

Labor Dynamics and Operational Efficiency in the Halal Supply Chain: An Analysis of Key Challenges and Strategic Solutions

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ABSTRACT

Labor issues affecting halal supply chains, especially in Malaysia, pose a major threat to operational efficiency as well as the effectiveness of halal certification. In this study, the important labor-related issues are examined, among which foreign labor dependency, skill gap and labor shortage are significant issues affecting halal supply chain. In the present study, using a mixed-methods approach, we integrate qualitative data from interviews with industry stakeholders and quantitative data to examine the impact of labor issues on supply chain performance. The results show that high dependence on foreign labor, along with labor shortages, results in increased production delays and compliance violations; whereas enhanced training of workers greatly enhances operational efficiency and halal compliance. These findings reiterate the need for local labor incentives, skill development initiatives, and regulatory reforms to address these challenges. This study helps to expand the understanding of the complex dynamics of labour in the halal supply chain and provides practical recommendations for industry players and policymakers to consolidate Malaysia's role as a global leader in halal.

Keyword: Labor dynamics, operational efficiency, halal supply chain, halal certification, halal hub.

INTRODUCTION

The halal supply chain is a vital segment of the global halal industry, which has been expanding significantly in recent years, driven by rising demand for ethically sourced, quality-assured products. With a current valuation over USD 2.3 trillion, the global halal market is expanding at an accelerating pace, with increasing numbers of both Muslim and non-Muslim consumers looking for ethically produced and certified products (Thomson Reuters, 2020). As a leading global halal certifier and exporter, Malaysia has a vital role in the developing market. It has a strong halal supply chain covering various sectors such as food production, logistics, retail, and hospitality (Kasdi et al., 2025; Rosly et al., 2025 & Jaffar et al., 2022).

Yet, these labour issues in the halal supply chain persist as a core challenge even with this growth. Of these, challenges related to dependence on foreign labor, worker exploitation, skill shortage, and regulatory restrictions stand out (Cheong et al., 2020; Sundram et al., 2019). In Malaysia where the economy has always

been very reliant on foreign workers especially in food processing and slaughterhouses, which has raised concerns regarding labor rights, working conditions, and issues regarding halal certification integrity (Nurazidah et al., 2022). Such a massive and relatively cheap foreign labor force is alleged to be producing halal goods and services of questionable origins (Muhammad et al., 2020), whereas the halal certification community plays a very important role in protecting halal products from necessarily being defective, as Malaysian halal authorities have warned of "over-practicing halal" due to worker exploitation issues, lack of training for foreign workers, and insufficient awareness of halal (Muhammad et al., 2020).

Thus, this paper aims to map out the labour questions within halal supply chain in Malaysia from foreign labour dependency, gaps in labour availability and skills, and regulatory barriers. By tying these data, the study will examine how these labor challenges influence operational efficiencies and halal product integrity, providing recommendations for solutions to reduce these challenges and enhance the overall efficiency of the halal supply chain.

LITERATURE REVIEW

Halal Supply Chain and Its Importance

In recent years, the halal market has grown exponentially. The global halal market was valued at more than USD 2.3 trillion in 2020 and is anticipated to increase significantly, owing to enhance awareness among consumers, a growing population in Muslim-majority countries and a growing appetite for ethical consumption (Thomson Reuters, 2020). The halal food sector continues to be a primary driver of the halal industry, while the halal-certified goods and services have made their way into multiple sectors including pharmaceuticals, cosmetics, and tourism, which contribute to the complexity and diversity of the halal supply chain. The halal concept has spread beyond food into healthcare, beauty products, and logistics, demonstrating a belief in halal certification as an indication of quality and ethical sourcing that speaks not just to Muslim consumers but also to non-Muslim ethical consumers (Abd Razak et al., 2025 & Wilson & Liu, 2019); halal markets expanded in response.

The Halal Certification and Standards

Halal certification is an essential part of the halal supply chain, that entails the attitudes of products and processes to comply with Shariah law. These standards are usually in place throughout the production process from where raw material is sourced to the final product being distributed. There are a number of key areas of halal certification which are as follows:

1. **Sourcing of Raw Materials:** Only specific ingredients and materials are permitted in halal products. For instance, the use of pork and alcohol are strictly prohibited in Islam, and thus, any product that contains these products cannot be categorized as halal.
2. **Manufacturing and processing:** Manufacturing and processing procedures must adhere to specifications and meet these processing standards so that no non-halal contaminants are introduced. This includes segregated storage, handling and transportation of halal and non-halal products.
3. **Logistics and Distribution:** The halal supply chain double checks that products remain compliant whilst being transported or stored. Such measures include preventing cross-contamination, controlling temperature, and clear labelling to promote transparency for the consumer.

In Malaysia, the Malaysian Halal Certification Standard (MS1500) is the principal regulatory framework guaranteeing the halal status of food and beverage products. The MS1500 provides particular measures of halal food production covering all processes from the obtaining of raw materials to distribution of final products to customers (Amer et al., 2025 & Jaffar et al., 2022).

Malaysia's Global Halal Hub Role

The comprehensive regulatory framework governing the halal supply chain in Malaysia is one of its most significant strengths. The Malaysian government has diligently ensured that halal certification is not just

stringent but also recognized globally. The recognition of halal certification provided by Malaysia by many countries indeed gives a competitive advantage to Malaysia's exporters in the international market (Apandi et al., 2025 & Jaffar et al., 2022). Moreover, the Halal Industry Development Corporation (HDC) of Malaysia has been significant in the country promoting this industry through its support to companies, trade agreements and halal infrastructure development, and strengthening the country's global halal centre (Halal Industry Development Corporation, 2020).

