Comparative Analysis of Packaging Requirements, Laws, and Regulations in Iran and Neighboring Countries

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Abstract

Packaging plays a crucial role in supply chains, product marketing, and consumer attraction while ensuring quality preservation and market competitiveness. This study conducts a comparative analysis of packaging requirements, laws, and regulations in Iran and neighboring countries (Iraq, the UAE, Turkey, Azerbaijan, and Russia). Using a library-based and documentary research approach, data were collected from reliable sources, including national laws, regulatory standards, industry reports, and academic studies. The analysis evaluates eight key criteria: standards and regulations, packaging technologies, waste management, recycling, and cultural influences on consumer preferences. Both qualitative and quantitative methods were employed, with findings presented through comparative tables and visual charts. The study highlights Iran's advancements in food safety and labeling but identifies gaps in recycling, waste management, and alignment with international standards. In contrast, the UAE and Turkey demonstrate strong compliance with global norms and technological advancements, serving as potential models for Iran. By adopting best practices from these countries, Iran can enhance its packaging industry, improving efficiency, sustainability, and global competitiveness. The findings underscore the need for greater collaboration with international organizations and investment in eco-friendly packaging solutions. Implementing these improvements would boost product safety, reduce waste, and strengthen Iran's position in international markets.

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1. Introduction

The packaging industry, as an indicator of production capability, plays a pivotal role in the development of economic sectors. Enhancing capabilities in this industry not only boosts competitiveness in other economic sectors but is also recognized as a fundamental industry in increasing national income and employment. Packaging, as one of the key elements in the production and distribution of products, not only helps protect goods but also plays a significant role in marketing and attracting customers. Progressive social changes have transformed the food supply chain, compelling producers to improve their product packaging to capture consumer attention and gain their trust [Czajkowska, Kowalska, & Piotrowski, 2013].

In the era of globalization and increasing competition in international markets, packaging is recognized as one of the cornerstones of product and brand success. This industry not only acts as a protector of products but also serves as a powerful tool for attracting customers, conveying brand values, and creating differentiation in crowded and highly competitive markets. Consumers' perceptions of packaging information are justifiable, as it is based on this information that a consumer may decide whether to purchase a product or not. Therefore, consumers' attitudes toward packaging information are of particular importance in the production of new categories of food products [Staniewska & Jakubowska, 2015].

The informational and promotional functions of packaging gain greater significance when designed correctly. Appropriate product packaging design is an integral part of marketing strategy and can enhance competitiveness and buyer interest. Research shows that consumers significantly rely on the information provided on packaging, which reflects a combination of quality attributes and determines the expected quality. This indicates that initial considerations and research on packaging have primarily focused on its design and content [Bialkova, Sasse, & Fenko, 2016]. In simple terms, packaging is a product offered to the market, made from any material intended for the storage, protection, transportation, delivery, or presentation of products, ranging from raw materials to processed goods. In another definition, packaging is a suitable physical structure for a product, designed to protect it from damage and deterioration, enable its division into portions and transportation (functional roles), as well as provide information about the product and present it aesthetically (promotional roles) [Cyrek, 2015]. Given the growing importance of this field, a comparative study of packaging in various countries can help better understand the differences, similarities, and identify opportunities and challenges facing the packaging industry. Iran, as one of the significant countries in the Middle East, has a growing packaging industry influenced by various factors, including culture, economy, technology, and domestic regulations. On the other hand, Iran's neighboring countries, such as Iraq, the United Arab Emirates, Turkey, Azerbaijan, and Russia, have each adopted different approaches to product packaging based on their specific conditions.

