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Sustainability analysis of the palm sugar industry in Hulu Sungai Tengah Regency: Perspectives on local economy, public policy, and labor law

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ABSTRAK

Introduction

The palm sugar industry in Hulu Sungai Tengah, South Kalimantan, is a traditional sector that supports the local economy and provides employment in the informal workforce. Despite its cultural and economic significance, the industry faces serious challenges, including unstable raw material supply, limited innovation, weak market access, and the absence of legal protection for workers. These issues raise critical questions regarding the long-term sustainability of this local industry.

Objectives

This study aims to analyze the sustainability of the palm sugar industry in Hulu Sungai Tengah from the perspectives of local economic development, public policy, and labor law, while also integrating insights from Islamic economics and finance to propose a holistic framework for industry revitalization.

Method

This research applies a qualitative descriptive-exploratory approach involving in-depth interviews, field observations, and document analysis. The participants consist of palm sugar artisans, policymakers, small and medium enterprise representatives, and local government officials. Data were examined using a triangulation technique to ensure validity, and the Triple Bottom Line framework guided the analysis.

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Results
The findings reveal that the palm sugar industry retains strong economic potential due to naturally growing sugar palms and established cultural practices. However, systemic challenges persist, including lack of planned cultivation, reliance on traditional processing methods, weak branding, and widespread informality in labor practices. Islamic finance mechanisms such as profit-and-loss sharing, as well as instruments like zakat and waqf, offer promising pathways to strengthen capital access, innovation, and social welfare within the sector.

Implications
The study highlights the need for integrated policies between local government, financial institutions, and community stakeholders. Practical recommendations include cultivating sugar palms systematically, introducing innovation and digital marketing, providing fair labor protection, and mobilizing Islamic social finance. These steps can enhance resilience, competitiveness, and sustainability in line with both national development priorities and Islamic economic principles.

Originality/Novelty
This study contributes a multidisciplinary perspective by linking local economic analysis, public policy, labor law, and Islamic finance in the context of a traditional industry. It offers a novel framework for understanding how ethical and Shariah-compliant economic instruments can support the sustainable transformation of rural industries, an area that has received limited scholarly attention in South Kalimantan.

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INTRODUCTION

The brown sugar industry, deeply rooted in traditional practices, remains an important pillar of rural livelihoods and local economic development in many parts of the Global South, including Indonesia. This artisanal sector provides employment opportunities, supports household incomes, and fosters community resilience in areas where large-scale industries are absent. However, small-scale producers face a volatile environment shaped by market globalization, climate change, and policy gaps. Research shows that small and medium enterprises (SMEs) in developing countries are uniquely vulnerable compared to their counterparts in advanced economies, as they often rely on outdated technologies, family labor, and informal governance structures that reduce productivity and market competitiveness (Cavicchi, 2020; Rizkiyah et al., 2025).

Technological and environmental challenges further exacerbate the precariousness of these traditional industries. Limited access to modern agricultural

methods and processing equipment constrains efficiency and output, perpetuating cycles of poverty for producers who cannot compete with mechanized rivals (F. V. Carlucci et al., 2025; Saad et al., 2023). In addition, unsustainable farming practices contribute to soil degradation, water stress, and deforestation, which undermine both long-term productivity and ecological resilience (Borges et al., 2024; Legg et al., 2021). These environmental risks intersect with tightening global regulations on sustainability, further pressuring artisanal industries to adapt without adequate resources. As scholars note, the interplay of economic, technological, and environmental vulnerabilities renders traditional sugar production highly fragile, particularly in regions lacking coordinated support mechanisms (Dry & Baker, 2022; Mercado et al., 2025).

The central research problem arises from this fragility: traditional brown sugar producers remain trapped between cultural heritage and modern competitiveness. On one side, artisanal methods sustain authenticity, cultural identity, and local community participation. On the other, dependence on manual processes, unorganized marketing channels, and weak labor-law enforcement hinder integration into formal economies and expose workers to precarious conditions (Kasolati & Kamilah, 2024; Rizkiyah et al., 2025). The inability to stabilize raw material supplies, ensure consistent product quality, and access higher-value markets makes sustainability elusive. Addressing these issues requires not only technological and financial solutions but also institutional frameworks that enhance social protection, equitable labor practices, and long-term environmental management.

Existing solutions proposed in policy and development literature highlight several broad strategies. First, integrated financial, technological, and educational support systems are viewed as essential to enable smallholders to overcome structural barriers. Programs that promote innovation, capacity building, and resource management have been shown to improve resilience in rural industries (Dharmawan et al., 2021; Sulaiman et al., 2019). Second, globalization and trade liberalization necessitate stronger policy interventions to protect small producers from market volatility and ensure equitable participation in value chains (Dry & Baker, 2022). Finally, scholars underscore that aligning rural industries with sustainability frameworks is critical, suggesting that interventions must encompass profit, people, and planet simultaneously (Elkington, 1994; Savitz, 2013).

More specific solutions from recent scholarship focus on targeted measures to strengthen artisanal industries. Product diversification, including organic and flavored sugar variants, enables producers to reach niche markets and buffer against reliance on a single commodity line (Herawati et al., 2023; Ikhsan et al., 2024). Branding and storytelling strategies emphasize authenticity and sustainability, enhancing consumer loyalty, particularly among environmentally conscious buyers (Sudirjo et al., 2024; Wu, 2022). Digital marketing and e-commerce platforms offer cost-effective channels for small-scale producers to bypass traditional middlemen, establish direct consumer connections, and expand beyond local markets (Ivanova et al., 2020). These innovations, when combined with cooperative action, have been documented to

enhance competitiveness while maintaining cultural authenticity (Curzi et al., 2023; Noya et al., 2023).

Parallel to marketing and production innovations, another strand of literature emphasizes labor law compliance and the pursuit of "Decent Work" as conceptualized by the International Labour Organization (1999, 2008) (Blustein et al., 2023; Brill, 2021; Deranty & MacMillan, 2012). Informal industries often fail to provide fair wages, safe working environments, and social protection, exposing workers to structural exploitation (Ganesh M., 2023; Pankaj & Jha, 2024). Evidence suggests that integrating informal labor into social security systems, supported by local enforcement mechanisms, strengthens resilience and improves productivity (Desanta & Aisyah, 2025; Lund, 2012a). Moreover, studies stress the need for labor regulation that is context-sensitive, accounting for the interplay of cultural norms and informal practices (Orlova & Boichev, 2017). Thus, sustainable upgrading of traditional industries requires not only technical modernization but also institutional reform to secure workers' rights.

Recent case studies of artisanal industries offer valuable insights into balancing tradition with innovation. For instance, integrating local knowledge with modern processing has enhanced both productivity and cultural preservation (Kamakaula, 2024). Consumers have shown willingness to accept innovations that maintain traditional characteristics while improving quality or nutritional value (D. Carlucci et al., 2023). Branding strategies that highlight authenticity have been successful in differentiating products and cultivating consumer trust (Wu, 2022). Similarly, public policies that link labor-law enforcement with targeted economic incentives have demonstrated improvements in worker welfare and community resilience (Dewey, 2018; Ndhlovu & Ndhlovu, 2023). Yet, despite these promising approaches, many artisanal sugar industries remain marginalized due to policy misalignments, inadequate enforcement, and fragmented institutional support (Nguyen & Thuy, 2025). This indicates a critical research gap at the intersection of production, marketing, labor, and policy frameworks.

Building upon these gaps, the present study aims to examine the sustainability of the brown sugar industry in Hulu Sungai Tengah (HST), South Kalimantan, by employing the Triple Bottom Line (TBL) framework, which balances economic viability, social equity, and environmental stewardship (Elkington, 1994; Elkington & Hartigan, 2008; Franklin et al., 2009). Specifically, it investigates production practices, marketing structures, and labor conditions, while evaluating the role of local government policies and compliance with labor law. The novelty of this research lies in its integrated approach: it not only diagnoses the multidimensional challenges of a traditional industry but also advances practical recommendations for cluster-specific policies, cooperative strategies, and labor formalization. By combining field evidence with theoretical frameworks, this study contributes to both scholarly debates and policy discussions on how artisanal industries can transition toward sustainable competitiveness while preserving their cultural identity and community role.

LITERATURE REVIEW

Production and Technological Challenges

The brown sugar industry has long been characterized by reliance on manual processes, outdated tools, and limited technological innovation. Such dependence on traditional methods significantly constrains productivity, quality, and market competitiveness. Carlucci et al. (2025) emphasize that smallholders in developing countries often lack the resources to adopt mechanized practices, creating disparities with larger producers who can scale efficiency. Saad et al. (2023) further highlight how technological exclusion perpetuates poverty cycles, as inefficiencies lead to low margins and minimal reinvestment capacity. Research on Indonesian contexts illustrates similar findings, where artisanal producers continue to rely on firewood-based boiling systems and rudimentary molds, resulting in inconsistent product quality and environmental strain (Sulaiman et al., 2019).

Efforts to integrate modern techniques into artisanal industries have proven difficult due to structural barriers. The study by Rizkiyah et al. (2025) notes that SMEs remain highly exposed to volatile markets and resource constraints, which limit their ability to invest in mechanization. Without coordinated government or cooperative interventions, technology adoption remains fragmented and inconsistent. Comparative cases, such as those in Latin America, suggest that innovations like energy-efficient stoves and mechanized sap extractors can improve yields and sustainability, but implementation requires both financial support and training (Aguilar-Rivera & Olvera-Vargas, 2021). This underscores that technological gaps are not merely operational but are tied to broader institutional weaknesses that hinder modernization.

Environmental considerations also intersect with technological challenges. Unsustainable practices, including overuse of natural fuel sources and absence of agroforestry, increase ecological pressures. Borges et al. (2024) argue that resource depletion directly undermines both ecological and economic sustainability. Similarly, Legg et al. (2021) link traditional farming to soil degradation and pesticide runoff, further constraining productivity. These environmental risks reveal that technological modernization must be paired with sustainable practices to avoid reinforcing ecological vulnerability. Thus, the literature establishes that addressing production challenges requires integrated solutions involving financial access, technological training, and environmental management.

Marketing, Diversification, and Branding

Market access remains one of the most critical obstacles for brown sugar producers. Research indicates that small-scale operations often function as price-takers, dependent on middlemen who dominate local marketing channels (Simbolon et al., 2021). This lack of bargaining power reduces incentives for innovation and limits exposure to high-value markets. Scholars argue that consumer demand is increasingly shaped by preferences for authenticity, sustainability, and quality assurance, leaving

traditional producers marginalized (Baka et al., 2016). In this context, the ability to diversify products and build brand identity becomes central to survival.