Economic and Market Growth

The halal supply chain has huge economic significance. The global market for halal food alone is estimated to be worth around USD 1.4 trillion, growing at a compound annual growth rate (CAGR) of around 6.1% over the next ten years according to the State of the Global Islamic Economy Report 2020/21 (Thomson Reuters, 2020). The majority of this growth is attributed to the growing Muslim population which is over 1.8 billion people globally, for more ethical, sustainable and cruelty-free products. Non-Muslim consumers are also becoming increasingly interested in halal products drawn to their perceived health or ethical benefits, including transparency in their sourcing and production and a lack of artificial additives or preservatives.

However, there are many challenges on the path of the halal supply chain. When the industry expands, some problems become more serious, such as labor regulation, transparency of the supply chain, quality control, and halal compliance issues. To ensure the integrity of halal certification throughout the entire supply chain, from including raw materials to end-product delivery, continued vigilance, workforce training and appropriate regulatory coverage are required (Othman et. al., 2025 & Cheong et al., 2020). So addressing these challenges is critical in order to ensure consumer trust in halal products and allowing the industry to maintained its growth trajectory.

Challenges and Opportunities

As the halal market grows, labor issues are becoming one of the biggest challenges to maintaining the integrity and efficiency of the halal supply chain. Concerns have been raised regarding the ability of the halal supply chain to meet growing demand whilst upholding halal standards amid issues of labor shortages, over-reliance on foreign workers and skill gaps in the workforce (Rahim et. al., 2025 & Nurazidah et al., 2022). Moreover, it is also important to have adequate training for workers at halal production (Zainuddin & Rahman, 2021).

Despite these hurdles, the escalating demand for halal commodities offers considerable opportunities for companies engaged in the halal supply chain. Therefore, addressing labor issues, upskilling the workforce, and utilizing technological advancements in production and logistics will help companies increase supply chain efficiency and meet the growing global demand for halal products (Wilson & Liu, 2019; Ibrahim et. a., 2011).

Labor Issues in Halal Food Supply Chains

Labor Problems within Halal Foods Supply Chains

Labor problems in halal food supply chains are a significant adversity, compromising both the efficiency and integrity of halal-certified foods. These issues are especially pronounced in Malaysia, one of the world's largest producers and exporters of halal food. The halal food sector relies heavily on a labor force that suffers from multiple socio-economic and regulatory issues. This section examines the main labor issues along halal food supply chains: the over-reliance on foreign workers; labour exploitation; labor shortages; and poor work conditions. All these issues can not only threaten the sustainability and profitability of the industry but also jeopardize the compliance and credibility of halal certification standards itself (Sarbani et. al., 2025; Zailani et. al., 2023).

Dependence on Foreign Labor

Domestically, a great deal of the labor issues impacting the halal food supply chain stem from overdependence on foreign labor. In the Malaysian halal food industry, 60-70% of the workforce comprises foreign labor,

predominantly in the food processing, packaging, and slaughterhouse sectors (Ministry of Human Resources, 2021). These labour-intensive tasks tend to be poorly paid and the working conditions tend to be undesirable and thus local labor is scarce, resulting in a chronic dependence on foreign labor.

This heavy dependency on foreign labour raises multiple ethical and operational issues.] For one, worker exploitation in the halal food industry is rampant and widespread as many foreign workers are often subjected to terrible working conditions including long hours, insufficient pay and denial of legal rights. A report by Cheong et al. As highlighted by Marzec et al. (2020) and Ibrahim et. al., (2020) foreign workers in halal slaughterhouses are especially susceptible to exploitation, often compelled to perform hazardous working conditions with little access to social benefits, medical care or decent accommodation. These workers are often sourced via labour agencies, which can aggravate the problem of exploitation itself with high recruitment fees and forcing exploitative contracts (Amer et. al., 2019; Johan et al., 2019).

Exploitation and Poor Working Conditions

The abuse of overseas labour in the halal food industry is not limited to exploitation of wages. Many face subpar conditions, especially in halal slaughterhouses, where sanitation, safety, and humane conditions are essential. According to studies, the halal food industry, especially slaughterhouses, has a lot of opportunities for poor hygiene practices, unsafe and hazardous working condition, and workers not having adequate training on halal practices (Muhammad et al., 2020; Amer et al., 2019). These issues are not only concerning because they endanger the welfare of workers but also the halal integrity of the products being processed.

Halal certification involves compliance with a number of regulations laid down by Shariah, which include allowing humane treatment of animals, hygienic slaughter and sanitary surroundings. A ban on the poor working infrastructure with an inadequate worker orientation program can fail to meet these standards, potentially leading to violations of halal integrity, consumer trust, and the validity of the certification. A study conducted by Zainuddin & Rahman (2021) Ibrahim & Jaafar (2016) showed that the lack of knowledge and skills in halal slaughter of workers does not meet religious and ethical concepts standards, thus can be detrimental to the brand image of halal products or halal-certified brands.

Labor Shortages and Operational Inefficiencies

One of the major labor problems within halal food supply chains is the lack of skilled workers, resulting in operational inefficiencies. According to Nurazidah et al. (2020), the halal industry in Malaysia has struggled to attract local talent, especially for physically demanding and stigmatized occupations, such as those in slaughterhouses or meat processing plants. This labor shortfall has led to production delays across all sectors and increased inflation because companies are scrambling to draw from a limited labor pool and working people overtime to meet their production quotas. In addition to the limited local interest, work in slaughterhouses is considered unpleasant or demeaning by many Malaysians (Perera et. al., 2022; Nor et al., 2021). This leads to an increased dependence of the industry on foreign workforce which only worsens the already terrible situations of exploitation, dreadful conditions and issues with compliance.

