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Navigating the Legal, Policy, and Regulatory Frameworks: Consumer Protection and Industry Development in Indonesia's TVET Factory Products

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ABSTRACT

The Teaching Factory (TeFa), as an integral component of the Technical and Vocational Education and Training (TVET) framework in Indonesian Vocational High Schools (SMK), has emerged as a crucial technique to align educational outcomes with industrial requirements. Students receive training in technical skills as well as entrepreneurial and manufacturing processes through practical production activities. This integration presents a policy issue when TeFa goods enter the market and confront industry standards and consumer protection legislation. This study investigates three primary inquiries: (1) to what degree do TVET Factory products manufactured by SMKs in Indonesia adhere to relevant industry standards; (2) is the existing legal framework sufficient to ensure consumer protection concerning TeFa products; and (3) how should forthcoming policies and regulations be formulated to harmonize consumer protection with industry development goals in the execution of the TVET Factory program. The research used a qualitative methodology, incorporating case studies from five vocational schools across diverse domains of expertise, augmented by interviews with stakeholders including educators, industry partners, and regulatory bodies. The findings indicate that the compliance of TeFa products with industry standards remains inconsistent, and current rules do not specifically address items based on vocational education. This generates legal uncertainty and impediments in product down streaming. Consequently, a novel, adaptable policy framework is required to safeguard consumers while promoting industry expansion through the synergy of TVET and market laws.

Introduction

A key policy question has been raised by the formation of revised Law Number 9 Year 1999 on Consumer Protection: how to strike a balance between the advancement of SMEs (small and medium enterprises) and consumer rights, especially in educational environments. Concurrently, a wider change in policy that incorporates learning with actual production processes is shown in the growth of Teaching Factory (TeFa) programs in vocational education (Imran, et al., 2024).

A teaching factory, or learning factory, emphasizes the development of practical knowledge, enabling students to operate in contexts akin to actual industrial settings and to engage with the product life cycle from design to production, so attaining comprehensive understanding of engineering workflows. It functions as a pedagogical framework that amalgamates academic training in the classroom with practical industrial experience, thus closing the divide between education and industry. In this framework, students encounter genuine workplace environments, standardized production methodologies, quality control systems, and entrepreneurial facets of manufacturing. In contrast to traditional laboratory instruction, the teaching factory prioritizes comprehensive industrial operations, encompassing product planning, prototyping, assembly, testing, marketing, and distribution (Szabó et al., 2024). The goal of these programs is to bridge the ongoing gap between industry demands and school-based vocational training (McGrath & Ramsarup, 2024). This circumstance, however, creates legal difficulty since, although these products have educational value, they also operate as market commodities that raise issues with consumer protection.

By presenting students as both learners and producers, TeFa goods occupy the nexus of business and education. This movement, however, pedagogically creative, presents substantial legal and ethical issues. TeFa products serve as both teaching instruments and commercial commodities, thereby categorizing them under consumer protection legislation. However, the existing legal framework is deficient in providing explicit instructions for product liability and quality assurance when the producers are students within an educational institution (Herliana, et al., 2024).

This scenario has resulted in a political quandary, wherein the government's initiative to utilize educational institutions for industrial advancement may jeopardize the legal safeguards afforded to consumers. The integration of production into education can blur regulatory lines, risking the marginalization of consumer rights in favour of economic objectives (Mourtzis et al., 2023; Montefusco & Angeli, 2025). This paper examines the regulatory vacuum surrounding TeFa products in Indonesia and interrogates the urgent need for an integrated legal and policy framework

that can simultaneously uphold educational integrity, industrial innovation, and consumer safety.

The study is guided by the following research questions:

1. To what degree do vocational schools in Indonesia generate TVET factory products that adhere to current industry standards?
2. Are current legal frameworks adequate to ensure consumer protection in the context of TeFa products?
3. How should future regulatory and policy frameworks be designed to effectively balance the dual objectives of consumer protection and industrial development in the implementation of TVET Factory programs?

