth Body Valuation: Complexity of Revenue and Costs

The core issue in the Land and Building Tax (PBB) for the mining sector lies in the valuation of the Production Operation Earth Body (Tubuh Bumi), which employs the income capitalization method. The fundamental formula is expressed as follows:

$$\text{NJOP} = (\text{Gross Revenue} - \text{Production Costs}) * \text{Capitalization Rate}$$

The first pivotal issue in tax audits within this sector pertains to the determination of gross revenue and the application of benchmark prices. The prevailing regulatory framework strictly mandates the use of the "higher value" between the actual contract price and the government-determined benchmark, known as the Reference Coal Price (Harga Batubara Acuan or HBA). However, field audit practices frequently reveal that Taxpayers utilize a lower realized sales price, typically based on Free on Board (FOB) Barge terms, compared to the HBA, which generally uses an FOB Vessel calculation basis.

Material disputes arise when Taxpayers fail to provide adequate and valid details regarding logistics costs. This cost data is essential to justify the price adjustment from the barge delivery point to a delivery point equivalent to the government reference. Without robust supporting evidence regarding freight and associated costs, the Taxpayer's argument to maintain the lower realized price becomes administratively weak. Consequently, Tax Valuers tend to adopt a conservative approach by applying a positive correction using the annual average HBA as the calculation basis. This condition has significant implications, particularly during the 2021–2022 period, which saw a drastic surge in global commodity prices. The use of a high HBA during this commodity boom directly elevated the calculated gross revenue, thereby substantially increasing the Sales Value of Tax Object (NJOP).

The most dominant and high-value area of correction in the mining tax audit process lies in the deduction cost components. This

occurs because PBB regulations adhere to a strict and rigid direct costing principle. Fundamental differences often emerge where many costs considered valid and reasonable under commercial accounting standards are categorized into the "Negative List" under PBB fiscal provisions and are strictly prohibited from being deducted from gross revenue.

Key cost components frequently subject to dispute and correction include reclamation and post-mining costs. Regulators view these as mandatory environmental recovery obligations rather than direct extraction production costs. Furthermore, head office overhead costs, including directors' salaries, corporate legal fees, and central administration, are disregarded in the calculation due to their structural nature and lack of direct correlation with production operations at the mine site. A similar treatment applies to marketing costs and Corporate Social Responsibility (CSR) expenses, which are classified as commercial and social burdens rather than mining operational costs.

In practice at KPP Pratama Batulicin, this research identified the use of an empirical benchmark: an average cost ratio of 77.9% of gross revenue. This figure serves as a crucial early detection tool. Taxpayers reporting a cost structure above this rationality ratio, for instance, in the 90% to 95% range, are strongly indicated to have included costs from the "negative list" in their reports. This condition automatically designates such Taxpayers as priority targets for in-depth audits to purify production costs in accordance with fiscal regulations.

A fundamental aspect to underscore in this valuation mechanism is the existence of the multiplier effect generated by the Capitalization Rate. In the PBB calculation structure for the mining sector, every positive correction made by the auditor to production cost components does not have a linear impact on the tax object value. A cost correction of IDR 1 billion does not merely increase the tax base by the same nominal amount; rather, that figure must first be multiplied by the applicable

Capitalization Rate to derive the true asset value.

Given that the Capitalization Rate for coal commodities is typically set at 10.25, the financial implications of every audit finding are significantly amplified. This multiplier mechanism is the primary factor behind the phenomenon of drastic surges in post-audit revenue potential. In other words, a cost correction that appears moderate initially can culminate in a massive increase in the Earth Body NJOP, resulting in a tax assessment far exceeding the Taxpayer's self-assessment.

4.2.2 Audit of Effectiveness as a Law Enforcement Instrument

Data indicates that tax audits are not merely tools to test compliance but vital instruments to "rectify" data. The post-audit potential increase of IDR 7.72 billion demonstrates that the self-assessment mechanism in the mining sector carries a high risk of moral hazard.