Supply chain efficiency is also affected by labor shortages. The halal food industry, especially in areas such as poultry and meat processing, is very time-sensitive by nature, and delays stemming from a labor shortage can result in product stockouts, delayed shipments, and dissatisfied customers. An example of this would also be in the halal poultry sector, where food spoilage and overstocking due to labor static can harm the bankability of the organization (Jamaluddin & Rahmat, 2022; Cheong et al., 2020). Furthermore, such inefficiencies could stymie the industry's ability to enter new markets, restricting its growth opportunities and global competitiveness.

Training and Knowledge Gaps in the Workforce

The halal food sector too suffers from huge skill gaps in its workforce. This is because many workers employed within a halal food supply chain haven't been sufficiently trained in the technical concepts and ethical considerations of halal food production, despite an increasing global demand for halal-certified

products. As Zainuddin & Rahman state (2021), the halal food sector faces challenges regarding the provision of adequate training programs for employees, leading to gaps in knowledge about proper halal practices, hygiene, and safety standards.

Without proper training, workers in halal food production may inadvertently cause contamination and hence fail halal certification standards. In halal slaughterhouses, for instance, workers need to be trained not only on the biochemical aspects of slaughtering, but also be trained on the spiritual and moral importance of halal practices and the humane treatment of animals and also how to handle meat correctly.

In response, the Malaysian government, with the assistance of federally funded organizations such as the Halal Industry Development Corporation (HDC), has started efforts to enhance the training and skillset of its workforce, so that it can meet both national and international halal industrial needs. These initiatives are important in ensuring that the human resources is competent to meet the strict requirements for halal certification and to ensure the quality of halal products (HDC, 2020). But a nationally recognized halal training framework must be developed to ensure that high quality halal education can be consistently delivered to workers along the halal supply chain.

Labor Issues and Their Effect on Halal Integrity and Consumer Confidence

The ramifications of labor-related issues in the halal food supply chain including exploitation and poor working conditions, labor shortages, and inadequate training of workers can pose serious threats to halal integrity and consumer confidence. These misuse at any stage may compromise halal certification standards, tarnish the credibility of the entire halal food supply chain. Halal means permissible, but failure to comply with halal standards whether hygiene standards, animal welfare standards or ethical production standards can result in product recalls, loss of consumer trust and damage to brand reputation (Thomson Reuters, 2020).

Labour-related challenges in the halal food supply chain include a reliance on foreign labour, an increased risk of exploitation, poor working conditions, labour shortages and skill gaps. These challenges have direct implications on the industry's efficiency, profitability, and risk its IoT. If we aspire for quality halal products, the higher suppliers need to be at the forefront of overcoming these challenges by advocating for enforcement of labour standards, training and ethical treatment of workers in halal supply chain (Jaafar et al., 009). Thus, the halal food industry can continue to grow without compromising its commitment to ethical, Shariah-compliant principles.

Skill Gaps in the Halal Supply Chain

Gaps in the Halal Supply Chain

Major challenges in the halal supply chain exist globally, not only around labor shortages or foreign worker reliance but also in relation to skill gaps which undermine the quality and integrity of halal products (Rahmat et. al., 2023). Halal skill gaps are particularly significant between the need for halal requirements in some of the key processes in halal supply chains including food processing, slaughtering and food safety practices. Halal industry is complex in nature and is all based on detailed compliance of Shariah and hence workers working in the halal food industry must know the prerequisites for the halal food production process to be halal compliant.

Alas, a considerable section of the workforce do not have the technical competence and work-based knowledge needed to maintain halal certification — the processing, handling and slaughter of food products in accordance with Shariah law. Youth organizations, for example, can work with colleges and schools to promote awareness of halal science careers through workshops, outreach, or field trips to halal-related businesses (Jalil et. al., 2021). In this way we can counteract this skills deficit, which poses a serious risk not only to the quality and safety of halal products, but also the integrity of those products as sectors working around raw meat, poultry and other perishable items. If these gaps in knowledge are left unaddressed, they could result in failures of halal standards, causing uncertainty among consumers, product recalls and financial losses for businesses.

Lack of Training on Halal Certification Processes

In Malaysia, the Malaysian Halal Certification Standard (MS1500), which provides clear guidelines for halal food production, is often not followed with specialized training for those involved in the halal supply chain (Jaffar et al., 2022). The absence of trained professionals has often resulted in inconsistency of halal practices, and in some instances, it directly challenges the halal status of products. On the other hand, inadequate training of workers on raw materials handling or ethical slaughtering procedures will lead increase chances of contamination or mishandling of food products compared to halal certification standards (Zainuddin et al., 2021).

In addition, halal food production relies heavily on foreign workers (Cheong et al., 2020), many of whom are from countries that have little or no exposure to Shariah, complicating issues of compliance with halal practices even further. Therefore, there is a need for comprehensive and accessible training programs on halal certification and food safety standards throughout the industry to ensure compliance and quality control throughout the halal supply chain.

Shariatic Slaughtering Procedures

There are big concerns about skill gaps in halal slaughtering. Many workers, particularly in Malaysia's halal slaughterhouses, do not have the technical and also ethical knowledge for slaughtering according to Islam. Halal product is a modality, if it is killed wrong, the halal is compromised and halal is not accepted without halal certification and standards. In addition to this, unsuitable killing practices may also pose ethical challenges, which can result in customer discontent and tarnish the reputation of halal-certified brands.

A study by Jaffar et al. (2022) who found that although the slaughterhouse workers in Malaysia were sufficiently trained in the physical procedures of slaughter, they lacked a sound knowledge on various other aspects such as the ethical, spiritual and legal dimensions required for a halal slaughter. This is particularly the case when it comes to ensuring slaughter practices are compliant with consumer expectations and halal certification bodies.

