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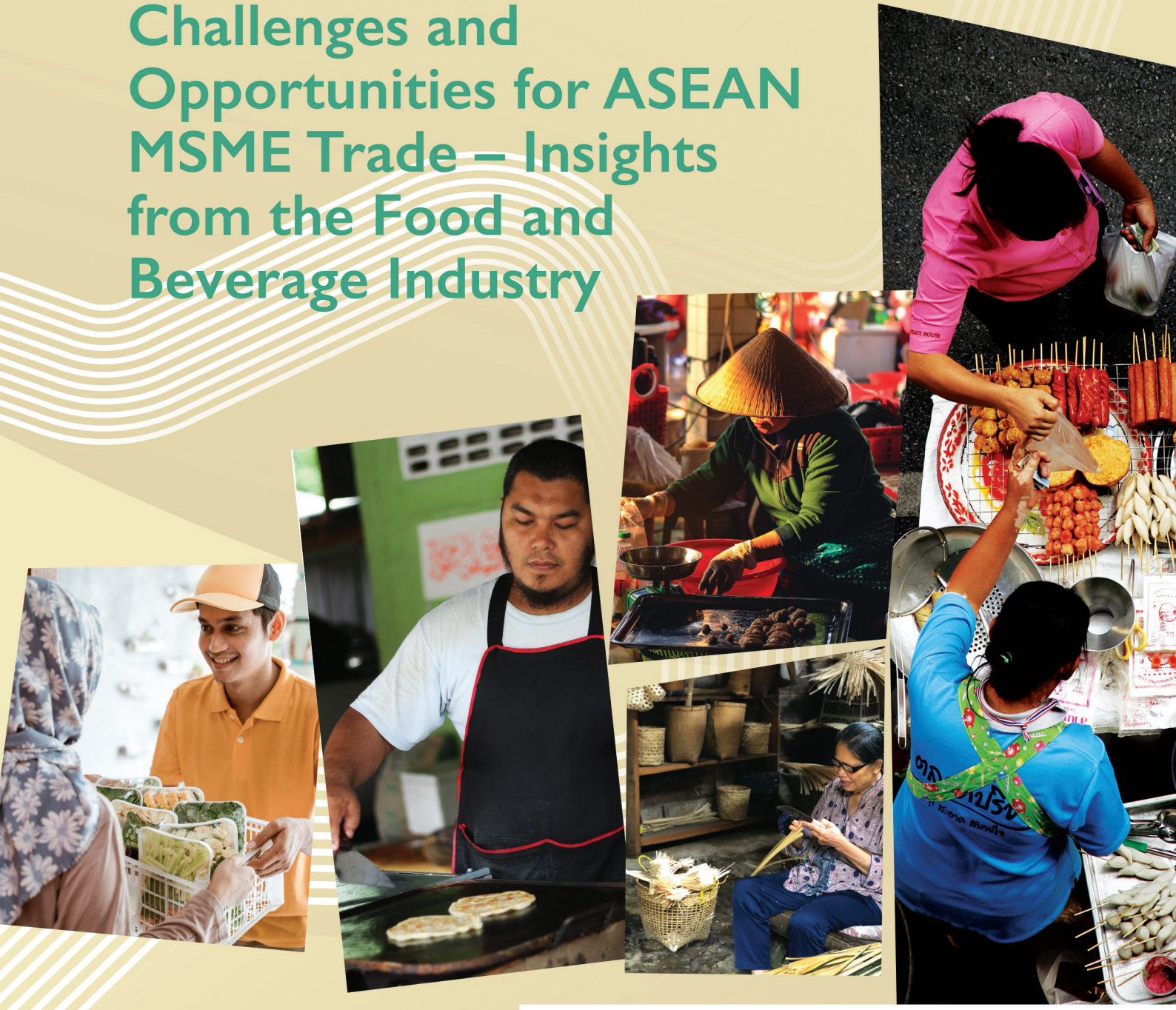
Challenges and Opportunities for ASEAN MSME Trade – Insights from the Food and Beverage Industry



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List of Terms/Abbreviations

ABC: ASEAN Blockchain Consortium

ACFTA: ASEAN-China Free Trade Area

AANZFTA: ASEAN–Australia–New Zealand Free Trade Area

AMS: ASEAN Member States

API: ASEAN Prosperity Initiative

ASW: ASEAN Single Window

ASEAN: Association of Southeast Asian Nations

ATIGA: ASEAN Trade in Goods Agreement

BKMH: Halal Food Control Division

BPJPH: Halal Product Assurance Organizing Body

BoPL: Back-of-Pack Labels

CEPT: Common Effective Preferential Tariff

CICOT: Central Islamic Committee of Thailand

DEFA: Digital Economy Framework Agreement

EU: European Union

FAO: Food and Agriculture Organization of the United Nations

FAF-SP: Food, Agriculture and Forestry Strategic Plan

MIDA: Malaysian Investment Development Authority

F&B: Food and Beverage

FDA: Food and Drug Administration

FoPL: Front-of-Pack Labels

FoPNL: Front-of-Pack Nutrient Labelling

FTA / FTAs: Free Trade Agreement(s)

GHP: Good Hygiene Practices

GMP: Good Manufacturing Practices

GTA: Global Trade Alert

HACCP: Hazard Analysis and Critical Control Point

HALCERT: Vietnam Halal Certification Authority

IDCP: Islamic Da'wah Council of the Philippines

IDEAS: Institute for Democracy and Economic Affairs

IoT: Internet of Things

ITA: Investment Tax Allowance

JAKIM: Department of Islamic Development Malaysia

LPI: Logistics Performance Index

MATRADE: Malaysia External Trade Development Corporation

TFA: Trade Facilitation Agreement

MRA / MRAs: Mutual Recognition Arrangement(s)

MSMEs: Micro, Small, and Medium-Sized Enterprises

MUI: Majlis Ulama Indonesia

MUIB: The Islamic Religious Council (Brunei Darussalam)

MUIS: Islamic Religious Council of Singapore

MPAC: Master Plan on ASEAN Connectivity

NCMF: National Commission on Muslim Filipinos

NGO: Non-Governmental Organisations

NPPOs: National Plant Protection Organisations

NTMs: Non-Tariff Measures

OECD: Organisation for Economic Co-operation and Development

PEDs: Priority Economic Deliverables

PRA: Pest Risk Analysis

ROO: Rules of Origin

SIDEC: Selangor Information Technology & Digital Economy Corporation

SPS: Sanitary and Phytosanitary

TEUs: Twenty-foot Equivalent Units

TLCs: Traceability Lot Codes

UNCTAD: United Nations Conference on Trade and Development

WTO: World Trade Organization

Foreword

Global trade in recent years has been marked by volatility; shaped by tariff hikes, supply chain disruptions, and growing geopolitical tensions. For the Association of Southeast Asian Nations (ASEAN), this shifting landscape presents both challenges and opportunities. The region commands significant economic weight, with total trade exceeding over USD3.8 trillion and foreign investment flows of USD226 billion in 2024 (MITI, 2025), and is expanding with the recent inclusion of Timor-Leste.

Under Malaysia's ASEAN Chairmanship theme of "Inclusivity and Sustainability", the 2025 Priority Economic Deliverables (PEDs) focus on advancing regional trade integration. Initiatives such as the ASEAN Trade in Goods Agreement (ATIGA) and ASEAN-China Free Trade Area (ACFTA) 3.0 Upgrade Protocol aim to strengthen connectivity and market access across the region. The PEDs also promote responsible investment, support micro, small, and medium-sized enterprises (MSMEs) in the green transition, and seek to unlock ASEAN's USD2 trillion digital economy potential by 2030 (MITI, 2025).

The next stage of regional integration will need to go beyond tariff reduction. Aligning standards and regulations will be key to ensuring that businesses, especially MSMEs, can compete on fair terms and take part more fully in regional trade. Continuing to leverage trade for economic development demands coherent policies, stronger regulatory systems, and deeper cooperation to prevent fragmentation.

The ASEAN Integration Report 2025 — published under the ASEAN Prosperity Initiative (API) — focuses on trade policy and compliance in the food and beverage (F&B) sector, where regulatory fragmentation and uneven logistics performance continue to constrain regional trade and food security. Between 2022 and 2024, ASEAN's F&B exports grew by 17% to USD43.5 billion. Yet only 23.4% of this trade flows within the region. The persistence of complex regulations, logistical constraints, and patchy digitalisation continue to hinder firms from trading more easily across borders.

MSMEs are central to the F&B sector, from farming and food production to distribution and retail. They create jobs, support local communities, and help keep food supply chains running. MSMEs could contribute significantly more if they did not face steep challenges such as meeting export requirements, securing finance, and adapting to evolving trade regulations.

Building a more inclusive and sustainable F&B trade ecosystem will require targeted measures. MSMEs, women, and youth entrepreneurs must have the support they need to integrate into regional and global value chains. Expanding access to finance, digital tools, and capacity-building will increase participation in cross-border trade. By aligning food regulations, adopting comprehensive digital sanitary and phytosanitary (SPS) systems, and enhancing mutual recognition arrangements, ASEAN can create a trusted trading environment that supports innovation and protects consumers.

Looking ahead, ASEAN's Post-2025 Vision signals an important turning point. The region must move beyond aspiration, translate commitments into results. Delivering on this vision will require cooperation and the political will to embrace openness. In doing so, ASEAN can strengthen its central position in global trade and shape a more inclusive, resilient and sustainable regional economy.

Aira Ariana Azhari
Chief Executive Officer

Executive Summary

ASEAN's Food and Beverage (F&B) sector is globally competitive, yet trade between ASEAN countries remains limited and fragmented. While tariffs on most intra-regional trade are already low or near zero, firms continue to face significant barriers in the form of non-tariff measures (NTMs), including divergent food standards, as well as uneven logistics integration. As MSMEs are the sector's core producers, scale considerations and produce perishability interact to create a sector-specific trade challenge. For ASEAN to deliver on its Vision 2045 targets for inclusive and sustainable growth, the ability to harmonise regulations, accelerate digital transformation, and integrate MSMEs — including women-led enterprises — into regional value chains will be key.

This report examines how regulatory divergence, digitalisation gaps, and logistics barriers shape the competitiveness of ASEAN's F&B trade. Drawing on consultations and interviews in Malaysia and Thailand, it identifies key structural challenges, evaluates the potential of digital and institutional reforms, and proposes practical steps to build a more integrated and inclusive regional trade environment.

Key Discussion Points

- **Regional integration remains shallow:** ASEAN's F&B exports have expanded nearly fourfold since 2003, but intra-ASEAN trade remains weak due to low supply chain complementarity.
- **Fragmented labelling standards and certifications increase compliance burdens:** Differences in nutrition labelling, language requirements, and conformity assessments continue to create overlapping costs that disproportionately affect MSMEs.
- **Halal certification shows how inconsistent rules can limit ASEAN's ability to capture a growing market:** Inconsistent certification and limited mutual recognition hinder market growth. Malaysia's halal system offers a model for a harmonised ASEAN approach.
- **Digitalisation could transform compliance and traceability:** Tools such as digital SPS certification, QR-based labelling, and blockchain traceability can reduce costs and improve transparency. Several ASEAN Member States (AMS) have adopted digital or pilot SPS certification systems, but uneven implementation and limited SPS interoperability through the ASEAN Single Window (ASW) continue to restrict region-wide efficiency.
- **Women-led MSMEs face structural and systemic disadvantages:** Women dominate small-scale F&B production but face higher certification costs, longer customs clearance times, and lower digital access, limiting participation in regional value chains.

- **Logistics inefficiencies continue to act as hidden trade barriers:** Fragmented cold chain infrastructure, unpredictable border processes, and inconsistent de minimis thresholds raise trade costs and discourage formal participation by smaller firms.

Policy Recommendations

- **Harmonise regional nutrition labelling and adopt digital labelling (i.e. e-labels):** Advance a consistent front-of-pack labelling (FoPL) framework and complement this with interoperable QR-code back-of-pack labelling (BoPL). A combined approach would reduce duplication and production costs, enable multilingual updates without reprinting, strengthen traceability and product authentication, and support MSMEs through lower compliance burdens across markets.

- **Deepen digital SPS interoperability and traceability through the ASW:** Expand e-Phyto and e-SPS exchanges across ASEAN by enabling a dedicated ASW channel to the global e-Phyto Hub, reducing duplication and lowering system development costs for AMS. Complement this with mandatory lot code traceability at the product level, supported by enforceable penalties, to strengthen product authenticity and curb illicit trade.

- **Reform logistics systems to reduce costs and improve inclusion:** Harmonise de minimis thresholds to simplify low-value cross-border trade and provide clearer regional guidance on halal logistics to support compliance. In parallel, pilot shared container and pooled logistics schemes so MSMEs can consolidate shipments and avoid being pushed into informal channels when they cannot meet full container load requirements.

- **Strengthen cold chain logistics and use DEFA to advance future-ready regulation:** Expand MSME access to cold chain capacity and Internet of Things (IoT)-based monitoring through concessional finance, targeted training and public-private partnerships (PPP). Leverage the ASEAN Digital Economy Framework Agreement (DEFA) to develop regional standards for AI-enabled traceability, labelling, and risk-based inspection, ensuring regulatory systems modernise in step with digital trade and that MSMEs are able to participate.

1.0 Introduction

At the 46th ASEAN Summit in Kuala Lumpur, leaders adopted the ASEAN Community Vision 2045, which commits the region to "meaningful inclusive participation across all sectors" (ASEAN Secretariat, 2025a). This vision puts MSMEs at the centre of advancing the region's long-term development agenda, elevating their long-recognised role as the backbone of ASEAN economies.

Agriculture and food systems have also been identified as strategic priorities. The ASEAN Economic Community Strategic Plan 2026–2030 positions agriculture as an enabler of green growth central to the decarbonisation of regional supply chains. Complementary initiatives, such as the Food, Agriculture and Forestry Plan (FAF-SP) 2026–2030 and the Cooperation Framework for Food, Agriculture and Forestry Towards 2045, underline the sector's role in sustaining ASEAN's competitiveness in a shifting global economy.

While the policy agenda has become more ambitious, the regulatory environment has also grown more complex. The number of NTMs[1] in ASEAN rose from 1,634 in 2000 to 9,494 in 2020 (Naz et al., 2020), with F&B alone accounting for 56.8% of all measures (AFBA, 2018). These figures refer only to mandatory measures and do not include private measures, which have also been increasing rapidly in the F&B sector. NTMs are often introduced to protect health, safety, and environmental standards (Peters & Kaushik, 2024), but in practice their cumulative effect has been to increase trade costs (World Bank, 2012; UNCTAD & World Bank, 2018) and constrain entrepreneurial growth (World Bank, 2021). For MSMEs, which already operate on narrow margins, this complexity can be prohibitive.

However, reliance on aggregate NTM counts offers only a crude instrument for understanding the reality of trade barriers. While the number of measures is rising, statistics alone cannot capture the lived experience of firms that face them, nor the ways in which rules designed to protect public goods (such as food safety) may operate as competitive barriers for smaller businesses. The key issue in ASEAN is poorly designed implementation of NTMs, which often undermines intended objectives and increases compliance costs (Taglioni & Kee, 2025). Because these measures are applied uniformly across firms regardless of size, they impose disproportionately high business compliance costs on MSMEs. In effect, the measures obscure as much as they reveal.

