

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

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ABSTRACT: Legal metrology services constitute a strategic technical public service that plays a crucial role in ensuring fairness in commercial transactions, consumer protection, and public trust in market mechanisms. Within the decentralisation agenda, authority for the administration of Legal Metrology in Indonesia has been explicitly delegated to regency and municipal governments, with the exercise of this authority operationalised through the establishment of Legal Metrology Units (Unit Metrologi Legal/UML or UPTD), which have been effectively implemented since 2018. A significant policy shift occurred with the enactment of Law Number 1 of 2022 on Financial Relations between the Central Government and Regional Governments (HKPD), which came into effect in January 2024 and abolished verification and re-verification service charges as objects of regional levies. As a consequence, local governments are required to provide legal metrology services free of charge and to finance them through the Regional Revenue and Expenditure Budget (APBD). This article aims to critically analyse the readiness of local governments to deliver legal metrology services in the post-decentralisation context and following the abolition of service charges, by comparing regions that have attained the status of Orderly Measurement Regions (Daerah Tertib Ukur/DTU) with those that have not. The study adopts a qualitative approach with a comparative inter-regional design, drawing on policy and budget document analysis as well as in-depth interviews with 18 key informants across six regencies and municipalities. The findings indicate that regional success in achieving DTU status is determined by a combination of local political commitment, fiscal capacity, availability of technical human resources, and service innovation. The article underscores the need for harmonisation of central–local policies, strengthening of institutional capacity, and the development of sustainable financing schemes to ensure that the decentralisation of legal metrology services genuinely generates public value.

KEYWORDS: legal metrology; decentralisation; public service; orderly measurement regions; fiscal policy.

I. INTRODUCTION

Legal metrology services constitute an integral component of the state's functions in ensuring legal certainty, fairness in commercial transactions, and consumer protection. In Indonesia, the provision of legal metrology is normatively regulated by Law Number 2 of 1981 on Legal Metrology, which has subsequently been operationalised through various technical regulations at the ministerial level. In line with the decentralisation agenda and the strengthening of regional autonomy, authority over the delivery of metrology services—previously centralised within the national government—has been gradually devolved to regency and municipal governments. This transfer of authority is grounded in Law Number 23 of 2014 on Regional Government, which mandates local governments to carry out verification and re-verification services, as well as supervision of Measuring Instruments, Measuring Devices, and Accessories (UTTP) and Prepackaged Goods (Barang Dalam Keadaan Terbungkus/BDKT).

The exercise of this authority is institutionalised through the establishment of Legal Metrology Units (Unit Metrologi Legal/UML) or Regional Technical Implementation Units (UPTD) for Legal Metrology, which function as local technical agencies directly responsible for the delivery of metrology services. Technical provisions concerning the establishment, duties, and functions of UMLs are further specified in Minister of Trade Regulation Number 115 of 2018 on Legal Metrology Units, which has been effective since 2018, and subsequently updated by Minister of Trade Regulation Number 24 of 2024 on Verification and Re-verification Activities. Within this regulatory framework, legal metrology services have formally become a mandatory function of local government that must be delivered on a continuous and standardised basis.

From a financing perspective, prior to changes in national fiscal policy, one of the primary funding sources for metrology activities was derived from service charges for verification and re-verification. A fundamental shift occurred with the enactment of Law Number 1 of 2022 on Financial Relations between the Central Government and Regional Governments (HKPD), which

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

came into force in January 2024 and abolished verification and re-verification charges as objects of regional levies. This abolition was not the result of discretionary policy choices by local governments, but rather a direct consequence of changes to the national fiscal policy framework formulated by the central government.

In practice, the central government, through the Ministry of Trade, has introduced the designation of *Daerah Tertib Ukur* (DTU, Orderly Measurement Regions) as both a performance evaluation instrument and a normative incentive for local governments. However, official data indicate that, until recent years, only a limited number of regencies and municipalities have succeeded in attaining this status, while the majority continue to face constraints in institutional and fiscal capacity (Directorate General of Consumer Protection and Trade Compliance, 2023). Purbalingga Regency is frequently cited as an example of good practice, having consistently achieved DTU status, in contrast to many other regions that have been unable to meet comparable standards (Government of Purbalingga Regency, 2024). This variation in performance highlights significant differences in local government readiness to deliver legal metrology services in the post-decentralisation context and following the abolition of service charges.

