

# Evaluation of Legal Metrology Policy Implementation in Citeko Traditional Market: A Case Study

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**Abstract.** *This study examines the effectiveness of Legal Metrology policy implementation in traditional markets, using Citeko Market in Purwakarta Regency, Indonesia, as a case study. It addresses issues of inaccurate weighing practices that disadvantage consumers and erode market trust. Employing a qualitative descriptive method, data was collected through interviews, field observations, and document analysis. Analysis was conducted using Winter's (1990) policy implementation model, covering five dimensions: policy content, organizational coordination, management mechanisms, bureaucratic behaviour, and target group responses. The findings reveal weak inter-agency collaboration, inadequate daily oversight, and technical vulnerabilities in digital weighing instruments. Despite the existence of formal regulations and routine inspections, persistent gaps hinder consistent enforcement and consumer protection. The study concludes that implementation is only partially effective and recommends strengthening institutional coordination, increasing supervisory capacity, and enhancing public awareness to ensure fair trade and rebuild consumer trust.*

**Keywords:** *Consumer Protection, Legal Metrology, Policy Implementation, Public Administration, Traditional Markets*

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## INTRODUCTION

Traditional markets play a central role in Indonesia's socio-economic fabric, providing essential goods and services to large segments of the population, particularly low-income and rural communities (Michon & Mary, 1994; Vetter et al., 2019; Achmad et al., 2022). These markets are not only economic spaces but also hubs of social interaction and local livelihood. A critical aspect of maintaining public trust in such marketplaces is ensuring fairness in trade, particularly through accurate measurements in commercial transactions (Stuyck et al., 2006).

In this context, Legal Metrology, the legal control of measuring instruments and practices is an indispensable tool in protecting consumers and ensuring a level playing field (Singh et al., 2024). Despite its legal importance, the practical enforcement of Legal Metrology policies at the local level faces persistent challenges. Although Law No. 2 of 1981 on Legal Metrology and Ministerial Regulation No. 26 of 2017 provide a comprehensive regulatory framework, their translation into day-to-day market practices remains inconsistent.

Limited resources, fragmented inter-agency coordination, and low awareness among market actors are among the recurring obstacles that hinder effective implementation. These challenges are especially pronounced in traditional markets, where verification of weighing instruments is not always enforced and consumer complaints mechanisms are weak or underutilized. The situation in Citeko Market in Purwakarta Regency serves as a case in point.

Inspections in 2022 revealed that of 237 weighing instruments evaluated, only 220 met the required tolerance standards, while the rest were either outside permissible limits or rejected.

Digital scales now widely used pose a particular challenge because they often lack secure calibration locks, making them prone to post-verification manipulation. This reality contributes to recurring consumer losses and gradually erodes public trust in the market system. Brennan et al. (2017) said that, the urgency of addressing these issues is underscored by the continued vulnerability of consumers in the absence of reliable measurement enforcement.

Prior studies have extensively discussed the theoretical value of Legal Metrology for consumer protection, yet empirical investigations into the local-level enforcement mechanisms remain limited. This study aims to bridge that gap by analysing how well Legal Metrology policy is being implemented at the district level, using the Citeko Market as a case study. It draws on Durlak & DuPre (2008) policy implementation model, which outlines five key dimensions that affect policy outcomes: policy content, inter-organizational relations, management structure, the behaviour of implementing officials, and the responses of target groups.

Based on these dimensions, the study is designed to systematically assess the implementation process from both an institutional and behavioural perspective (Mendel et al., 2008). The central problem posed in this research is: To what extent is the implementation of Legal Metrology policy effective in ensuring fair and accurate measurement in traditional markets, specifically in the Citeko Market. The objective is to identify systemic weaknesses in current supervisory practices and provide actionable recommendations for strengthening the policy's impact.