Diversification strategies have been widely discussed in the literature. Expanding offerings to include organic brown sugar, flavored variants, and liquid or granulated forms enables producers to reach niche markets and mitigate risks associated with reliance on a single product line (Herawati et al., 2023). Other studies (Abson et al., 2013; FAO, 2014; Stevens & Teal, 2024) emphasize that diversification also improves resilience against price volatility by creating alternative income streams. Branding initiatives, meanwhile, emphasize storytelling that highlights cultural heritage, artisanal processes, and sustainability. Ikhsan et al. (2024) note that these narratives enhance consumer engagement and loyalty by aligning with broader shifts toward premium and ethically sourced products.

Digital platforms provide additional opportunities for market expansion. Ivanova et al. (2020) demonstrate that e-commerce and social media marketing significantly extend the reach of traditional food industries, enabling direct-to-consumer models that bypass exploitative intermediaries. Sudirjo et al. (2024) also underscore that branding centered on sustainability attracts environmentally conscious consumers, enhancing long-term competitiveness. Noya et al. (2023) add that partnerships within small and medium enterprises can facilitate collective marketing initiatives, leveraging shared resources to amplify visibility. Collectively, the literature affirms that diversification, branding, and digital marketing are indispensable strategies for empowering traditional producers in competitive markets.

Public Policy and Institutional Support

Public policy plays a decisive role in shaping the sustainability and competitiveness of informal and artisanal industries. Targeted local economic development strategies can strengthen micro-enterprises by providing training, financial incentives, and infrastructure (Aisha et al., 2024; Dubihlela & Van Schaikwyk, 2014; Susilowati et al., 2024; Tulsi, 2025; Valverde et al., 2024). In Indonesia, however, policies often fail to address the specificities of brown sugar clusters, resulting in fragmented support (Boedirochminarni, 2018; Nelson & Panggabean, 1991; Rahman et al., 2019; Stapleton, 2006). Research highlights that many interventions treat SMEs generically, overlooking the unique dynamics of resource-based rural industries (Famiola & Wulansari, 2019; Neilson et al., 2020).

Recent literature emphasizes the importance of context-sensitive policy design. Horodnic et al. (2022) stress the role of community engagement in policymaking, ensuring that interventions are culturally relevant and locally accepted. Similarly, Mahmud et al. (Mahmud et al., 2024) illustrate how empowering communities through brown sugar development initiatives can enhance local independence and economic resilience. Yet challenges remain in aligning policy objectives with local realities. Evidence indicates that misaligned programs often fail to achieve intended outcomes, particularly when policies are not adaptive to changing market and environmental conditions (Sulila & Usman, 2022).

The intersection of public policy with labor law enforcement is especially critical. Ndhlovu & Ndhlovu (2023) note that governments often focus labor law enforcement on formal sectors, neglecting informal ones where violations are widespread. Dewey (2018) demonstrates that strengthening labor standards enhances community resilience by protecting workers from exploitation. Luthra (2020) similarly shows that effective policy frameworks can enhance informal sector productivity by providing incentives for compliance. Thus, institutional support is not only about economic empowerment but also about integrating legal frameworks that safeguard workers and promote sustainable practices.

Labor Law, Decent Work, and Social Protection

Labor law compliance and the principle of "Decent Work" have emerged as essential dimensions of sustainability for informal and artisanal sectors. The International Labour Organization (1999) defines decent work as employment that provides fair income, workplace security, and social protection. Yet informal industries often fall short of these standards. Ganesh M. (2023) underscores that lack of formal contracts and minimal access to social security leave workers vulnerable to exploitation. Similarly, Pankaj & Jha (2024) illustrate how precarious conditions persist in informal economies, particularly where labor rights remain unenforced.

Studies propose multiple pathways to enhance labor conditions. Some studies (DeLuca-Acconi, 2017; Goodwin & Maru, 2017; Joshi et al., 2022)suggest that legal advocacy and education can empower workers to demand their rights, while others (Lund, 2012b; Sojo, 2015; Van Ginneken, 1999) emphasize the role of integrating informal workers into social protection systems. Orlova & Boichev (2017) highlight the importance of considering cultural norms when designing compliance initiatives, noting that formal rules alone cannot reshape entrenched informal practices. Collectively, these perspectives stress that enforcement must be complemented by education, advocacy, and community involvement to achieve meaningful labor protection.

Empirical research also links labor regulation to broader industry resilience. Previous studies (Bitzer et al., 2024; Ruwanpura & Wrigley, 2011) demonstrate that compliance with labor standards reduces vulnerability during economic downturns by providing stability and income security. Compliance can also enhance access to formal markets, as many contracts require adherence to legal labor standards (Ndhlovu & Ndhlovu, 2023). Furthermore, the integration of environmental regulations with labor law enforcement ensures that industries operating with natural resources adopt sustainable practices (Nguyen & Thuy, 2025). Thus, the literature suggests that labor law enforcement serves as a fundamental lever for advancing sustainability by improving working conditions, stabilizing economies, and promoting equitable growth.

Triple Bottom Line as Analytical Framework

The triple bottom line (TBL), introduced by Elkington (1994), provides a multidimensional framework to assess sustainability by integrating economic, social, and environmental

outcomes. Savitz (2013) elaborates that well-managed companies achieve success by balancing profit, people, and planet. Within the context of artisanal sugar industries, the TBL lens captures the interconnected nature of production challenges, labor conditions, and environmental impacts. Franklin et al. (2009) further argue that social well-being, including labor protection and community benefits, is as critical as financial performance.

In practice, applying TBL to brown sugar industries reveals complex trade-offs. Economic contributions to local livelihoods must be balanced against the absence of formal labor protections (International Labour Organization, 1999, 2008) and the environmental costs of fuelwood dependency (Legg et al., 2021). Studies of Indonesian contexts note that while brown sugar production supports household incomes, its informal nature undermines compliance with labor standards and weakens long-term sustainability (Hulatali et al., 2023; Larmintho, 2023; Supardi et al., 2016). Moreover, ecological threats from unsustainable palm sap harvesting highlight the urgency of integrating replanting and agroforestry strategies (Faadhilah et al., 2023; Giampietro et al., 2025).

The TBL thus provides a robust conceptual tool for analyzing both the challenges and opportunities of traditional industries. It allows scholars and policymakers to examine not only profitability but also the human and ecological dimensions of production. By applying TBL, research can identify multidimensional pathways toward sustainable upgrading, bridging the gap between traditional practices and modern demands. This study situates itself within this framework, emphasizing that economic, social, and environmental strategies must be pursued in concert rather than isolation.

Research Gap and the Significance of the Study

Although the literature offers valuable insights into production modernization, marketing innovation, policy interventions, and labor regulation, gaps remain in integrated analyses that examine these dimensions simultaneously. Most studies address either technological or marketing challenges in isolation, while others focus narrowly on labor law compliance or public policy effectiveness. Few works apply the triple bottom line comprehensively to artisanal sugar industries, particularly in Indonesia, where ecological pressures, informal labor, and weak institutional support intersect in unique ways. This fragmentation leaves policymakers and practitioners without holistic frameworks to guide interventions.

The significance of this study lies in bridging these gaps by integrating economic, social, and environmental perspectives under the TBL framework while grounding analysis in empirical evidence from Hulu Sungai Tengah. By combining production, marketing, labor, and policy dimensions, this research advances scholarly debates on sustainability in informal industries and provides actionable insights for policymakers. Its novelty rests on articulating cluster-specific strategies that balance cultural preservation with modern competitiveness. In doing so, it contributes to both theoretical development and practical policymaking for artisanal industries navigating global pressures.

METHOD

Research Design

This study employed a qualitative, exploratory–descriptive design to investigate the sustainability of the brown sugar industry in Hulu Sungai Tengah (HST), South Kalimantan. The qualitative approach was chosen to capture the nuanced realities of artisanal producers and the structural challenges faced by this traditional sector. Such a design is well suited for examining the intersection of production practices, marketing channels, labor conditions, and policy frameworks, as it enables researchers to explore social meanings and institutional dynamics that cannot be fully addressed through quantitative methods (Miles et al., 2013). The exploratory orientation was particularly necessary, given the paucity of prior research on cluster-specific dynamics in the HST brown sugar industry.

Qualitative methods also provided the flexibility to engage with multiple perspectives, ranging from artisans and local policymakers to community stakeholders. This approach is consistent with previous scholarship on rural agro-based industries, which stresses the importance of contextual, field-based inquiry for understanding sustainability challenges and opportunities. Through a descriptive orientation, the study sought not only to interpret the lived experiences of participants but also to produce a grounded analysis capable of informing practical interventions.

Research Site and Participants

The study was conducted in Hulu Sungai Tengah, a district recognized for its concentration of brown sugar artisans operating primarily in Pandawan and Barabai sub-districts. The region was selected because it represents both the cultural significance of sugar palm–based products and the vulnerabilities of informal industries in rural Indonesia. The local industry is composed of approximately 108 small-scale producers, making it a significant contributor to household incomes and local economic activity.

Participants were recruited through purposive sampling to ensure representation of different stakeholders. A total of 13 respondents were engaged, including brown sugar artisans, government officials, and local MSME coordinators. The inclusion of multiple perspectives allowed for triangulation of insights on production conditions, market structures, labor practices, and policy interventions. This selection method followed the principle of information-rich cases, as outlined by (Miles et al., 2013), ensuring that respondents could provide deep and varied insights into the research questions.

Data Collection

Data were gathered through semi-structured interviews, participant observation, and document analysis. Semi-structured interviews provided the flexibility to probe deeper into issues while maintaining comparability across respondents. Each interview lasted approximately 30 minutes and focused on themes such as raw material supply, production processes, marketing strategies, labor conditions, and government support

programs. The use of open-ended questions allowed respondents to articulate their experiences and challenges in their own terms, while the structured framework ensured that data remained aligned with the objectives of the study.

Observation complemented the interviews by enabling the researchers to directly examine production facilities, equipment, and work practices. Field visits were instrumental in capturing the realities of artisanal processing, such as reliance on wood-fired stoves, rudimentary molds, and labor-intensive sap collection methods. Document analysis provided additional layers of evidence by reviewing local government reports, policy documents, and industry data related to MSMEs. These three methods (interviews, observation, and documentation) were employed to achieve methodological triangulation and enhance the reliability of findings.

Data Analysis

The study applied the interactive model of data analysis developed by Miles et al. (2013), which consists of three concurrent activities: data reduction, data display, and conclusion drawing/verification. Data reduction involved organizing raw transcripts, field notes, and documents into thematic categories. Codes were developed inductively from the data, focusing on themes such as supply instability, production challenges, market dynamics, labor conditions, and policy interventions.