Method

This study uses a qualitative socio-legal approach to explore the legal and institutional challenges that arise when vocational schools are expected to function both as learning centers and as producers of marketable goods through their Teaching Factory (TeFa) programs (Blandy, 2015). It looks closely at how efforts to promote industrial growth through education may conflict with the need to protect consumers. To understand these complexities, the research combines legal document analysis with direct observations and interviews in the field (Joseph et al., 2025; Trávníčková et al., 2024; Taherdoost, 2022). This interdisciplinary method helps capture how laws, policies, and everyday practices interact in real school settings where education and production are blended.

This study employed a qualitative case study approach, drawing on evidence from five vocational schools (SMKs) that operate Teaching Factories (TeFa). The schools were purposively selected to reflect diversity in geographic location, industrial collaboration, and product specialization. A summary of the case study sites, along with key characteristics, is provided in Table 1.

In addition to case studies, the research relied on semi-structured interviews with multiple stakeholders, including school principals, teachers, students, industry partners, and government officials. In total, the study interviewed 13 teachers, 8 industry partners, and 4 government officials. To protect confidentiality, all participants are anonymized, with codes assigned according to stakeholder group. Where relevant, excerpts from industry partners are included to illustrate their perspectives on the quality of TeFa products and the legal ambiguities surrounding their commercialization.

The quantitative component of the analysis is based on a compliance assessment of TeFa products. Compliance levels were determined through structured rubric derived from existing national standards and industrial guidelines. The rubric covered aspects such as product safety, labeling, and consumer protection indicators. Trained assessors used a checklist to evaluate each product, and compliance percentages were calculated as the proportion of fulfilled criteria relative to the total checklist items. Further details of the rubric and scoring system are provided in Table 2.

Together, these methodological steps ensure transparency, triangulation, and robustness in evaluating the intersection of consumer protection and industrial growth within Indonesia's TVET Teaching Factories.

Results and Discussion

Compliance Teaching Factory Products Produced by Vocational Schools in Indonesia with Existing Industrial Standards

Teaching factories, or Learning Factories, emphasize the acquisition of practical knowledge, allowing students to operate in environments that closely resemble actual industrial settings and to engage with the product life cycle, from design to production, thereby attaining comprehensive understanding of engineering processes. Vocational education students will derive maximum benefit from a Teaching Factory (TeFa) in enhancing industrial skills if the development of TeFa is not solely concentrated on a big and complicated scale but also structured as a stationary facility within the school complex. Furthermore, TeFa must be designed to be adaptive, mobile, straightforward, and sensitive to both educational requirements and the evolving landscape of the industrial sector (Szabó et al., 2024;Rohaeni et al., 2021; Rejeki & Kuat, 2023;).

Teaching Factory is a learning model that optimizes the curriculum, funding resources, and human capital within vocational schools by aligning the production process with industry standards, aiming to produce graduates equipped with the soft skills and hard skills demanded by the workforce (Panduan Teaching Factory SMK, n.d.). Teaching Factory (TeFa) programs in vocational schools generally fall into three categories (Panduan Teaching Factory SMK, n.d.):

TeFa Focused on Student Competency Development

In this type, the main goal is to help students build the skills and character they need to succeed in the workplace. The school uses TeFa as a learning model, and while the students produce goods that meet industry standards, these products are not yet widely used by the public or industry. This is usually due to limitations in school capacity, community readiness, or challenges in managing

finances and administration.

TeFa Driven by Community Needs

Here, the school designs its TeFa activities to respond directly to what the local community wants and needs. Students still learn valuable skills, but their learning is also directed toward producing items that are already in demand. As a result, TeFa products are often ordered and used by residents, and the school can meet this demand in both quality and quantity.

TeFa Based on Industry Partnerships

In this paradigm, the school collaborates closely with industrial partners. The objective is to manufacture superior products that not only fulfil but also maintain industry requirements. To do this, schools may employ seasoned professionals, establish adequate manufacturing facilities, enhance their management and marketing strategies, and expand operational hours. This type of TeFa facilitates student learning within a genuine industry environment while also addressing corporate requirements.

An additional factor influencing the compliance of TeFa products with industry requirements is the collaboration structure between vocational schools (SMK) and the industrial sectors (DUDI). Vocational schools that sustain robust and ongoing collaborations with industry are more apt to produce programs that align closely with market needs. In specific cases, industry partners provide support by developing production standard operating procedures, delivering training for instructors and students, and performing regular quality audits. This underscores the function of vocational schools as institutions that not only deliver education but also produce competitive goods and services (Roy & Sharma, 2024).