By doing so, the research seeks to enhance consumer protection mechanisms and advance economic justice within Indonesia's traditional market system. From this foundation, the study hypothesizes that the effectiveness of Legal Metrology implementation in traditional markets is determined not solely by regulatory presence, but by the interplay of institutional capacity, operational consistency, inter-agency collaboration, and community awareness.

## **METHODS**

This study employed a qualitative descriptive approach to investigate the implementation of Legal Metrology policies in the Citeko Market, located in Purwakarta Regency. The use of qualitative methods enabled a comprehensive exploration of the contextual, behavioural, and institutional factors that influence the supervision of weighing instruments in traditional market environments. According to Sugiyono (2016), qualitative research is well-suited for capturing complex social dynamics and interpreting human behaviour within specific settings, making it ideal for policy implementation analysis. The research was guided by Meyers & Nielsen (2012) policy implementation model, which outlines five interrelated dimensions that influence policy outcomes: policy content, inter-organizational relations, management mechanisms, street-level bureaucrat behaviour, and the attitudes and behaviours of target groups. This model is particularly relevant in the Indonesian context, where metrology enforcement is decentralized and involves multiple stakeholders including government regulatory bodies, market administrators, vendors, and consumers. By using this framework, the study was able to evaluate both institutional processes and individual-level practices within the implementation chain. Data collection was conducted using three main techniques: field observation, document analysis, and semi-structured interviews. Informants were selected through purposive sampling to ensure representation of key stakeholder groups directly involved in or affected by metrological policy enforcement. These included officers from the UPTD Metrology Legal Purwakarta, traditional market officials, traders using various types of weighing instruments, and consumers who routinely engage in market transactions. The selection criteria emphasized the informants' direct experience and relevance to the study's objectives. Additional data sources included institutional reports, calibration and inspection records, and relevant regulatory documents such as Law No. 2 of 1981 on Legal Metrology and Ministerial Regulation No. 26 of 2017 concerning mandatory calibration procedures. Field observations were used to document the real-time condition of

weighing instruments, enforcement routines, and the operational presence of POSKUR (Post for Re-Measurement), which plays a role in resolving disputes related to weighing accuracy. To ensure the validity and reliability of the research findings, the study employed both source and methodological triangulation. Data gathered from interviews were cross verified with observational notes and document analysis to identify recurring patterns, contradictions, and critical gaps. The analysis was conducted using an interpretive approach, allowing for a nuanced understanding of the challenges and practices surrounding Legal Metrology policy implementation at the local level. This method provided a well-rounded perspective on the effectiveness and shortcomings of current enforcement mechanisms.

## **RESULTS AND DISCUSSION**

The findings of this study indicate that, while Indonesia possesses a well-established legal framework for metrological supervision, substantial gaps remain in its localized implementation. An examination of the enforcement of Legal Metrology policy at the Citeko market reveals a variety of structural and operational challenges that limit its overall effectiveness. Guided by Khan & Khandaker (2016) policy implementation model, the analysis identifies five interrelated thematic areas that shape the outcomes of policy execution: the strength and clarity of the legal and policy foundation, the degree of institutional coordination among stakeholders, the consistency of operational supervision, the performance and accountability of the bureaucracy, and the behavioural responses of both traders and consumers. These findings are grounded in evidence collected through field observations, in-depth interviews, and the review of relevant documents, providing a comprehensive understanding of the barriers that impede effective metrological supervision at the market level.

### **Legal and Policy Foundation**

Legal foundations such as Law No. 2 of 1981 and Ministerial Regulation No. 26 of 2017 provide clear mandates for the verification and re-verification of measuring instruments. However, local interpretations of these mandates are often inconsistent. UPTD Metrology Legal has limited capacity to enforce policies comprehensively, especially in smaller markets like Citeko. Although scheduled inspections occur annually, they are insufficient to address daily calibration violations. Law No. 2 of 1981 and Ministerial Regulation No. 26 of 2017 provide a strong legal basis for regulating weighing instruments in trade. These regulations define the rights and responsibilities of traders and inspectors and mandate periodic verification to ensure instruments remain accurate. However, the implementation of these standards in diverse market environments like Citeko often lacks contextual adaptation. Busroh et al. (2024) and Astriyanti & Efridadewi (2024) argue that while the regulatory design is sound at the national level, the operational details needed for localized enforcement are frequently absent.