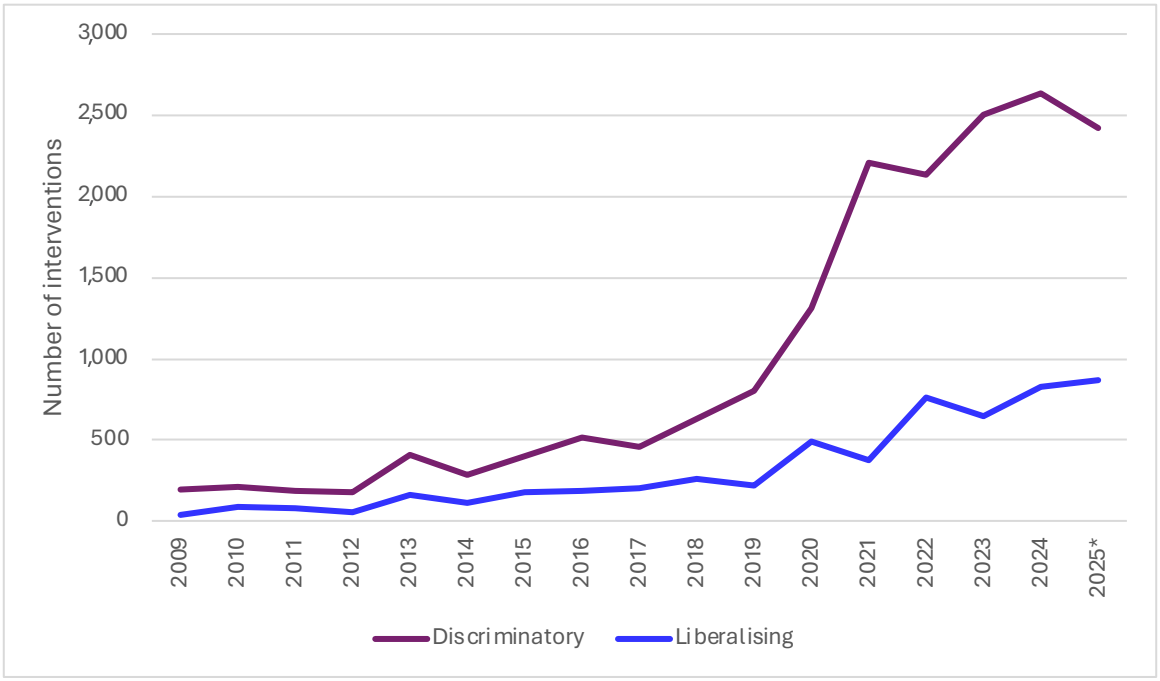
National and regional challenges are compounded by the shifting global trading environment. Globally, the number of discriminatory trade measures is rising, with Global Trade Alert (GTA) data showing that discriminatory interventions increased significantly vis-à-vis liberalising measures — reaching almost three times their number in 2024 *(see Figure 1)*. Last year, governments worldwide introduced 2,632 discriminatory measures compared to 825 liberalising ones. Since May 2022, more than thirty countries have resorted to food export restrictions, from Argentina's soybean meal ban to Malaysia's

[1] *NTMs are typically defined as "policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both" (UNCTAD, 2019).*

chicken export suspension and Indonesia's palm oil restrictions (Capri, 2022). Such measures, often described by policymakers as efforts at "friend-shoring" supply chains (OECD, 2025), are in practice interventions to secure domestic supply — highlighting the fragility of cross-border food trade.

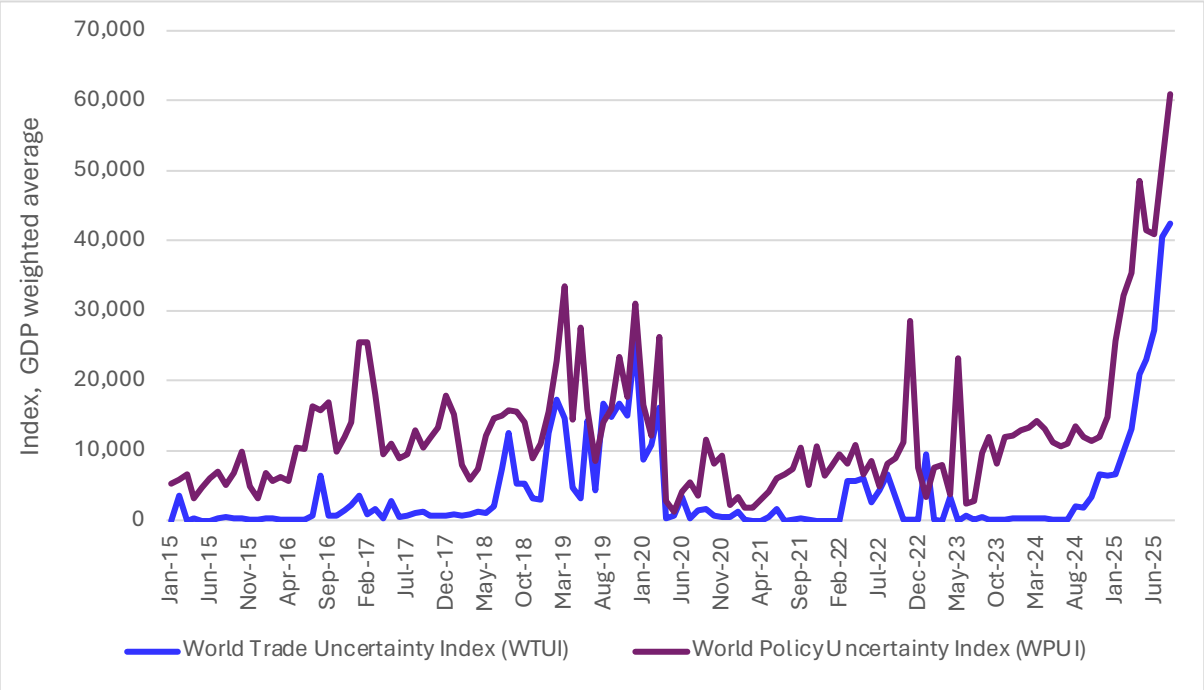
For ASEAN, where food supply chains are deeply interdependent and highly networked (Devadason, 2022), protectionist shocks highlight the need for resilient regional systems that can both safeguard food safety and keep trade flowing. And, growing global trade policy uncertainties *(see Figure 2)* stress the urgent need for inclusive trade frameworks that level the playing field and prevent MSMEs from being further marginalised in an increasingly protectionist world economy.

Figure 1: Discriminatory Interventions Have Outpaced Liberalising Ones Since 2018



Source: GTA
*Note: *Data current as of 23 September 2025 (at time of download); Liberalising measures are policies that reduce barriers to international trade and make it easier for foreign firms to operate in the domestic market; discriminatory measures are policies that increase barriers to international trade or create unequal treatment between domestic and foreign firms.*

Figure 2: Rising Uncertainty in World Policy and Trade



Source: World Uncertainty Index

This policy report seeks to lift the veil on these dynamics, that is how regulatory complexity, uneven implementation of NTMs, and external protectionist shocks collectively constrain MSME participation in ASEAN's F&B trade. It builds on the preceding ninth IDEAS' API Report, Inclusive Trade: Perspectives on Regulatory Challenges for MSMEs in ASEAN (Suntherasegarun et al., 2024), which framed the broader context of regulatory complexity and its implications for MSME participation in regional trade. This report turns its attention to the F&B sector, highlighting emerging regulatory and procedural challenges as viewed from the industry's standpoint. The F&B sector was chosen as it is both strategically important to global agri-food trade, and a sector disproportionately burdened by complex regulation. Considering the highly differentiated nature of the sector, combined with rapidly changing consumer preferences and evolving domestic demands, streamlining regulations, and procedures is not easy but necessary and demands sustained coordination and policy commitment.

While the core focus of this report is on MSMEs as a whole, it also recognises that advancing inclusive trade requires attention to gender dynamics, particularly given the significant role of women entrepreneurs in the F&B sector. As such, the report incorporates a gender lens in selected areas of analysis, with specific implications for women-led MSMEs *(see Box Article 2)*.

This study draws on semi-structured interviews with F&B MSMEs and experts in Malaysia and Thailand *(see Appendix A)*, combined with a series of consultations and focus group discussions with industry players and women MSMEs *(full profiles in Appendix B).* Malaysia illustrates the case of a regional hub with relatively advanced regulatory systems and integrated trade facilitation mechanisms, while Thailand exemplifies as a major agri-food exporter with extensive MSME participation embedded in global supply chains.

The remainder of this report is structured as follows:

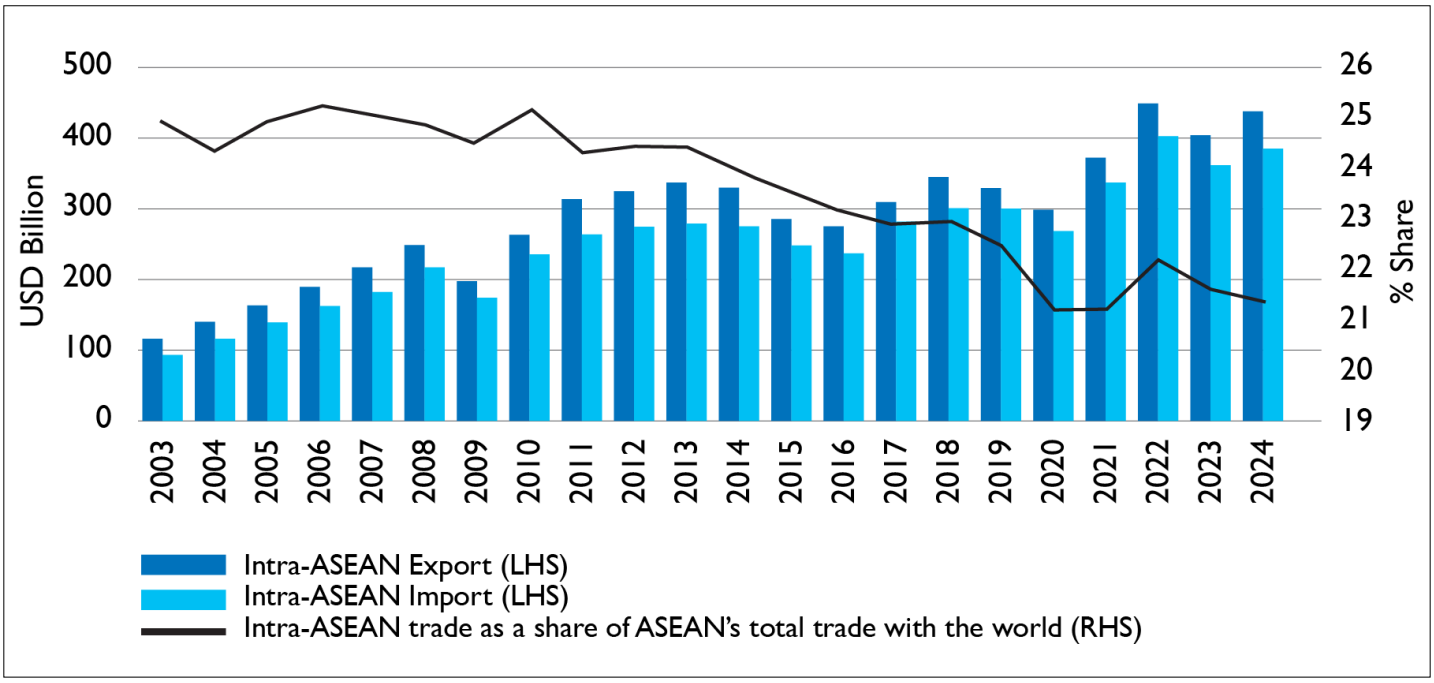
- **Section 1** examines the regional F&B trade landscape, highlighting ASEAN's growing global competitiveness but persistent integration gaps within the region.
- **Section 2** discusses challenges in standards, certification, and compliance, including fragmented food safety and halal frameworks.
- **Section 3** highlights the role of digitalisation and the opportunities for SPS systems.
- **Section 4** analyses logistics and distribution bottlenecks that undermine efficiency in regional food trade.
- **Section 5** concludes with policy recommendations and a summary.

2.0 Shifts and Trends in ASEAN's F&B Trade

ASEAN's F&B trade is growing, but integration remains structurally limited

Trade within ASEAN has nearly quadrupled over the past 20 years, but ASEAN still trades much more with third countries. Despite the increase in intra-regional trade from USD217 billion in 2003 to USD823 billion in 2024, ASEAN's trade remains predominantly outward-oriented, with intra-ASEAN trade accounting for only an average of 23.6% of total trade *(see Figure 3).* This persistently low share of intra-regional trade has been well established in the literature and continues to be identified as a structural feature of ASEAN's economic architecture (Devadason, 2022). And, despite extensive tariff liberalisation and ASEAN's wide network of Free Trade Agreements (FTAs), intra-regional trade has remained stagnant — far below the levels of intra-regional integration achieved within the broader ASEAN+3 grouping and the European Union (EU) (He & Ng, 2025).

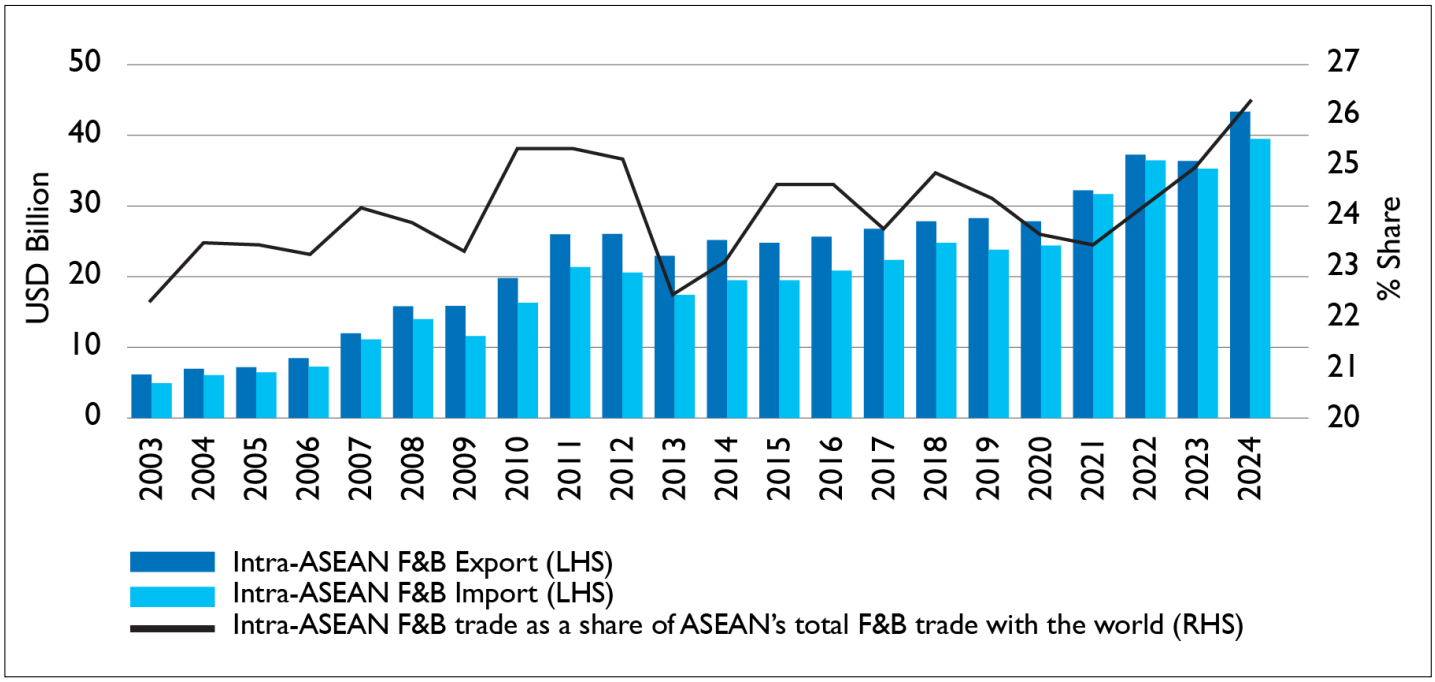
Figure 3: Intra-ASEAN Trade Remains a Small Share of ASEAN's Total Trade



Source: Authors' calculation from ASEAN Stats.
Note: Export and import flows (in USD billion) are shown on the left axis (LHS) and the share of intra-ASEAN trade to ASEAN's total trade with the world is shown on the right axis (RHS).