In contrast, vocational schools without permanent industrial partners or those that merely have administrative partnerships encounter difficulties in obtaining industry best practices, leading to offerings that are more educational than professional. In this context, local and central governments play a vital role in fostering cooperation networks, delivering industry-standard training, and aiding in the acquisition of suitable equipment and laboratories.

The findings indicate the need for revisions to vocational school curricula, namely by incorporating content on quality standardization, product certification, and industrial management system training. Project-based learning through Teaching Factories should emphasize the cultivation of students' essential competencies while also producing things with economic value and commercial viability. This will make learning more relevant and applicable to workplace needs. Furthermore, to augment the competitiveness of TeFa products in the market, mentorship in

entrepreneurship and market literacy is necessary (Ardaniah et al., 2025). TeFa goods designated for local and digital market distribution must adhere to regulatory mandates, encompassing PIRT (Permit for Industrial Relations), halal certification, industry-standard packaging, and intellectual property rights. This mentorship will expand the Teaching Factory's scope from a simple teaching practice to an innovative ecosystem and firm incubation within the vocational school framework (Irfan, et al., 2024)

Teaching Factory products at Indonesian vocational schools have shown considerable potential in generating outputs that align closely with industry norms. To sustainably enhance this conformity, a comprehensive approach is required, encompassing curriculum development, fortifying collaborations with the industrial sector (DUDI), elevating teacher competency, and reorganizing the quality management system within vocational schools (Pratama et al., 2025). By implementing these procedures, the Teaching Factory can serve as a pivotal mechanism for cultivating adaptive, skilled, and competitive vocational graduates in the industry 4.0 landscape (Bondin & Zammit, 2025). Students in vocational education will derive greater benefits from a Teaching Factory (Tefa) in enhancing industrial skills if Tefa development prioritizes both large-scale complexity and stationary integration within the school complex. Tefa requires enhancement to become more adaptable, transportable, straightforward, and sensitive to educational demands and the evolving landscape of the industrial sector (Christiansen et al., 2024; Futri & Naruetharadhol, 2025; Garay et al., 2019;).

Analysis of Adequate Current Legal Frameworks to Ensure Consumer Protection in The Context of Tefa-Products

The general regulation of consumer protection in Indonesia is Act Number 8 Year 1999 Concerning Consumer Protection. This regulation explicitly stated as an umbrella act in the scope of consumer protection which integrates and strengthens law enforcement of consumer protection (Hapsari & Kurniawan, 2020; Darmawan et al., 2023). As the other party of consumer, an entrepreneur or business entity refers to an individual or business entity (incorporated or not) established, domiciled, or operating within the jurisdiction of the Republic of Indonesia, who engages in a broad range of economic activities through contractual arrangements, either independently or in collaboration with others (Law of the Republic of Indonesia Number 8 of 1999 concerning Consumer Protection, 1999). Based on that definition, Teaching factory classified as the business entity, but not fully commercial. As a semi-commercial business entity teaching factory the scale and capacity is categorized SMEs (Small and Medium Enterprise) (Mourtzis et al., 2023;

Darmawan et al., 2023).

According to the Regulation of the Director General of Vocational Education, Special Education, and Special Services of the Ministry of Primary and Secondary Education Number 14 of 2025, which pertains to the Technical Guidelines for Government Assistance under the 2025 Creative Project and Entrepreneurship Program for Vocational High Schools, one anticipated outcome of the Vocational High School Creative and Entrepreneurial Project Program is the cultivation of students who are innovative and creative in producing goods and/or services with significant market value and competitive viability in both local and global markets (Director General of PKPLK Directorate General Regulation No. 14 of 2025 - Technical Guidelines for Creative and Entrepreneurship Projects for Vocational Schools in 2025). This ambitious objective necessitates the assurance that the generated items adhere to elevated standards of quality and safety for consumers.