This lack of localized policy adaptation has resulted in enforcement inconsistencies. Moreover, the decentralization of governance in Indonesia intended to promote responsiveness and autonomy has paradoxically introduced variability in how Legal Metrology policies are prioritized and applied across regions (Arifin, 2024; Ridhawati, 2025). In Purwakarta, for instance, limited policy socialization among traders and insufficient regulatory outreach were found to undermine the policy's practical significance. Indonesia's legal framework on metrology is robust in principle, but implementation remains uneven. While Law No. 2 of 1981 provides foundational mandates and sanctions, local regulatory bodies often lack sufficient guidance on adapting these mandates to diverse market conditions (Raintung et al., 2024). The decentralized nature of local governance in Indonesia has both empowered and complicated the enforcement of uniform measurement standards across regions (Shoemith et al., 2020).

### **Institutional Coordination**

The issue of coordination among institutions emerged as a key factor limiting the success of policy implementation. The study found that UPTD Metrology Legal, which is responsible for conducting inspections and issuing verification certificates, often operates in silos with minimal

collaboration with market management authorities. This results in poor data sharing, unclear inspection schedules, and limited accountability when traders fail to meet verification standards. These findings are consistent with Overdevest & Zeitlin (2014) observations that institutional fragmentation, especially in the regulation of trade and consumer protection, weakens monitoring systems. Without real-time updates or an integrated database of scale users, inspectors struggle to proactively enforce verification, often relying on outdated or incomplete information.

Field findings underscore the fragmented coordination between UPTD Metrology Legal and local market management. Similar challenges have been noted in other Indonesian regions, where institutional silos impede integrated monitoring systems and real-time data sharing (Bernot et al., 2024). This disconnection hampers the scheduling of inspections and post-violation enforcement. Coordination among key stakeholders including the UPTD, market managers, and traders is weak. For example, the data flow between the market and the UPTD regarding which scales are in use and their verification status is incomplete or outdated. This leads to poor targeting during inspection campaigns and lack of follow-up after violations are found. According to field interviews, market authorities are not actively involved in the supervision process, viewing it as the sole responsibility of the UPTD.

### **Operational Supervision**

Supervisory mechanisms face technical and logistical constraints, particularly with the proliferation of digital weighing scales. Although digital devices are perceived as more precise and user-friendly, they present unique challenges: most do not have locking features post-verification, making them vulnerable to tampering. This is particularly problematic in settings where enforcement presence is low. Kim (2019), in their study of Southeast Asian markets, emphasize that digital scale manipulation is an emerging threat that requires regulatory innovation, including software-level calibration locks and remote monitoring capabilities. In Citeko, while 90% of inspected devices were within tolerance during formal checks, the absence of locking features raised concerns about continued accuracy in daily use. The visual inspection alone cannot guarantee compliance, especially without technological safeguards or trader accountability mechanisms.

In 2022, the UPTD inspected 237 weighing instruments, of which 220 were within tolerance, 16 were outside tolerance, and 1 was rejected outright. These results suggest a relatively high level of compliance, particularly among users of digital scales. However, digital scales also presented a new challenge: they cannot be physically locked after calibration, making it easier for dishonest manipulation post-verification. This undermines consumer confidence and the perceived legitimacy of inspections. While digital scales are increasingly preferred for convenience and accuracy, they also introduce technical challenges, such as the inability to secure settings post-verification. Studies in other Southeast Asian countries report similar issues, urging regulatory innovations to address electronic scale tampering risks (Alex-Omiogbemi et al., 2024). In the Purwakarta case, although 90% of scales passed verification, the inability to ensure continued accuracy compromises consumer protection efforts.