For example, Iraq, as one of Iran's most important trading partners, is a key target market for Iranian exports. Studying packaging in this country can help better understand the needs and preferences of Iraqi consumers and improve the packaging of Iranian export products. Meanwhile, the United Arab Emirates, as one of the most advanced economies in the region, has high standards in packaging. Studying packaging in the UAE can inspire innovations and enhance the quality of packaging in Iran. Turkey, as one of Iran's main competitors in the region, has a diverse and advanced packaging industry. Examining the approaches of this country can help identify the strengths and weaknesses of packaging in Iran and provide strategies for better competition in

regional markets. Azerbaijan, due to its cultural and historical commonalities with Iran, offers insights into the impact of culture on packaging design and selection, as well as identifying opportunities for joint collaboration in this field. Finally, Russia, as one of the largest economies in the world and Iran's northern neighbor, is a significant market for Iranian exports. Studying the standards and approaches to packaging in this country can help improve the packaging of Iranian export products and increase competitiveness in the Russian market. A comparative study of packaging in Iran and these neighboring countries not only helps better understand Iran's position in this industry but can also provide strategies for the improvement and development of this industry in the country. This study can identify successful patterns in neighboring countries, analyze the strengths and weaknesses of packaging in Iran, and offer suggestions for enhancing the quality and efficiency of packaging at the national and international levels. In this regard, examining various dimensions of packaging, including design, raw materials, technologies used, laws and standards, as well as the impact of culture and economy on this industry, can aid in a comparative analysis of packaging in Iran and neighboring countries.

The presentation and supply of products without packaging are not feasible, but the notable point is the importance and application of modern technologies, up-to-date printing techniques, the use of suitable materials, art, and creativity in this process to serve as a medium that persuades the audience to purchase the product. Packaging for exported food products, due to the distance, time, and extensive demand, requires higher quality, more durable, and more creative materials to stand out among foreign competitors [Jerzyk, 2014].

2. Industrial Packaging Market Analysis (2024–2030)

This section presents a comprehensive comparative analysis of the industrial packaging market in the six countries studied. The analysis is based on data and projections from 2022 to 2025, with forecasts extending to 2030, Key aspects considered include material usage trends, sector-specific demand, export-import flows, production capacity, and market growth trajectories.

2.1. Regional and Global Market Overview

According to the Middle East Industrial Packaging Market Size Report (2030), the value of the packaging market in the Middle East was estimated at USD 9.15 billion in 2024 and is projected to reach USD 13.38 billion by 2030, representing a compound annual growth rate (CAGR) of 6.6%. Plastic packaging currently dominates the regional market with a 50% share, followed by chemical and pharmaceutical packaging at 31%. Among the countries analyzed, the UAE emerges as the regional leader due to industrial diversification policies, government initiatives such as Operation 300bn, and the presence of numerous free trade zones that facilitate manufacturing and export. Iran's packaging market, despite lacking transparent and official statistical data, is experiencing increasing demand driven by its expanding oil, gas, and petrochemical sectors. Iraq also shows notable potential due to rising industrial imports and oil-related investments.

On a global scale, the packaging industry is expected to grow from USD 1.28 trillion in 2025 to USD 1.69 trillion by 2034, with a CAGR of 3.16%. The primary drivers of this growth include the rapid expansion of e-commerce platforms, increasing demand for recyclable and biodegradable materials in response to environmental concerns, and the growing adoption of smart packaging technologies such as RFID, QR codes, digital printing, and bio-based PET materials. Figure 1

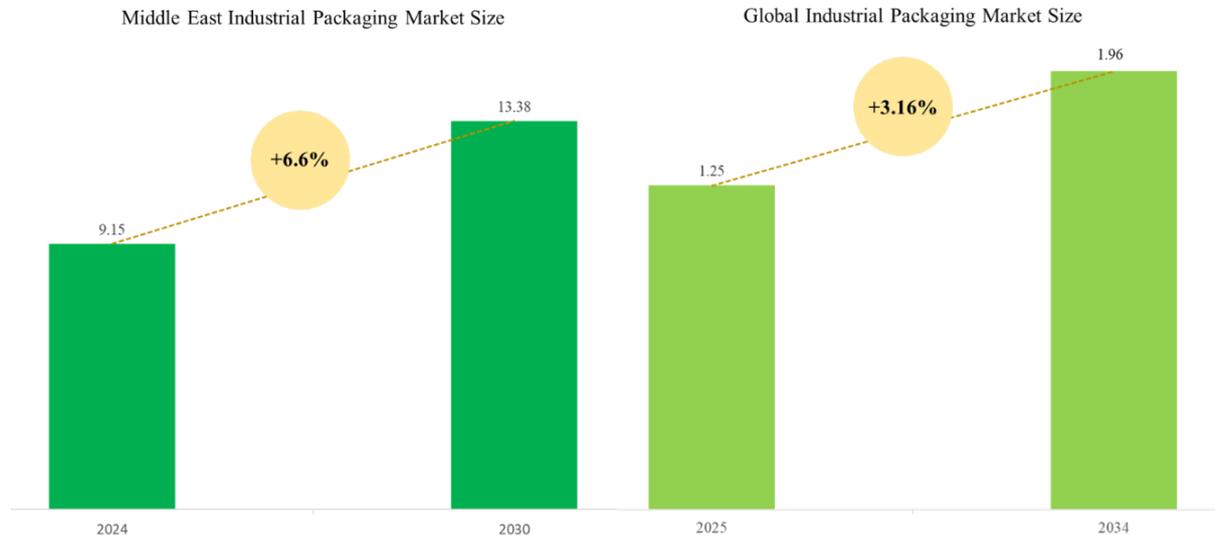shows the estimated size of the industrial packaging market in the future.