Improving the quality and safety of products is crucial for improving the results of vocational education, especially in the context of entrepreneurship-based learning at vocational high schools (Sekolah Menengah Kejuruan/SMK). Students are encouraged to develop commercial products and services, necessitating that their final outputs adhere to stringent criteria prioritizing long-term competitiveness and consumer protection. Consequently, various essential variables must be evaluated to ensure the product's safety and quality (Oliver et al., 2019).

Establishing rigorous product testing processes is crucial for guaranteeing product safety. To guarantee that the final products meet national and international safety standards, it is essential to do functional testing, durability assessments, and material safety evaluations. Testing improves product reliability and assists in detecting potential issues. The choice of raw materials is essential; they must be of exceptional quality, safe, and devoid of any dangerous or toxic chemicals. Adherence to safety rules regarding material composition guarantees consumer safety, legal responsibility, and environmental conservation. Furthermore, a crucial element of guaranteeing safety is product design. Designers must prioritize ergonomics and safety above elements that pose dangers to users, such as sharp edges, easily detachable components, or unstable structures. Every product must have explicit and succinct usage instructions. These should provide maintenance instructions, cautionary advisories regarding potential misuse, and detailed guidelines for safe operation. To preserve the product's integrity, usefulness, and safety throughout its life cycle, guidelines for appropriate storage and maintenance must be supplied (Liao, 2022; Kumar & Srivastava, 2020).

In the absence of express legal provisions for a given circumstance, the applicable legal

framework defaults to the fundamental principles outlined in the Consumer Protection Act. This legislation serves as a primary framework to ensure the safeguarding of consumer rights, particularly in the absence of more detailed regulations. It addresses the legal void by providing comprehensive yet enforceable standards applicable across diverse industries of products and services. This legislation delineates the obligations of commercial entities and the entitlements of customers in facilitating equitable and secure transactions. Numerous stipulations within the legislation explicitly pertain to the necessity for elevated standards in goods and services available in the marketplace. Article 7(d) mandates that every business entity ensures the quality of the goods and/or services they produce or trade, in compliance with applicable quality standards. This provision establishes the legal basis for implementing product quality assurance and demonstrates the government's dedication to safeguarding consumer rights in a progressively competitive market landscape.

Article 8, a fundamental aspect of the legislation, forbids enterprises from manufacturing or disseminating goods and/or services that fail to comply with obligatory requirements or diverge from the specifications indicated on the product label, including weight, volume, size, ingredients, efficacy, and other characteristics. Moreover, it mandates that businesses provide explicit information on packaging, including product composition, usage instructions, and expiration dates, all of which must be presented in Bahasa Indonesia. This essay underscores the importance of adherence to standards and precise representation in maintaining consumer trust.

The law mandates conformity with standards and imposes strict liability on businesses for damage resulting from defective or hazardous products. Article 19 asserts that enterprises are liable for indemnifying consumers for losses associated with damage, contamination, or injury caused by their products or services. This commitment encompasses not only refunds or replacements but also healthcare or other types of reparation if required.

The legislation enhances product accountability via Article 25, mandating that manufacturers of durable items (exceeding one year of usage) help, including spare parts and warranty services. This signifies a comprehensive perception of quality, not solely as a trait of the product at the time of purchase, but as a dedication to its continual dependability and user contentment.

Article 26 similarly underscores that service providers are obligated to uphold all promises or warranties provided, so reaffirming the legal assumption that service quality must conform to consumer agreements. To ensure compliance, Article 62 outlines criminal penalties for violations of these provisions, including imprisonment and substantial fines. This legal mechanism demonstrates

that failure to breach of public trust and consumer rights.

Table 1 presents the compliance levels of TeFa products across five vocational schools. These percentages were determined using a structured compliance rubric, developed from national education standards, industrial product quality guidelines, and consumer protection regulations. The rubric consisted of checklist items covering key domains, including:

1. Product Safety: adherence to basic safety requirements and absence of hazardous materials.
2. Documentation & Labelling: completeness of labels, inclusion of required certifications (e.g., PIRT, SNI), and compliance with consumer information standards.
3. Quality Assurance Practices: evidence of testing protocols, calibration, and adherence to standard operating procedures.
4. Hygiene & Handling: application of sanitary practices in food- and textile-related products.
5. Market Readiness: packaging, durability, and conformity to client or consumer expectations.