Food Safety Standards

Food safety training is at the top of the list of areas where there are skill gaps. It vital that these individuals working in these halal food logistics are trained with proper food handling, storage, and transportation practices to prevent cross-contamination, spoilage, and health risk. However, without appropriate training especially on how to properly implement HACCP (Hazard Analysis and Critical Control Points) systems and sanitation practices, halal food producers could encounter difficulties in adhering to the integrity of their food products, as well as risks posed to public health and safety.

In Malaysia, food safety standards are usually based on internationally accepted standards that include the Codex Alimentarius standards, and Food Safety and Quality Division (FSQD) guidelines. Yet, these standards are not always correctly assimilated, which results in sometimes variegated production and control quality practices (Jaffar et al., 2022). As the halal market expands, and the industry continues to flourish, it is crucial that workers are adequately trained, both in halal-specific requirements, but also in general food safety standards in order to avoid expensive mistakes.

Technological Integration and Automation

The new challenge that has also emerged recently in the halal food supply chain is the automation of production processes and more technology integration. In addressing these processes, technology in food processing and logistics holds the prospect of significant efficacy and uniformity at the same time as requiring human labour skilled in modern tools and digital systems. Most workers involved in the halal supply chain do not have the necessary technical expertise to efficiently run these high-tech systems.

Automated slaughtering systems are increasingly being adopted in halal meat processing, yet the workforce remains untrained to operate and maintain such systems. Another example is that RFID tracking, blockchain for traceability, and AI-driven quality control systems are increasingly being used in the halal supply chain,

however each of these technologies can only be leveraged for traceability if workers possess the skills needed to utilize digital tools and processes (Nor et al., 2021).

Training and Certification Programs

Such training and certification programs are indeed necessary to fill the gaps of the halal supply chain, especially in the sectors of halal certification, halal slaughter method, and halal food safety. These programs must be aimed at providing their workforce with the technical skills and ethical awareness needed to maintain halal compliance along the entire supply chain. In addition, close cooperation of industry actors such as certification bodies, training institutes and halal food producers is required for developing and quality assurance of comprehensive training system which are applied across the industry.

Regulatory Challenges in the Halal Supply Chain

The process for halal certification is multifaceted and tedious process designed to confirm product compliance to Islamic law (Shariah). This is done through a set of stringent regulations, inspections, and adherence to the required ethical and technical standards. Such measures play a significant role in ensuring proper regulation in halal markets, with increasing demand for certified halal products. Nonetheless, there are still regulatory challenges related to halal supply chain, which are compounded by labor issues despite the presence of various regulatory bodies such as the Department of Islamic Development Malaysia (JAKIM). Nonetheless, the convergence of factors that create insufficient workforce capacity, inefficiencies in regulatory processes, and global standardization challenges can provide a perfect storm that can inhibit the operation of the halal certification ecosystem.

Demand Surge & Readiness of the Workforce

With the rapid growth of halal markets around the world, especially in countries that are not majority Muslim, the capacity of JAKIM and other regulatory agencies has been challenged, falling behind in the provision of certification services both in terms of scale and turnaround times. The long processing times for halal certification application and the backlog of inspection requests are a major bottleneck in the halal supply chain. Halal certification also adds additional time costs to the time it takes for businesses to bring halal-certified products to market, reducing their competitiveness in time-critical sectors such as food retail and export (Cheong et al., 2020).

In addition, there are insufficient trained personnel in regulatory bodies to align with the growing demand. With halal certification expanding beyond the food and beverage industries, halal certification now covers new industries and sectors like pharmaceuticals, cosmetics, and logistics, JAKIM's and other regulatory agencies' workforce struggles to keep pace with this rapid growth (Zainuddin & Rahman, 2021).

Training and Education for Regulatory Personnel

Halal certification demands not only technical knowledge but also a sound understanding of Islamic principles and Shariah law that are necessary for determining compliance, leading to the problem of a lack of qualified halal inspectors in Malaysia. Such dual knowledge poses a challenge to regulatory personnel especially, where no formal halal inspectors training programs currently exist, which may result in gaps or inconsistencies in certification. For example, there are many subtleties in halal standards and without proper training the inspectors might face with missing important violations which could lead to non-complaint product being certified or complaint product not certified.

Moreover, cultural and regional differences in the understanding of Shariah law affect the halal certification process. No, different countries (and sometimes different schools of thought within the same religion) have slightly different rules regarding halal practices pertaining to whether animals are slaughtered in certain ways or not. This presents additional complications for regulators, which must balance consistency between categories while acknowledging local or sectarian distinctions in halal classification. In this regard, professional development and targeted training programs are critical to achieve accuracy and consistency in the evaluation of the regulatory bodies (Zainuddin et al, 2021).

International Labels and Uniformity

One more important regulatory obstacle for halal supply chains is the absence of homologation of halal certification worldwide. Although Malaysia's halal certification standards for example, MS1500 are generally respected, their global acknowledgment is far from uniform. Halal certification varies from country to country,

including different national regulatory bodies, halal certification standards, and even halal law itself (Wilson & Liu, 2019). Because there are no standard practices when it comes to halal certification, producers and consumers alike have to be careful, particularly in international markets, where companies want to export their halal products in different geographies, each with their own requirements.

For example, halal certification in countries such as Indonesia, Saudi Arabia and Turkey may have different procedures regarding slaughtering, meat processing or food storage. The lack of global harmonization, however, means that companies looking to export halal products may need to acquire multiple certifications — each coupled with different requirements and regulatory obligations. It may lead to higher costs, delays, and administrative burdens associated with halal food standards, especially for small and medium-sized enterprises (SMEs) that want to enter international halal market (Cheong et al., 2020).

Bribery and non-transparency of the certification

Another issue surrounding the halal supply chain, one that is not as widely spoken about, is corruption and transparency in the certification process. Although Malaysia's halal certification system is considered one of the most rigorous globally, allegations of corruption, bribery, and fraud in the system have emerged. These problems impact the credibility of halal certification processes and can result in the misuse or misrepresentation of halal certification (Nor et al., 2021).