Against this background, this article aims to: (1) analyse the dynamics of the decentralisation of legal metrology services in Indonesia; (2) compare the readiness of local governments in delivering metrology services using the frameworks of Orderly Measurement Regions (DTU) and Orderly Measurement Markets (*Pasar Tertib Ukur*); and (3) critically examine the policy implications of free verification and re-verification services for service quality and inter-regional disparities in institutional capacity.

Unlike previous studies that tend to conceptualise metrology primarily as an administrative–technical function, this article positions legal metrology services as a form of *technical public service* that directly contributes to the creation of public value in the context of a developing country. The novelty of this study lies in its analysis of the interrelationship between the decentralisation of authority, changes in financing frameworks, and variations in regional institutional capacity—an area that has received limited systematic attention in the public administration literature. By employing the DTU framework as a performance-based governance indicator, this study offers a conceptual contribution to scholarship on the decentralisation of technical services and public service governance in countries of the Global South (Moore, 1995; World Bank, 2021).

II. LITERATURE REVIEW

2.1 Legal Metrology as an Instrument of Consumer Protection and Market Fairness

Legal metrology is widely recognised as a fundamental pillar of consumer protection and market fairness. The International Organization of Legal Metrology (OIML) emphasises that an effective legal metrology system is a prerequisite for legal certainty, market confidence, and the legitimacy of economic transactions, particularly in retail trade and traditional markets (OIML, 2021; OIML, 2023a). Measurement accuracy is understood as a public interest that must be safeguarded by the state through coherent legal, institutional, and supervisory frameworks.

Empirical literature demonstrates that weak metrological capacity directly contributes to increased information asymmetry between business actors and consumers, ultimately disadvantaging consumers and undermining trust in market mechanisms (Eichstädt et al., 2021). In developing country contexts, measurement inaccuracies are also associated with higher transaction costs and diminished legitimacy of public institutions responsible for market oversight (Oppermann et al., 2022). Nevertheless, much of the existing scholarship on metrology remains dominated by technical and industrial standards perspectives, while studies that conceptualise metrology as a strategic public service within the field of public administration remain relatively limited.

2.2 Decentralisation and Variation in Public Service Quality

In public administration literature, decentralisation is commonly understood as a mechanism to enhance responsiveness, efficiency, and innovation in public service delivery by bringing decision-making closer to citizens (Yilmaz et al., 2022). The central normative assumption underpinning decentralisation is that local governments possess superior knowledge of local needs and stronger incentives to improve service quality.

However, cross-national empirical findings indicate that decentralisation does not automatically lead to uniform improvements in service quality. Instead, it often generates inter-regional variation in service performance, shaped by differences in fiscal capacity, bureaucratic competence, and local political leadership (World Bank, 2021). In the Indonesian context, numerous studies suggest that regional autonomy has stimulated public service innovation in high-capacity regions, while leaving lower-capacity regions at a relative disadvantage (Setiawan et al., 2022; Sahputri, 2023).

2.3 Technical Public Services and Governance Challenges

Standard-based technical services, such as legal metrology, exhibit characteristics distinct from basic social services. They require high levels of technical expertise, precision, consistency, and sustained investment in both human resources and equipment. In the metrology domain, developments associated with Metrology 4.0 and the adoption of digital calibration certificates further underscore the need for advanced technical capacity and system interoperability, requirements that are not evenly met by all local governments (Hackel et al., 2023; Sołtysiński et al., 2024).