### **Street-Level Bureaucrat Performance**

The role of street-level bureaucrats the field inspectors and POSKUR officers is central to the day-to-day implementation of the policy. Yet, this study uncovered that these bureaucrats are often under-resourced, with limited staff, tools, and transportation. As a result, inspection practices become reactive rather than preventive. Handayani (2016) explains that street-level officials act as de facto policymakers, making decisions in real-time that directly affect policy outcomes. However, their discretion is constrained by systemic limitations, such as high workload and insufficient training. In Purwakarta, these issues manifested in irregular inspections, underutilization of the POSKUR station due to staffing gaps, and missed opportunities to resolve weighing disputes effectively.

The role of field officers is critical in shaping implementation outcomes. However, interviews revealed that inspectors often face logistical limitations such as lack of equipment, insufficient staff, and time constraints. As a result, supervision becomes reactive rather than preventive. Additionally, the POSKUR (Post for Re-Measurement), intended as a consumer service hub for resolving weighing disputes, is underutilized due to lack of dedicated personnel and low public awareness. Street-level officers are central to the success of public policies, especially those requiring close, continuous enforcement. However, interviews indicate that inspectors are under-resourced, lack mobility, and often cannot perform spot-checks, leading to a reactive rather than preventive oversight culture.

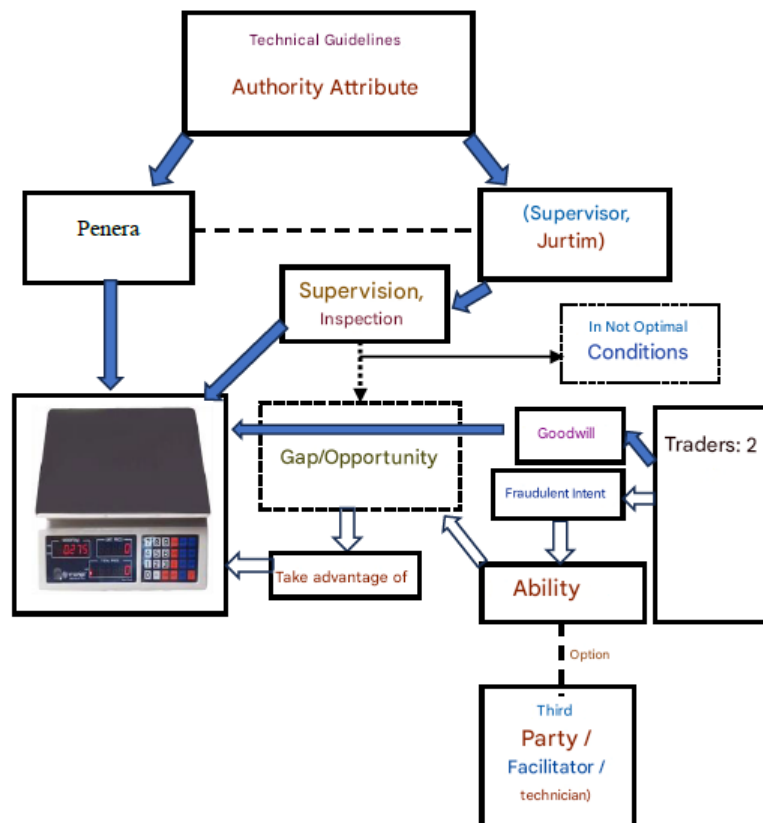


Figure 1. Interweaving of Field Actors' Roles

### Trader and Consumer Behaviour

The behaviour and attitudes of traders and consumers significantly affect policy enforcement. Many traders lack awareness of the importance of routine re-verification or believe that one-time certification is sufficient for ongoing operations. Malesky & Taussig (2019) demonstrate that in comparable Southeast Asian market settings, the effectiveness of metrology enforcement is closely tied to trader education and the perceived fairness of inspections. If traders feel unfairly targeted or uninformed, they are less likely to comply voluntarily. On the consumer side, there is a widespread lack of knowledge regarding weighing rights and redress mechanisms. This passive behaviour limits the social pressure needed to enforce ethical trading standards. According to the McDermott et al. (2015), effective metrology enforcement requires not just top-down inspections but also bottom-up vigilance from informed consumers. The absence of this consumer oversight diminishes the policy's deterrent effect and weakens the feedback loop necessary for sustained compliance.