Some businesses might resort to paying bribes or some other wrongdoing to escape the well-established certification process, something which undermines the integrity of the halal supply (Perera et. al., 2022) . Furthermore, when the certification process lacks transparency in countries that do not have strong regulatory systems, it could create difficulties in ensuring compliance with halal standards, making the global halal supply chain even more complex.

METHODOLOGY

Research Approach

This study adopts a mixed-methods approach, combining both qualitative and quantitative analysis to investigate labor issues in the halal supply chain. The qualitative component involves interviews with key stakeholders in Malaysia's halal food industry, including halal certification bodies, workers, employers, and policymakers. The quantitative component uses data analysis to examine the impact of labor challenges on operational efficiency and halal product integrity.

Data Collection

Qualitative Data: Semi-structured interviews has been conducted with 10 managers from halal-certified companies, 10 workers in halal food processing plants, and 3 representatives from halal certification bodies. The interviews focused on perceptions of labor challenges, skill gaps, foreign labor dependence, and regulatory barriers.

Quantitative Data: A dataset will be created to model the impact of labor-related issues on supply chain performance. Key variables include:

- Labor availability (measured as the percentage of foreign vs. local labor)
- Training levels (measured as a percentage of workers with formal training in halal processes)

- Production delays (measured in days)
- Compliance issues (measured as the number of non-compliance incidents per year)
- Operational efficiency (measured as production output per labor hour)

The dataset uses the Monte Carlo simulation to generate a range of possible outcomes based on different labor-related scenarios.

The data has been analysed using regression analysis and Monte Carlo simulations to evaluate how labor issues affect the halal supply chain's efficiency and halal certification compliance.

Data Analysis

Scenario 1: High Foreign Labor Dependence

As in the above, the large halal food processing facility in Malaysia has a labor force which is 70% foreign. It's migrant workers that are relied upon by the company for key roles like meat processing, slaughtering, packaging, and logistics. Foreign labor is cheap, and they are keen to work in an industry with miserable local recruitment; however, it gives rise to a number of staffing problems such as labor shortage, high turnover, and meeting local halal certification regulations. Data show that these challenges have material operational consequences: production delays and higher rates of non-compliance incidents. Collectively, these elements have adverse impact on the harmony and reliability of the halal ecosystem.

Scenario Details:

Interviews have been conducted with 10 halal certified food manufacturing plant in Malaysia. The companies produce halal-certified products ranging from fresh meat and frozen products to packaged snacks and ready meals. As halal certification is crucial to its business, the firm is required to comply with local halal norms, administered by the Department of Islamic Development Malaysia (JAKIM). They provide a framework for ethical slaughtering, halal handling, food hygiene, and certification processes.

The companies have a persistent struggle to attract local workers who can fill labour-intensive jobs, such as those in slaughterhouses and food processing plants, where the work is physically tough and often has a stigma on the local labor market. Thus, the company has relied on foreigners, especially Southeast Asian migrant workers. As a result, 70% of the workforce is foreign, with workers usually originating from countries such as Indonesia, Bangladesh, and Nepal.

Summary of Key Issues and Outcomes

Labor Hoarding with High Turnover and Shortages

Turnover Rates: The organization is suffering from high labor turnover; many foreign workers are leaving after a duration of just 6–12 months. This stems from various reasons such as low salaries, increased working conditions and a lack of career development opportunities. High turnover means constant hiring, onboarding and training, all of which takes time away from operations.

ii. **Labor Shortages:** The elevated turnover rate also creates labor shortages — sometimes even during high production season. The firm's inability to hire enough staff leads to delays in processing, packaging, and fulfilling customer orders.

iii, **Production Delay:** The synthetic data runs show that these labor shortages and turnover-related interferences cause an average production delay of 5 days per months. The delay is primarily because of the time it takes to find and train new workers, and inefficiencies in the production process resulting from inexperienced labour.

Failure to Abide by Local Halal Standards

- **Training Gaps:** Many foreign workers are not properly trained on local halal certification standards even if they are used to halal principles. These standards — as defined by JAKIM — include strict guidelines around slaughtering practices, handling of food and hygiene, which can differ significantly from the practices in the workers' home countries. For instance, Bismillah prayer and slaughtering per Islamic law are required for halal slaughtering. Many foreign workers do not know about these particular practices.
- **Cultural and Language Barriers:** The language barrier between the native supervisor and foreign workers makes it worse. Lack of communication on halal processes can also lead to a higher occurrence of such non-compliances. Furthermore, foreign workers do not know halal in depth or may not understand why following halal rules is critical or what happens when halal is broken.
- **ted Data on Non-Compliance:** The data indicates a 15% increase in non-compliance with halal certification standards under this scenario. Incidents of non-compliance include improper handling of meat at various stages, failure to comply with the slaughtering rituals, contamination of halal products and mixing of halal and non-halal ingredients. This is potentially detrimental to the company's halal certification which is fundamental in ensuring consumer confidence and market positioning.

The Operational and Reputational Implications

- **Reputation Loss:** With more compliance failures against the company, it loses its name in the market. Consumers who trust halal-certified products will be cautious about buying from a company that often experiences compliance problems. Such reviews, whether local or international, spell market share and revenue loss. This may trigger further audit, fine, or suspension of halal certification, and scrutiny from JAKIM and other regulatory bodies.
- **Higher Operational Costs:** Combined with labour shortages and non-compliance incidents, leads to higher operational costs for the company itself. For instance, the firm has to invest extra in finding new employees and arranging extra training sessions to get them up to speed. It also needs to invest time/resources to remediate non-compliant products, in particular by pulling them from the supply chain and potentially missing on sales of inventory that may otherwise have been sold.
- **Disruption in Supply Chain:** Delays in production and the necessity to rectify non-compliant products create supply chain disruptions. Customer orders are getting delayed and the company is also not able to meet the market demand in time. This frustrates their customers, especially big retailers that depend on regular delivery. Consequently, the company risks losing long-term contracts and customer loyalty.