Data display was facilitated through matrices and thematic charts that enabled cross-case comparisons across respondents. This stage provided a visual representation of recurring patterns, contradictions, and emerging relationships among themes. Finally, conclusions were drawn by synthesizing findings across data sources, followed by verification through iterative review. The process emphasized reflexivity and constant comparison, ensuring that interpretations were grounded in the evidence while maintaining coherence with the theoretical framework of the Triple Bottom Line.

Triangulation was central to the analytical strategy. The study employed three forms: source triangulation (comparing perspectives of artisans, officials, and coordinators), method triangulation (interviews, observations, and documents), and time triangulation (data collection conducted across different field visits). This approach strengthened validity by reducing reliance on any single type of evidence and by cross-checking findings from multiple vantage points.

Ethical Considerations

The study adhered to established ethical principles for qualitative research. All participants provided informed consent prior to interviews, after being briefed on the objectives, scope, and voluntary nature of their participation. Anonymity was guaranteed by omitting identifying information from transcripts and publications. The confidentiality of responses was strictly maintained, ensuring that sensitive information regarding labor conditions or policy gaps could not be traced back to individuals.

In line with international ethical standards, the researchers also respected local cultural norms during fieldwork. Sensitivity to community values and practices was

prioritized, reflecting the need for culturally responsive research in rural settings. The ethical safeguards were not only procedural but also substantive, designed to protect vulnerable participants engaged in informal labor arrangements with limited legal protections.

Limitations

While the qualitative design enabled rich, context-specific insights, it also posed limitations. The purposive sample of 13 respondents, while appropriate for in-depth analysis, does not represent the full diversity of perspectives across all artisans in HST. This limitation restricts the generalizability of findings, though the intention of the study was not statistical representativeness but rather depth of understanding.

Another limitation concerns reliance on self-reported data, which may be subject to recall bias or selective disclosure. To mitigate this, triangulation with observational and documentary evidence was employed. Nonetheless, the study acknowledges that informal sectors are often characterized by opacity, particularly in labor relations and compliance issues.

Finally, the scope of the study was limited to Hulu Sungai Tengah, which may not capture variations in brown sugar production across other regions of Indonesia. Future studies could adopt a comparative design to examine inter-regional differences, or integrate quantitative surveys to complement the qualitative findings. Despite these limitations, the methodological framework employed here offers a robust foundation for understanding the sustainability challenges of artisanal brown sugar industries.

RESULTS

Industry Structure and Production Practices

The brown sugar industry in Hulu Sungai Tengah (HST) remains dominated by artisanal production methods that reflect both cultural heritage and technological limitations. Field observations revealed that approximately 108 artisans operate primarily in the Pandawan and Barabai sub-districts, producing palm-based sugar using traditional techniques. These methods rely heavily on manual sap collection, wood-fired boiling systems, and wooden molds, which collectively constrain output and product consistency. The reliance on wood fuel not only drives production costs upward but also raises environmental concerns associated with deforestation and carbon emissions.

While artisanal approaches retain authenticity and cultural value, they also result in significant inefficiencies. Inconsistent heating during the boiling process often produces variations in color, texture, and taste, making it difficult to standardize output for broader markets. Interviews with artisans indicated that production is typically undertaken at the household level, involving family members and informal laborers, which further reinforces the industry's small-scale and fragmented character. This condition reflects what Saad et al. (2023) describe as the "low-productivity trap" typical of traditional agro-industries. Without intervention, the capacity for scaling and integration into larger value chains remains minimal.

Raw Material Supply

A central issue identified in the study is the instability of raw material supply. Most producers in HST depend on naturally growing sugar palms (Arenga pinnata) rather than cultivated plantations. This reliance on wild-growing palms makes the industry highly vulnerable to seasonal fluctuations and long-term ecological pressures. During the dry season, sap flow diminishes significantly, forcing many artisans to reduce or suspend production. The absence of systematic replanting or agroforestry initiatives further exacerbates this vulnerability, as aging trees are not being replaced at a sustainable rate.

Respondents repeatedly emphasized that limited access to land and insufficient technical knowledge of agroforestry practices prevent the establishment of structured palm plantations. Consequently, producers face unpredictable supply volumes, which directly impact their income stability and bargaining position in the market. The lack of coordinated community-based resource management represents a structural weakness that threatens the long-term continuity of HST's brown sugar industry.

Marketing and Distribution

The marketing of brown sugar in HST remains dominated by intermediaries, known locally as pengepul, who purchase artisanal products at fluctuating prices. Artisans reported limited bargaining power, as they rely on collectors to transport goods to regional markets. This dynamic positions producers as price-takers, reinforcing their economic vulnerability.

The absence of branding, packaging, and certification further restricts market access. Producers typically sell brown sugar in unbranded, bulk forms that fail to meet modern retail standards. Few artisans have experimented with value-added products such as granulated or liquid palm sugar, despite evidence that diversification enhances competitiveness and consumer appeal. Moreover, digital marketing remains largely untapped, with most artisans lacking the skills or resources to leverage e-commerce platforms.

The consequence is a dependence on local demand and price fluctuations, which erodes income stability. Although consumer preferences are shifting toward authentic and sustainable products, HST artisans are unable to capture these opportunities without investments in branding and certification.

Labor Conditions

The study also revealed critical issues in labor practices. Employment in the HST brown sugar industry is predominantly informal, with workers engaged through unwritten agreements and compensated on a daily or piece-rate basis. Few workers receive social protection through BPJS (Indonesia's social security program), and occupational safety standards are minimally enforced. These conditions align with broader patterns in informal economies, where labor law compliance remains low and workers are vulnerable to exploitation (International Labour Organization, 2019; Ganesh M., 2023).

Gender disparities also surfaced during interviews. Women often participate in labor-intensive tasks such as sap collection, boiling, and molding but receive lower compensation compared to men. This reflects findings by Pankaj and Jha (2024), who highlight systemic inequities in informal labor markets. Additionally, reliance on family labor creates blurred boundaries between productive and reproductive work, further complicating labor rights enforcement.

The absence of decent work standards undermines both social equity and long-term productivity. Van Hoyweghen et al. (2021) demonstrate that compliance with labor standards enhances resilience during economic downturns by stabilizing employment and income. However, in HST, weak enforcement of labor regulations and limited legal awareness among workers perpetuate precarious conditions. These findings highlight the urgent need for policy interventions that integrate social protection, gender equity, and occupational safety into the artisanal industry framework.

Policy Environment and Institutional Support

Analysis of the policy environment revealed fragmented and inadequate support structures. While the local government has introduced general MSME programs such as digital marketing training and microfinance schemes, no cluster-specific policies directly address the challenges of the brown sugar industry. This finding confirms earlier observations that generic SME interventions often fail to account for the unique needs of resource-based rural industries.

Labor law enforcement is equally weak in HST. Regulatory bodies lack the resources and capacity to monitor informal sectors effectively, resulting in low compliance rates. Although national laws such as Law No. 13/2003 stipulate minimum wages, contracts, and social protections, these standards remain largely absent in practice. Moreover, limited collaboration between local government, cooperatives, and artisans hinders collective action. Research by Horodnic et al. (2022) suggests that community involvement in policymaking improves relevance and compliance, yet such participatory mechanisms are rarely implemented in HST.

The lack of targeted institutional support not only undermines the industry's sustainability but also weakens its integration into broader development strategies. Comparative studies indicate that when governments align policy, training, and enforcement with the realities of artisanal industries, both productivity and social welfare improve (Ndhlovu & Ndhlovu, 2023; Dewey, 2018). The absence of such alignment in HST underscores a significant structural gap.

Sustainability Assessment through the Triple Bottom Line

The Triple Bottom Line (TBL) framework—profit, people, and planet—was applied to assess the sustainability of the HST brown sugar industry (Elkington, 2008; Savitz, 2006).

Economic Dimension (Profit)

The industry contributes significantly to local household incomes but remains trapped in low productivity and weak market access. Producers' dependence on intermediaries and lack of product diversification limit profitability. Without process modernization and market innovation, the potential to scale economically remains constrained.

Social Dimension (People)

Labor conditions fall short of the International Labour Organization's Decent Work standards (International Labour Organization, 2019). Informality, gender inequities, and lack of social protection highlight significant social sustainability challenges. While the industry supports community livelihoods, the absence of legal protections exposes workers to long-term vulnerabilities.

Environmental Dimension (Planet)

The industry is ecologically unsustainable under current practices. Overreliance on firewood contributes to deforestation, while lack of replanting and agroforestry threatens the continuity of palm sap supply. These findings echo Borges et al. (2024) and Giampietro et al. (2025), who emphasize that ecological degradation directly undermines artisanal industries dependent on natural resources.

The TBL analysis confirms that the HST brown sugar industry cannot be considered sustainable in its current form. Economic contributions are offset by social inequities and environmental degradation, pointing to the urgent need for integrated interventions.

DISCUSSION

Production and Technological Limitations

The study revealed that brown sugar production in Hulu Sungai Tengah (HST) continues to rely heavily on artisanal techniques, including wood-fired boiling and wooden molds, resulting in inconsistent product quality and limited scalability. Producers acknowledged difficulties in maintaining standardization, as variations in heating processes generate uneven color, taste, and texture. These findings confirm that traditional production methods remain deeply entrenched, reflecting cultural continuity but also technological stagnation. Artisans operate in small household units, with limited access to mechanization or energy-efficient equipment, perpetuating low productivity and high dependence on manual labor. Such reliance not only hampers economic competitiveness but also raises environmental concerns due to unsustainable reliance on firewood (Legg et al., 2021).

Comparable studies provide consistent evidence of these technological challenges. Carlucci et al. (2025) found that smallholders in developing economies often lack financial and institutional resources to modernize production, leaving them vulnerable to inefficiency and poverty traps. Saad et al. (2023) similarly observed that outdated agricultural practices hinder productivity and prevent small-scale producers from competing with mechanized industries. Aguilar-Rivera and Olvera-Vargas (2021),

in their study of Mexican non-centrifugal sugar, argue that introducing simple innovations, such as improved stoves or mechanized sap collectors, can substantially enhance quality and sustainability. These parallels reinforce that the difficulties observed in HST are not unique but part of broader structural constraints within artisanal agro-industries.

The implications extend to both theory and practice. From a theoretical standpoint, the persistence of traditional methods supports the argument that technological adoption in informal sectors is constrained by structural and institutional barriers rather than by mere reluctance (Miles et al., 2013). Practically, this highlights the urgency of targeted interventions that combine low-cost technological upgrades with training programs. Policymakers should incentivize adoption of environmentally friendly equipment, such as efficient evaporators, to reduce reliance on firewood while improving consistency. Without such measures, the industry risks continued marginalization and ecological degradation, undermining its contribution to local economies.