Intra-ASEAN trade in F&B remains limited and unevenly distributed, characterised by persistently low regional shares, little change over time, and high export concentration among a few AMS. Mirroring broader regional trade patterns, intra-ASEAN F&B trade[2] remains considerably low, averaging just 24.1% of the region's total F&B trade *(see Figure 4).* While total F&B exports have grown substantially in recent years, the share of intra-ASEAN trade has remained largely stagnant, rising only marginally from around 18.2% in 2003 to roughly 23.1% in 2024, despite over two decades of regional integration *(see Figures 5 and 6).* And regional export performance also remains highly concentrated. In 2024, Indonesia, Thailand, Vietnam, and Malaysia accounted more than 80% of ASEAN's total F&B exports, equivalent to USD155 billion that year and roughly USD700 billion across the 2020–2024 period. Their dominance reflects structural comparative advantages and established processing industries. Malaysia and Indonesia retain strengths in palm and soybean oil exports, while Thailand's competitiveness lies in cereals and coconut oil and Vietnam in rice and coffee (TradeImeX, 2025). These four countries also recorded an average food export growth rate of 41% over the same period, reinforcing their central role in ASEAN's food trade network.

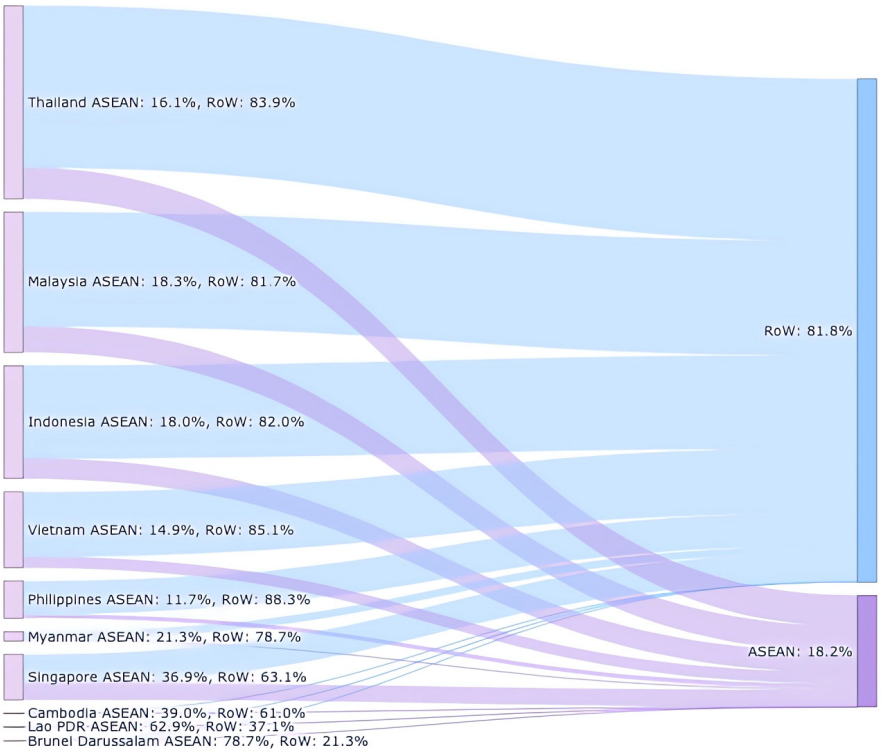
Figure 4: Intra-ASEAN Trade in the F&B Sector is Similarly Low



Source: Author's compilation from ASEAN Stats
Note: Export and import flows (in USD billion) are shown on the left axis (LHS) and the share of intra-ASEAN trade to ASEAN's total trade with the world is shown on the right axis (RHS); List of HS Codes related to the F&B Sector can be found in Appendix C.

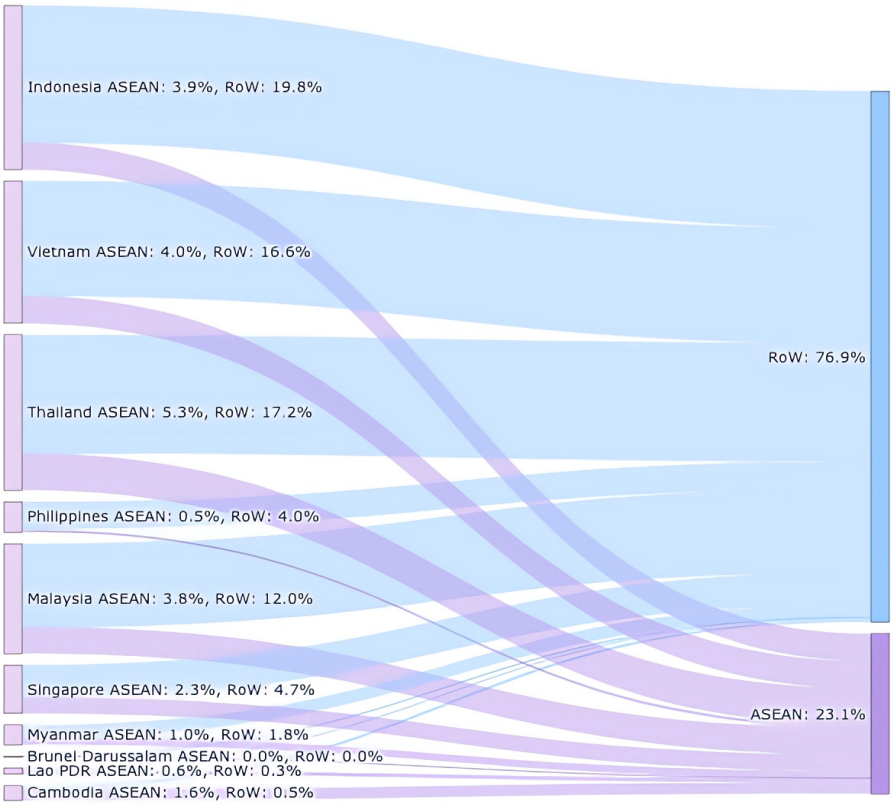
[2] *The main two-digit HS codes for F&B products are in Chapters 2 through 22, except for HS 5,6 and 14 (see Appendix C).*

Figure 5: ASEAN F&B Share of Exports by Destination (2003)



Source: Author's compilation from ASEAN Stats

Figure 6: ASEAN F&B Share of Exports by Destination (2024)



Source: Author's compilation from ASEAN Stats

ASEAN's export markets remain geographically diversified, with China (13%), the United States (11.3%), India (6.4%) and Japan (5.7%) as the main destinations in 2024. These patterns have stayed relatively stable across the five-year period, reflecting consistent demand from key global trading partners. However, this outward orientation contrasts with limited progress in intra-regional trade integration. Intra-ASEAN exports reached USD35 billion in 2024, representing just 23.4% of the region's total food exports, compared with around 60% among EU member states (Oizumi, 2020). This disparity highlights ASEAN's continuing challenge of deepening regional supply chain connectivity despite its success in global markets.

Despite these limitations, intra-ASEAN food exports are expanding faster than extra-regional trade. Between 2020 and 2024, intra-regional food exports rose by 58.3% compared to 43% growth in exports to the rest of the world. The stronger intra-regional growth has been supported by gradual progress in trade facilitation through the ATIGA, which consolidated previous tariff reduction frameworks under the Common Effective Preferential Tariff (CEPT) scheme and expanded their scope to cover NTMs, rules of origin (ROO), and SPS measures (Thanh Doan and Rosenow, 2019). In 2018, higher utilisation of ATIGA was linked to a 35% increase in intra-ASEAN trade, particularly in agriculture and food industries (Thanh Doan and Rosenow, 2019). Across AMS, products related to meat, vegetables, fruits and nuts, and the milling industry (HS 02, 07, 08, and 20) show some of the highest FTA utilisation rates (exceeding 95%) (ERIA, 2021). Continued and consistent implementation of such agreements is likely to further strengthen intra-regional trade integration.[3]

Several underlying structural factors explain this imbalance between ASEAN's strong global export performance and its relatively weak intra-regional trade. ASEAN's agri-food exports remain dominated by low value-added goods, with limited processing capacity reducing profitability and incentives for intra-regional trade (Mizik, 2021). Weak trade complementarity across AMS further restricts potential trade flows, as one country's export basket does not always match the import requirements of others (Devadason 2024). For instance, while Malaysia's imports align well with Thailand's export capacity, Indonesia's agricultural profile shows less complementarity with other ASEAN partners. However, even where complementarities exist — and where tariff liberalisation through ATIGA is already in place — intra-ASEAN trade remains lower than expected, an indication that behind-the-border barriers continue to impede market access. Thus, the constraint is not just what ASEAN trades, but how it trades, reinforcing the need to address the regulatory frictions that disproportionately affect MSMEs, the focus of this report.

Overall, ASEAN's F&B sector remains globally competitive but regionally fragmented, with supply chains that are largely oriented toward global rather than ASEAN markets. The region's global success contrasts with unrealised intra-regional trade potential, especially in processed foods, vegetable oils, and higher-value food products, where only about half

[3] The ATIGA was upgraded in 2025 to deepen trade liberalisation within AMS by expanding concessions for intra-ASEAN goods, strengthening MSME participation, and enhancing supply chain connectivity, among other measures (Antara News, 2025).

of total export potential[4] has been achieved. Addressing this imbalance and promoting inclusive and resilient trade requires understanding and addressing policy causes in areas like processing capacity, standards harmonisation, and NTM streamlining. This sets the context for examining the next section, ASEAN's trade policy and compliance bottlenecks in the F&B sector.

[4] Export potential refers to estimates generated by the ITC's Export Potential Map, an analytical tool that identifies products and markets with the highest untapped export growth. It calculates potential export value based on three factors: (1) supply capacity of the exporter, (2) demand in the target market, and (3) bilateral ease of trade (including tariffs and NTMs) (ITC).

3.0 Food Labelling and Certification Standards

National reforms and ASEAN frameworks show progress, but F&B labelling and certification standards remain fragmented and unevenly implemented

Despite ASEAN's formal commitment to harmonise food labelling and certification standards and considerable progress towards this, practical convergence remains difficult. Alignment with international benchmarks such as Codex Alimentarius[5] should have streamlined compliance and introduced new export opportunities, yet this report finds that national regulations continue to diverge in scope and enforcement regionally.

Rather than facilitating trade, inconsistent standards reinforce regulatory barriers through duplicative processes and uncertainty over market access conditions. This section shows that the divergence is not only a technical misalignment, but a structural barrier shaped by institutional capacity constraints and uneven regulatory adoption across the region. While AMS are advancing regulatory convergence through reform, others remain constrained by weak enforcement, institutional overlaps and inconsistent adoption of standards. And, these factors and their compounding impact directly influence MSMEs' ability to participate in international trade.

3.1 Divergence in Scope of Regulatory Requirements for Food Labelling

ASEAN has established common regional principles for food labelling, but the scope and depth of implementation varies widely across AMS. All AMS require back-of-pack labels (BoPL) in line with the ASEAN General Standards for the Labelling of Prepackaged Food (2016), itself derived from the Codex Alimentarius (CODEX STAN 1-1985[6]). However, divergences in the scope of food labelling requirements across ASEAN demonstrate how differences in regulatory content (not just enforcement gaps) drive fragmentation in regional markets and can create inadvertent trade barriers. Regulatory divergence arises in two key ways.

Firstly, AMS differ in the amount and type of information required on BoPL. Beyond basic Codex-aligned elements such as allergen declarations, country of origin, date marking, disposal instructions, expiration dates, and ingredient disclosures, several AMS mandate additional domestic requirements that go beyond regional standards *(see Table 1)*. These inconsistencies are not limited to nutritional labelling formats but also extend to health claims, language requirements, and halal certification standards. As a result, firms are forced to constantly modify labelling to suit destination markets, increasing compliance costs and reducing scale efficiencies. Also, on the consumer-side, the proliferation of

[5] *Codex standards refer to "international food texts, i.e. standards, codes of practice, codes of hygienic practice, guidelines and other recommendations, established to protect the health of the consumers and to ensure fair practices in the food trade" (FAO and WHO).*

[6] *Refers to the General Standard for The Labelling of Pre-Packaged Foods CXS 1-1985 (FAO and WHO, 2024).*

mandatory information can be overwhelming, where nutrition information panels are often too complex to interpret, and the abundance of nutrition and health claims has been shown to contribute to confusion (Pettigrew et al., 2022).

Secondly, there is regulatory divergence in how nutritional information must be presented. Although ASEAN provides a general framework for labelling, AMS apply different rules concerning nutrient thresholds, layout, presentation, and terminology. Cambodia, Indonesia, Lao PDR, Thailand, and Vietnam require translation of labelling information into national languages; Singapore mandates English; while Malaysia, Brunei, Myanmar, and the Philippines allow either. Country-of-origin labelling is generally required, though Indonesia only demands the importer's name and address. These inconsistencies create a fragmented regulatory environment within ASEAN, requiring firms to tailor product labels when trading regionally.

Meanwhile, differing front-of-pack labelling (FoPL)[7] regulations show how well-intentioned health policies can unintentionally deepen market fragmentation and disadvantage smaller producers. This raises the challenge of balancing public policy objectives with trade facilitation. Brunei, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam have adopted voluntary schemes, while Singapore mandates its Nutri-Grade system focused narrowly on sugar and saturated fat (since 2022). Thailand's plans for graphic health warnings on alcohol (EU-ASEAN Business Council, 2024) reflect legitimate public health objectives, but absent regional alignment generates duplicative requirements that diminish economies of scale and increase compliance costs for producers supplying multiple ASEAN markets.

There have been positive steps towards regional regulation, but with too much national autonomy retained. The ASEAN Guidelines on Nutrition Labelling (ASEAN Secretariat, 2025), endorsed in October 2025, establish common principles for nutrition labelling and include an annex with non-binding guidance on FoPNL systems. But these guidelines leave the design and adoption of any specific FoPL label to each country (FratiniVergano, 2025), thereby maintaining scope for policy divergence in practice.