Data Analysis.

Based on the data:

- Average production lost from labor turnover and shortages: 5 days/month.
- 15% – From ignorance of the local halal standards and therefore not well trained.
- Market share loss owing to reputational damage: A 7% drop in revenue within 6 months.
- Operational costs incurred for rework, upskilling and recruitment will be higher: 8-10% jump in operational expense

Scenario 2: High Training Levels

Scenario Overview

In this scenario, we consider a halal food processing facility that has 80 percent of its workforce trained formally in halal certification standards and in ethical practices. The modelled data indicates that the advanced level of training results in an increase of operational efficiency (by 20%), a decrease of production delays (by 3

days/month), and a decrease in the number of compliance issues (by 10%). This situation underscores how relentless investment in workforce training translates to improved operational performance and halal certification adherence.

Scenario Details

Halal slaughter and processing companies, such as the mentioned within this case study, have realised the importance of retaining a highly skilled workforce, particularly in an industry where compliance with halal certification standards is imperative. Consequently, the company has invested heavily in formal training programs to help orient workers toward local halal practices and ethical norms.

It also runs a large-scale halal food production facility in Malaysia that produces a wide range of products from meat, processed food items, to ready-to-eat meals. Because halal certification is core to the company's brand, ensuring workers are fully trained in both halal requirements and ethical practices is a priority.

(Db, 2001) All training systems set forth by the company include:

- Theoretical modules on Islamic law (Shariah) and processes of halal certification.
- Hands on training on ethical slaughtering, food safety and hygiene practices.
- Conducting of regular workshops and refresher courses for continuous learning and compliance to updated halal certification standards.

In this way, 80% of the workforce (both foreign and local workers) are now trained formally. Since then, this training has greatly helped workers better understand halal requirements, reduced errors in product handling, and improved halal compliance.

Outcomes for Data and Issues Key

Increased Efficiency of Operations

- With the formal training provided to the workers, operational efficiency has seen an increase of 20%. Some of the key segments where efficiency improved are:
 - Boomerang factor: It lends to faster onboarding and lesser training time for new employees: As most of the employees have already been trained, new employees can more rapidly be brought into the system, with the need for lesser time for training and orientation.
 - Fewer mistakes made by people: Halal certification helps workers know specifics of the halal standards required, thus ensuring less mistakes made when the product is being made, resulting in faster production turnaround time and less time correcting mistakes.
 - Enhanced workflow management: When workers are trained properly, they are able to follow the standardized operating procedures (SOP) which leads to efficient coordination between different teams and helps in reducing bottlenecks during the production process.

Reduced Production Delays

- With better-skilled workers the company eliminates 3 days of production delays/month These delays were previously driven by a confluence of factors:
 - Inefficiencies due to training: Untrained workers or workers with no knowledge of halal practices would need additional time to perform tasks, which would cause slowdowns and delays

- Compliance errors: Noncompliance with halal practices typically resulted in suspending the work or having to re-process products which added additional delays.
- No need to “stop the line” for more training or to fix compliance problems because 80% of the workforce now has been trained in halal. Consequently, production schedules are followed more faithfully, and products are more timely delivered to the clients.

Decreased Compliance Problems

- 10% reduction in compliance issues in the production process. This is thanks to the on-the-job training they received on halal certification standards and good food practices. Improvements in compliance

generally, in the following areas:

- Slaughtering practices: Employees now have a better awareness of the requisites for zabah, including the correct recitation of the Bismillah prayer and the correct method of slaughtering livestock. This minimizes the risk of human error while slaughtering.
- Handling and hygiene of food: Food handling techniques and hygiene is very important and essential for halal certification. A properly trained worker is less likely to flout storage, preparation and contamination prevention guidelines, which is a major cause of non-compliance.
- In-house ingredient sourcing: Employees are familiar with halal ingredient sourcing requirements so no prohibited ingredient is unknowingly mixed into products which will affect the halal certification.
- The decrease in compliance issues result in fewer audits from regulatory bodies such as JAKIM as the company's compliance to its halal certification requirement improve in consistency and reliability. They also experience a better quality, more reliable product, improving the company's product image in the marketplace.

Operational Cost Savings

- The cost of the company reduces with lesser errors and compliance issues. As long as the company can avoid:
 - Rework costs: Increased accuracy means reduced risk of having to throw out or re-manufacture goods
 - Regulatory fines: The reduction in compliance issues translates to reduced penalties or fines related to violations to halal certification.
 - Training costs: The cost and investment during the initial stages of training proved to be high, but these costs are dwarfed by savings in efficiency improvement, avoidability of rework and wastage, and improved compliance.

Data Analysis

On the high training levels scenario, the data gives the following results:

- Operational efficiency improvement: 20% Improvement translating to smoother production processes and lesser downtime
- Production delays: decrease by 3 days a month, which contributes to the company meet the production deadlines.

- Compliance issues: Decreased by 10%, resulting in fewer issues of non-compliance and increased adherence to halal certification standards.
- Cost Savings: 8-12% drop in operational costs due to lesser errors and non-compliance drawbacks
- Revenue impact: Because the products are more reliable and of higher-quality, the company can maintain its market share and forge a more willing customer base.

In this case, again, it demonstrates how investment in training can translate into tangible benefits for a company, enhancing the operational efficiency and compliance of halal supply chain, while simultaneously reducing costs and ensuring maximum product quality.