Table 1. Compliance of TVET factory products with industrial standards by vocational field

No	*Vocational Field*	*SMK Case Study*	*Compliance Level (%)*	*Key Strengths*	*Key Challenges*
1	Mechanical Engineering	SMK A	80	Use of CNC, precision tools, industry mentoring	Lack of standardized documentation and calibration practices
2	Software Engineering	SMK C	75	Functional apps, UI/UX focus, partial agile adoption	Limited testing protocols, weak cybersecurity practices
3	Automotive Engineering	SMK E	70	SOP-based service, strong industry linkage	Outdated diagnostic equipment and partial QA implementation
4	Culinary Arts	SMK B	65	Attractive products, taste quality	Inadequate hygiene, missing PIRT, non-compliant labelling
5	Fashion Design	SMK D	60	Creative design, tailoring skills	Inconsistent sizing, poor stitching, unmet client specifications

The case study findings directly informed the policy recommendations advanced in this paper. For example, in the Culinary Arts program (SMK B), products demonstrated attractive taste quality

but faced inadequate hygiene practices, missing PIRT certification, and non-compliant labeling. These shortcomings highlight the gap between students' capacity to produce marketable goods and their ability to meet regulatory requirements. This gap directly informed the recommendation for a tiered regulatory framework, which would allow Teaching Factory (TeFa) products to gradually progress from internal use toward broader commercial distribution while aligning with regulatory compliance milestones.

To illustrate this, one Culinary Arts program reported difficulties in obtaining PIRT certification, as local authorities required formal documentation and infrastructure upgrades beyond the school's available resources. As a result, the program could not legally distribute its products outside the school premises, despite strong demand from the surrounding community. This real-world barrier underscores the necessity of a regulatory pathway that recognizes the developmental nature of TeFa enterprises while still safeguarding consumer protection.

The proposed tiered framework is designed to balance innovation and consumer safety by recognizing different levels of readiness among TeFa products:

1. Tier 1 (Internal Educational Use): Products are produced and consumed within the school environment. Basic hygiene and safety standards apply, but certification requirements are minimal, emphasizing learning outcomes rather than market readiness.
2. Tier 2 (Local Market Readiness): Products may be sold at local markets or community events. At this level, compliance with PIRT, basic labelling, and hygiene standards becomes mandatory to ensure consumer safety.
3. Tier 3 (Wider Commercialization): Products meet national standards (e.g., SNI certification) and are eligible for broader distribution. This tier requires robust documentation, quality assurance systems, and formal regulatory approvals.

By situating the case study evidence within this graduated framework, the recommendations become more actionable for policymakers, while also aligning with the realities faced by vocational schools in Indonesia.

The results depicted in Figure 1 demonstrate that sectors engaged in the concrete industry and adhering to established norms typically do well in meeting external quality standards. The disparities highlight the need for specific interventions, such as improved equipment, quality assurance training, and increased regulatory support, to ensure that all TeFa products meet the expectations of consumers and industry partners.