Raw Material Supply and Environmental Sustainability

The findings emphasized that raw material supply is highly unstable due to reliance on naturally growing Arenga pinnata rather than systematic cultivation. Seasonal fluctuations, particularly during dry months, reduce sap flow and force artisans to suspend production. Furthermore, the absence of replanting and agroforestry programs creates long-term risks, as aging palms are not being replaced. Producers confirmed that they lack both the land and technical expertise to establish plantations, leaving the industry vulnerable to ecological] decline and resource depletion. This structural weakness directly undermines economic stability and long-term sustainability (Borges et al., 2024; Faadhilah et al., 2023).

Other studies provide evidence of similar challenges in resource-based rural industries. Giampietro et al. (2025) argue that community-based agroforestry programs enhance ecological resilience and ensure steady raw material supplies for artisanal sectors. Sekhar et al. (2024) and VijayKumar et al. (2024) further demonstrate that agroforestry systems improve soil fertility, biodiversity, and carbon sequestration, strengthening long-term productivity. In Indonesia, Sulaiman et al. (2019) highlight the importance of land suitability analysis and structured plantation management in increasing sugar production. These findings collectively affirm that without structured resource management, artisanal industries remain trapped in cycles of resource scarcity and environmental vulnerability.

The implications are twofold. Theoretically, the results highlight the necessity of linking sustainability discourse with resource management, confirming that ecological degradation directly affects industrial resilience (Wang & Xu, 2024). On a practical level, community-led replanting initiatives and agroforestry must be prioritized to stabilize raw material supply. Policymakers should develop incentives for farmers to plant new palms and integrate agroforestry with existing agricultural systems. Institutionalizing such programs not only secures long-term viability but also aligns with broader

environmental goals of reducing deforestation and promoting biodiversity conservation.

Marketing and Market Access

The study found that HST artisans remain dependent on local collectors (pengepul), limiting their bargaining power and reinforcing their status as price-takers. Most producers sell in bulk, unbranded forms, which are poorly positioned to meet modern retail standards. Few have pursued product diversification, such as liquid or granulated palm sugar, and digital marketing strategies are virtually absent. This leaves producers highly vulnerable to price fluctuations and market volatility, constraining income stability. Respondents emphasized that while demand for authentic and artisanal products exists, the lack of branding and certification prevents them from capturing higher-value markets (Simbolon et al., 2021; Wu, 2022).

Literature on artisanal industries consistently highlights these challenges. Ivanova et al. (2020) note that digital platforms can help bypass intermediaries and expand direct-to-consumer sales, but require capacity-building among producers. Aurand et al. (2022), Chandrasena et al. (2005), and Srivastava (2020) show that diversification strategies—such as introducing flavored or organic sugar variants—expand consumer bases and buffer against reliance on single product lines. Sudirjo et al. (2024) further emphasize that sustainability branding attracts eco-conscious consumers, aligning authenticity with environmental awareness. Studies in other traditional food sectors demonstrate that combining storytelling with certification enhances competitiveness in increasingly globalized markets (Herawati et al., 2023; Ikhsan et al., 2024).

The implications for theory and practice are significant. From a theoretical perspective, the findings validate models of market dependency in informal economies, where asymmetrical relationships with intermediaries limit growth potential (Baka et al., 2016). Practically, producers must invest in branding, certification, and product diversification to access higher-value markets. Policymakers and development agencies should provide training in digital marketing and facilitate cooperative branding initiatives to amplify visibility. These interventions can reposition the industry from low-margin commodity sales toward premium artisanal markets, enhancing both competitiveness and sustainability.

Labor Conditions and Social Protection

The results highlighted precarious labor conditions, with widespread informality, lack of written contracts, and minimal access to social protection programs such as BPJS. Women often performed labor-intensive tasks but received lower compensation than men, reflecting entrenched gender inequities. Occupational safety standards were largely absent, and family-based labor blurred boundaries between work and household responsibilities. These conditions reflect a broader pattern in informal economies, where labor law compliance is minimal and workers remain exposed to exploitation (Akinwale, 2014; Bahuguna, 2018; Clark et al., 2023).

Other studies confirm similar dynamics across informal sectors. Pankaj & Jha (2024) and Chueri & Busemeyer (2025) describe how gig and informal workers face structural vulnerabilities, including income insecurity and weak institutional protection. Cordero-Guzmán (2015) and Setyaning & Nursyamsiah (2024) argue that legal advocacy and awareness programs can empower workers to demand improved conditions. Mumtaz (2022) and Stavropoulou et al. (2017) emphasize the importance of integrating informal labor into social protection systems to enhance resilience. Cooney (2006) and Simarmata (2024) highlight the cultural dimensions of compliance, noting that regulatory strategies must align with local norms to succeed. Collectively, these studies underscore that addressing labor inequities requires both structural enforcement and grassroots empowerment.

The implications are profound. Theoretically, the findings reaffirm the relevance of the International Labour Organization's concept of "decent work" as a lens for evaluating informal industries (Baum & Hai, 2019; Hughes et al., 2021). Practically, policies must prioritize extending labor protections, formalizing work arrangements, and addressing gender disparities. Government programs that condition financial assistance on compliance with basic labor standards—such as contracts and occupational safety—can create incentives for formalization. On the policy level, strengthening enforcement mechanisms and integrating informal workers into social security systems would improve resilience, productivity, and social equity within the brown sugar industry.

Policy Environment and Triple Bottom Line Sustainability

The study revealed that government interventions in HST are fragmented and largely generic, with little alignment to the specific needs of the brown sugar cluster. While digital marketing training and microfinance programs exist, no integrated framework addresses the interrelated challenges of raw material supply, production modernization, labor conditions, and market access. Labor law enforcement is weak, with regulators lacking the capacity to monitor informal sectors effectively (Dewi & Tampubolon, 2025; Riyadi, 2025). This confirms that institutional gaps undermine both productivity and social protection, leaving the industry vulnerable to economic and ecological shocks.

Similar critiques of policy environments emerge in comparative studies. Ndhlovu and Ndhlovu (2023) emphasize that extending labor law enforcement to informal sectors enhances social equity and productivity, while Dewey (2018) shows how strengthened labor standards increase community resilience. Horodnic et al. (2022) argue that engaging communities in policymaking improves compliance and relevance, while Nguyen & Thuy (2025) warn that weak institutional frameworks exacerbate vulnerabilities during crises. Collectively, these findings corroborate that fragmented policy undermines artisanal industries, while targeted, integrated approaches can foster sustainability.

The implications for theory, practice, and policy are clear. Theoretically, the results affirm the value of the Triple Bottom Line (Elkington, 1994; Savitz, 2013) as an analytical

framework, demonstrating how economic, social, and environmental dimensions intersect in artisanal industries. Practically, the findings highlight that sustainability cannot be achieved through piecemeal interventions; instead, integrated cluster policies are required. Policymakers must design comprehensive strategies that simultaneously address raw material management, production modernization, labor protections, and market innovation. Embedding TBL principles in local development planning ensures that interventions promote profitability, equity, and environmental stewardship in tandem.

Some Notes from Islamic Perspectives

Profit-and-Loss Sharing and Small-Scale Industrial Sustainability

The findings of this study indicate that the palm sugar industry in Hulu Sungai Tengah (HST) possesses strong potential for growth, yet struggles with financing constraints and limited innovation. Producers rely heavily on informal capital sources, which restricts their ability to scale operations or adopt new technologies. The absence of structured financial mechanisms has perpetuated reliance on traditional methods that are often inefficient and environmentally taxing. Embedding Islamic finance principles, particularly profit-and-loss sharing (PLS), into this sector provides an alternative that ensures equitable risk distribution between financiers and producers. Such mechanisms would not only alleviate dependence on debt-based loans but also build resilience by aligning incentives between financial institutions and palm sugar artisans.

Empirical research supports the potential of PLS in strengthening small-scale industries. Studies demonstrate that models such as musharakah and mudarabah improve capital access and encourage entrepreneurial innovation, particularly in agricultural contexts (Alhammadi, 2022; Yasin et al., 2023). Evidence from Oman and Indonesia shows that these arrangements foster mutual responsibility, resulting in better business practices and improved output quality (Al Balushi et al., 2019; Soemitra, 2021). Additionally, PLS has been shown to support the introduction of sustainable technologies in agriculture, thereby enhancing productivity and environmental stewardship (Masrizal et al., 2025). These findings affirm that the incorporation of Islamic finance can directly address structural challenges observed in HST's palm sugar industry.

Theoretically, embedding PLS aligns with the Sustainable Development Goals (SDGs), emphasizing inclusive growth and environmental responsibility. Practically, it creates pathways for palm sugar producers to access fair financing without the burden of interest-based debt. Policy-wise, collaboration between government bodies, financial regulators, and Islamic financial institutions becomes essential for mainstreaming PLS-based models. By offering structured literacy programs, the Financial Services Authority (*Otoritas Jasa Keuangan* abbriviated OJK) can ensure that artisans and cooperatives are well-equipped to adopt Shari'ah-compliant financing. These measures hold potential to elevate the palm sugar sector from an informal, vulnerable economy into a resilient, competitive, and ethically grounded industry.

Zakat, Waqf, and Islamic Microfinance for Agricultural Resilience

The present study reveals that the palm sugar industry in HST is hindered by limited capital, market instability, and raw material scarcity. These issues not only reduce productivity but also threaten long-term sustainability. Islamic social finance instruments, particularly zakat and waqf, present promising solutions. Properly distributed zakat can be allocated for training, agricultural inputs, and equipment purchases, directly improving productivity. Waqf, on the other hand, provides long-term investment opportunities for community-based projects such as sugar palm cultivation and eco-friendly processing. Together with Islamic microfinance institutions, these instruments can mitigate financing gaps and improve competitiveness.

Empirical evidence affirms the transformative role of these instruments in rural economic development. Studies report that zakat enhances food security and farmer livelihoods by directly funding agricultural projects (Herianingrum, Supriani, et al., 2024). Waqf has also been utilized to support environmentally sustainable agriculture, although its full potential remains untapped (Faizi et al., 2024). Islamic microfinance institutions, employing PLS principles, offer alternatives to exploitative credit models and improve farmers' resilience against price and climate shocks (Wahyuni & Wulandari, 2024). Case studies further illustrate that integrating zakat with microfinance, so-called "productive zakat", yields sustainable livelihood improvements in agricultural communities (Maulana & Taufani, 2023).