The patchwork implementation of core food safety frameworks further highlights ASEAN's coordination deficit. Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP), and Hazard Analysis and Critical Control Point (HACCP) systems are widely recognised but inconsistently applied. Vietnam mandates full compliance across all operators, Lao PDR requires GMP, GHP, and HACCP, while the Philippines not only enforces regular inspections but has signed a memorandum of understanding with the US Food and Drug Administration (FDA) to facilitate exports. The lack of harmonised oversight adds complexity for exporters navigating different national regimes.

[7] FoPL refers to "nutrition labelling systems that are presented on the front of food packages (in the principal field of vision) and can be applied across the packaged retail food supply" (WHO, 2022).

National reforms show both progress and continuing divergence in conformity assessment measures, which regulate how compliance is verified through certification, inspection, and testing. On the side of progress, Malaysia will require, from 2025, that all imported food be produced in factories certified under its Ministry of Health's Food Safety Assurance Program (Food Compliance International, 2025a). Amendments allowing new packaging materials for irradiated foods move Malaysia closer to US FDA practices, reflecting a step toward greater regulatory compatibility that could inform future regional alignment (Food Compliance International, 2025b). Vietnam's draft revisions to its Food Safety Law would expand obligations for producers and importers, strengthen risk analysis, and improve state oversight (Food Compliance International, 2025c). By contrast, Indonesia continues to face widespread non-compliance with labelling requirements, reflecting weak supervision and limited engagement with businesses (Prabaswara, 2025). These asymmetries reveal a fragmented reform landscape that is progressing in some AMS but uneven in depth and enforcement across ASEAN.

Regional mechanisms aim to close these gaps, but fragmented governance continues to slow progress. The ASEAN Food Safety Regulatory Framework Agreement, currently under ratification, commits AMS to harmonise technical regulations based on Codex and convert voluntary guidelines into mandatory rules (ASEAN, 2025). A Mutual Recognition Arrangement (MRA) on Prepared Foodstuff Hygiene is already in force, requiring mutual recognition of inspection and certification systems. However, with oversight often spreading across multiple ministries, national coordination remains weak and implementation is slow. Similarly, the MRA for food safety and quality testing has yet to become fully functional, limiting its effectiveness in facilitating cross-border recognition.

3.2 Divergence in Enforcement and Procedural Barriers

Uneven adoption of Codex standards compounds regulatory frictions by creating high transaction costs and diminishing trust in regional food governance. While most AMS apply Codex rules on food additives, contaminants, pesticide residues and hygiene, enforcement is inconsistent and depends heavily on national institutional capacity. This reflects differences not in the scope of regulations but in how compliance is monitored and ensured in practice.

Documentation and procedural requirements create additional compliance costs by requiring firms to adjust packaging, labelling and certification processes across markets. These are known as procedural barriers[8]. Firms interviewed cited strict and often arbitrary differences such as whether packaging must read "made in" versus "manufactured in" and noted that minor concerns with the font size of nutritional panels has led to rejected

[8] *Regulatory and procedural obstacles are distinct. Regulatory obstacles refer to the specific requirements imposed by a NTM, such as limits on pesticide residues that a product must meet before it can be exported. In contrast, procedural obstacles relate to the practical steps involved in meeting these requirements and may include issues such as the absence of accredited local laboratories to conduct the necessary testing. Both of these form NTM-related trade obstacles, encompassing both the regulations themselves and the procedures required for compliance (ITC, 2012).*

shipments or costly relabelling. In several cases, firms also reported arbitrary decision-making by regulatory officers and a lack of transparency in procedural requirements, which further increases uncertainty and exacerbates compliance risks. Cultural sensitivities are also applied inconsistently across the region, with artwork and imagery on product labels subject to discretionary scrutiny[9]. For example in Malaysia, halal certified products are not permitted to display images associated with non-Islamic festivals, such as Santa Claus, resulting in label rejection even when the product meets all technical food safety requirements (MalaysiaNow, 2020). These inconsistencies may appear minor but can determine market access and profitability, especially for MSMEs that lack the scale to manage or absorb repeated compliance costs.

Certification requirements further add to procedural burdens. Halal certification encapsulates both ASEAN's potential and its fragmentation *(See Box Article 1).* Each AMS maintains its own authority and logo, obliging exporters to pursue duplicative certification that stands in contrast to the growing importance of halal trade as a regional growth driver. While certification is generally managed by public institutions, governance structures differ significantly (Yuanitasari et al., 2023). Malaysia and Indonesia are spearheading the ASEAN Halal Council to harmonise standards and build ASEAN's position as a credible global halal hub (Bernama, 2025). However, in practice, recognition remains inconsistent — for example, participants in stakeholder discussions noted that Indonesia's acceptance of Malaysia's JAKIM certification reportedly varies at the customs level, though these issues are being gradually addressed through ongoing coordination. If realised, the initiative could provide a model for standardisation more broadly across the F&B sector.

3.3 Implications for MSMEs and Regional Integration

As a whole, fragmented food standards and certification regimes remain one of the most significant barriers to expanding intra-ASEAN trade for MSMEs. Duplicative testing, overlapping inspections, and inconsistent labelling requirements impose prohibitive costs for smaller firms that undermine their competitiveness. Faced with these barriers, many smaller firms either forgo internationalisation altogether, rely on informal or intermediary channels, or redirect their exports outside ASEAN towards larger markets, where the scale of demand justifies higher compliance costs. Regional frameworks under development hold promise, but their success will depend on shifting from voluntary cooperation to binding commitments, backed by credible enforcement and coherent cross-ministerial coordination.

Empirical evidence reinforces the case for convergence, showing that regulatory alignment can generate substantial trade gains, whereas fragmentation erodes competitiveness. Harmonising Codex residue standards in beef alone could expand global trade by USD3.2 billion (Wilson, Otsuki, & Majumdar, 2003), while UNCTAD modelling finds that convergence toward international norms yields the highest efficiency benefits (Bouët et

[9] *This observation was validated through roundtable discussions with key stakeholders in the F&B sector.*

al., 2022). Within ASEAN, the persistence of fragmented national standards represents a missed opportunity to capture similar efficiency dividends and advance the region's commitment to inclusive, rules-based trade.

The region has made some promising steps, for example through the ASEAN Task Force on Codex to assist with CODEX adoption. However, the absence of binding legislative authority at the ASEAN level has meant that these regulations remain subject to voluntary compliance and varying interpretation across AMS (ASEAN, 2024), and full alignment therefore remains a work in progress.

Table 1: Mapping of Adoption of CODEX Requirements by AMS

Sub-Parameter	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Brunei	Cambodia	Lao PDR	Myanmar
				Nutrition Labelling						
Mandatory nutrient declaration	Ø required for some foods and claims; draft front-of-pack labels exist	✓ (for most processed foods)	✓ (for claims/ special foods)	✓ (for some categories; expanding post-2025)	Ø (for claims/ special foods)	✓ (from 2026 for energy, protein, carb, fat, sodium)	Ø (only for claims/ special foods)	X Voluntary except when claims made	✓ (for claims/ special/ fortified foods)	✓ (for claims/ special/fortified foods)
Nutrient declaration list	Energy, protein mandatory; sugar, salt, fat increasingly required where applicable	Energy, protein, carbs, fat, sugar, sodium required	Energy, macro/ micronutrients per Codex	Energy, protein, fat, carbs, sodium mandatory for certain groups	Energy, protein, fat, carb, sodium if labelled	Energy, protein, carb, fat, sodium from 2026	✓ (used when declared)	✓	✓ (applied for special foods)	✓ (for claims, fortified)
Nutrient claims (✓=Codex Guidelines)	Allowed per Codex; regulated with specific conditions	✓ (Regulated strictly)	Follow Codex labelling rules for claims	Claims regulated per Codex, stricter since 2025 amendment	Claims allowed; must be substantiated	As per Codex, claims regulated	Claims allowed if substantiated to Codex criteria	Claims permitted with Codex alignment	Claims allowed under Codex rules	Claims regulated per Codex standards
Energy and protein calculation (✓=Codex Conversion Standard)	✓ (mandatory for labels with claims)	✓ (strictly enforced)	✓	✓ (amended 2025)	✓ (mandated if labelled)	✓ (required from 2026)	✓	✓ (required for labels)	✓	✓
Nutrient content presentation (✓=numerical)	✓ (format varies by food category)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tolerance and compliance (✓=codex tolerance applied)	✓ (enforced variably, improving)	✓ (Strict compliance monitoring)	Codex tolerance mostly followed	✓ (compliance improving)	Codex tolerances followed for labelled nutrients	✓ (mandatory from 2026)	✓	✓	✓	✓ (primarily for claims)
				General Labelling						
List of ingredients declaration	✓	✓ (detailed ingredient list required)	Mandatory listing per descending weight	✓ (detailed ingredient list required)	Mandatory listing per descending weight	✓	Ingredient list mandatory per Codex	✓	✓	✓
List in descending weight	Required by food category	✓	✓	✓	✓	✓	✓	✓	✓	✓
Declaration of allergenic food	✓ (for major allergens)	✓ (specification of allergens required)	✓ (for featured allergens)	✓	✓	✓	✓	✓	✓	✓
Net content and weight	✓ (must be accurately stated)	✓ (strict enforcement)	✓	✓ (strict enforcement)	✓	Mandatory from 2026	✓	✓	✓	✓
Name and address	✓ (manufacturer/importer info)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country of origin	Required or recommended depending on product	✓	✓	✓	✓	✓	✓	✓	✓	✓
Consume before (expiry date)	Mandatory with valid date format	Mandatory date marking	Mandatory expiry date or best before	Mandatory expiry/ best before date	✓	Mandatory from 2026	✓	✓	✓	✓
Instructions for use	Required if necessary for safe use	Required if applicable	Required if applicable	Required if applicable	Required if applicable	Required if applicable	Required if applicable	Required if applicable	Required if applicable	Required if applicable

Note: ✓ denotes mandatory or required, Ø denotes partly mandatory, X denotes voluntary or not required.
Source: Authors' compilation from various source

Box Article 1: Fragmented Halal Rules and the Case for Regional Convergence

The halal industry in ASEAN is an emerging and rapidly growing sector, driven by rising consumer demand both regionally and globally. Its expansion is further backed by government support and ASEAN's significant Muslim population.

Yet, all AMS have different processes, regulations, and certification standards for halal certification, complicating compliance and limiting the effectiveness of intra-ASEAN trade. This box article delves into the root factors of this fragmentation, the problems that arise, and actionable solutions with the potential of paving the way for a streamlined halal industry in ASEAN that would promote better trade integration and inclusive growth for small and medium enterprises. It also explores Malaysia's system as a regional benchmark that offers insights and serves as a model for harmonisation across ASEAN.

Malaysia as the Golden Standard

Malaysia has developed and adopted a standardised halal certification process, primarily overseen by JAKIM. Recognised as one of the most reputable halal systems in the world (Ahmed, 2025), JAKIM serves as the central regulatory authority, allowing for a systematic and uniform certification process. The uniformity and detailed nature of frameworks deployed by JAKIM ensures that manufacturing processes adhere to strict religious and scientific standards under Shariah principles. This plays a critical reputational role, assuring customers domestically and regionally of the integrity of the Malaysian Halal logo.

The MS1500 Malaysian Halal Standard is a critical component of Malaysia's halal framework. First introduced by JAKIM in 2004 as MS1500:2004, the standard serves as a primary point of reference that outlines the certification process in full, including detailed guidelines to ensure the standard is consistently achieved and maintained. The standard is typically put through a revision process every five years to ensure it aligns with evolving global halal best practices and has undergone three revisions since its conception. The current standard in use is the MS1500:2019, a revised version that introduced updated clauses to better reflect international standards (Halal Food-General Requirements (Third Revision), 2019). A major difference is the definition of 'halal food', which was revised for clarity and supported with a definition of 'non-halal', that was not included in previous versions. The word 'halal' is defined in the latest standard as "matters that are lawful and permitted in Islam based on Shariah law and Fatwa". The updated explanations of these terminologies allow for a clearer and more comprehensive understanding of the process and its requirements.

Malaysia's majority-Muslim population has played a crucial role in the development of a strong and well-established domestic halal supply chain. Muslims represent 63.5% of the population (DOSM, 2023), hence the strong demand for halal certified products. This demographic advantage has fostered a conducive environment for

the growth of halal-compliant businesses and the establishment of a comprehensive framework that supports the entire halal ecosystem.

The decision to digitise the certification process was an important step in improving ease of compliance. Launched in May 2025, all applications will be required to go through the MYeHALAL platform, and will then be processed electronically (Ahmed, 2025). This shift towards a fully digitised process aims to reduce the overall duration of the certification process by providing flexibility to businesses in the application process, improving overall efficiency and reducing the risk of damaged physical certificates. However, it is also acknowledged that this digitalisation might present accessibility challenges for MSMEs that lack the necessary technological infrastructure or expertise needed to access the digital platforms. While physical certificates are still available, they require a formal process and additional fee.

There is a growing demand for halal products in the global market, presenting ASEAN countries with an opportunity to meet these demands through expanding regional markets. As global demands rise, ASEAN could position itself to meet this demand through better trade integration and harmonisation of the halal verification process across the region. The Middle East for example, comprises a growing majority Muslim population, for which rising disposable incomes are increasing demand for convenient, packaged halal goods, often imported from other Muslim majority countries (Adnan, 2025). A harmonised halal standard across ASEAN serves to support regional value chains that satisfy demands from countries with strict adherence to Sharia law, as well as increasing the region's competitiveness and readiness to respond to the growing demands.

Halal certification across ASEAN

Halal certification governance systems across ASEAN remain fragmented, with countries adopting different approaches to regulatory oversight and implementation. Businesses operating within the region's expanding halal economy must navigate the complexities of a fragmented system, which often requires obtaining multiple halal certificates in order to trade effectively across borders.

While differing in the details, the governing authorities or boards can be broadly categorised into three main types: centralised, hybrid, and decentralised *(see Table 2)*. Malaysia, Singapore, Indonesia and Brunei practice a centralised government authority that oversees all steps of verification, streamlining the process and simplifying what is expected of businesses. A hybrid or decentralised authority, as in Thailand, Vietnam, the Philippines, requires businesses to go through multiple bodies and processes in order to obtain the certification, prolonging the process and increasing costs. Countries with limited or emerging frameworks on the other hand, such as Cambodia, Lao PDR, and Myanmar typically rely on various international certification bodies, creating confusion among both businesses and consumers with the different certificates available in the local market.