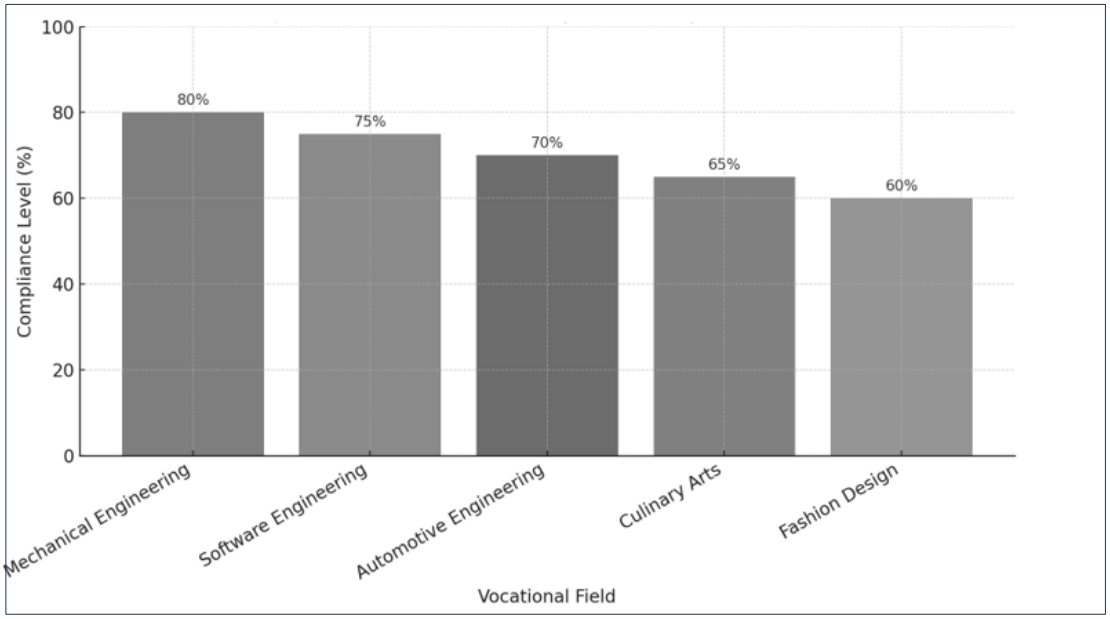

Fig 1: Compliance levels of TVET factory products

The examination of Teaching Factory (TeFa) implementation in five Indonesian Vocational High Schools (SMKs) indicates differing levels of adherence to established industrial norms (Table 1). Mechanical Engineering exhibited the highest compliance rate (80%) among the evaluated disciplines, mostly attributable to its robust collaboration with industry partners, availability of precision machinery, and conformity to technical quality standards. Software Engineering achieved a compliance score of 75%, benefiting from organized development methodologies and functional testing, however documentation and cybersecurity requirements require enhancement. Automotive Engineering achieved a 70% compliance rate, facilitated by standardized service protocols and industry cooperation, however antiquated diagnostic technologies continue to provide challenges. Conversely, Culinary Arts exhibited a compliance rate of 65%, with challenges related to hygiene protocols, packaging, and regulatory certifications such as PIRT and nutritional labelling obstructing complete adherence to food industry norms. The lowest compliance rate was noted in Fashion Design (60%), with significant issues identified in sizing, stitching quality, and adherence to order specifications.

Future Regulatory and Policy Frameworks to be Designed to Effectively Balance the Dual Objectives of Consumer Protection and Industrial Development in The Implementation of Teaching Factory Programs

To navigate the growing complexity of Teaching Factory (TeFa) practices in vocational

education, future regulatory and policy frameworks must be thoughtfully redesigned to balance two critical goals: protecting consumers and advancing industrial development (Imran et al., 2024). As TeFa shifts from a purely pedagogical model to a semi-commercial system of production, existing legal structures which are often grounded in general consumer protection law are no longer sufficient. Instead, what is needed is a more nuanced regulatory approach that reflects both the educational mission and the realities of market participation (Sofyani et al., 2023).

While this study highlights the legal ambiguity surrounding Teaching Factory (TeFa) products, it is important to note that, to date, there have been no formal legal cases or consumer complaints recorded against TeFa products in the selected schools. However, interviews with industry partners and government officials revealed a shared concern that the absence of clear legal recognition leaves both producers and consumers vulnerable. For example, without formal certification (such as PIRT or SNI), TeFa products cannot be fully protected under consumer protection law, and liability in the event of a complaint would be unclear. This lack of precedent underscores the urgency of developing a legal and regulatory framework that provides certainty for schools while safeguarding consumers.

A fundamental initial step is to create a distinctive regulatory policy that distinctly separates full-scale commercial firms from school-based production units. Although TeFa products can be marketed and yield income, their development is essential to student education. Consequently, policies must acknowledge the instructional purpose of these products while simultaneously safeguarding fundamental consumer rights. A viable alternative is to implement a tiered framework, wherein standards like labelling, safety certification, and warranty provisions are scaled according to the product's market reach and potential risk to consumers.

Regulatory frameworks must incorporate measures for institutional accountability tailored to the educational context. Institutions administering TeFa programs must have internal quality assurance procedures that conform to national education requirements and consumer protection principles. These may manifest as school-based oversight committees, collaborative assessment processes involving educators and industry experts, or compulsory external product validation. These systems not only improve consumer safety but also promote a culture of accountability and professionalism among educators and students (Sofyani et al., 2023).