Theoretically, integrating zakat and waqf into rural industry finance reflects the Islamic ethos of redistributive justice and social cohesion. Practically, it ensures that capital access for artisans is not only ethical but also sustainable. For policy, governments and zakat authorities can design schemes where collected zakat funds are channeled into agricultural clusters, while waqf endowments provide stable, long-term backing. Such approaches enhance food security, strengthen informal sectors, and bridge socio-economic gaps in rural Indonesia. In HST's palm sugar sector, this synergy could stabilize supply chains, foster equitable wealth distribution, and build resilience against external shocks.

Islamic Ethical Values and Economic Sustainability

The research confirms that the palm sugar industry in HST is characterized by informality, with limited labor protection and wage disparities. These findings reflect structural imbalances where workers lack contracts, insurance, and occupational safety measures. Embedding Islamic ethical values—fairness in trade, prohibition of exploitation, and protection of workers' rights—provides an ethical framework for redressing these issues. Ensuring transparent pricing, equitable wages, and safe working conditions aligns directly with both Islamic teachings and international decent work standards. These principles also encourage cooperation and fairness within local supply chains, thereby supporting long-term sustainability.

Literature reinforces the role of Islamic ethics in sustaining rural economies. Fair trade practices rooted in Islamic principles have been linked to improved livelihoods and higher agricultural productivity (Sukmana et al., 2024). Prohibitions on exploitation

promote equitable contracts and protect producers from predatory practices (Herianingrum, Iswati, et al., 2024). Case studies demonstrate that communities adhering to these values are more likely to form cooperatives that strengthen bargaining power (Casprini et al., 2023). Additionally, Islamic teachings on fair wages and gender equity enhance worker satisfaction and productivity (B. Khan et al., 2010; K. Khan et al., 2015; Syed & Ali, 2010), underscoring the importance of labor protection for resilience and sustainability.

Theoretically, applying Islamic ethics to labor practices contributes to economic models that are inclusive and just. Practically, fair trade principles encourage trust between producers and buyers, facilitating access to broader markets. From a policy standpoint, embedding Islamic values into labor laws can improve worker protections, reduce wage disparities, and formalize employment relationships. Moreover, aligning these ethical frameworks with environmental stewardship fosters sustainable agriculture that respects both human welfare and natural resources. In HST, this alignment could transform palm sugar production into an industry that upholds social justice while maintaining cultural and ecological balance.

Islamic Financial Instruments and MSME Innovation

The study highlights the limited innovation in HST's palm sugar industry, which remains dependent on manual techniques and outdated marketing practices. This stagnation reduces competitiveness in both domestic and global markets. Islamic financial instruments, particularly musharakah and mudarabah contracts, present mechanisms for stimulating innovation by addressing capital constraints. These contracts foster partnerships where risks and returns are shared, allowing producers to invest in product diversification, digital marketing, and technology upgrades. By framing financiers as partners rather than creditors, these instruments create environments conducive to creativity and entrepreneurship.

Empirical research validates the capacity of musharakah and mudarabah to enhance MSME performance. Evidence from Oman shows that musharakah financing provides not only capital but also shared knowledge and resources (Al Balushi et al., 2019). Similarly, mudarabah arrangements offer liquidity alongside managerial support, bridging gaps in technical capacity and promoting innovation (Yasin et al., 2023). In Indonesia, Islamic microfinance institutions employing these contracts have democratized financial access for small enterprises, enabling them to experiment with new products and expand market reach (Tubastuvi & Rusydiana, 2024). These findings directly support the transformative potential of Islamic finance in revitalizing stagnant industries like palm sugar.

Theoretically, musharakah and mudarabah embody principles of partnership and risk-sharing that strengthen community-based economic ecosystems. Practically, they empower MSMEs to innovate without being stifled by prohibitive loan structures. Policy-wise, governments and financial institutions can facilitate the scaling of these instruments through literacy campaigns, incentives, and regulatory frameworks. Embedding such financing models within Indonesia's rural economy ensures that

MSMEs not only survive but also thrive amid global competition. For HST, this translates into opportunities for branding palm sugar as a sustainable, Shari'ah-compliant product with strong international appeal.

Social Justice, Labor Law, and Informal Workers

The results of this study underscore widespread informality in HST's palm sugar industry, where workers operate without contracts, social security, or occupational safety. These findings raise significant concerns about worker vulnerability and economic inequality. Islamic economic perspectives on social justice—emphasizing equity, fairness, and community welfare—offer a framework for addressing these challenges. By integrating these values into labor law, policymakers can craft inclusive protections that safeguard worker rights. This approach ensures fair wages, reasonable working hours, and safe conditions, aligning both with Islamic teachings and international labor standards.

The literature strongly supports this intersection of Islamic economics and labor policy. Principles of akhlaq (ethics) and maslahah (public interest) have informed inclusive legal frameworks designed to protect vulnerable workers (Azizah, 2023; Mahmudulhassan et al., 2025). Case studies reveal that integrating waqf into worker welfare programs funds training and skills development, enabling upward mobility for informal laborers (Salaudeen, 2024; Saputra, 2025). Gender equity, emphasized in Islamic economics (Fitria, 2025b, 2025a), also intersects with labor protections, ensuring that women receive fair wages and opportunities in traditional industries. These insights confirm the relevance of Islamic principles in addressing the gaps identified in this study.

Theoretically, embedding social justice into labor law ensures that economic development is inclusive and equitable. Practically, integrating Islamic social finance—through zakat- and waqf-funded safety nets—provides essential protection against shocks such as illness or unemployment. For policy, aligning labor regulations with Islamic values ensures legitimacy, increases community acceptance, and enhances compliance. In the palm sugar industry, such integration could transform vulnerable informal workers into protected contributors, thereby strengthening both social welfare and economic sustainability. Ultimately, this synergy ensures that traditional industries can thrive while safeguarding the dignity and rights of their workers.

CONCLUSION

This study has shown that the brown sugar industry in Hulu Sungai Tengah (HST) faces interconnected challenges across production practices, raw material supply, marketing, labor conditions, and policy environments. The findings reveal persistent reliance on traditional methods, unstable sap supply, dependence on intermediaries, and widespread informality in labor arrangements. When analyzed through the Triple Bottom Line (TBL) framework, the industry contributes economically to local livelihoods but struggles to meet social equity and environmental sustainability benchmarks. These insights confirm that sustainability in this sector cannot be understood in

isolation but must be framed as a multidimensional challenge involving technology, ecology, markets, and institutions.

Comparisons with other contexts underscore that the difficulties in HST reflect broader structural barriers confronting artisanal industries globally. Studies from Latin America, South Asia, and other Indonesian regions point to similar constraints in technological adoption, ecological management, and labor protections. At the same time, evidence from successful interventions highlights opportunities for innovation through agroforestry, product diversification, branding, and policy alignment. These parallels suggest that while HST is not unique, its challenges demand locally tailored responses that balance tradition with modernization. Addressing these issues requires integrated solutions that align with both cultural values and global sustainability imperatives.

The study contributes to existing knowledge by applying the TBL framework to an understudied rural industry, demonstrating how economic, social, and environmental dimensions intersect in artisanal production. It highlights the critical role of institutional design in shaping industry resilience and proposes a cluster-specific policy approach that integrates technological innovation, labor formalization, and sustainable resource management. Beyond academic significance, these findings provide practical guidance for policymakers, development agencies, and local communities aiming to safeguard the cultural heritage of brown sugar production while ensuring its competitiveness. Future initiatives must continue to bridge the gap between tradition and sustainability, turning artisanal production into a viable model for rural development.

Limitations of the Study

Despite offering valuable insights, this study is not without limitations. The qualitative design, while effective in capturing rich, context-specific perspectives, involved a relatively small sample of thirteen respondents. Although purposive sampling ensured diversity among artisans, officials, and coordinators, the findings cannot be generalized to all brown sugar producers in Hulu Sungai Tengah or beyond. Reliance on interviews also carries risks of recall bias and selective disclosure, especially when discussing sensitive issues such as labor conditions and compliance with legal standards. To mitigate this, triangulation with observational and documentary evidence was employed, though limitations inherent to qualitative research remain.

Another limitation concerns the geographical scope of the study, which was restricted to Hulu Sungai Tengah. While this region provides a valuable case study due to its high concentration of artisans, it does not capture variations across other Indonesian districts where brown sugar industries operate under different ecological, cultural, and policy contexts. Additionally, the study primarily examined the perspectives of producers and local officials, leaving out consumers, traders, and external stakeholders who also influence sustainability outcomes. A broader range of participants and comparative multi-regional analysis would provide a more

comprehensive understanding of the challenges and opportunities facing artisanal brown sugar industries.

Recommendations for Future Research

Future research should expand both the scope and methodology to build on the insights provided here. Comparative studies across different Indonesian regions or other countries with artisanal sugar industries would illuminate variations in ecological conditions, cultural practices, and institutional arrangements. Incorporating quantitative surveys alongside qualitative methods could also generate more representative data, particularly regarding labor demographics, income patterns, and market performance. Mixed-method approaches would strengthen the robustness of findings while enabling statistical validation of trends observed in this study.

Further research should also explore the effectiveness of specific interventions, such as agroforestry initiatives, technological upgrades, branding strategies, and labor law enforcement mechanisms. Longitudinal studies tracking these interventions over time would shed light on their capacity to transform industry practices and improve sustainability outcomes. Additionally, consumer-focused studies could investigate demand for artisanal brown sugar products, including preferences for authenticity, sustainability, and quality assurance. Such inquiries would not only enrich academic debates but also provide actionable insights for policymakers, cooperatives, and development agencies seeking to integrate tradition with sustainable development goals.

Author Contributions

Conceptualization	M.F.N., I.A., & A.A.	Resources	M.F.N., I.A., & A.A.
Data curation	M.F.N., I.A., & A.A.	Software	M.F.N., I.A., & A.A.
Formal analysis	M.F.N., I.A., & A.A.	Supervision	M.F.N., I.A., & A.A.
Funding acquisition	M.F.N., I.A., & A.A.	Validation	M.F.N., I.A., & A.A.
Investigation	M.F.N., I.A., & A.A.	Visualization	M.F.N., I.A., & A.A.
Methodology	M.F.N., I.A., & A.A.	Writing – original draft	M.F.N., I.A., & A.A.
Project administration	M.F.N., I.A., & A.A.	Writing – review & editing	M.F.N., I.A., & A.A.

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Informed Consent Statement

Informed consent was not required for this study.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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Conflicts of Interest

The authors declare no conflicts of interest.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT, DeepL, Grammarly, and PaperPal to translate from Bahasa Indonesia into American English and improve the clarity of the language and readability of the article. After using these tools, the authors reviewed and edited the content as needed and took full responsibility for the content of the published article.