Table 2: Governance Structures in ASEAN Halal Certification

Country	Main Authority	Type of authority	Regulations/Certification Process
Malaysia	JAKIM	Centralised Government Authority	Overseen entirely by JAKIM without outside interference.
Singapore	Islamic Religious Council of Singapore (MUIS)	Centralised Government Authority	MUIS acts as the single statutory religious authority in the country.
Indonesia	Halal Product Assurance Organizing Body (BPJPH)	Centralised Government Authority	BPJPH is the sole authority issuing halal certificates, with Majlis Ulama Indonesia (MUI) providing religious jurisprudence.
Brunei Darussalam	The Islamic Religious Council (MUIB)	Centralised Government Authority	MUIB under the Department of Syariah Affairs, Ministry of Religious Affairs is the central authority.
Thailand	Central Islamic Committee of Thailand (CICOT)	Hybrid	CICOT as the main policy planners; applications in regions with Islamic councils are fully managed by the councils.
Vietnam	Vietnam Halal Certification Authority (HALCERT)	Decentralised	Minimal government oversight, multiple private certification bodies including the Halal Certification Agency Vietnam (HCA).
Philippines	National Commission on Muslim Filipinos (NCMF)	Hybrid	NCMF and Islamic Da'wah Council of the Philippines (IDCP) as the main organisations, multiple private certifications available.
Cambodia	Cambodian Halal Steering Committee	Emerging/Limited Frameworks	Limited or emerging frameworks in place for Halal certification.
Lao PDR	Launched the Halal Certification Project	Emerging/Limited Frameworks	
Myanmar	Islamic Religious Council of Myanmar	Emerging/Limited Frameworks	Islamic Religious Council of Myanmar relies on international certification bodies.

Source: Author compilation from various Halal regulatory bodies government websites
Note: Centralised: Single national authority; Hybrid: A mixed system where the government provides oversight and sets basic standards, but certification bodies (including Non-Governmental Organisations (NGOs) or private entities) handle audits and issuance under government-recognised schemes; Decentralised: multiple private or provincial organisations are authorised (or self-declare) to issue halal certificates, with limited or no central government coordination.

Halal Costs and Incentives

The cost of applying for and receiving halal verification varies across the different members of ASEAN *(see Table 3)*. The expenses involved in obtaining a halal certificate vary, with application fees, audit fees, and annual certification fees accounting for a considerable percentage. The fees vary greatly depending on the size of the business (micro, small, medium, large) and the sector. Though this typically suggests lower direct costs for micro and small businesses, these smaller companies frequently face greater indirect expenses in facilities, compliance, and auditing due to the various different fees imposed, further discouraging cross-border trade. While local businesses pay fees as set by the governing authorities, foreign businesses typically pay an extra fee on top of the standard prices, as set by the recognised foreign certification bodies. Foreign companies that want to trade in Malaysia for example, must make their application through JAKIM-certified bodies that impose their own fees, depending on the type of certificate as well as audit requirements.

Table 3: Costs Involved in Halal Certification Across ASEAN

Country	Certificate Costs, USD (National Currency)	Inspection Costs, USD (National Currency)	Issuing Authority
Malaysia	USD23.9 (RM100) to USD47.8 (RM200) for initial application.	USD95.6 (RM400) - USD167.3 (RM700)	JAKIM
	Annual Certification Fee: Small businesses: USD239 (RM1,000) to USD478 (RM2,000) Medium to large enterprises: USD717.1 (RM3,000) to USD1,195.2 (RM5,000)	Additional Fees: USD119.5 (RM500) - USD358.6 (RM1,500) (product testing, ingredient analysis, or compliance-related inspections)	
Singapore	USD286.8 (RM1,200) to USD956.2 (RM4,000) based on size of business.	Included in the certificate fee	MUIS
Indonesia	Large enterprises: USD179.3 (RM750) - USD298.8 (RM1,250)	USD119.5 (RM500) - USD597.6 (RM2,500), varies by the type of product, number of ingredients, and complexity of the production process	BPJPH
	Medium enterprises: USD83.7 (RM350) - USD143.4 (RM600)		
	Small/micro businesses: Free (state-subsidised) if registered		

Brunei Darussalam	(Premise-based): USD71.7 (RM300) Validity: 3 years (Product-based): USD35.8 (RM150) per product Validity: No expiration date	USD71.7 (RM300) - USD191.2 (RM800) (Tiered according to size of business)	Halal Food Control Division (BKMH) under the Department of Syariah Affairs, Ministry of Religious Affairs
Thailand	USD239 (RM1000) - USD478.1 (RM2,000), vary depending on size of business	Starts at USD239 (RM1,000) (Tiered according to size of business)	CICOT
Philippines	USD239 (RM1,000) - USD358.6 (RM1,500)	Varies widely across certifying bodies	NCMF (Government body) & IDCP (Private body)
Vietnam	Varies widely across private certifying bodies	Varies widely across certifying bodies	Private certification bodies
Cambodia	Not publicly listed	Varies widely across certifying bodies	Department of Halal Affairs, Ministry of Commerce
Lao PDR	Varies widely across private certifying bodies	Not publicly listed	Private certification bodies
Myanmar	Varies widely across private certifying bodies	Not publicly listed	Private Islamic organisations

Source: Authors' compilation from various sources

Incentives in the halal industry depend on several factors, and are limited in their availability. Compared to other countries in ASEAN, Malaysia and Indonesia offer more subsidies and government assistance as incentives to obtain halal certification. Malaysia, in particular, incentives exist to reduce the financial barriers in place for MSMEs while also improving halal compliance and exports. These incentives are provided to local companies that are registered to the relevant governing authorities such as Malaysia External Trade Development Corporation (MATRADE), SME Corp Malaysia, and the Halal Development Corporation (HDC). Malaysia also provides incentives in the form of an investment tax allowance (ITA) for halal food production both inside and outside of designated halal parks, as well as deductions for expenses (PWC, 2022).

Issues and Potential for Harmonisation for Trade Integration

The fragmented nature of certification processes across ASEAN increases trade friction and administrative costs for exporters. Unharmonised national certification systems create a 'duplication problem', where a single product requires multiple halal certificates in order to trade across the region. The absence of a unified halal certification process and/or mutual recognition of certification is a significant constraint on building halal trade. The lack of trust can be attributed to the disparities in governance structure and differing stringency of verification processes. But fragmentation contributes to increased costs and delays in trade, hindering regional economic integration.

Establishing a unified ASEAN Halal Council could position the region as a central hub for halal certification, streamlining processes and increasing consumer confidence. Malaysia has emerged as a prominent export hub for halal-certified products, with exports reaching USD7 billion and accounting for 16.1% of the nation's total exports. The proposed ASEAN Halal Council, jointly led by Malaysia and Indonesia (Bernama, 2025) could leverage Malaysia's global competitiveness in halal trade and its successful certification method as a model for streamlining policies, regulations, and standards across the region.

ASEAN has in recent years promoted regional halal standardisation through the ASEAN Guidelines for the Preparation of Halal Food Products to simplify certification and encourage mutual recognition, though the implementation remains limited and varies across AMS. Harmonisation serves to lower obstacles to the free trade of food products and increase intra-ASEAN F&B flow, as the aforementioned fragmentation erodes consumer trust. It would allow businesses to trade more effectively in a wider and more accessible market through reduced costs and time spent on multiple certifications. It would also help instil confidence in consumers through uniform regional standards. A united approach in the growing halal industry would further promote economic growth in the region and position ASEAN as a global leader in halal trade and certification.

4.0 Traceability Challenges and Opportunities Through Digitalisation of SPS Procedures

Accelerating SPS systems can reduce non-tariff frictions and make compliance more attainable for MSMEs

4.1 Overview of Digital SPS Ecosystem

Global shifts toward paperless trade and data-driven regulatory systems have prompted individual AMS to accelerate digitalisation within their SPS regimes, though progress across the region remains uneven. Building on global initiatives such as the World Trade Organization's (WTO) Trade Facilitation Agreement and the e-Phyto Hub, several AMS have begun digitising SPS procedures to improve efficiency, transparency, and business accessibility. Electronic certification platforms, digital traceability tools, and risk management databases are already being piloted, but implementation remains fragmented, reflecting broader divergence in food standards, institutional capacity, and regulatory interpretation.

The challenge is no longer about introducing digital tools but ensuring they are interoperable and scaled in ways that reduce transaction costs and expand compliance access. Interoperability must be achieved not only across borders but also within domestic systems, where weak coordination between customs, agriculture, and health authorities continues to create bottlenecks. Integration with the ASW will be critical to enable seamless cross-border exchange of SPS data and certificates. For MSMEs, whose participation is often constrained by procedural NTMs, digitised SPS systems could transform regulatory compliance from a fixed cost into a competitive enabler. At the same time, some countries still require paper certificates alongside e-Phyto documentation for legal compliance, limiting the full efficiency gains of digitalisation.

The digitalisation of SPS certification is emerging as a regional priority because it directly addresses the transaction costs that fragment ASEAN's F&B trade. The SPS framework, comprising risk assessment, risk management, and verification of compliance (OECD, 2021) remains resource intensive and unevenly implemented across AMS. Inconsistencies contribute to time delays, redundant paperwork, and higher costs for firms navigating multiple national systems. Digital solutions, such as electronic certification, automated risk profiling, and interoperable traceability systems, can streamline these procedures and reduce trade frictions, ensuring that health and safety safeguards do not become disproportionate barriers to MSME participation.

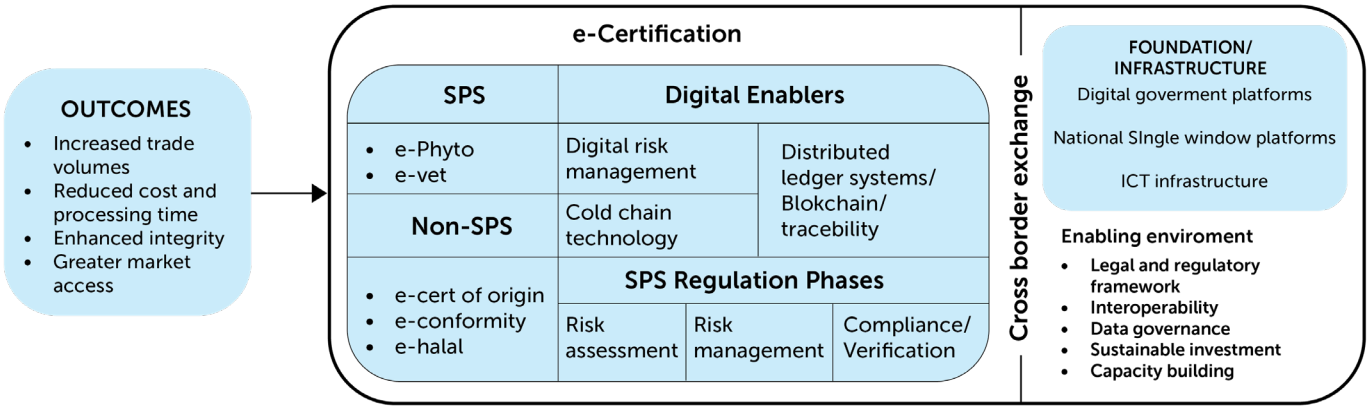
Electronic certification (e-certification) systems, such as e-Phyto for plants and e-Vet for animal products are transforming the compliance landscape. These tools enable real-time data exchange, reduce administrative costs, minimise documentation errors, and limit the opportunities for trade fraud. Non-SPS systems, such as e-Cert of Origin, e-Conformity, and e-Halal, complement this shift by supporting wider supply chain

transparency. Their use has expanded rapidly in recent years, with the share of trade supported by SPS e-certificates rising from 18.8% in 2018 to 32.7% in 2022, driven largely by new phytosanitary exchange agreements (ERIA, 2024). For MSMEs, which operate on thin margins, digital certification reduces reliance on costly intermediaries and lowers the fixed costs of compliance, turning what was once a barrier into a bridge to formal trade.

Risk assessment, the foundation of SPS regulation, depends on access to accurate, timely, and specialised data on toxicology, epidemiology, and agricultural practices. Digital platforms close these information gaps by facilitating the collection, analysis, and sharing of data across borders. In Indonesia, blockchain-based platforms integrate farmer data, geo-tagging, weather conditions, land use, and transaction records, making risk assessment more transparent and efficient (Marzuki, 2018). Malaysia's BloomBloc–MPOC initiative applies similar blockchain methods to trace palm oil supply chains from tree to mill, ensuring product integrity and environmental accountability (Ungson & Soorapanth, 2022). Such technologies allow trading partners to classify exporters by risk category, reducing the need for blanket restrictions and fostering trust in regional supply chains.

These developments form part of a broader digital certification ecosystem that links governance, infrastructure, and cross-cutting enablers into a coherent framework for risk-based regulation *(see Figure 7)*. The figure illustrates how digital certification extends beyond individual e-certificates to an integrated system built on interoperable infrastructure, cross-cutting technologies, and shared regulatory processes. Within this ecosystem, SPS digitalisation represents one of the most advanced and structured applications, serving as an early model that demonstrates how integrated certification frameworks could be scaled across other regulatory domains, such as food safety, animal health, and customs (OECD, 2021). At its foundation lies interoperable public systems, national single windows, digital government platforms, and secure ICT infrastructure, that enable real-time data sharing and verification. Built upon these are cross-cutting technologies such as blockchain, data analytics, and digital risk management tools that enhance transparency, traceability, and trust across borders.

Figure 7: Digital Certification Ecosystem



Source: Authors' compilation from various sources

Digitalisation in isolation, at the level of individual countries, can deliver important efficiency gains, but connectivity across a wider regional network generates multiplier benefits. Isolated platforms can improve efficiency within a single agency, but when integrated, they transform compliance from a transaction process into a governance capability, reducing information asymmetries, streamlining SPS verification, and strengthening institutional accountability. For MSMEs, this integration is especially transformative as digital ecosystems can lower procedural NTMs, enable proportionate regulation, and open pathways to formal trade that were previously inaccessible due to cost or complexity.

Global trade rules already provide a foundation for digitalisation that ASEAN could seek to embed. Under the WTO SPS Agreement, AMS are required to base SPS measures on scientific risk analysis to ensure that restrictions are necessary and not unduly trade-restrictive. Article 10 of the WTO Trade Facilitation Agreement (TFA) further calls for simplified formalities and reduced documentation. Tools such as the WTO's ePing platform, which alerts stakeholders to new SPS measures, and the e-Phyto Hub, which allows countries to exchange phytosanitary e-certificates, demonstrate how transparency and interoperability can lower NTM-related costs. Globally, there has been a steady rise in e-Phyto exchanges in the past five years (IPPC, 2025). Several AMS are already piloting or implementing e-Phyto systems, often connected to the ASW. Thailand, Vietnam, and Indonesia have begun exchanging e-Phyto certificates electronically, while Singapore and Malaysia are integrating these exchanges into their national SPS digital systems (VNTR, 2024). However, the ASW still lacks a direct channel for e-Phyto exchanges with partners outside the region, forcing some AMS to develop separate connections to the global Hub, which adds cost and technical complexity (Polachai, 2025). The challenge for ASEAN is to move beyond participation and embed these tools within a cohesive regional digital framework that links national SPS systems together.

4.2 Implications of Limited Digitalisation in SPS Procedures

Digitalisation of SPS procedures can prevent trade disruptions and economic losses for ASEAN exporters. While much of the region's trade remains outward-oriented, ensuring digital traceability and consistent inspection systems within ASEAN is equally critical to maintaining confidence in regional F&B supply chains. Recent incidents highlight the risks when such systems are absent or weak. In early 2025, China rejected over 64,000 kilograms of Thai durians contaminated with the banned yellow dye BY2, forcing domestic resale at nearly half their purchase price (Straits Times, 2025; Khaosod English, 2025). Vietnamese exporters faced similar rejections and customs delays affecting 170 tonnes of produce under the same inspections (The Star, 2025). Although these examples involve trade with a third country, they show how fragmented inspection regimes and gaps in traceability can lead to significant financial losses. The same vulnerabilities could easily disrupt intra-regional trade if left unaddressed. The stakes are especially high given the scale of ASEAN's fruit trade. In 2024, Vietnam exported 1.5 million tonnes of durians worth USD3.3 billion, nearly half of the country's total fruit and vegetable export value (Vietnam News, 2025). For such high-trade sectors, strengthening digital

SPS integration is not simply a matter of administrative efficiency but a necessary step to safeguard intra-regional trade, reduce compliance risks, and enhance the credibility of ASEAN's F&B exports.