Figure 1. Estimated future size of the industrial packaging market

2.2. Market Trends and Sectoral Demand

The dominant material in both regional and Iranian markets is plastic, with plastic packaging accounting for 88% of Iran's total packaging exports. However, due to environmental pressures and regulatory trends, there is an observable shift toward biodegradable and sustainable packaging solutions. In terms of sectoral demand, Iran's food and beverage industry is the largest consumer of packaging materials, accounting for nearly 40% of domestic consumption. Meanwhile, the pharmaceutical and chemical sectors are witnessing strong growth, particularly in the use of flexible plastic packaging.

2.3. Iran's Packaging Industry: Capacity, Trade, and Structure

Iran's industrial packaging sector is characterized by a relatively high production capacity, especially in plastic and cellulose-based materials. The annual production capacity for plastic packaging is estimated at around 20 million tons, representing approximately half of the total packaging output. Cellulose packaging, including cardboard and paper-based products, is produced at a scale of about 50 million tons per year. In 2022, Iran exported approximately USD 437 million worth of packaging products, with the majority destined for Iraq, Afghanistan, and Pakistan, which together accounted for 85% of the export volume. Plastic packaging constituted 88% of the export value. On the import side, Iran brought in around USD 510 million worth of raw materials, primarily plastic resins and cellulose, mainly from China, the UAE, and Turkey. These three countries collectively accounted for 70% of Iran's packaging-related imports.

2.4. Future Outlook and Strategic Directions

Looking ahead, Iran is expected to prioritize the growth of packaging exports, particularly targeting neighboring markets, while simultaneously investing in the localization of raw material production to decrease reliance on imports. On the global front, the Asia-Pacific region is forecast to remain the largest consumer of packaging products, with an estimated market share of 39% by 2034. The proliferation of smart packaging solutions and the shift toward sustainable materials are set to

redefine the future structure of the packaging industry worldwide.

3. Packaging Standards and Regulations in Iran

The Iran National Standards Organization (INSO) is responsible for developing and implementing packaging standards, as well as regulating the export and import of goods in Iran. The organization has developed specific requirements and regulations for packaging in various industries, which are outlined below.

3.1. Food Packaging

Food packaging is the most significant role of the packaging industry since it directly impacts health and safety at the level of consumers. Food packaging in Iran is regulated to its importance. For instance, perishable goods or packaged with permeable materials must offer a Certificate of Inspection at the Origin (COI). This ensures packaging against penetration by outside agents such as air, water, and impurities, thereby maintaining food quality. In addition, canned items and preserves are included under compulsory standards, noting packaging that is pressure-resistant and heat-resistant to provide preservation. An example includes metal packaging, which is highly valued for being strong and sterilized, thereby serving as a favorable method for preserving food.

3.2. Packaging for Hazardous Goods

Due to the risky nature of gases and chemicals, packaging them in Iran is done strictly. For instance, fire-fighting materials and refrigerants must be compliant with safety standards to prevent accidents and spills. Similarly, pressurized gas cylinders for gases such as oxygen require a Certificate of Inspection at the Origin Point to ensure they are impact and pressure resistant, minimizing potential danger. Hazardous materials require particularly secure packaging conditions since they are dangerous to health and the environment. Pressurized gas cylinders, for instance, oxygen cylinders, in Iran need to have a Certificate of Inspection at the Origin, and chlorine gas cylinders must

comply with national standards for quality control. Such measures ensure packaging does not produce negative impacts.