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

2.4 Fee Abolition Policies and Fiscal Implications in Decentralised Systems

The removal of public service fees is often promoted as a strategy to enhance access and public compliance. However, public finance literature cautions that fee abolition policies may generate fiscal and administrative pressures if they are not accompanied by adequate compensatory funding mechanisms (World Bank, 2021). This phenomenon is frequently associated with the concept of an *unfunded mandate*, whereby central governments impose new service obligations on subnational governments without providing commensurate financial resources. This body of literature is particularly relevant for understanding the dynamics of legal metrology service provision in Indonesia following the abolition of verification and re-verification fees.

2.5 Legal Metrology, Public Value, and Governance in Developing Countries

The public value approach in public administration emphasises that the primary objective of public service provision is the creation of value for society, including justice, legitimacy, and public trust (Moore, 1995; Denhardt & Denhardt, 2000). Within this framework, legal metrology services can be understood as a state instrument for generating public value through consumer protection and orderly trade.

However, public value governance literature also stresses that the creation of public value is highly contingent upon institutional capacity and policy coherence across levels of government (Yilmaz et al., 2022). In developing country contexts (the Global South), variations in regional capacity, resource constraints, and dependence on central government policies constitute major challenges in the governance of standard-based technical services. Consequently, the study of legal metrology in Indonesia offers an important contribution to global debates on the governance of technical public services within decentralised systems characterised by uneven capacities.

III. RESEARCH METHODOLOGY

3.1 Research Design and Approach

This study adopts a qualitative approach with a comparative inter-regional design. The qualitative approach is employed to obtain an in-depth understanding of policy dynamics, institutional capacity, and the practical delivery of legal metrology services at the local level—dimensions that cannot be fully captured through quantitative data alone. The comparative design is used to examine differences in readiness and service performance between regions that have attained *Daerah Tertib Ukur* (DTU, Orderly Measurement Region) status and those that have not.

This approach enables a contextual analysis of the implications of decentralised authority and the policy of abolishing verification and re-verification service fees, particularly in relation to variations in fiscal capacity, human resources, and service innovation at the local level.

3.2 Research Sites and Criteria for Case Selection

The study was conducted in six regencies/municipalities selected purposively, based on DTU achievement status and variation in regional capacity. The selection of research sites was informed by official data from the Ministry of Trade of the Republic of Indonesia concerning the conferral of the *Daerah Tertib Ukur* (DTU) award for 2024, which was announced at the end of 2024 in preparation for the 2025 period.

According to these data, several regency and municipal governments were recognised for successfully enhancing consumer protection through ensuring the accuracy of measurements and were awarded DTU status. Recipients of the DTU award for the 2024–2025 period include Purbalingga Regency (which received the award for the third time), Banyumas Regency, Tegal Regency, Blora Regency, Jombang Regency, Kendal Regency, Mojokerto Regency, Trenggalek Regency, and Tangerang Regency, as well as municipalities such as Semarang City (recipient in both 2024 and 2025), Depok City, Pangkalpinang City, and Banjar City.

From this list, the study selected three DTU-designated regions to represent areas with relatively high levels of readiness in delivering legal metrology services. Purbalingga Regency was included due to its consistent attainment of DTU status over several consecutive years, while the other two DTU regions were chosen to reflect diversity in territorial characteristics and fiscal capacity.

For comparison, the study also selected three regencies/municipalities that had not been recorded as DTU recipients in the official Ministry of Trade listings up to the 2024–2025 period. These non-DTU regions were chosen to represent areas with differing levels of institutional and fiscal readiness, and to identify the challenges associated with implementing legal metrology services in the post-decentralisation and post-fee abolition context.

3.3 DTU Assessment Criteria as an Analytical Framework

In analysing regional readiness, this study employs the DTU assessment criteria established by the Directorate of Metrology, Ministry of Trade, as a comparative analytical framework. These criteria comprise: the Outcome Achievement Aspect (reflected in levels of trader awareness and compliance with regular verification and re-verification); the Institutional Aspect (including the availability and capacity of Legal Metrology Units, particularly the number and competence of certified verifiers); and the

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

Innovation Aspect (encompassing policies and service practices such as outreach-based services, scheduled market verification, and the digitalisation of service administration).

These criteria are used to construct analytical indicators that enable systematic comparison between DTU and non-DTU regions in terms of institutional readiness and service sustainability.