Tax audits in the PBB-P5L ecosystem are not viewed merely as administrative procedures but possess a strategic dual function. First, the audit performs a budgetary function aimed at securing state revenue directly. Through this mechanism, the Tax Office issues a Notice of Underpayment Tax Assessment (SKP Kurang Bayar) to collect unreported revenue potential, thereby realizing revenue targets. Second, the audit holds a regulatory function oriented toward psychological aspects and long-term compliance. Audit actions provide a deterrent effect while sending a strong signal to other mining business actors that the tax authority possesses the capability to detect data inaccuracies, whether in production data manipulation or cost inflation

4.2.3 Managerial Implications and Improvement Recommendations

To effectively close the identified tax gap, KPP Pratama Batulicin must immediately undertake business process reform through three integrated strategic steps. The first

fundamental step focuses on the integration of Mining Business License (IUP) data. In this regard, the Tax Office is required to shift its supervision paradigm from a passive to an active approach. IUP issuance data from the Ministry of Energy and Mineral Resources (ESDM) must be established as an automatic trigger for the tax authority to conduct ex officio NPWP or NOP registration. This mechanism is crucial to ensure that every new permit holder enters the tax administration system without a time lag.

The second strategic step targets supervision modernization through the utilization of satellite technology. The use of satellite imagery needs to be officially adopted into the routine data collection Standard Operating Procedure (SOP). The objective is to monitor physical changes in mining land in real-time and with precision. By possessing objective visual comparative data, the Tax Office no longer relies entirely on the formal truth of SPOP reports submitted by Taxpayers, allowing for faster early detection of discrepancies in the cultivated area size.

Finally, supervision effectiveness needs to be strengthened through the implementation of risk-based supervision or Compliance Risk Management (CRM). The Tax Office is advised to employ strict quantitative parameters in determining audit priorities, specifically by highlighting Taxpayers with cost ratios above 80% and those showing significant sales price deviations from the HBA. By establishing these two indicators as primary CRM parameters, the allocation of audit resources will become far more effective as it directly targets entities with the highest indications of non-compliance risk

5. Closing

5.1 Conclusion

This study explored the business process of Land and Building Tax (PBB-P5L) in the mining sector at KPP Pratama Batulicin, with a focus on identifying operational challenges and untapped tax potential. The analysis revealed that despite the existence of a comprehensive

legal framework, such as PMK 81/2024, PMK 186/2019, and PMK 15/2025, the application of these regulations faces significant operational barriers. These barriers include discrepancies between the number of mining permit holders and registered taxpayers, issues with data integration between DJP and ESDM, and insufficient monitoring mechanisms. Additionally, the lack of satellite imagery and physical land monitoring exacerbates these issues, causing inaccuracies in land and tax reporting.

As a result, the untapped PBB-P5L revenue in Tanah Bumbu and Kotabaru was estimated to be significant, with the potential increasing from Rp30.87 billion to Rp38.59 billion after the audit. This discrepancy highlights the importance of more rigorous audits in the tax process. The study's findings indicate that improvements in data integration, enhanced monitoring through satellite technology, and a risk-based approach to oversight can significantly enhance tax collection and reduce revenue losses.

5.2 Theoretical Contributions

This study contributes to the literature on tax administration and Compliance Risk Management (CRM) by demonstrating that the optimization of PBB-P5L revenue in the mining sector is influenced not only by taxpayer compliance behavior but also by the effectiveness of business processes, inter-agency data integration, and monitoring systems. The findings also enrich the discussion on object-based taxation by providing empirical evidence from the Indonesian mining sector, particularly regarding how administrative gaps and data fragmentation can create significant untapped tax potential.

5.3 Practical and Policy Implications

The findings indicate that KPP Pratama Batulicin and related authorities need to strengthen data integration between DJP and ESDM, improve monitoring through satellite imagery and digital systems, and implement

risk-based supervision using CRM approaches. These measures are expected to improve tax object identification, reduce underreporting, increase administrative efficiency, and optimize PBB-P5L revenue collection in the mining sector.

5.4 Limitations of the Study

This study is limited to the context of KPP Pratama Batulicin, so the findings may not fully represent conditions in other mining regions with different administrative and operational characteristics. In addition, the analysis relies on secondary data and descriptive estimation methods, meaning that the calculated untapped revenue potential should be interpreted as indicative estimates rather than exact measurements of actual tax losses.

5.5 Directions for Future Research

Future research is recommended to examine PBB-P5L administration in other mining regions and apply broader comparative or mixed-method approaches to strengthen the generalizability of the findings. Further studies may also explore the effectiveness of digital monitoring technologies, inter-agency data integration, and taxpayer behavior analysis in improving tax compliance and reducing revenue leakage in the mining sector.

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