Iran has mandatory and comprehensive strict packaging and labeling laws. All products need to comply with national or INSO-approved standards to achieve consumer safety and product quality. The laws offer protection to the consumers along with enhancing the competitiveness of Iranian products in domestic as well as foreign markets.

3.3. Electrical and Electronic Goods Packaging

Packaging of electrical and electronic goods is also subject to strict regulation, considering that the product tends to be fragile and sensitive. Packaging regulations in Iran aim at minimizing physical damage during shipment. Domestic appliances and electrical machinery, for example, must be provided with energy labels, whereas all products are required to meet national or INSO-approved marking standards. This is purposed to authenticate that packaging not only protects the item but also provides consumers with essential information.

3.4. Labeling and Marking

Labeling is a crucial aspect of packaging, providing consumers with necessary product information. In Iran, specific regulations govern labeling to ensure transparency. For instance, household appliances must display energy labels, and washing machines must include water consumption labels. These requirements not only inform consumers but also promote resource efficiency. All products must adhere to national or INSO-approved labeling standards, ensuring consistency and reliability.

3.5. National and International Standards

Iran utilizes both national and international standards for packaging and labeling. Key national standards include INSO 18614 for water consumption labels and INSO 6591 for chlorine gas cylinders. International standards, such as EN 81-1 for elevator safety and ISO

standards for food and chemical testing, are also adopted. These standards ensure product safety and quality, boosting consumer trust and improving the global competitiveness of Iranian goods [Iran National Standard Organization, 2023].

3.6. Structural Challenges and Development Opportunities

Although Iran's packaging industry has notable strengths such as a large domestic market and access to petrochemical resources, it still faces deep-rooted structural challenges. One major issue is the reliance on imported raw materials and equipment, due to underdeveloped infrastructure for producing pulp and advanced polymers. Additionally, the lack of domestic innovation and outdated technologies has made the sector dependent on foreign machinery, limiting productivity and increasing vulnerability to sanctions.

Financial constraints are another barrier, especially for small and medium-sized enterprises. Economic instability, high production costs, and limited access to affordable financing hinder investment in modernization and expansion. On the environmental front, Iran faces serious recycling and sustainability challenges, with limited infrastructure for waste collection and processing, and minimal public awareness of eco-friendly packaging.

Despite these issues, there are significant growth opportunities. Iran's extensive petrochemical base offers potential for localizing raw material production. Moreover, rising domestic demand in food, pharmaceutical, and hygiene industries can stimulate further investment. Proximity to emerging markets like Iraq and Central Asia also creates export potential.

To address its challenges, Iran needs to promote technology transfer, support SMEs with targeted financing, develop domestic production capabilities, and encourage research in smart and sustainable packaging.

4. Packaging Standards and Regulations in Iraq

In Iraq, packaging regulations and standards are primarily categorized into two main groups: guidelines for exhibitions and guidelines for the import of equipment and materials.

4.1. Official Transport Guidelines for Exhibitions

Iraqi packaging of exhibition products must be sufficiently sturdy to endure constant handling, e.g., customs inspection. Dispose of wooden crates rather than pallets because pallets might lead to theft or damage. Package each item with appropriate labeling containing information such as exhibition name, exhibitor name, hall and booth number, date of exhibition, package dimensions (length × width × height), package number (e.g., 1 of 5), and gross and net weight (in kilograms).

Regarding the ISPM15 standard, Iraq does not require compliance with this standard for wood packaging materials. This international standard involves the treatment or heat treatment of wood to prevent pest transmission. However, if the country of origin requires compliance for returned goods, it is advisable to use wooden packaging materials that meet ISPM15 standards and bear the IPPC mark.