Furthermore, national policy must officially acknowledge Teaching Factory products as a unique category within the wider context of small-to-medium enterprises (SMEs) and education-industry partnership. By designating “educational-industrial goods” legally, the ministries of education, trade, and industry can jointly formulate specific guidelines that encompass critical aspects such as

pricing transparency, packaging standards, tax responsibilities, and after-sales service, while maintaining the educational intent of these initiatives.

A potential challenge in introducing a new legal category of educational-industrial goods is the risk of unintended loopholes. Schools, for instance, might inadvertently or deliberately use this designation to sidestep stricter consumer protection requirements. Consider the case of food or health-related products: if labelled as "educational," such goods could be marketed without meeting established hygiene or safety standards, thereby undermining public trust and consumer safety (Chauhan, et al., 2025; Joya & Orth, 2025).

Equally problematic is the question of market boundaries. At what point does a product produced within a Teaching Factory (TeFa) cease to serve as a primarily educational function and instead operate as a fully commercial commodity? When goods are manufactured in large quantities or sold through digital marketplaces, there is a tangible risk that private actors may exploit this ambiguity (Adjei et al., 2024). By leveraging the more lenient regulatory space afforded to educational-industrial goods, they could secure an unfair advantage over small and medium-sized enterprises (SMEs) or established industries that remain bound by stricter obligations.

The issue of accountability remains a pressing concern. Should a defective or unsafe product cause harm, responsibility may become blurred among students, schools, and industry partners. In the absence of clear regulatory guidance, consumers could face significant obstacles in seeking redress or compensation. This ambiguity not only weakens the position of consumers but also threatens the credibility of the educational institutions involved (Arifin et al., 2021).

Cross-sectoral collaboration is equally significant. Effective regulatory design will rely on coordinated efforts among pertinent government ministries (including those responsible for education, trade, industry, law, and human rights) as well as inclusive consultations with educational institutions, local authorities, business stakeholders, consumer advocacy organizations, and civil society. This participative procedure will ensure that regulatory instruments are contextually relevant, enforceable, and adaptable to concurrent innovations.

Ultimately, regulatory regimes must be proactive and flexible. As TeFa projects increasingly involve digital production, online markets, and cross-border trading, the regulatory framework must broaden to encompass concerns beyond the safety of physical products. Future policies must handle data privacy, intellectual property protection, and the ethical implications of student involvement in entrepreneurial activity. A nationwide monitoring and evaluation system, incorporating frequent audits, consumer feedback systems, and public reporting, is essential for

performance tracking and facilitating ongoing policy enhancement.

The future efficacy of Teaching Factory programs will hinge not only on their educational and economic outcomes but also on the robustness and adaptability of the regulatory structures that regulate them. An equitable, context-sensitive, and cooperative regulatory framework is crucial to guarantee that these initiatives significantly enhance both student education and customer welfare.

It is timely that the proposed New Consumer Protection Law is presently being discussed in the House of Representatives of the Republic of Indonesia. A major topic of discussion revolves around how to define and categorize business entities. In this context, it is essential to classify Teaching Factory (TeFa) products under a specific regulation and/or to require additional detailed regulation. Due to their role as both educational tools and market-driven items, TeFa products require a specific legal approach that acknowledges their unique status between education and business.

A comprehensive re-evaluation of the current legal and policy framework is essential to address the increasing intricacy of Teaching Factory (TeFa) practices in Indonesian vocational education. The legislative framework regulating Technical and Vocational Education and Training (TVET) institutions must evolve as TeFa transitions from a purely educational instrument to a semi-commercial production entity. The hybrid characteristics of TeFa, encompassing education, industry, and entrepreneurship, are insufficiently addressed by the existing legislation, despite their alignment with conventional consumer protection frameworks (Imran et al., 2024). Consequently, a more intricate regulatory structure is required, one that promotes industrial advancement and safeguards consumer rights without compromising educational goals (Sofyani et al., 2023).