Burdensome, complex and largely manual SPS procedures in ASEAN illustrate how digital streamlining could save time, lower compliance costs, and build greater trust and consistency across the region. In Malaysia, importers of raw agricultural commodities such as coffee beans must complete a Pest Risk Analysis (PRA) process administered by the Department of Agriculture's Plant Biosecurity Division. The PRA form requires detailed technical documentation, from the commodity's scientific classification, farm and packaging origins to treatment records, storage methods, and transport logistics, before import approval is granted. The process, which can take between six and twenty-four months depending on information exchanges with exporting countries' national plant protection organisations (NPPOs), remains largely paper-based and manual. Inconsistent interpretation of requirements between agencies, such as fumigation or packaging rules, further delays approval, creating uncertainty for traders. For MSMEs, these procedural layers convert compliance into a fixed cost that favours large intermediaries. Embedding PRA workflows within a digital SPS platform that connects national authorities and NPPOs could automate document verification, improve procedural transparency, and reduce regulatory asymmetries that currently disadvantage smaller importers.

There is also a growing case to enhance SPS traceability systems through the use of unique Traceability Lot Codes (TLCs)[10]. Requiring the documentation of lot codes and related information at each stage of production and distribution enables regulators to quickly identify the origin of contamination, bypass low-risk nodes in the supply chain, and trace products directly back to the source (Bratager, 2023). Weak or tampered lot codes also create room for illicit trade, as counterfeiters often erase or falsify them to hide product origins, refill packaging, or disguise parallel imports, particularly for alcoholic beverages (EUABC, 2024). This is increasingly critical given the length and complexity of global food chains, where traditional paper-based traceability is insufficient to prevent illicit trade or respond to safety incidents in real time. Reflecting this shift, Singapore recently amended its food regulations to incorporate a mandatory lot code provision *(Food (Amendment) Regulations, 2025)*. But, in most ASEAN countries, legal frameworks for TLCs are still absent or only partially implemented, leaving traceability systems fragmented.

Awareness among policymakers and institutions across ASEAN is gradually translating into early efforts to integrate emerging digital technologies, such as blockchain, into governance and trade facilitation frameworks. ASEAN's policy frameworks are beginning to reflect this strategic shift. In the 2015–2020 ICT Master Plan, blockchain ranked low in national digital strategies, with 67% of AMS deeming it a non-priority. By 2020–2025, this trend had reversed with 30% of AMS now viewing blockchain as "critical" and 50% as "important" to their digital governance agenda (ASEAN Secretariat, 2022). The

[10] A traceability lot code refers to a unique combination of letters or numbers used to identify and track a specific batch of food products within a company's records (US FDA, 2024).

establishment of the ASEAN Blockchain Consortium (ABC) in 2021, bringing together partners across ASEAN and Australia to promote blockchain education, share technical expertise, and expand adoption in digital assets and enterprise systems, highlights this growing institutional and private sector commitment (Labuan IBFC, 2021). Rather than indicating a wholesale policy shift, these developments point to a growing recognition, driven by both public and private sector demand, that distributed ledger technologies can enhance supply chain transparency, improve regulatory interoperability, and lower compliance costs for MSMEs engaged in cross-border F&B trade.

While several bilateral and plurilateral initiatives are underway, including under the ASEAN–Australia–New Zealand Free Trade Area (AANZFTA) and UNESCAP's interoperability projects, progress remains uneven. Electronic application and issuance of SPS certificates remains one of the least implemented agricultural trade facilitation measures in the region, with a subregional implementation rate of around 50%, and only 20% of countries having fully implemented systems (UNESCAP, 2025). This incomplete implementation underscores the wider challenge of interoperability, where differing national standards and limited technical capacity constrain cross-border data exchange. A regionally harmonised digital SPS framework and compatible data-sharing protocols, is essential to avoid re-fragmentation in digital form.

Hence, for ASEAN, the strategic challenge is no longer about deciding to digitalise SPS systems, but about mobilising and coordinating efforts to implement them in ways that promote regulatory convergence, enhance interoperability, and facilitate mutual recognition across AMS. If designed and implemented in isolation, national e-certification and traceability platforms risk becoming a new layer of digital NTM, adding complexity for exporters navigating multiple systems. But when coordinated and interoperable, these same tools can level the playing field, lowering procedural costs, reducing document duplication, and expanding access to formal markets for MSMEs that are often excluded by manual or paper-based requirements.

Box Article 2: Beyond Tariffs: How Complex Trade Regulations Hold Back Women-Led MSMEs

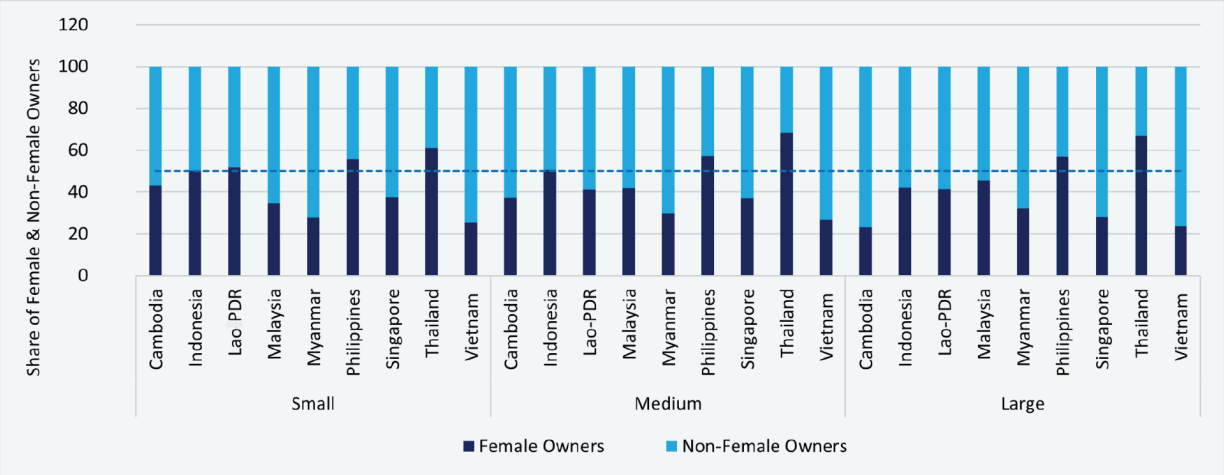
Women entrepreneurs in MSMEs are a driving force for economic growth, crucial for building competitive markets, and particularly significant in emerging economies. Through their involvement in global supply chains, women-owned MSMEs unlock new avenues for inclusive and sustainable growth. Across ASEAN, women's participation in business ownership is relatively high but heavily concentrated in micro and small enterprises operating in lower-value sectors such as agriculture, catering, tailoring, beauty, and food processing (OECD, 2017). While these activities contribute meaningfully to social and community-level impacts, structural barriers limit their economic potential.

The barriers limiting women-led MSMEs' growth are not unique to the region. In 2022, women made up 73% of all "missing" entrepreneurs across OECD countries, underscoring that entrepreneurship gaps are largely gender-based (OECD, n.d.). Gender stereotypes, exclusion from decision-making, and unequal access to finance confine many women to smaller, less productive ventures (Rahmawati, 2025). These barriers are intensified in international trade, where women-owned MSMEs face additional obstacles such as tariffs, NTMs, and restrictive domestic trade policies that limit access to imported inputs (World Bank & WTO, 2020). Strengthening women's participation in trade requires targeted measures including capacity-building, simplified certification, and inclusive trade finance, to help women entrepreneurs, particularly micro-and solo-owners, scale and compete globally.

Women in Trade

Patterns of women's business ownership across ASEAN varies widely, shaped by differing economic structures and social norms *(see Figure 8)*. In Lao PDR and Indonesia, women own about half of small firms, indicating near parity with men. By contrast, women in Vietnam, Myanmar, and Malaysia remain less represented, reflecting persistent barriers even at the entry level of entrepreneurship. In Malaysia, for example, women have expressed discomfort with entrepreneurialism and often pursue business opportunities in ways that align with social norms around acceptable female economic activity, such as multi-level marketing, where products are sold through personal networks on a commission basis rather than for a salary (Centre for Strategy & Evaluation Services, 2024).

Figure 8: Share of Firms with Female and Non-Female Owners in ASEAN



Source: Author's calculation from World Bank Enterprise Survey Data
Notes: Female owners: females among the owners of the firm; non-female owners: no females among the owners; MSME definition: Small (5-19 workers), Medium (20-99 workers), and Large (≥ 100 workers).

When considering the distribution of firms by size, women entrepreneurs are notably concentrated in micro and small enterprises, with their presence declining sharply as businesses expand. This pattern suggests that women are overrepresented in smaller-scale activities and underrepresented in higher growth segments of the economy, where participation in trade, technology adoption, and export markets tends to occur. In most ASEAN countries, women's share of ownership falls to around 45% among medium firms and below 30% in large enterprises, with Vietnam showing the steepest decline despite its progressive gender policies. While these trends point to structural barriers such as limited access to finance, networks, and market information, they may also reflect risk preferences, formal employment offers greater income stability and predictability compared to the risks associated with entrepreneurial expansion (Ubfal, 2024).

Structural Barriers Constraining Women-Led MSMEs

Regulatory Barriers

Regulatory barriers place a disproportionate burden on women-led MSMEs in ASEAN. Smaller firm size makes compliance costs harder to absorb, with gender-based disadvantages, such as limited access to information, fewer business connections, and bias in the administrative systems intensifying the gap (Ubfal, 2024).

Complex export-related regulation creates high upfront costs that women-led MSMEs struggle to absorb. Malaysia's certification requirements such as HACCP, GMP, or halal can cost up to USD9,584 (WEF, 2021). As women-led businesses are often smaller and more informal, they are less equipped to shoulder these "fixed"

costs of NTMs, which include licensing, testing, certification, and labelling (UNCTAD, 2022). These challenges are compounded by fragmented governance of NTMs across multiple agencies, leading to duplication and inconsistent guidance (Ing et.al, 2016).

Import and customs regulations represent another critical barrier, with women-led MSMEs facing longer delays and higher compliance costs. Across ASEAN, MSMEs frequently cite customs clearance and tax procedures as overly complex, and while some progress has been made, such as Vietnam's WTO-aligned reforms with international standards, regional harmonisation of SPS measures remains limited (Centre for Strategy & Evaluation Services, 2024). Evidence shows that women-owned firms spend 1.5 times longer clearing customs than male-owned firms, partly because men often have stronger networks that facilitate border processes (UNCTAD, 2024). With limited staff and capital, women entrepreneurs struggle to keep up with changing documentation and compliance requirements, leading to errors, delays, and added costs that hinder their competitiveness (CEPR, 2023).

Cash Flow and Finance Gaps

Access to finance is central to both business growth and trade participation. Women-led MSMEs often lack the capital to expand production, meet export requirements, or manage trade-related costs such as certification and logistics. Without such basic access, women face difficulty in saving income and expanding their businesses (WTO and The World Bank, 2020).

Financing constraints stem largely from structural and institutional factors. Collateral requirements, complex loan procedures, and gendered ownership norms limit women's ability to secure formal credit. In Malaysia, banks perceive MSMEs as high-risk borrowers due to their size and instability. This perception leads to high interest rates and strict loan conditions, often requiring borrowers to pledge fixed assets such as land or property as collateral. Women face structural disadvantage because asset ownership is commonly concentrated in men's names and the lack of collateral ownership significantly reduces women's ability to access bank loans (Ogundeji & Vernekar, 2025). Similar patterns occur in Vietnam and Indonesia, where property titles and legal documentation practices restrict women's credit access, leaving them reliant on informal or short-term financing (Centre for Strategy & Evaluation Services, 2024).

Beyond credit access, capability and information gaps further constrain women entrepreneurs. Many women-led MSMEs lack the capacity to prepare robust business plans or financial statements, weakening their applications for credit and leading to rejection by financial institutions. Women often lack awareness of financing schemes or alternative sources of capital, limiting their ability to benefit from support programmes. In addition, women entrepreneurs report facing challenges with timing such as needing to pay upfront for compliance costs before revenues are generated and difficulties in dealing directly with suppliers. Since suppliers

frequently prefer larger buyers, women-led MSMEs often rely on middlemen, which increases costs and erodes margins. These factors reinforce a cycle of low profitability, further reducing lending constraints.

Trade finance represents an even higher hurdle. Instruments like letters of credit and export insurance are essential for managing cross-border risks, yet they require stronger documentation, collateral, and financial track records than most women-led firms possess. Although many hold bank accounts, only about 18% receive sufficient trade finance (World Trade Organization and The World Bank, 2020). Existing support, like microfinance, angel investors, venture capital, and group lending, remains insufficient to bridge this gap, leaving women entrepreneurs underserved in both basic finance and trade finance (Ogundeji & Vernekar, 2025).

Networks and Social Capital

Limited networks, social capital, and access to information act as a significant barrier for women entrepreneurs. Excluded from male-dominated professional circles, women often have fewer opportunities to access market information, role models, and contacts that are essential for business support. This exclusion narrows their "business culture" and limits the ability to build strategic relationships.

Beyond the general MSME challenges, women face intersecting social disadvantages, such as caring responsibilities, restrictive norms, and discrimination. Challenges are even more severe for women with disabilities, migrant women, ethnic minorities, rural women, single mothers, and elderly women, who encounter layered forms of exclusion.

The problem is compounded by the lack of accessible and inclusive support systems. Trade-related regulations, particularly NTMs, are governed by multiple ministries, making compliance difficult for small businesses with limited networks. Agencies such as MATRADE, Selangor Information Technology & Digital Economy Corporation (SIDEC), and Malaysian Investment Development Authority (MIDA) provide MSME support, but women entrepreneurs often find these schemes difficult to access due to limited guidance, reimbursement-based funding, and programmes not tailored to their realities, especially in sectors like F&B. These gaps mirror global findings that show women continue to face costly and complicated regulations, harassment during business processes, and lack targeted government programmes for finance and training (World Bank, 2025). Without reforms, women remain systematically disadvantaged in leveraging both networks and support systems.

Digital Divide and Inclusion Gaps

Digitalisation has become a key driver of productivity, innovation, and participation in global trade, but its benefits remains unevenly distributed. Many small firms hesitate to adopt new technologies, perceiving the costs and risks as too high. This gap is widened by limited access to information, skills shortages, and weak organisational practices. In Vietnam, for example, MSMEs struggle to mobilise financial and technical resources for digital transformation, while few firms offer digital training to employees, leaving smaller enterprises ill-equipped to adapt to technological change.