4.2. Standard Shipping Instructions (SSI) for Iraq (OFE, TPS)

Identification marks must be visibly displayed on three sides of each package and include company name, purchase order number, and invoice number. Numbers and marks must match shipping documents perfectly (i.e., invoice and packing slip). Dimensions, net and gross weight, package number, and so on should be included in the packaging information. Any existing marks or irrelevant data on packages must be removed to prevent incorrect identification. Photos of all packages must also be sent to the logistics and customs department before shipping to ensure proper identification marks and packaging.

Packaging requirements may vary depending on the nature of the equipment, shipment, or project, and these must be clearly stated in the purchase order (PO) or contract. Avoid using packaging materials that may damage goods or obscure identification marks, especially for sensitive and high-value shipments.

4.3. Standards Used in Iraq

4.3.1. ISPM15 Standard

This international standard applies to wooden packaging materials (e.g., pallets and wooden crates) to prevent the spread of pests and plant diseases. Although Iraq does not mandate compliance, it is advisable to use ISPM15-compliant materials with the IPPC mark if the country of origin requires it for returned goods.

4.3.2. Durability and Strength of Packaging

Packaging must be sufficiently robust to prevent damage during transportation, especially for shipments traveling long distances or exposed to harsh road conditions.

4.3.3. Identification Marks

Identification marks must be clearly displayed on three sides of each package and match the information in the shipping documents, including the company name, invoice number, and purchase order number.

4.3.4. Packaging Details

Packaging details must include dimensions, gross and net weight, number of packages, and other relevant information, ensuring consistency with shipping documents to prevent errors.

4.3.5. Package Pictures

Package photos should be transmitted to the custom department before the shipment so as to confirm marking details and packing identification, in particular for high-value and sensitive shipments [Baker Hughes Company, 2023; Agro Pack Iraq & Plast Iraq, 2024].

5. Packaging Standards and Regulations in the United Arab Emirates (UAE)

In the United Arab Emirates (UAE), packaging standards and regulations are primarily governed by regulatory bodies such as the Gulf Standardization Organization (GSO) and the Emirates Authority for Standardization and Metrology (ESMA). The standards are formulated according to international models such as Codex Alimentarius and ISO, whose primary objective is to provide environmental compatibility, quality, and safety for packaging. Below is an overview of the key packaging requirements and standards in the UAE.

5.1. General Standards for Food Packaging

5.1.1. UAE.S GSO 839:1997

This standard, titled *"Food Packaging – Part 1: General Requirements,"* outlines the general rules for food packaging. It covers various packaging types, including metal, glass, plastic, paper, cardboard, multilayer, and wooden packaging. According to this standard, packaging materials must not react with food and must prevent the infiltration of external contaminants. This is particularly critical for packaging that comes into direct contact with food.

5.1.2. UAE.S GSO 1863:2013

Titled "*Food Packaging – Part 2: Plastic Packaging – General Requirements,*" this standard gives extra requirements for plastic packaging that comes into contact with food. It mandates that plastic products must be safe for human health and must not transfer any contaminants to food. The standard also shows special focus on plastic packaging's durability and resistance under various storage and transportation conditions.

5.2. Requirements for Food Contact Materials (FCM)

5.2.1. UAE.S GSO 2231

This standard, titled *"General Requirements for Specifications of Food Contact Materials,"* establishes the general requirements for materials in contact with food. It ensures that packaging materials, including plastic, metal, glass, and paper, are safe for human health and do not transfer any harmful substances to food.

5.2.2. Food Contact Materials Control Scheme

Implemented by the UAE, this program ensures that all food contact materials, including packaging, comply with **UAE.S GSO 2231**. It involves chemical, physical, and microbiological testing to verify that packaging materials pose no risk to human health.

5.3. Specific Requirements for Packaging Types

5.3.1. Metal Packaging

Metal packaging must comply with **UAE.S GSO 839** and be made from materials that do not react with food. It must also be corrosion-resistant and prevent the infiltration of external contaminants.

5.3.2. Glass Packaging

Glass packaging must be durable, crack-free, and resistant to impact and temperature changes to prevent contamination.

5.3.3. Plastic Packaging

Plastic packaging must adhere to **UAE.S GSO 1863** and be made from materials safe for human health. It must also withstand heat, moisture, and other environmental factors.