3.4 Data Collection Techniques and Sources

Research data were collected using three main techniques: document analysis (including legislation, Ministry of Trade policies, DTU designation documents, regional planning and budgeting documents—such as the Regional Medium-Term Development Plan (RPJMD), agency strategic plans, and Regional Revenue and Expenditure Budgets (APBD)—as well as performance reports of Legal Metrology Units); in-depth interviews with 18 key informants (comprising officials and technical staff of Legal Metrology UPTDs, officials of trade offices, market managers, and trader representatives); and limited observation of verification and re-verification practices in traditional markets, aimed at capturing differences in service intensity and delivery patterns across regions.

3.5 Data Analysis Techniques and Research Validity

Data analysis was conducted using thematic analysis, following the stages of open, axial, and selective coding. Comparative inter-regional analysis was applied to identify patterns of variation in readiness and performance of legal metrology services. Data validity was ensured through source and method triangulation, as well as confirmation of key findings with selected informants (*member checking*).

3.6 Ethical Considerations

This study adhered to the principles of social research ethics, including informed consent, confidentiality of informant identities, and the use of data solely for academic purposes.

IV. RESULT AND DISCUSSION

This chapter discusses the research findings by situating them within the literature on public administration and governance, particularly in relation to the decentralisation of technical services, public value creation, and policy implications in developing countries. The discussion focuses on three main aspects: policy gaps, the theoretical contribution of the study, and governance implications for countries in the Global South.

5.1 Policy Gaps in the Decentralisation of Legal Metrology Services

The findings reveal a significant *policy gap* between national policy design and local implementation capacity in the delivery of legal metrology services. At the normative level, the decentralisation of metrology services and the abolition of verification and re-verification fees reflect the state's commitment to expanding access to services, strengthening consumer protection, and enhancing transaction fairness. These policies are consistent with national regulatory objectives related to consumer protection and orderly trade.

At the implementation level, however, the findings demonstrate that these policies have not been uniformly accompanied by adequate mechanisms for capacity-building and financing across regions. Empirical evidence shows that only a subset of local governments has been able to adapt to the free service policy through internal adjustments, budgetary efficiency, and operational innovation. By contrast, regions with limited institutional and managerial capacity have experienced declines in service intensity, as reflected in reduced frequency of market verification and lower coverage of properly verified measuring instruments (UTTP).

This condition aligns with decentralisation literature emphasising that the transfer of authority without corresponding capacity transfers risks generating uneven policy implementation (World Bank, 2021; Yilmaz et al., 2022). Accordingly, the policy gap in legal metrology services is not solely attributable to weak regional fiscal capacity, but also to limitations in national policy design in anticipating variations in local institutional capacity.

5.2 Fee Abolition as an Unfunded Mandate and Regional Responses

The discussion of the policy to abolish verification and re-verification fees indicates characteristics of an *unfunded mandate*. While the policy aims to improve access and compliance among economic actors, the removal of service charges has not been directly accompanied by specific and guaranteed compensatory funding mechanisms for legal metrology services. Consequently, the financial burden has been shifted entirely to local governments through regional budgets (APBD) and surcharge mechanisms, the capacity and effectiveness of which vary considerably across regions.

The findings show that regions with strong governance capacity have been able to manage these conditions through policy prioritisation and efficient budget utilisation, despite fiscal constraints. The case of Purbalingga Regency illustrates that an unfunded mandate does not necessarily result in implementation failure when balanced by adaptive leadership and management. In contrast, in non-DTU regions, the fee abolition policy has intensified operational pressures and accelerated declines in service performance.

These results reinforce arguments in public finance and fiscal decentralisation literature that the impacts of unfunded mandates are highly contextual and strongly shaped by institutional and managerial capacity at the local level (World Bank, 2021).

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

5.3 Theoretical Contribution: Technical Services and Governance Capacity

This study contributes to public administration scholarship by extending understanding of the decentralisation of technical public services, which have received less attention than basic social services. The empirical findings demonstrate that the successful delivery of technical services depends not only on fiscal capacity, but more critically on governance capacity, encompassing leadership, policy prioritisation, and organisational efficiency.