For women entrepreneurs, digitalisation holds immense potential but also exposes structural inequalities. It can enhance flexibility, expand access to cross-border markets, and create new economic opportunities for women with mobility or time constraints. Yet, women are often less prepared to benefit from these opportunities due to lower digital literacy, weaker access to technology and finance, and limited participation in training initiatives (Russo, 2024). In Malaysia for instance, high costs and weak infrastructure make digital adoption difficult, forcing many women to self-learn digital marketing during the pandemic. By contrast, targeted interventions, such as Indonesia's HARA Pancasila Ginger Project, show that digital inclusion programmes can transform livelihoods by equipping women with agri-tech tools and market access (HARA AgriTech, 2021). To realise the full potential of digital transformation, policies must integrate a gender perspective, ensuring that women entrepreneurs have the skills, infrastructure, and financial access needed to participate equally in the digital and global economy.

5.0 Logistics Systems

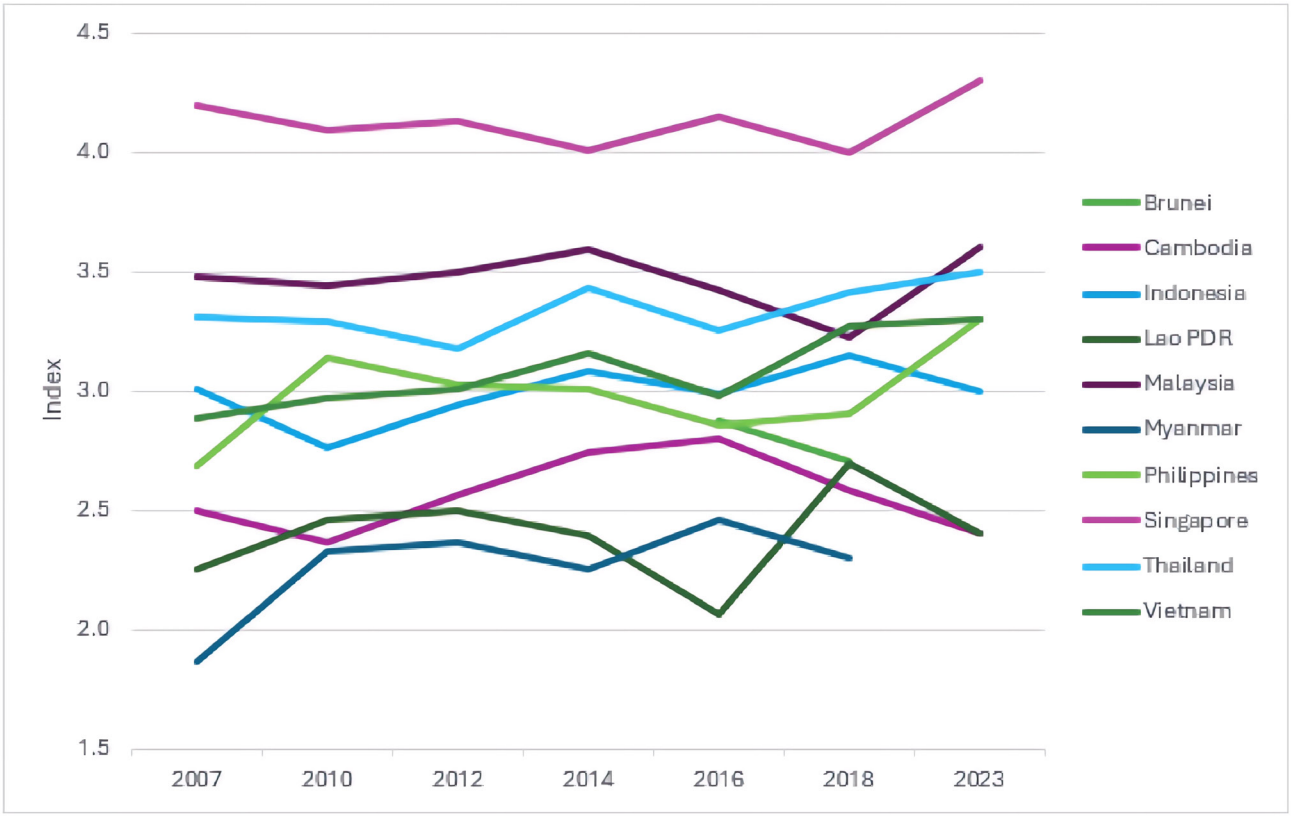
ASEAN's logistics systems show progress toward greater efficiency and integration, but gains are uneven and nonlinear

Rising logistics costs and systemic fragmentation have re-emerged as critical constraints on ASEAN's competitiveness in the post-pandemic and geopolitical context. The COVID-19 pandemic exposed deep structural weaknesses through border closures, shipping route disruptions, and sudden inspection surges, while disruptions in passages like the Red Sea, Suez Canal, and Panama Canal have inflated freight rates and stretched delivery times (UNCTAD, 2024).

ASEAN has made measurable progress, with average export times shortened by more than six days between 2007 and 2014 and container port traffic expanded by 31 million Twenty-foot Equivalent Unit (TEUs) by 2016 (Lai et al., 2019). But, the system's underlying fragmentation endures. For smaller firms, logistics costs are not just an operational concern but a structural barrier, shaped by border delays, inconsistent enforcement, and infrastructure gaps. These frictions function as procedural NTMs that limit regional integration. Large firms often manage them through scale or outsourcing, while MSMEs face the choice of either absorbing high logistics costs, turning to informal intermediaries, or exiting regional markets altogether.

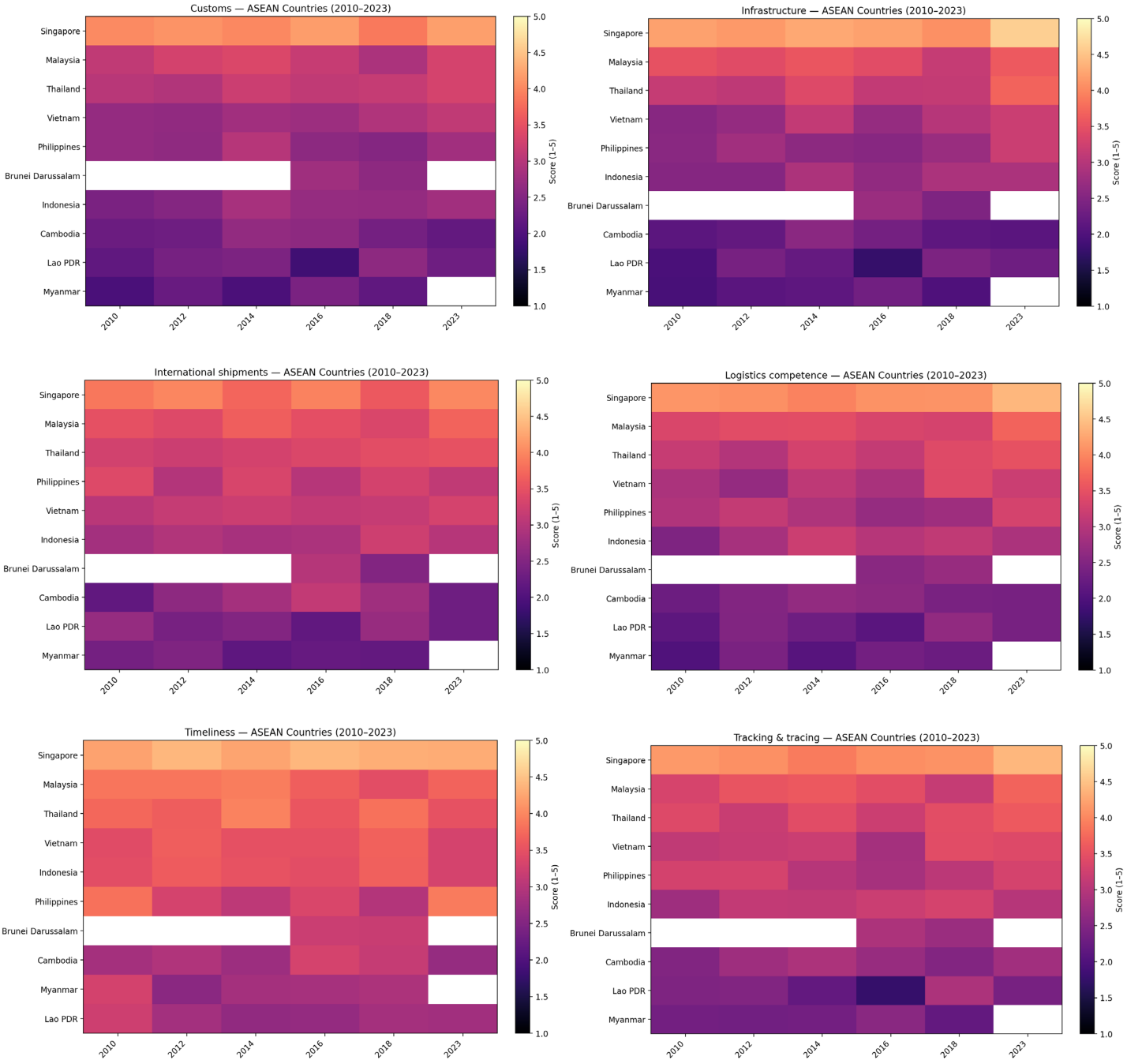
The World Bank's Logistics Performance Index (LPI) indicates steady improvement in ASEAN's logistics efficiency between 2007 and 2023 *(see Figure 9)*. But progress has been uneven with some economies having strengthened logistics capacity and governance while others continue to face structural bottlenecks, particularly in border management, multimodal connectivity, and tracking systems *(see Figure 10).* This divergence suggests that, although the region has advanced as a whole, logistics performance remains highly dependent on domestic reforms and institutional capabilities.

Figure 9: Logistics Performance Index (LPI) for AMS



Source: World Bank's LPI.
Note: Data only available for selected years; Data not available for Myanmar for 2023 and Brunei for 2007, 2010, 2012, 2014 and 2023. Higher index values represent higher logistics performance.

Figure 10: Heatmaps of LPIs by Components for Each AMS



Source: World Bank's Logistics Performance Index (LPI)

Border unpredictability remains the most visible symptom of procedural fragmentation. Traders describe clearance processes that hinge on officer discretion, inconsistent document checks, and limited coordination between customs agencies. One Thai MSME interviewed reported losing an entire shipment of perishables when delays at the Cambodia-Thailand border rendered its stock unsellable. For firms operating in fast-moving consumer or agri-food sectors, such delays can erase profit margins within hours and in some cases prevent certain commodities from being possible to trade. As Lai et al. (2019) note, transport inefficiency should be treated as a non-tariff barrier in its own right, capable of producing the same distortive effects as formal tariffs. Without streamlined clearance and transparent risk profiling, the region's integration remains vulnerable to the weakest procedural links in its borders.

Differences in customs thresholds across ASEAN make trading more difficult for smaller firms, creating an uneven playing field. Most ASEAN countries continue to require imports by full container load, effectively pricing MSMEs out of formal trade channels. De minimis levels, the value threshold under which imports are exempt from duties, vary dramatically, from just USD40 in Vietnam to nearly USD300 in Brunei (Elms, 2024). For a small e-commerce exporter, these differences can determine whether a shipment remains viable or falls into regulatory limbo. In the absence of pooled or shared container schemes, smaller traders face disproportionately high freight costs or are pushed into informal routes. Such inconsistencies create unintentional barriers that restrict the region's ability to democratise participation in cross-border trade.

High logistics costs and inconsistent customs procedures mean that many MSMEs resort to informal trade as a practical way to move goods across borders. Formal channels are often too costly or complex, and simplified trade procedures that could help small traders are rarely publicised or easy to access (UNCTAD, 2018). The same study notes that charges on small consignments are often too high, discouraging formal participation. The COVID-19 pandemic further exposed the risks of informality, as MSMEs outside formal systems were unable to access government support, financing, or legal protection (UNESCAP, n.d.).

Weak post-border logistics undermine the gains from customs reforms, keeping trade costs high even after clearance. Many MSMEs face long customs to shelf delays, especially in sectors where temperature control is critical. In the case of alcoholic beverages, for instance, extended delays at storage or clearance points can compromise product quality and safety, as temperature fluctuations alter taste profiles and render goods unsuitable for sale. The ASEAN Secretariat (2025) attributes such losses not to food scarcity but to logistical failures such as poor storage, inadequate handling, and broken cold chain links. For small exporters, these are not operational setbacks but structural barriers that erase competitiveness before products reach consumers.

Digitally monitored cold chain systems, integrating temperature and humidity sensors with automated customs documentation, could significantly reduce spoilage and improve traceability. However, adoption raises valid questions about cost and who should bear it. For smaller firms, installing IoT monitoring is often not commercially viable on their

own, as the benefits (reduced waste, improved food safety, and lower inspection delays) accrue not only to the firm but also to regulators and consumers (Aspillaga, 2025). To address affordability, governments adopt public–private partnership (PPP) models instead of requiring individual firms to invest in digital cold chain infrastructure on their own. For example, India established the National Centre for Cold chain Development (NCCD) as an autonomous PPP under the Ministry of Agriculture, tasked with coordinating standards, investment guidelines, and technology adoption across the cold chain ecosystem (UNEP & FAO, 2022). Such PPP structures enable shared investment and risk-pooling, while ensuring that digital cold chain systems serve both commercial needs and broader public-good objectives such as food security and reduced loss and waste.

Global disruptions, including geopolitical tensions and rerouted supply chains, have increased shipping costs and revealed ASEAN's uneven logistics resilience. MSMEs, with limited bargaining power in freight contracting, are hit hardest by rising costs and storage shortages. These challenges are worsened by weak infrastructure. And these infrastructure bottlenecks magnify costs for smaller firms. Evidence also shows that reducing logistics and facilitation costs delivers larger trade gains than cutting tariffs (ERIA, 2021). Even a small improvement, such as a 1% increase in infrastructure capacity, can raise exports by up to 1.7% (Manocha, 2025). Expanding the ASW to include logistics, cold chain, and conformity documentation would create smoother data flows between customs and transport systems. Digital container-sharing platforms could help smaller exporters share shipments, while harmonising de minimis thresholds would create fairer trading conditions for MSMEs in e-commerce. Stronger partnerships between MSMEs, logistics providers, and customs authorities, a model shown to reduce time-to-market (Tukamuhabwa & Kyomuhendo, 2021), would further strengthen these reforms.

6.0 Policy Recommendations and Conclusion

Regional policy commitments provide a strong foundation for regulatory alignment, but ASEAN's next challenge lies in implementation and interoperability. The recently endorsed ASEAN Guidelines on Nutrition Labelling mark an important step toward FoPL, yet current provisions still allow each AMS to design its own system, recommending only that one label be used nationally. A regionally harmonised FoPL framework would help reduce conflicting standards, lower production costs, and prevent technical barriers to trade. To ensure feasibility and buy-in, structured consultations should involve the private sector, particularly MSMEs and women-led enterprises, whose participation is essential to designing labelling rules that reflect their compliance capacities.

ASEAN should also advance interoperable digital labelling using QR codes on BoPL, allowing consumers to access accurate, multilingual information beyond packaging constraints. For MSMEs, digital labels can reduce the recurring cost of reprinting and facilitate quick updates to meet different national requirements. Embedding traceability and verification features within QR systems would also strengthen product authenticity and curb illicit trade. ASEAN's cross-border QR payment network (Zhong, 2025) already demonstrates that digital interoperability across diverse systems is achievable and can be extended to food labelling, certification, and traceability systems.