5.3.4. Paper and Cardboard Packaging

Paper and cardboard packaging must be made from materials that do not react with food and are resistant to moisture. They must also be mechanically strong and resistant to tearing and puncturing.

5.4. Packaging Labeling Requirements

5.4.1. UAE.S GSO 9:2017

Titled *"Labeling of Prepackaged Food,"* this standard sets the general requirements for food labeling. Labels must include information such as the product name, ingredients, production and expiration dates, storage conditions, and nutritional information. This information must be clearly displayed in Arabic or English.

5.4.2. UAE.S GSO 2333:2013

Titled *"Permitted Health and Nutrition Claims on Food and Conditions of Use,"* this standard governs the use of health and nutrition claims on food labels. Any such claims must be scientifically substantiated and clearly stated on the label.

5.4.3. Emirates Quality Mark (EQM)

For certain products, such as water and some dairy items, the use of the **Emirates Quality Mark (EQM)** is mandatory. This mark indicates compliance with UAE standards and assures consumers of the product's high quality. To obtain the EQM, products must pass rigorous testing and quality evaluations.

5.5. Testing and Evaluation

All food packaging must undergo various tests to ensure compliance with **UAE.S GSO 839** and **UAE.S GSO 1863**. These tests include assessments of strength, impermeability, and compatibility with food, ensuring the safety and quality of packaging materials.

5.6. International Standards Used in the UAE

5.6.1. Codex Alimentarius

The Codex Alimentarius standards serve as a reference for many food and packaging standards in the UAE. Developed by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO), these standards aim to ensure global food safety and quality.

5.6.2. ISO Standards

ISO standards are also used as a reference for compliance with UAE standards. They encompass a wide range of technical and quality requirements that help improve production and packaging processes [Emirates Authority for

Standardization & Metrology, 2009; United States Department of Agriculture, 2019].

6. Packaging Standards and Regulations in Turkey

Turkey, as a leading country in the packaging industry, utilizes both international and domestic standards to regulate packaging. These standards encompass quality, safety, environmental, and technical requirements, established by authoritative organizations such as the Turkish Standards Institution (TSE) and the Ministry of Environment and Urban Planning. Below is a detailed examination of packaging requirements and standards in Turkey, categorized by topic.

6.1. General Packaging Standards

6.1.1. ISO 9000

Titled *"Quality Management Systems,"* this standard ensures that packaging companies manage their production processes to deliver high-quality products that meet customer needs. Compliance with this standard helps companies improve internal processes and enhance customer satisfaction. In the packaging industry, adherence to ISO 9000 means producing packaging that meets high standards of quality and durability.

6.1.2. ISO 14001

Titled *"Environmental Management Systems,"* this standard helps companies reduce the environmental impact of their activities and improve their environmental performance. In the packaging industry, this translates to the use of eco-friendly materials, waste reduction, and increased recycling. Companies adhering to this standard typically use recyclable and low-impact materials.

6.1.3. ISO 22000

Titled *"Food Safety Management Systems,"* this standard is crucial for companies producing food packaging. It ensures that food packaging is safe and complies with hygiene requirements. Compliance involves using materials that do not react with food and prevent contamination.

6.1.4. ISPM15

Titled *"International Standards for Phytosanitary Measures for Wood Packaging Material in International Trade,"* this standard is designed to prevent the spread of pests and plant diseases through wooden packaging. Turkish companies using wooden packaging must comply with ISPM15 to prevent the transfer of pests to other countries.

6.2. Environmental Requirements

Turkey operates under the *"Packaging Waste Management Law"* which regulates packaging waste generated domestically and imported. The law aims to reduce the negative environmental impact of packaging and increase the recycling of packaging materials. Companies are required to use recyclable materials and dispose of packaging waste in an environmentally safe manner.

Turkey is developing standards to increase the recycling of packaging materials. These standards promote the use of recyclable materials and reduce the use of non-degradable materials in packaging. Companies are encouraged to use recycled materials in their packaging and improve recycling processes.

6.3. Technical and Safety Requirements

Turkish packaging companies adhere to various technical standards for producing packaging materials such as paper, plastic, glass, metal, and wood. These standards include requirements for durability, flexibility, recyclability, and food compatibility. Compliance ensures that packaging can withstand harsh transportation conditions and protect its contents.