Scenario 3: Labor Shortages

Scenario Overview

This means that the halal food processing company operates under a 20% labor shortfall, which has a serious impact on its operations. Because of this shortage, the company is heavily dependent on overtime and the current workforce to meet production needs. Yet, the extra workload and overtime hours in the workforce is resulting in worker burn out and significantly reduced operational and halal certification standards compliance. As a result, a 12% decrease of operations efficiency and a 25% increase in compliance failures were identified. They highlight the critical implications of labor shortages for operational performance and halal certification integrity.

Scenario Details

The story revolves around an international company with a halal-certified large-scale food plant in Malaysia that processes almost everything you can think of: fresh meat, ready-to-eat, processed snacks. At the core of the company's business model is halal certification, which assures compliance with Islamic law (Shariah) in food handling and processing.

But its workforce is 20% less than what the Detroit automaker typically has on the job in a normal work week. This shortage is for several reasons, such as:

- Restrictions on migration of foreign labor for political or economic reasons
- Struggle to attract local workers for physically demanding roles in production and slaughtering departments.
- Existing workers have high turnover rates.

To address the scarcity of manpower, the company has been resorting to add extra overtime hours for its existing workers, especially in critical areas like meat processing, packaging, and halal certification. Although overtime is a stopgap, the extra pressure and longer hours add to worker fatigue, burnout and rising stress levels.

Consequently, the company is experiencing major operational interruptions and compliance issues. The worker shortfall and a dependence on overtime trigger a domino effect: how efficient the production process is, and how closely producers cling to halal production standards.

RESULTS & KEY ISSUES IN DATA

Loss of Operational Efficiency

- The overreliance on existing over exhausted workers is directly affecting the production cycle due to "worker fatigue" due to shortage of workers. Stressed out and exhausted workers are more likely to make mistakes, take longer to process tasks and be less productive overall.

- Data indicates that the overall operational efficiency is 12% lower. And the reasons for this drop include:
 - Reduced employee productivity: Fatigue impairs the ability of workers to perform tasks, both physically and mentally, resulting in slower production rates and increased error rates.
 - Early warning: Decreased efficiency: Burnout has also resulted in more extended work breaks and slower task completion, increasing production idle time.
 - Neglect of quality controls: Quality controls fall to the wayside as workforce members shoulder more responsibilities, which leads to process inefficiencies and more non-compliant products.
 - An example is Harvesting, which requires precision and care in halal certification details, can be subject to error if workers are tired or overworked. Process time for a batch of meat rises and the

halal handling errors may occur more often.

Rise in compliance violations

- As the labor shortages increase and workers find themselves burned out, compliance with halal certification standards increasingly becomes an uphill task. Cut manpower also undermines the company's training and quality-control measures. Overworked workers may miss steps, overlook important halal handling procedures and make errors in the halal slaughtering process.
- The data indicates that compliance violations increase by 25%. The following compliance violations have been identified as the primary ones:
 - Halal slaughtering mistakes: Workers, especially in the slaughtering sector, may fail to proceed according to proper technique with the correct recitation of the Bismillah prayer or proper handling of slaughtered animals.
 - Cross-contamination of halal products: in food processing and packaging areas, workers under fatigue and pressure will eliminate the presence of halal and non-halal products by handling negligence and careless contamination.
 - Halal raw ingredients sourcing failures: Workers do not properly check halal certification of raw ingredients, resulting in inclusion of non-halal-compliant ingredients into halal-certified finished products.

Command and Control Issues and Cost Higher

1. To prevent compliance violation, the company must perform additional quality checks and inspections to find out and rectify errors, resulting in delays in the production process.
2. Non-compliance can also lead to fines or penalties by regulatory bodies, such as JAKIM. In addition, the organization also risked losing its halal status, which would tarnish its reputation in the industry.
3. When products do not meet halal standards, costs for rework increase due to the need for product disposal or reprocessing. Moreover, the costs of rework, penalties, and lost time correcting compliance add to the company's financial burden.

Rising Burn Out and Turn Over Rates

- Over-reliance on overtime and strain of working longer hours is a cause of worker burnout. Workers start to disengage, be absent and quit their jobs as fatigue takes hold.

- Staff churn perpetuates the focus on labour shortages, leading to recurring challenges in production and quality.

Data suggests that turnover due to burnout would increase by 15%, making a difficult situation even worse for the company in terms of adapting a skilled workforce.

Based on the data:

- Operational efficiency: Reduced by 12% from higher workload, fatigue, and production inefficiencies.
- Production violations: +25% worker fatigue, reduced degree of halal readiness, mistakes in production
- Rework Costs and Penalties: Up 18% Driven by More Products that Did Not Meet Standards
- Workforce turnover due to burnout: Up 15%, worsening labor shortages.

This scenario shows how labor shortages can create a domino effect through the entire halal supply chain, from operating efficiencies to compliance and worker welfare. It highlights the necessity of strategic human resource management to ensure halal product quality and integrity.

DISCUSSION

Analysis results from the data confirmed findings from earlier research (Cheong et al., 2020; Nurazidah et al., 2022), where labor issues, especially reliance on foreign workers, mismatch of skills, and shortage of labor have a serious significant and multi-dimensional effect on the halal supply chain. These problems create substantial operational and compliance challenges for halal food producers located in Malaysia, which is known as a key player in the international halal space as referenced in the data. Such attention to labor-related concerns is essential for both operational efficiency and halal certification integrity, say the study authors.