A similar approach is needed for digital SPS frameworks. ASEAN should establish a dedicated channel within the ASW to enable e-Phyto and e-SPS exchanges with global partners. This would streamline current arrangements, as several AMS still maintain separate connections to the global e-Phyto Hub, increasing cost and administrative complexity. Embedding traceability through mandatory lot codes would further enhance recall efficiency and reduce illicit trade risks, provided enforcement mechanisms include penalties for tampering.

Beyond the digital layer, logistics capacity remains a binding constraint on competitiveness. Halal products, which require segregation at every stage of the supply chain, face higher compliance costs and unpredictable delays that disproportionately burden MSMEs. Targeted support measures, such as regional guidance on halal logistics and financing mechanisms for MSMEs, would help reduce these bottlenecks and improve supply chain predictability. Broader logistics reforms should also focus on harmonising de minimis thresholds across AMS to simplify low-value e-commerce trade. A range-based threshold, linked to risk-based inspection, would maintain food safety while reducing administrative barriers for smaller exporters. In parallel, ASEAN could pilot shared logistics or container-pooling schemes to help MSMEs overcome the full-container-load import requirement that effectively excludes small traders from formal channels. Such schemes would lower per shipment costs, improve access to regional supply chains, and strengthen inclusivity in cross-border trade.

Cold chain integration is equally essential. IoT monitoring within SPS certification would allow real-time tracking of temperature and humidity, reducing spoilage and improving traceability. To build this capacity, concessional financing for logistics MSMEs, training programs to strengthen cold chain handling skills, and incentives for data transparency among storage operators would assist. Where individual MSMEs cannot justify investment, ASEAN governments could use public–private partnership (PPP) models to develop shared cold chain infrastructure, reducing unit costs and pooling risks. These measures could be implemented under the Master Plan on ASEAN Connectivity (MPAC), linking digital reforms to physical infrastructure investment.

Forward looking policy should anticipate the next generation of regulatory technology. The ASEAN DEFA offers a platform to develop regional guidelines for AI-assisted labelling, traceability, and risk-based inspection. Automating verification and anomaly detection could improve accuracy and transparency while reducing inspection burdens. To ensure inclusivity, ASEAN should pair these initiatives with MSME-focused support such as shared digital infrastructure, capacity-building, and affordable access to technology to prevent widening the digital divide as food regulation becomes more data-driven.

Appendix

Appendix A: Interview Questionnaire

Semi Structured Interview Questions

CONTROL INFORMATION

Please provide the start and end date for the latest full fiscal year for which company results are available: _____.

Please refer to this year when answering questions in the following sections.

PART A: COMPANY PROFILE

1. Name of Company:

2. Location of Company:

3. Name and Position of Respondent:

4. What is the ownership structure of your company? (Please tick one)

100% locally owned	
Majority locally owned (more than 50%)	
Joint ownership (50% local, 50% foreign)	
Majority foreign owned (more than 50%)	
100% foreign owned	
Others (please specify)	

5. Does a foreign investor or entity exercise a controlling interest in your company? (*Control is defined as owning more than 50% of voting shares, or ability to influence key decisions, such as appointing the board or setting business strategy.)* (Please tick one)

6. Among the owners of the company, are there any women? If yes, what percentage of the company is female-owned? _____%

7. Which of the following top management positions in your company are held by women? (Please tick all that apply)

CEO / Managing Director / General Manager	
Senior Executives (eg. CFO, COO, CTO etc.)	
Business Owner (if applicable–for small enterprises)	
None of the above	

8. In what year did this establishment begin operations? _____

9. Full-time employment size: _____

10. Annual turnover in fiscal year: _____ (local currency)

11. Net income (profit) after expenses and taxes in fiscal year: _____ (local currency)

12. Total capital investment in your business (excluding land and buildings)? _____ (local currency)

13. What were this establishment's total annual sales for all products and services? _____ (local currency)

14. What percentage of this establishment's sales were:

National sales	%
Indirect exports (sold to third party for export)	%
Direct exports	%
	100%

15. What percentage of this establishment's inputs (raw materials, components, etc.) were imported?

Imported inputs	%
Nationally sourced inputs	%
	100%

16. What is this establishment's primary exports and imports (based on the share of annual sales)? (HS Code reference: HS Nomenclature 2022 edition)

HS Code	Description	√
02	Meat and edible meat offal	
03	Fish and crustaceans, molluscs and other aquatic invertebrates	

04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	
07	Edible vegetables and certain roots and tubers	
08	Edible fruit and nuts; peel of citrus fruit or melons	
09	Coffee, tea, maté and spices	
10	Cereals	
11	Products of the milling industry; malt; starches; inulin; wheat gluten	
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	
13	Lac; gums, resins and other vegetable saps and extracts	
15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	
16	Preparations of meat, of fish, of crustaceans, molluscs or other aquatic invertebrates, or of insects	
17	Sugars and sugar confectionery	
18	Cocoa and cocoa preparations	
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	
20	Preparations of vegetables, fruit, nuts or other parts of plants	
21	Miscellaneous edible preparations	
22	Beverages, spirits and vinegar	

17. Based on the major product exported (imported) by your company, which are the key export destinations (import sources)? *(Please indicate % of exports/ imports of the major markets)*

Export Markets: .....

Import Sources: .....

PART B: REGIONAL TRADE LINKAGES

18. Do you source any raw materials (including capital and intermediate goods) from international suppliers? _____ (Yes/No)

19. If yes, please list the key raw materials or products you source *(e.g., raw materials, finished products, etc.)*.

    _____

20. How important is ASEAN compared to the Rest of the World (ROW) as an import source? (*Please state the percentage of total imports below*)

ASEAN (*state countries*):	%
ROW (*state countries*):	%

21. What are the key raw materials or products that are sourced from ASEAN and ROW? *(Please specify the main product categories.)*

    ASEAN: _____

    ROW: _____

22. What are the key considerations for sourcing from ASEAN and/or major problems faced with regional (ASEAN) suppliers?

Criteria	Key Consideration	Major Problem/ Issue
Input pricing (*cost competitive inputs*)		
Trade Regulations (*aligned standards and regional participation in Codex, compatible conformity assessment procedures, customs procedures*)		
Supplier Network (*reliable supplier; supplier capacity; quality assurance*)		
Trade agreements & Regional Initiatives *(utilisation of ATIGA, RCEP, ASW)*		
Other requirements *(sustainability, traceability)*		

PART C: TRADE REGULATIONS

23. From your experience, what are the major challenges to exporting to (importing from) ASEAN? (*tariffs; non-tariff measures etc*.). Which market(s) within ASEAN are considered the most difficult to access within the region and why?

24. What **technical regulations** (such as sanitary and phytosanitary or SPS measures and technical barriers to trade or TBTs) do you consider critical to being able to access the ASEAN market, whether for export or imports? (*labelling requirement; product safety, quality, or performance requirement*)

25. Do your encounter any difficulty related to **conformity assessment procedures (CAPs)** when exporting or importing? (*certification, testing, inspection, traceability etc*)

26. Are there any specific rules or **new developments regarding product labels or packaging** that have been challenging to meet regionally or globally? (*language requirements, information to include, or design specifications etc*). Are these regulations comparable across ASEAN countries?

27. Have you experienced any specific **certification** issues to export and import? Which requirement(s) and what were the issues experienced? (*halal certification, certificate of irradiation (CoI), certificate of analysis (CoA, phytosanitary certificate etc.)*

28. Are there any **traceability** requirements your company faces given the emerging sustainable standards (labour, environment, governance) in ASEAN for your products? *(suppliers being ESG (environmental, social and governance) compliant)*

29. Do **private (voluntary) standards** affect your trade within the region? How about the impact on your extra-regional trade *(including private standards such as rainforest alliance, BRCGS Global Standard Food Safety etc.)*

30. Any other domestic challenges that you would like to point out?

    (a) Internal company-level challenges (*talent; technology etc.)*

    (b) Structural or ecosystem challenges. *(government incentives; business support etc.)*

PART D: PROCEDURAL OBSTACLES

31. The table below lists the different types of procedural obstacles faced by companies. Can you tick those that are applicable to your company?

√	Procedural Issue
A. Administrative burdens related to regulations	
☐	A1. Large number of different documents
☐	A2. Documentation is difficult to fill out
☐	A3. Difficulties with translation of documents from or into other languages
☐	A4. Numerous administrative windows/organisations involved, redundant documents
B. Information/transparency issues	
☐	B1. Information on selected regulation is not adequately published and disseminated
☐	B2. No due notice for changes in selected regulation and related procedures
☐	B3. Selected regulation changes frequently
☐	B4. Requirements and processes differ from information published
C. Discriminating behaviour of officials	
☐	C1. Arbitrary behaviour of officials regarding classification and valuation of the reported product
☐	C2. Arbitrary behaviour of officials with regards to the reported regulation
D. Time constraints	
☐	D1. Delay related to reported regulation
☐	D2. Deadlines set for completion of requirements are too short
E. Informal or unusually high payment	
☐	E1. Unusually high fees and charges for reported certificate/regulation
☐	E2. Informal payment, e.g. bribes for reported certificate/regulation

F. Lack of sector-specific facilities	
☐	F1. Limited/inappropriate facilities for testing
☐	F2. Limited/inappropriate facilities for sector-specific transport and storage, e.g. cold storage, refrigerated trucks
☐	F3. Other limited/inappropriate facilities, related to reported certificate/ regulation
G. Lack of recognition/accreditations	
☐	G1. Facilities lacking international accreditation/recognition
☐	G2. Other problems with international recognition, e.g. lack of recognition of national certificates
H. Other	
☐	H1. Other procedural obstacles, please specify

Source: Procedural obstacle list from International Trade Centre, classification of procedural obstacles adapted for ITC surveys, January 2012 (unpublished document).

32. Can you provide a sense of the magnitude of trade costs incurred as a result of complying with trade regulations as a percentage of your trade costs? (eg. *administrative cost, testing cost, labelling cost, networking cost, transportation cost etc.*).

    (a) If possible, could you provide a rough breakdown of these costs?

    (b) Are those costs considered as initial cost or recurring cost?

33. What trade-distorting effects have regulations had on your company? Have they resulted in higher costs (e.g., increased product prices) or reduced sales (*e.g., fewer exports to ASEAN or loss of market share*; *have import restrictions led to higher raw material costs, or have compliance requirements reduced your access to certain markets*)?

PART E: NATIONAL & REGIONAL INITIATIVES

34. Has your company received any domestic government support in the following areas?

    - Financing *(e.g. soft loans, grants; subsidies; tax incentives etc.)*
    - Human capital development *(e.g. SME Capability Development Program by OSMEP; etc.)*
    - Infrastructure & business operations *(e.g. Biz Portal Thailand etc.)*
    - Innovation & technology adoption (e.g. *Technology and Innovation-based Enterprise Development Fund (TED Fund) etc.*)
    - Market access & export promotion *(e.g. IDEAS Lab; Export Readiness Development Program by the Department of International Trade Promotion (DITP) etc.)*

    If yes, which of these initiatives has been most helpful for your internationalisation or export activities, and why?

35. Has your company benefited from any regional trade facilitation and regulatory cooperation initiatives aimed at improving cross-border trade, such as:

    - Mutual Recognition Agreements (MRAs) *(e.g. ASEAN MRA on Prepared Foodstuff; ASEAN MRA on Inspection and Certification Systems for Food Hygiene etc.)*
    - Regulatory harmonisation frameworks *(e.g. ASEAN Food Safety Regulatory Framework (AFSRF) Agreement etc.)*
    - Digital trade facilitation systems *(e.g. ASEAN Single Window (ASW); e-Phyto certifications etc.)*
    - Trade information platforms *(e.g. ASEAN Trade Repository (ATR); ASEAN Tariff Finder etc.)*

    If yes, which initiatives have been most useful for your business, and why? If no, what are the main challenges preventing your company from benefiting from these initiatives?

36. Do you have any recommendations for the government to provide further trade support for the F&B sector? Are there any recommendations for supporting regional trade in this sector?

37. How is your company navigating recent geopolitical developments (such as shifting trade policies, regional conflicts, or new trade agreements) and what short- to medium-term impacts do you anticipate on your operations or market access?

Appendix B: Profile of Stakeholders Interviewed and Consultations

Engagement Type	Sector / Organisation Type	Role / Position
Semi-Structured Interview	Food Import & Distribution (Japanese ingredients, seafood, premium sauces)	Senior Manager
Semi-Structured Interview	Instant Noodles & Herbal Beverage Manufacturing	Senior Manager
Semi-Structured Interview	Vietnamese Specialty Food Trading	Business Owner
Semi-Structured Interview	Thai Sauce Manufacturing & Distribution	Managing Director
Semi-Structured Interview	Academia	Professor / Research Specialist in AI, Digital Traceability & Food Safety
Semi-Structured Interview	Government Trade Promotion & Diplomatic Mission	Trade Commissioner
Semi-Structured Interview	Consulting & Alcoholic Beverage Trade	Consultant & Industry Expert
Semi-Structured Interview	Food Services Franchise (cakes & restaurant chain)	CEO
Semi-Structured Interview	Specialty Coffee and Beverage Industry	Representative
Focus Group	Multinational Beverage Company	Regional Representative
Focus Group	FMCG Export-Oriented Biscuit Manufacturer	Export Manager
Focus Group	Multilateral Regional Development Coordination Body	Senior Officials
Focus Group	Consulting & Alcoholic Beverage Trade	Consultant & Industry Expert
Focus Group	National Export Promotion Agency	Trade Promotion Official
Focus Group	International Chamber of Commerce	General Manager
Focus Group	Multinational Enterprise Group	Group COO
Focus Group	Venture Capital Firm	Founder & Director
Focus Group	Local Food Manufacturing SME	Founder
Focus Group	SME Development Agency	Policy Official
Focus Group	Investment Promotion Authority	Senior Representative

Focus Group	Legal & Dispute Resolution Firm	Partner
Focus Group	Innovation & Technology Start-up	Founder
Focus Group	Media & Publishing Sector	Executive Director
Focus Group	Wellness & Lifestyle SME	Founder
Focus Group	Pharmaceutical Manufacturing	CEO

Note: Some stakeholder categories include multiple representatives from the same organisation. For such cases, all insights are consolidated under a single anonymised stakeholder profile.

Appendix C: Food and Beverages HS Codes at 2-Digit Level

HS Code	Description
02	Meat and edible meat offal
03	Fish and crustaceans, mollusks and other aquatic invertebrates
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included
07	Edible vegetables and certain roots and tubers
08	Edible fruit and nuts; peel of citrus fruit or melons
09	Coffee, tea, maté and spices
10	Cereals
11	Products of the milling industry; malt; starches; inulin; wheat gluten
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder
13	Lac; gums, resins and other vegetable saps and extracts
15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
16	Preparations of meat, of fish, of crustaceans, molluscs or other aquatic invertebrates, or of insects
17	Sugars and sugar confectionery
18	Cocoa and cocoa preparations
19	Preparations of cereals, flour, starch or milk; pastrycooks' products
20	Preparations of vegetables, fruit, nuts or other parts of plants
21	Miscellaneous edible preparations
22	Beverages, spirits and vinegar

Source: World Customs Organisation based on HS Nomenclature 2022 edition

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