Trader compliance is mixed. While many traders understand the economic risks of using unverified instruments, others continue to neglect re-verification obligations. The study found

that a lack of awareness and education, rather than deliberate fraud, is the primary cause of non-compliance. On the consumer side, there is little knowledge of their rights related to accurate measurements, and no organized consumer advocacy exists within the market context. Trader compliance largely depends on knowledge and trust in enforcement institutions. As also found in similar market contexts in Vietnam and the Philippines, education and training significantly affect willingness to comply with calibration standards (Tran et al., 2013). Meanwhile, consumer behaviour is marked by limited awareness of weighing rights, leading to minimal pressure on traders to comply. This consumer passivity diminishes the accountability chain that Legal Metrology relies on to function effectively.

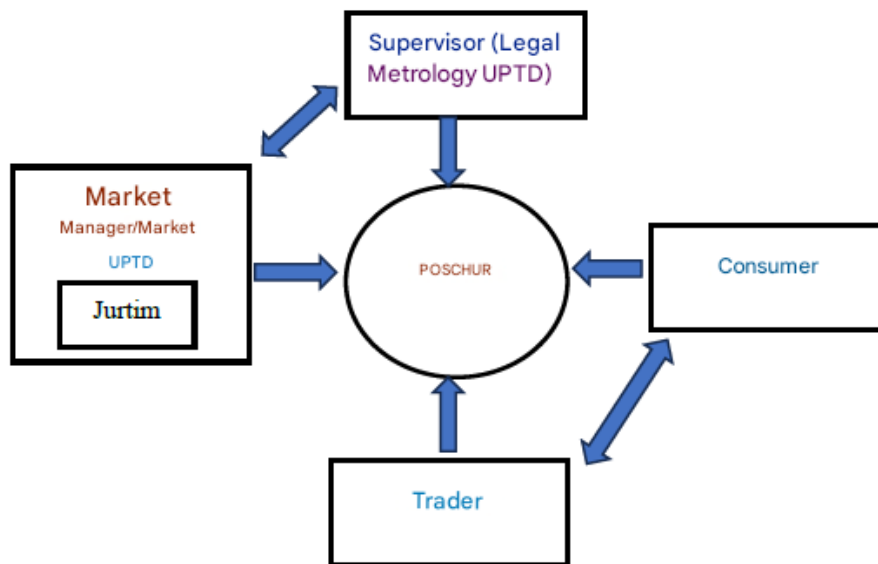


Figure 2. POSKUR Relationship Pattern

### Comparative Analysis

These results are compatible with traditional implementation theory implementation-the policy success is not only a matter of formal rules but also of realistic circumstances that enable rules to be put to use (Nilsen et al., 2013). Importantly, especially, “institutional readiness” should not be interpreted as a mere abstract capacity statement: rather, it involves so-called predictable budgets, trained personnel, workable standard operating procedures, interoperable information systems, and a leadership capable of making trade-off arbitrations. Similarly, participatory aspects are only meaningful with informed stakeholders who regard enforcement as reasonable and their means to report infringements and obtain feedbacks as frictionless, otherwise we enter the box-ticking regime under the name of participation.

Transparency of bureaucratic positions is also non-negotiable: diffused mandates and jurisdictional ambiguities encourage drift in use of discretion, selective application of enforcement policies and coordination lapses. This is true in the environments described above, where a nicely designed policy itself deters since they all become merely nodding at the rulebook-symbolic compliance at best, episodic verification, data that go unused in frontline action, frontline performers pursuing measures of activity instead of outcome improvement. A more aggressive implementation plan would thus combine regulation with ex-ante capacity and stakeholder mapping, cooperative processes where costs of compliance are halved, performance metrics based on results (not merely inspections passed), shielded time and resources to conduct training at the front lines, and checks and balances where citizen grievances are carried into cycles of reassessment and adjustments to the rules and procedures.