The case of Purbalingga can be interpreted as an instance of *positive deviance*, in which a locality achieves high performance despite resource constraints. This finding challenges deterministic assumptions in decentralisation literature that tend to link public service quality directly to fiscal capacity. Instead, the study highlights governance capacity as a key explanatory variable in the success of decentralised technical services.

Within the public value governance framework, legal metrology services in DTU-designated regions illustrate how public value can be created through appropriate policy choices, efficient management, and a strong orientation towards societal interests, even under conditions of fiscal limitation.

5.4 Implications for Governance in Developing Countries (Global South)

The findings have broader implications for public service governance in developing countries, which commonly face similar challenges in decentralising standard-based technical services. Many countries in the Global South experience substantial inter-regional capacity variation, resource constraints, and dependence on central government policies.

This study suggests that decentralising technical services requires a hybrid governance approach that combines centralised standard-setting with decentralised implementation. Central governments should act not only as normative regulators, but also as capacity enablers, through investments in human resource development, sustained technical assistance, and financing schemes that are sensitive to variations in local capacity.

For countries in the Global South, Indonesia's experience in legal metrology service delivery offers an important lesson: decentralisation reforms must be designed with explicit consideration of local capacity disparities. Without corrective interventions, policies intended to expand access may inadvertently exacerbate regional inequalities in service provision.

V. CONCLUSIONS

This study demonstrates that the decentralisation of legal metrology services in Indonesia, accompanied by the abolition of verification and re-verification service charges, has produced uneven impacts across regions. At the normative level, the policy reflects the state's commitment to expanding access to services, strengthening consumer protection, and ensuring fairness in commercial transactions. At the level of implementation, however, the effectiveness of legal metrology service delivery is determined primarily by the capacity of local governance, rather than by fiscal capacity alone.

The findings indicate that regions designated as Orderly Measurement Regions (Daerah Tertib Ukur/DTU) generally possess effectively functioning institutional arrangements, an adequate minimum of technical human resources, and efficient and adaptive service management strategies. The case of Purbalingga Regency, in particular, demonstrates that strong legal metrology performance can be achieved despite fiscal constraints when supported by clear policy priorities, managerial consistency, and efficient resource utilisation.

By contrast, in non-DTU regions, the policy of exempting verification and re-verification services from user charges tends to intensify operational pressures, as it is not accompanied by sufficient institutional capacity and financing support. This condition reinforces the existence of a policy gap between national policy design and local-level implementation readiness. Accordingly, this study underscores that the decentralisation of technical services such as legal metrology requires policy designs that are sensitive to variations in regional capacity in order to ensure the equitable creation of public value.

Based on these findings, several policy recommendations are proposed. First, the central government should strengthen its role as a capacity enabler by ensuring systematic mechanisms for capacity transfer, including the development of technical human resources, the provision of standard equipment, and continuous supervision for regional Legal Metrology Units. The establishment of realistic and context-specific minimum service standards is essential to maintaining service quality across regions.

Second, the policy of abolishing verification and re-verification service charges should be accompanied by a more targeted and sustainable financing design. Regional surcharge schemes and allocations within regional budgets (APBD) need to be specifically optimised to support legal metrology services, so that the policy does not operate as an unfunded mandate that burdens local governments.

Third, good practices from DTU regions—particularly those with limited fiscal capacity yet strong performance—should be systematically documented and used as a basis for inter-regional learning. This approach enables the replication of efficient and adaptive governance models without requiring significant increases in budgetary resources.

Finally, in the context of developing countries (the Global South), Indonesia's experience indicates that the decentralisation of technical services necessitates a hybrid governance approach that combines the centralisation of standards with the

Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

decentralisation of implementation. This approach is relevant not only to legal metrology services but also to other technical public services that are dependent on standardisation and accuracy.

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Legal Metrology Services in Indonesia in the Post-Decentralisation Era: A Critical Analysis of Regional Readiness for the Implementation of Free Services

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