Specialized packaging, such as medical or chemical packaging, is subject to specific safety standards. These standards ensure that packaging is safe under specific conditions (e.g., transporting hazardous materials) and prevents leaks or harm to the environment and human health.

6.4. CLP Regulations in Turkey (Classification, Labeling, and Packaging)

6.4.1. Packaging Requirements for Hazardous Substances and Mixtures

If a substance or mixture is classified as hazardous, suppliers must label and package it in accordance with Turkish regulations. These requirements include adhering to specific standards for packaging hazardous materials to prevent leaks or harm to the environment and human health.

6.4.2. Label Information

Labels on packaging must include information such as the substance name, associated hazards, hazard symbols, and safety instructions. This information must be provided in Turkish and comply with the Globally Harmonized System (GHS) of chemical classification and labeling.

6.4.3. Packaging Standards

Packaging for hazardous materials must prevent leakage, evaporation, or dispersion and withstand various transportation conditions. Such packaging must comply with international standards and Turkish national regulations.

6.4.4. Safety Data Sheets (SDS)

If a substance or mixture is classified as hazardous, the supplier must prepare a Safety Data Sheet (SDS). This document provides comprehensive information on the hazards of the substance, safe packaging methods, storage conditions, and transportation requirements. [Ministry of Environment and Urban Planning, Turkey, 2013; Ministry of Economy, Turkey, 2012; Ministry of Trade, Turkey, 2019; Ministry of Trade, Turkey, 2022].

7. Packaging Standards and Regulations in Azerbaijan

In Azerbaijan, packaging regulations and standards are primarily governed by customs laws and guidelines from international companies. These regulations encompass general packaging requirements, labeling, transportation of hazardous materials, and documentation necessary for customs clearance. Below is a detailed examination of packaging requirements and standards in Azerbaijan, categorized by topic.

7.1. General Packaging Requirements

Packaging in Azerbaijan must comply with the requirements of international companies and regulatory standards. These requirements include protecting goods during transportation and storage. Packaging must be designed to safeguard goods from physical damage, moisture, and other environmental factors. Additionally, packaging should facilitate customs inspections to ensure smooth and efficient clearance processes.

Each package must be labeled or marked with information such as the consignee's name, contract/purchase order (PO) number, invoice number, and package ID/serial number, as per the packing list. This information aids in the identification and tracking of packages during transportation and customs clearance.

Common packaging types used in Azerbaijan include carton boxes, wooden crates, pallets, baskets, shipping frames, and containers. The choice of packaging depends on the nature of the goods and transportation conditions.

The dimensions of the packaging (length × width × height) must be clearly specified. Additionally, the gross weight and net weight of each package must be accurately calculated and included in the packing list. The volumetric weight should also be calculated and recorded to ensure accurate transportation cost calculations.

7.2. Special Requirements for Hazardous Materials

Packaging for hazardous materials in Azerbaijan must comply with international regulations for the transportation of dangerous goods. This includes the use of UN numbers and hazard labels, which must be clearly displayed on the packages. Additionally, a Certificate of Packing and a Material Safety Data Sheet (MSDS) must accompany the shipment to

provide necessary information about the hazards of the materials and how to handle them.

For certain shipments, especially hazardous materials, images of the packaging must be submitted. These images should include an overview of the shipment, separate images of each hazardous material, and images of serial numbers and different parts of the goods. These images assist inspection and customs teams in verifying the accuracy and compliance of the packaging.

7.3. Standards and Regulations

7.3.1. Customs Laws of the Republic of Azerbaijan

Compliance with Azerbaijani customs laws, including requirements for transportation documents, customs clearance, and duty payments, is essential for the import and export of goods. These laws ensure that goods are imported or exported legally and safely.

7.3.2. Incoterms

The Incoterms 2020 rules, particularly FCA (Free Carrier), are commonly used in international trade in Azerbaijan. These terms help define the responsibilities of the seller and buyer in the transportation process.

7.3.3. International Standards for Transporting Hazardous Materials

Compliance with international regulations for transporting hazardous materials, including the use of UN numbers and the provision of MSDS, is mandatory for transporting dangerous goods in Azerbaijan. These regulations ensure the safe transportation of hazardous materials.