REFERENCES

Abson, D. J., Fraser, E. D., & Benton, T. G. (2013). Landscape diversity and the resilience of agricultural returns: A portfolio analysis of land-use patterns and economic returns from lowland agriculture. *Agriculture & Food Security*, *2*(1), 2. https://doi.org/10.1186/2048-7010-2-2

Aguilar-Rivera, N., & Olvera-Vargas, L. A. (2021). Innovations for sustainable production of traditional and artisan unrefined non-centrifugal cane sugar in Mexico. In W. Leal Filho, E. V. Krasnov, & D. V. Gaeva (Eds.), *Innovations and traditions for sustainable development* (pp. 313–330). Springer International Publishing. https://doi.org/10.1007/978-3-030-78825-4_19

Aisha, I., Istighfan, Y., Karimatussya'fi, I., Kurniawan, A., Kholil, M., & Wihartati, W. (2024). Penguatan ekonomi lokal Desa Sendangdawung melalui workshop dan pendampingan UMKM [Strengthening the local economy of Sendangdawung Village through workshops and mentoring MSMEs]. *Kesejahteraan Bersama : Jurnal Pengabdian Dan Keberlanjutan Masyarakat*, *1*(4), 30–37. https://doi.org/10.62383/bersama.v1i4.536

Akinwale, A. A. (2014). Precarious working conditions and exploitation of workers in the Nigerian informal economy. *Social Science Diliman: A Philippine Journal of Society and Change*, *10*(1). https://journals.upd.edu.ph/index.php/socialsciencediliman/article/view/4336

Al Balushi, Y., Locke, S., & Boulanouar, Z. (2019). Omani SME perceptions towards Islamic financing systems. *Qualitative Research in Financial Markets*, *11*(4), 369–386. https://doi.org/10.1108/QRFM-06-2018-0078

Alhammadi, S. (2022). Analyzing the role of Islamic finance in Kuwait regarding sustainable economic development in COVID-19 era. *Sustainability*, *14*(2), 701. https://doi.org/10.3390/su14020701

Aurand, T. C., Sunthornvarabhas, J., & Sriroth, K. (2022). Value addition through diversification of the sugar industry from farm to mill. Sugar Tech, 24(4), 1155–1166. https://doi.org/10.1007/s12355-021-01024-z

Azizah, N. R. (2023). Protection of workers by the government from an Islamic perspective. *IJIRCS : International Journal of Islamic Religion Dan Culture Studies*, *1*(2), 20–27. https://ijircs.com/index.php/1/article/view/62

Bahuguna, P. (2018). The effectiveness of Indian labor laws in protecting the rights of workers: A quantitative perspective of Indian labor law. *Psychology and Education Journal*, *55*(1), 273–281. https://psychologyandeducation.net/pae/index.php/pae/article/view/7786

Baka, W. K., Rianse, U., Sidu, D., Widayati, W., Cahyono, E., Abdullah, W. G., Rianse, I. S., Zulfikar, L., Abdi, L., & Baka, L. R. (2016). Customer behaviour model of brown sugar commodity. *International Journal of Business Innovation and Research*, *11*(3), 444–460. https://doi.org/10.1504/IJBIR.2016.078895

Baum, T., & Hai, N. T. T. (2019). Applying sustainable employment principles in the tourism industry: Righting human rights wrongs? *Tourism Recreation Research*, *44*(3), 371–381. https://doi.org/10.1080/02508281.2019.1624407

Bitzer, V., Kruijssen, F., Mugisha, J., Waswa, L., Aliso, J., & Nakazzi, B. (2024). Vulnerability and resilience among farmers and market actors in local agri-food value chains in the face of COVID-19 disruptions: Findings from Uganda and Kenya. *Food Security*, *16*(1), 185–200. https://doi.org/10.1007/s12571-023-01414-z

Blustein, D. L., Lysova, E. I., & Duffy, R. D. (2023). Understanding decent work and meaningful work. *Annual Review of Organizational Psychology and Organizational Behavior*, *10*, 289–314. https://doi.org/10.1146/annurev-orgpsych-031921-024847

Boedirochminarni, A. (2018). The development model of brown sugar micro small medium enterprise in Sumberringin Village Sanan Kulon Sub-District Blitar Regency. *Jurnal Ekonomi Pembangunan*, *16*(2), 133–146. https://doi.org/10.22219/jep.v16i2.9071

Borges, R. J., Iturralde Carrera, L. A., Bastida, E. J. L., García-Martínez, J. R., Carrillo-Serrano, R. V., & Rodríguez-Reséndiz, J. (2024). Energy sustainability indicators for the use of biomass as fuel for the sugar industry. *Technologies*, *12*(3), 36. https://doi.org/10.3390/technologies12030036

Brill, L. (2021). What is decent work? A review of the literature. In F. Christie, M. Antoniadou, K. Albertson, & M. Crowder (Eds.), *Decent Work* (pp. 11–26). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80117-586-920211002

Carlucci, D., Roselli, L., Giannoccaro, G., Cavallo, C., Del Giudice, T., Vecchio, R., Cicia, G., & De Gennaro, B. C. (2023). Consumer acceptance of innovations in traditional foods: The case of extra-virgin olive oil. *British Food Journal*, *125*(1), 1–17. https://doi.org/10.1108/BFJ-05-2021-0570

Carlucci, F. V., Salgado Junior, A. P., Rebehy, P. C. P. W., Lemos, S. V., Novi, J. C., & Saddow, S. E. (2025). Techno-economic and agricultural best practices for increasing the efficiency of bioenergy companies: Mixed method for the optimization of land use in Brazil and Australia. *Business Strategy and the Environment*, *34*(2), 1708–1734. https://doi.org/10.1002/bse.4063

Casprini, E., Pucci, T., & Zanni, L. (2023). From growth goals to proactive organizational resilience: First evidence in women-led and non-women-led Italian wineries. *Review of Managerial Science*, *17*(3), 1017–1036. https://doi.org/10.1007/s11846-022-00557-1

Cavicchi, B. (2020). A "system dynamics perspective" of bioenergy governance and local, sustainable development. *Systems Research and Behavioral Science*, *37*(2), 315–332. https://doi.org/10.1002/sres.2631

Chandrasena, G., Keerthipala, A. P., & Jayasuriya, M. K. B. F. (2005). Feasibility of cottage-level sugarcane-based product diversification in Sri Lanka. Proceedings of the International Society of Sugar Cane Technologists, 25, 431–435.

Chueri, J., & Busemeyer, M. R. (2025). Different status, same demands? The social policy preferences of platform workers in OECD countries. *Competition & Change*, 10245294251318440. https://doi.org/10.1177/10245294251318440

Clark, I., Collins, A., Hunter, J., Pickford, R., Barratt, J., & Fearnall-Williams, H. (2023). Persistently non-compliant employment practice in the informal economy: Permissive visibility in a multiple

regulator setting. *Cambridge Journal of Economics*, *47*(3), 611–632. https://doi.org/10.1093/cje/bead007

Cooney, S. (2006). Making Chinese labor law work: The prospects for regulatory innovation in the People's Republic of China. *Fordham International Law Journal*, *30*(4), 1050. https://ir.lawnet.fordham.edu/ilj/vol30/iss4/4

Cordero-Guzmán, H. R. (2015). Worker centers, worker center networks, and the promise of protections for low-wage workers. *WorkingUSA*, *18*(1), 31–57. https://doi.org/10.1111/wusa.12152

Curzi, D., Materia, V. C., & Vaquero-Piñeiro, C. (2023). Innovation as a resilience strategy to economic crises for international food and drink firms. *Agribusiness*, *39*(2), 303–321. https://doi.org/10.1002/agr.21777

DeLuca-Acconi, R. A. (2017). Empowering social workers to transform the dominant narrative: Advocating for human rights over corporate profit. *Journal of Human Rights and Social Work*, *2*(1), 3–15. https://doi.org/10.1007/s41134-016-0025-9

Deranty, J.-P., & MacMillan, C. (2012). The ILO's decent work initiative: Suggestions for an extension of the notion of "decent work." *Journal of Social Philosophy*, *43*(4), 386–405. https://doi.org/10.1111/josp.12003

Desanta, A. P., & Aisyah, S. (2025). Exploring the employment of the informal sector in Indonesia and the factors that influence it. *Majapahit Journal of Islamic Finance and Management*, *5*(1), 398–420. https://doi.org/10.31538/mjifm.v5i1.383

Dewey, M. (2018). Domestic obstacles to labor standards: Law enforcement and informal institutions in Argentina's garment industry. *Socio-Economic Review*, *16*(3), 567–586. https://doi.org/10.1093/ser/mwx028

Dewi, R., & Tampubolon, J. (2025). Permasalahan tanpa solusi tentang buruknya pengawasan ketenagakerjaan di Indonesia [Problems without solutions about poor labor inspection in Indonesia]. *Jurnal Global Ilmiah*, *2*(11), 841–851. https://doi.org/10.55324/jgi.v2i11.257

Dharmawan, A. H., Mardiyaningsih, D. I., Rahmadian, F., Yulian, B. E., Komarudin, H., Pacheco, P., Ghazoul, J., & Amalia, R. (2021). The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: The case of indonesian sustainable palm oil in East Kalimantan. *Sustainability*, *13*(5), 2611. https://doi.org/10.3390/su13052611

Dry, T., & Baker, P. (2022). Generating political commitment for regulatory interventions targeting dietary harms and poor nutrition: A case study on sugar-sweetened beverage taxation in Australia. *International Journal of Health Policy and Management*, *11*(11), 2489–2501. https://doi.org/10.34172/ijhpm.2021.174

Dubihlela, J., & Van Schaikwyk, P. J. (2014). Small business incubation and the entrepreneurial business environment in South Africa: A theoretical perspective. *Mediterranean Journal of Social Sciences*, *5*(23), 264–269. https://doi.org/10.5901/mjss.2014.v5n23p264

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, *36*(2), 90–100. https://doi.org/10.2307/41165746

Elkington, J., & Hartigan, P. (2008). *The power of unreasonable people: How social entrepreneurs create markets that change the world*. Harvard Business Press.