Differentiation is the foundation of this framework. Legislation and policy must distinctly differentiate large-scale commercial enterprises from school-based production units operating under TVET. Despite TeFa goods being marketed and distributed to the public, their primary objective remains educational. Regulations must consequently consider this dual function. A tiered policy approach may be beneficial in this context, imposing varying levels of legal obligations such as product labelling, warranty stipulations, safety certifications, and pricing transparency, contingent upon the product's market reach and associated risks. This proportionality would protect consumers without imposing excessively high regulatory obligations on schools (Adjei et al., 2024).

Furthermore, the educational system must incorporate institutional accountability. It should be mandatory for schools who use TeFa programs to create internal quality assurance systems that are in line with fundamental consumer protection principles and national education requirements.

These could include external product validations, collaborative assessments by educators and industry representatives, and school-level quality oversight groups. These systems would guarantee that goods are safe for consumers to use while simultaneously encouraging a professional and accountable culture among educators and students.

It is imperative to formally categorize Teaching Factory goods within the broader legislative framework governing small-to-medium enterprises and public-private educational collaborations at the national level. The Ministries of Education, Trade, Industry, and Law should collaborate to establish regulations for TeFa items that encompass intellectual property, taxation, packaging, and post-purchase support. The unique role of TeFa as both an educational instrument and a financial resource should be acknowledged in these regulations.

Furthermore, stakeholder engagement and interministerial collaboration are essential for effective regulation. Extensive consultations including enterprises, civil society, educational institutions, regional governments, and consumer advocacy groups are essential to ensure that policies are effectively enforced and suitable for the context. Policies must also account for emerging challenges such as data privacy, digital product compliance, and ethical considerations regarding student labor, as TeFa programs increasingly utilize digital platforms and may engage in cross-border e-commerce.

This regulatory reform takes place at a pivotal moment. The matter of TeFa goods can be formally addressed through the proposed New Consumer Protection Law currently under discussion in Indonesia's House of Representatives. Indonesia can encourage responsible innovation in TVET while ensuring consumer safety and industrial competitiveness by recognizing these items under a specific legal framework.

Conclusion

This study emphasizes the delicate equilibrium necessary between enhancing vocational education via Teaching Factory (TeFa) initiatives and ensuring consumer protection in Indonesia. Research from five vocational schools indicates differing levels of adherence to industrial norms, with robust industry partnership identified as a critical success element. Nonetheless, regulatory deficiencies remain, as existing consumer protection legislation fails to sufficiently address the semi-commercial and educational hybrid characteristics of TeFa products. This legal ambiguity presents hazards to both customers and the integrity of vocational schools. A diversified and flexible regulatory framework is required to separate school-based production from full-scale commercial firms while maintaining basic safety and quality standards.

This technique guarantees that students are not constrained by inflexible structures but are instead immersed in adaptable learning environments that reflect various industry contexts. A mobile or modular TeFa model facilitates swift reconfiguration of training activities in response to technological innovations, market requirements, and industrial collaborations. Furthermore, the use of digital tools, simulation technologies, and portable production units enhances the versatility of TeFa, rendering it more accessible to schools with constrained resources. Vocational education can improve students' proficiency in technical skills, entrepreneurial ability, and work preparedness by integrating large-scale industrial replication with smaller, contextually pertinent teaching factories.

Moreover, procedures for institutional accountability in vocational schools must be enhanced via internal quality control and collaborative industry assessment. National policy ought to officially classify TeFa products as educational-industrial goods, facilitating regulatory coherence across the education, trade, and industry sectors. As TeFa progressively incorporates digital technology and expands its market reach, regulatory reforms must proactively address new issues associated with data security, intellectual property, and ethical labor practices. A balanced, context-sensitive regulatory framework will ultimately allow TeFa to fulfill its dual objectives: cultivating skilled graduates and providing safe, competitive products that further Indonesia's industrial development goals. While the findings of this study underscore the regulatory dilemmas surrounding Teaching Factory (TeFa) products, they also highlight a unique opportunity. Indonesia has the potential to develop a pioneering legal and regulatory framework that not only ensures consumer protection but also supports innovation and industrial growth within vocational education. Such a framework could serve as a benchmark for other countries, demonstrating how education systems can foster entrepreneurship while maintaining public safety.

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