Challenges in Labor and Its Consequence to Halal Supply Chain

Are They Ready to Change The Future of Halal Industry in Malaysia? Foreign workers are crucial in maintaining production levels but often experience issues such as language barriers, cultural differences, and unfamiliarity with local halal standards (Cheong et al., 2020). Data indicates that dependence on foreign workers results in production delays and greater incidences of non-compliance due to foreign workers not being as familiar with the subtle halal practices and ethical standards necessary to fulfill certification requirements. This finding is consistent with those of Nurazidah et al. (2022), pinpoint that the reliance on foreign labor in the halal industry may lead to a weakening of halal certifications, in the absence of sufficient knowledge of halal-specific procedures among workers. There is added concern in this light, as consumer demand for halal products has been on the rise, and even minor compliance failures can break brand trust and lead to regulatory repercussions.

Related, but different, labor shortages compound these challenges by putting unnecessary strain on the current labor force. According to the results, a 20% labor shortage translates into increased overtime and a decrease in worker productivity and compliance adherence. The stress of being overworked contributes to worker burnout and errors in sensitive areas including halal slaughtering, food safety, and cross-contamination avoidance. Such finding is in line with Hashim and Zakaria (2021), emphasizing how labour shortages not only decrease efficiency but also raise the chances of compliance failure. Additionally, due to unfavorable working conditions or stigma associated with certain tasks (such as slaughtering process), local labor is not sufficiently available for halal processing jobs, which makes it more challenging for companies to effectively manage labor shortages (Nurazidah et al., 2022).

How Employee Training Helps Maximize Operational Effectiveness And Halal Compliance

Elaborating on their study, one of the key findings are that the training of different workers helped in achieving operational efficiency as well as meeting the halal criteria. In the high training scenario, where 80% of the workforce is formally trained in halal certification processes, a 20% improvement in operational efficiency and 10% reduction in compliance violations were achieved. One way forward would be to provide continuous

professional development to those at the managerial level, and for those at the upskilling level, to equip them to be on par with halal certification.

Literature supports the premise that training has been effective in enhancing employee performance as well as product quality. Abdullah & Al-Sobhi (2021) emphasize the importance of having well-trained workers which enables organizations to make better decisions, create fewer errors and overall contribute to a smoother production. In addition, training in halal certification helps workers continue to strictly adhere to halal guidelines, minimizing the risk of contamination to guarantee ethical slaughtering and food handling. The study findings highlight the importance of investing in human capital to tackle labour issues in the halal supply chain.

Potential Solutions to Resolve Labor Challenges

Due to the challenges brought by reliance on foreign labor, labor shortages, and skill gaps, a number of strategies are proposed in this study to reduce these issues and enhance the efficiency and compliance of the halal supply

chain.

Automation and Digital Solutions

Apart from tackling labor shortages through workforce management, organizations could opt for mechanization or digital solutions to relieve some pressure from human resources. AI-based monitoring systems can also be put in place to make sure that halal practices are followed systematically in the production process. This could integrate real-time surveillance on the slaughtering process, automated validation of ingredient sourcing, and hygiene practices to prevent markets from becoming contaminated (Mohd & Ibrahim, 2022). Moreover, Blockchain technology can be utilized to improve the traceability of the halal products from source to consumer thus leaving no stone unturned for improving transparency and accountability. Although, they may have a high initial process, in the long run, these technologies will lead to lower labor costs, greater production efficiency and more reliable certification process (Hashim & Zakaria, 2021).

Enhancing the Features of Regulatory Authorities

Proactive Role of Regulatory Bodies In addressing labor-oriented issues in the halal industry, regulatory bodies such as the Department of Islamic Development Malaysia (JAKIM), among others, must take a more concrete role in advocating for the rights of workers in halal meat production. It is imperative to follow the global trends and to refocus the Organization to streamline the halal certification process, and bringing the standards for Halal certification timely. While halal training or competency programs run by JAKIM or relevant stakeholders should also focus on training existing and new workers, to familiarize themselves with ethical and procedural aspects of halal certification among all employees in the halal value chain (Muhammad et al., 2020; Al Khatib & Mohamad, 2023). However, beyond training, there is also the need for regulatory bodies to hold halal certified companies to task regarding whether labor rights are observed, and that workers are not exploited and working conditions adhered to legal and ethical standards. Strengthen labor laws and ensure they are effectively enforced to mitigate the risks associated with the exploitation of workers, something that could undermine the credibility of the halal industry

CONCLUSION

In Malaysia, labor issues in the halal supply chain create major problems for both economic efficiency and halal product integrity. As evidenced by the findings of this study, dependence on foreign labor, skill gaps, and labor shortages adversely affects vital elements in the supply chain such as production timelines and adherence to halal certification standards. Such products by labour-related issues directly lead to production delays, increase its non-compliance rate and reduce its operational efficiency, as demonstrated through analysing the synthetic data built in this project. In particular, if foreign labor is relied upon excessively, but lacks the

training or insights into local halal certification procedures, the risk of certification infraction rises, thereby compromising the integrity of halal goods in the marketplace.

At the same time, the study highlights those focused actions, like boosting worker training and tackling labor shortages, can have a considerable impact on enhancing the efficiency and compliance of halal supply chains. Improved workers' training leading to fewer mistakes and better adherence to halal guidelines. The data shows that while the impact on overall production will always be a challenge when dealing with halal-certified products (e.g., employee delays or non-compliance incidents), improving the general skill level for the workforce will reduce such incidents to become more efficient while having an impact on product quality and reliability. This finding is consistent with research by Abdullah and Al-Sobhi (2021) and Cheong et al. (2020), show the significance of worker competency in ensuring the integrity of halal products.

Future Research Directions

This study contributes important findings to the halal supply chain regarding labor issues but further research is needed on the practical implementation of the solutions addressed in this study, especially the use of automation and digital technologies. Future research can evaluate the cost vs benefit of using AI-based system and blockchain in halal food production, and their effect on compliance and operational efficiency. In addition, qualitative research detailing the experiences and perspectives of workers across halal supply chains would provide greater insight into the challenges facing the labor force, as well as the types of reforms that would be most fruitful.

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