Faadhilah, A. F., Karuniasa, M., & Tumuyu, S. S. (2023). Land suitability assessments for the palm plantation (Arenga Pinnata L.) as non-timber forest product using geographic information

system. *Jurnal Teknik Pertanian Lampung (Journal of Agricultural Engineering)*, *12*(4), 957. https://doi.org/10.23960/jtep-l.v12i4.957-967

Faizi, F., Kusuma, A. S., & Widodo, P. (2024). Islamic green finance: Mapping the climate funding landscape in Indonesia. *International Journal of Ethics and Systems*, *40*(4), 711–733. https://doi.org/10.1108/IJOES-08-2023-0189

Famiola, M., & Wulansari, A. (2019). SMEs' social and environmental initiatives in Indonesia: An institutional and resource-based analysis. *Social Responsibility Journal*, *16*(1), 15–27. https://doi.org/10.1108/SRJ-05-2017-0095

FAO. (2014). *Promoting economic diversification and decent rural employment towards greater resilience to food price volatility*. FAO. https://openknowledge.fao.org/handle/20.500.14283/i3574e

Fitria, T. N. (2025a). A working wife: An Islamic economic perspective on women's economic participation in household and workforce. *Jurnal Ilmiah Ekonomi Islam*, *11*(3), 1–22. https://doi.org/10.29040/jiei.v11i03.17112

Fitria, T. N. (2025b). Women in political leadership: An Islamic economic perspective on women's empowerment, gender justice and socio-economic welfare. *Jurnal Ilmiah Ekonomi Islam*, *11*(2), 29–49. https://doi.org/10.29040/jiei.v11i02.17012

Franklin, B., Hogan, M., Langley, Q., Mosdell, N., & Pill, E. (2009). *Key concepts in public relations*. SAGE Publications Ltd. https://doi.org/10.4135/9781446269084

Ganesh M., N. (2023). Formalisation of workforce and legal protection including social security for unorganised or informal workers. *International Journal For Multidisciplinary Research*, *5*(3), 1–5. https://doi.org/10.36948/ijfmr.2023.v05i03.3456

Giampietro, M., Funtowicz, S., & Bukkens, S. G. F. (2025). Thou shalt not take the name of bioeconomy in vain. *Sustainability Science*, *20*(3), 725–739. https://doi.org/10.1007/s11625-025-01633-7

Goodwin, L., & Maru, V. (2017). What do we know about legal empowerment? Mapping the evidence. *Hague Journal on the Rule of Law*, *9*(1), 157–194. https://doi.org/10.1007/s40803-016-0047-5

Herawati, A., Sarwani, S., Listyawati, L., Kamariyah, S., & Widiarto, D. S. (2023). Strengthening spice coffee SMEs based on digital marketing for sustainable business improvement. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, *8*(2), 336–346. https://doi.org/10.26905/abdimas.v8i2.8982

Herianingrum, S., Iswati, S., Ma'ruf, A., & Bahari, Z. (2024). The role of Islamic economics and social institutions during the time of Covid-19. *Journal of Islamic Marketing*, *15*(8), 2144–2162. https://doi.org/10.1108/JIMA-05-2022-0134

Herianingrum, S., Supriani, I., Sukmana, R., Effendie, E., Widiastuti, T., Fauzi, Q., & Shofawati, A. (2024). Zakat as an instrument of poverty reduction in Indonesia. *Journal of Islamic Accounting and Business Research*, *15*(4), 643–660. https://doi.org/10.1108/JIABR-11-2021-0307

Horodnic, I. A., Ciobanu, C. I., Zaiț, A., & Williams, C. C. (2022). Who purchases from the informal economy and why? *Frontiers in Psychology*, *13*, 940076. https://doi.org/10.3389/fpsyg.2022.940076

Hughes, D., Warhurst, C., Benger, E., & Ifans, M. (2021). Building better futures: Decent work, inclusion and careers support services in the UK. *British Journal of Guidance & Counselling*, *49*(2), 213–227. https://doi.org/10.1080/03069885.2021.1900537

Hulatali, N., Zubaidi, M., Napu, Y., & Setiyowati, E. (2023). Peran pekerja informal perempuan di bidang usaha gula aren Kabupaten Bone Bolango [The role of women informal workers in the palm

sugar business in Bone Bolango Regency]. *Student Journal of Community Education*, *2*(2), 1–12. https://doi.org/10.37411/sjce.v2i2.1975

Ikhsan, R. I., Syah, M. F. J., & Custilas, A. (2024). Disabled entrepreneurs: Challenges in utilizing digital marketing in MSMEs. *Jurnal Ilmu Sosial Mamangan*, *13*(1), 1–12. https://doi.org/10.22202/mamangan.v13i1.7859

International Labour Organization. (1999). Decent work. *87th Annual International Labour Conference*.

International Labour Organization. (2008, August 13). *ILO declaration on social justice for a fair globalization*. International Labour Organization. https://www.ilo.org/resource/other/ilo-declaration-social-justice-fair-globalization

International Labour Organization. (2019). Decent work. International Labour Organization. International Labour Organization. (2019). Decent work. International Labour Organization.

Ivanova, V., Anichkina, O., Chernegov, N., Tatochenko, A., & Kuzmina, A. (2020). Development of graduates' training system with meta-subject competencies for Russian agro-industrial complex. *E3S Web of Conferences*, *175*, 15024. https://doi.org/10.1051/e3sconf/202017515024

Joshi, A., Schaaf, M., & Zayed, D. (2022). The use of legal empowerment to improve access to quality health services: A scoping review. *International Journal for Equity in Health*, *21*(1), 136. https://doi.org/10.1186/s12939-022-01731-3

Kamakaula, Y. (2024). Cultural perspectives on climate change adaptation in agriculture an ethnoecological study. *West Science Interdisciplinary Studies*, *2*(4), 743–748. https://doi.org/10.58812/wsis.v2i04.787

Kasolati, K., & Kamilah, K. (2024). Data collection on MSME creative industries in Medan City according to a Sharia accounting perspective. *Jurnal Ilmiah Akuntansi Kesatuan*, *12*(1), 189–196. https://doi.org/10.37641/jiakes.v12i1.2477

Khan, B., Farooq, A., & Hussain, Z. (2010). Human resource management: An Islamic perspective. *Asia-Pacific Journal of Business Administration*, *2*(1), 17–34. https://doi.org/10.1108/17574321011037558

Khan, K., Abbas, M., Gul, A., & Raja, U. (2015). Organizational justice and job outcomes: Moderating role of Islamic work ethic. *Journal of Business Ethics*, *126*(2), 235–246. https://doi.org/10.1007/s10551-013-1937-2

Larmintho, R. B. H. (2023). Peningkatan produktivitas pengolahan gula merah dari tebu di Kecamatan Kebonsari Kabupaten Madiun [Increasing the productivity of brown sugar processing from sugar cane in Kebonsari District, Madiun Regency]. *Jurnal Cahaya Mandalika*, *4*(2), 411–423. https://doi.org/10.36312/jcm.v4i2.1465

Legg, T., Hatchard, J., & Gilmore, A. B. (2021). The Science for Profit Model—How and why corporations influence science and the use of science in policy and practice. *PLOS ONE*, *16*(6), e0253272. https://doi.org/10.1371/journal.pone.0253272

Lund, F. (2012a). La protección social laboral de los trabajadores del sector informal [Social labor protection for workers in the informal sector]. *Revista Internacional de Seguridad Social*, *65*(4), 11–36. https://doi.org/10.1111/j.1752-1734.2012.01445.x

Lund, F. (2012b). Work-related social protection for informal workers. *International Social Security Review*, *65*(4), 9–30. https://doi.org/10.1111/j.1468-246X.2012.01445.x

Luthra, A. (2020). Efficiency in waste collection markets: Changing relationships between firms, informal workers, and the state in urban India. *Environment and Planning A: Economy and Space*, *52*(7), 1375–1394. https://doi.org/10.1177/0308518X20913011

Mahmud, S. I., Morad, A. M., & Satria, S. (2024). Pemberdayaan masyarakat melalui pengembangan industri gula merah: Meningkatkan ekonomi lokal dan kemandirian desa [Community empowerment through the development of the brown sugar industry: Improving local economy and village independence]. *Journal of Human and Education (JAHE)*, *4*(6), 647–651. https://doi.org/10.31004/jh.v4i6.1938

Mahmudulhassan, M., Abuzar, M., Khondoker, S. U. A., & Khanom, J. (2025). The dignity of labor in Islam: Ethical principles and contemporary relevance. *Suhuf: International Journal of Islamic Studies*, *37*(1), 47–57. https://doi.org/10.23917/suhuf.v37i1.10193

Masrizal, Sukmana, R., & Trianto, B. (2025). The effect of Islamic financial literacy on business performance with emphasis on the role of Islamic financial inclusion: Case study in Indonesia. Journal of Islamic Marketing, 16(1), 166–192. https://doi.org/10.1108/JIMA-07-2022-0197

Maulana, H., & Taufani, M. K. (2023). Quadruple helix governance as an effort in maintaining food security through Islamic philantrophy. *Jurnal Ecodemica*: *Jurnal Ekonomi Manajemen Dan Bisnis*, *7*(2), 226–234. https://doi.org/10.31294/eco.v7i2.15292

Mercado, V. S. V., Fernandez-Felisbino, R., Leal Silva, J. F., & Tovar, L. P. (2025). Bolivia's path to lower emissions: Sugar cane ethanol and GREET model insights into ethanol-gasoline blends. *ACS Omega*, *10*(24), 25350–25361. https://doi.org/10.1021/acsomega.5c00346

Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis: A methods sourcebook*. SAGE Publications.