The findings show that while legal frameworks such as Law No. 2/1981 and Ministerial Regulation No. 26/2017 provide robust regulatory mandates, their local application is inconsistent. Coordination between UPTD Metrology Legal and market management remains fragmented, leading to unclear supervision schedules and limited data accuracy. Inspection activities, including periodic calibration, are often insufficient to prevent long-term inaccuracy in measurements. Additionally, the use of digital scales with no secure calibration locking mechanisms opens avenues for manipulation. Traders' compliance varies, with many unaware of the importance of verified instruments. Consumer awareness is also minimal, reducing pressure on market actors to maintain measurement integrity. The role of POSKUR (Post for Re-Measurement) is theoretically strategic but practically underutilized due to human resource constraints and weak integration into daily market governance. These challenges underscore the limitations in the current policy design and its operationalization. Inter-agency synergy, proactive monitoring systems, and educational outreach are needed to ensure sustained policy effectiveness.

The results of this study show that although the legal structure for metrological supervision in Indonesia is well-established, significant gaps persist in its localized implementation. Using Polski & Ostrom (1999) policy implementation model as the analytical framework, five critical thematic areas emerge: the legal and policy foundation, institutional coordination, operational supervision, bureaucratic performance, and behavioural responses from traders and consumers. The implementation of Legal Metrology policy in Citeko is constrained by institutional fragmentation, technical limitations, weak supervisory capacity, and low stakeholder awareness. These challenges align with international findings, reinforcing that even well-drafted policies can falter in the absence of localized adaptation, inter-agency collaboration, adequate resourcing, and community engagement. Addressing these gaps will require not only administrative reform but also innovation in digital enforcement and widespread public education.

## CONCLUSION

Based on this case study, it can be concluded that albeit Indonesia has a fairly effective legal and regulatory framework that governs its legal metrology policy, it could still be evaluated on the ground, especially in the Citeko Market in Purwakarta as only partly effective. Despite the presence of legislation such as the Law No. 2 of 1981 and the Ministerial Regulation No. 26 of 2017 offering clear guidance regarding the methods needed to ensure fairness and accuracy of trade measurements, this aspect cannot be said to be completely inculcated in the daily activities carried out in traditional markets. The lack of a close coordination between the stakeholders, insufficient supervisory capacity and trader and consumer awareness are cited as the major gaps in the implementation. The results indicate that the routine verification process, as a rule, is formal rather than effective concerning the issue of post-calibration manipulation, with special emphasis on the reality of a digital scale that cannot be locked. This technical weakness is compounded by poor use of POSKUR (Post for Re-Measurement) to act as a corrective mechanism to weigh disputes. Also, because market administrators tend to take a passive approach, it weakens any attempts to enforce measurements accuracy and lack of protection to consumers. One should also keep in mind that unwillingness to comply with regulation among traders is not always based on their antipathy towards regulation but is often related to information insufficiency and institutional support shortages. This also underscores a more general problem of scarce community involvement and inconsistent communication between the regulators and market participants.

## SUGGESTION

To overcome these problems, the study suggests boosting up institutional synergy between the UPTD Metrology Legal and the market management through the development of integrated data systems and the inculcation of routine coordination. In addition, hiring more and better supervisory staff, putting investment in consumer rights awareness campaigns, and

enlivening the role of POSKUR by providing dedicated staff and incorporating them into everyday market procedures are also important measures ahead. Collectively, these efforts aim not only to enhance the effectiveness of Legal Metrology enforcement but also to restore public trust in traditional markets. By ensuring consistent and transparent trade practices, local governments can contribute to broader goals of economic justice, consumer protection, and market credibility across Indonesia.

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