Mumtaz, Z. (2022). Informal social protection: A conceptual synthesis. *Social Policy & Administration*, *56*(3), 394–408. https://doi.org/10.1111/spol.12772

Ndhlovu, P., & Ndhlovu, P. (2023). Precipitants of the ineffective labor act enforcement in Zimbabwe. *Conflict Resolution Quarterly*, *41*(2), 197–211. https://doi.org/10.1002/crq.21401

Neilson, J., Dwiartama, A., Fold, N., & Permadi, D. (2020). Resource-based industrial policy in an era of global production networks: Strategic coupling in the Indonesian cocoa sector. *World Development*, *135*, 105045. https://doi.org/10.1016/j.worlddev.2020.105045

Nelson, G. C., & Panggabean, M. (1991). The costs of Indonesian sugar policy: A policy analysis matrix approach. *American Journal of Agricultural Economics*, *73*(3), 703–712. https://doi.org/10.2307/1242822

Nguyen, T. C., & Thuy, T. H. (2025). Pre-crisis conditions and financial crisis duration. *The World Economy*, *48*(5), 997–1019. https://doi.org/10.1111/twec.13662

Noya, S., Taneo, S. Y. M., & Melany, M. (2023). Triple helix innovation ecosystem: The role of small and medium enterprises community in enhancing performance. *Quality Innovation Prosperity*, *27*(1), 46–61. https://doi.org/10.12776/qip.v27i1.1759

Orlova, A. V., & Boichev, V. (2017). "corruption is us": Tackling corruption by examining the interplay between formal rules and informal norms within the Russian construction industry. *Journal of Developing Societies*, *33*(4), 401–427. https://doi.org/10.1177/0169796X17735238

Pankaj, A. K., & Jha, M. K. (2024). Gig workers in precarious life: The trajectory of exploitation, insecurity, and resistance. *The American Journal of Economics and Sociology*, *83*(5), 935–946. https://doi.org/10.1111/ajes.12563

Rahman, M. E., Sinaga, B. M., Harianto, N., & Susilowati, S. H. (2019). Kebijakan dukungan domestik untuk menetralisir dampak negatif penurunan tarif impor terhadap industri gula Indonesia [Domestic support policies to neutralize the negative impact of import tariff reduction on the Indonesian sugar industry]. *Jurnal Agro Ekonomi*, *36*(2), 91–112. https://doi.org/10.21082/jae.v36n2.2018.91-112

Riyadi, R. B. (2025). Tanggung jawab hukum terhadap tenaga kerja outsourcing dalam perspektif undang-undang ketenagakerjaan di Indonesia [Legal responsibility for outsourced labor in the perspective of labor law in Indonesia]. *Jurnal Teknik, Komputer, Agroteknologi Dan Sains*, *4*(1), 7–11. https://doi.org/10.56248/marostek.v4i1.110

Rizkiyah, N., Rachmadhan, A. A., Hendrarini, H., & Indah, P. N. (2025). The challenges to revitalizing the upstream sector of the white sugar industry in East Java. *IOP Conference Series: Earth and Environmental Science*, *1497*(1), 012046. https://doi.org/10.1088/1755-1315/1497/1/012046

Ruwanpura, K. N., & Wrigley, N. (2011). The costs of compliance? Views of Sri Lankan apparel manufacturers in times of global economic crisis. *Journal of Economic Geography*, *11*(6), 1031–1049. https://doi.org/10.1093/jeg/lbq036

Saad, S., Hussien, M. H., Abou-ElWafa, G. S., Aldesuquy, H. S., & Eltanahy, E. (2023). Filter cake extract from the beet sugar industry as an economic growth medium for the production of Spirulina platensis as a microbial cell factory for protein. *Microbial Cell Factories*, *22*(1), 136. https://doi.org/10.1186/s12934-023-02146-7

Salaudeen, A. O. (2024). Proposing an effective waqf model for ensuring poverty reduction among refugees in Malaysia. *F1000Research*, *13*, 763. https://doi.org/10.12688/f1000research.149944.1

Saputra, W. (2025). Skill waqf as a mechanism for economic empowerment of youth: A comprehensive literature review grounded in Islamic economic principles. *JIMU:Jurnal Ilmiah Multidisipliner*, *3*(2), 1308–1319. https://ojs.smkmerahputih.com/index.php/jimu/article/view/829

Savitz, A. W. (with Weber, K.). (2013). *The triple bottom line: How today's best-run companies are achieving economic, social and environmental success -- and how you can too*. Jossey-Bass.

Sekhar, M., Lallawmkimi, M. C., Rani, D. V., Upadhyay, L., Tiwari, P., Verma, U., & Rajput, A. (2024). Agroforestry practices and their impact on soil health and fertility: A review. Journal of Experimental Agriculture International, 46(9), 511–528. https://doi.org/10.9734/jeai/2024/v46i92849

Setyaning, A. N. A., & Nursyamsiah, S. (2024). Participatory strategies for empowering indonesian migrant worker unions in Kuala Lumpur, Malaysia: Improving welfare and rights. *Asian Journal of Community Services*, *3*(9), 913–922. https://doi.org/10.55927/ajcs.v3i9.11465

Simarmata, J. (2024). Normative juridical study of regulatory urgency use of local labor in the regions. *Jurnal Ketenagakerjaan*, *19*(1), 48–68. https://doi.org/10.47198/jnaker.v19i1.331

Simbolon, S. B., Supriana, T., & Lindawati. (2021). Marketing strategy of brown sugar from palm oil in Serdang Bedagai District. *IOP Conference Series: Earth and Environmental Science*, *782*(2), 022012. https://doi.org/10.1088/1755-1315/782/2/022012

Soemitra, A. (2021). The relevance of Islamic economics and finance fundamentals to the contemporary economy: Islamic economist perceptions. *Share: Jurnal Ekonomi Dan Keuangan Islam*, *10*(2), 325–352. https://doi.org/10.22373/share.v10i2.9544

Sojo, A. (2015). Including informal economy workers in contributory social protection: Current challenges in Latin America. *International Social Security Review*, *68*(4), 69–92. https://doi.org/10.1111/issr.12088

Srivastava, S. (2020). Diversification of sugar and sugarcane industry: Agro-industrial alternatives. In N. Mohan & P. Singh (Eds.), Sugar and sugar derivatives: Changing consumer preferences (pp. 151–169). Springer. https://doi.org/10.1007/978-981-15-6663-9_10

Stapleton, T. (2006). Institutional determinants of Indonesia's sugar trade policy. *Bulletin of Indonesian Economic Studies*, *42*(1), 95–103. https://doi.org/10.1080/00074910600632401

Stavropoulou, M., Holmes, R., & Jones, N. (2017). Harnessing informal institutions to strengthen social protection for the rural poor. *Global Food Security*, *12*, 73–79. https://doi.org/10.1016/j.gfs.2016.08.005

Stevens, A. W., & Teal, J. (2024). Diversification and resilience of firms in the agrifood supply chain. *American Journal of Agricultural Economics*, *106*(2), 739–778. https://doi.org/10.1111/ajae.12398

Sudirjo, F., Ausat, A. M. A., Suherlan, S., & Azzaakiyyah, H. K. (2024). Understanding psychological dynamics in consumer decision-making processes in the digital marketing era: A review. *Jurnal Penelitian Inovatif*, *4*(2), 635–644. https://doi.org/10.54082/jupin.384

Sukmana, R., Ratnasari, R. T., Majid, R., & Mohd Shafiai, M. H. (2024). Designing waqf-based financing model for livestock project: Empirical evidence from Indonesia. *International Journal of Islamic and Middle Eastern Finance and Management*, *17*(3), 599–617. https://doi.org/10.1108/IMEFM-06-2023-0211

Sulaiman, A. A., Sulaeman, Y., Mustikasari, N., Nursyamsi, D., & Syakir, A. M. (2019). Increasing sugar production in indonesia through land suitability analysis and sugar mill restructuring. *Land*, *8*(4), 61. https://doi.org/10.3390/land8040061

Sulila, I., & Usman, S. D. (2022). Factors determining the policy implementation for micro, small, and medium enterprises (MSMES) empowerment in Indonesia. *Central European Management Journal*, *30*(4), 370–379. https://doi.org/10.57030/23364890.cemj.30.4.31

Supardi, H., Yusdiarti, A., & Arsyad, A. (2016). Analisis pendapatan dan efisiensi pemasaran gula merah skala rumah tangga (Studi kasus: Desa Pasiripis Kecamatan Surade Kabupaten Sukabumi Provinsi Jawa Barat) [Income analysis and marketing efficiency of household-scale brown sugar (Case study: Pasiripis Village, Surade Sub-district, Sukabumi District, West Java Province)]. *Jurnal Agribisains*, *2*(1), 18–26. https://doi.org/10.30997/jagi.v2i1.762

Susilowati, E., Lestari, S. D., & Prasetya, R. E. (2024). The micro, small, and medium enterprises (MSMEs) incubation centers to strengthen local economies and foster entrepreneurship in Kaliabang Tengah Regency. *Pengabdian: Jurnal Abdimas*, *2*(1), 93–102. https://doi.org/10.55849/abdimas.v2i1.553

Syed, J., & Ali, A. J. (2010). Principles of employment relations in Islam: A normative view. *Employee Relations*, *32*(5), 454–469. https://doi.org/10.1108/01425451011061630

Tubastuvi, N., & Rusydiana, A. S. (2024). Prioritizing Islamic financial literacy for MSMEs in Indonesia. *Islamic Economics Methodology*, *3*(1), Article 5. https://doi.org/10.58968/iem.v3i1.522

Tulsi, K. E. (2025). Enhancing rural entrepreneurship: Business incubation and MSME development in West Java. *Journal of Research in Social Science and Humanities*, *5*(1), 131–133. https://doi.org/10.47679/jrssh.v5i1.254

Valverde, R. I. M., Segura, M. Y. V., Burgos, M. R. Z., Muñiz, J. E. A., & Torres, N. M. A. (2024). Las microempresas y los emprendimientos como dinamizadores económicos de la parroquia Ximena, Quayaquil 2024 [Microenterprises and entrepreneurship as economic dynamizers of the Ximena parish, Quayaquil 2024]. *Ciencia Latina Revista Científica Multidisciplinar*, *8*(4), 4054–4069. https://doi.org/10.37811/cl_rcm.v8i4.12632

Van Ginneken, W. (1999). Social security for the informal sector: A new challenge for the developing countries. *International Social Security Review*, *52*(1), 49–69. https://doi.org/10.1111/1468-246X.00033

Van Hoyweghen, K., Fabry, A., Feyaerts, H., Wade, I., & Maertens, M. (2021). Resilience of global and local value chains to the Covid-19 pandemic: Survey evidence from vegetable value chains in Senegal. Agricultural Economics, 52(3), 423–440. https://doi.org/10.1111/agec.12627

VijayKumar, R., Tiwari, P., Daniel, S., Kumar, K. R., Mishra, I., Ks, A., & Shah, D. (2024). Agroforestry systems: A pathway to resilient and productive landscapes. International Journal of Environment and Climate Change, 14(12), 177–193. https://doi.org/10.9734/ijecc/2024/v14i124617

Wahyuni, P., & Wulandari, R. (2024). Zakat and poverty alleviation in Muslim countries: A Biblioshiny application. *Journal of Islamic Economics Lariba*, *10*(1), 205–230. https://doi.org/10.20885/jielariba.vol10.iss1.art12

Wang, X., & Xu, X. (2024). Sustainable resource management and green economic growth: A global prospective. Resources Policy, 89, 104634. https://doi.org/10.1016/j.resourpol.2024.104634

Wu, Z. (2022). Crafting inconspicuous luxury brands through brand authenticity in China. *Frontiers in Psychology*, *13*, 826890. https://doi.org/10.3389/fpsyg.2022.826890

Yasin, M., Kabul, L. Muh., Herman, L. E., Hidayat, A. A., & Muhdin, M. (2023). Overcoming asymmetric information with a profit sharing system at Islamic bank: Acceleration of theory and practice. *Journal of Economics, Finance and Management Studies*, *6*(8), 3566–3572. https://doi.org/10.47191/jefms/v6-i8-02