7.3.4. Health, Safety, and Environment (HSE) Standards

Obtaining approval from the HSE team in accordance with international safety and health standards is essential for companies involved in packaging and transportation. This approval demonstrates compliance with safety and health standards in operational processes.

7.3.5. Standards for Radioactive Materials

For the transportation of radioactive materials, permits must be obtained from the Ministry of Emergency Situations and other regulatory bodies in Azerbaijan, in accordance with international standards such as those of the IAEA (International Atomic Energy Agency). These permits ensure that radioactive materials are transported safely and in compliance with international laws.

7.3.6. Air and Sea Transportation Standards

Compliance with IATA (International Air Transport Association) regulations for air transportation and SOLAS (International Convention for the Safety of Life at Sea) and IMDG (International Maritime Dangerous Goods Code) regulations for sea transportation is mandatory in Azerbaijan. These regulations ensure that goods are transported safely and in accordance with international standards [Baker Hughes Company, 2023].

8. Packaging Standards and Regulations in Russia

In Russia, packaging regulations and standards are primarily based on international standards such as ISO and European standards. These standards encompass general requirements for safety, quality, and environmental compatibility of packaging. Below is a detailed examination of packaging requirements and standards in Russia, categorized by topic.

8.1. General Packaging Standards

8.1.1. ISO/TS 22002-4:2013

This technical specification, titled *"Prerequisite Programs for Food Safety – Part 4: Food Packaging Manufacturing,"* outlines prerequisite programs for food safety in the production of food packaging. It covers areas such as facility design, contamination control, cleaning, raw material management, pest control, and other related aspects. The goal of this standard is to ensure that food packaging is produced in a way that prevents food contamination.

8.1.2.   ISO 22000:2005

This international standard, titled *"Food Safety Management Systems – Requirements for Any Organization in the Food Chain,"* sets general requirements for organizations involved in the food supply chain. It helps companies engaged in food packaging production to improve their food safety management systems and ensure the safety of their products.

8.1.3.   ISO/TS 22002-1:2009

This technical specification, titled *"Prerequisite Programs for Food Safety – Part 1: Food Manufacturing,"* addresses prerequisite programs for food safety in food production. It includes requirements for contamination control, cleaning, raw material management, and pest control, which directly impact food safety.

8.1.4.   BS PAS 223:2011

This British standard, titled *"Prerequisite Programs and Design Requirements for Food Safety in the Manufacture and Provision of Food Packaging,"* focuses on prerequisite programs and design requirements for food safety in the production and provision of food packaging. It emphasizes the importance of proper facility and process design to prevent food contamination.

8.1.5.   EN 15593:2008

This European standard, titled *"Packaging – Hygiene Management in the Production of Food Packaging – Requirements,"* addresses hygiene management in the production of food packaging. It specifies requirements for hygiene and cleanliness in packaging production environments, helping companies prevent food contamination.

8.1.6.   ISO 21067

This international standard, titled *"Packaging – Vocabulary,"* defines terms and concepts related to packaging. It helps establish a common language in the packaging industry and facilitates understanding of packaging-related concepts.

For product labeling in Russia, standard requirements that are common in most countries must be followed, including:

- Trademark
- Manufacturer's name
- Country of origin
- Ingredients and composition
- Production and expiration dates
- Product volume and weight
- Special usage instructions (if the product is intended for specific groups) and storage guidelines
- Nutrition facts table (for food products)
- Usage warnings and side effects (for pharmaceutical, food, and hygiene products)

Additionally, labels must include certification marks and other standard symbols, which will be discussed in detail in the certification section. Some labeling in Russia is optional, such as indicating the place of production, which can be written in English.

8.2. General Requirements for Food Packaging Production

Food packaging production facilities must be designed and constructed to prevent food contamination by using corrosion-resistant materials, ensuring easy cleaning, and avoiding the accumulation of contaminants. Effective contamination control measures are essential, including the use of air filters, regulation of temperature and humidity, and preventing the entry of microbiological, physical, or chemical contaminants into the production environment. Regular cleaning programs must be implemented for equipment, floors, and walls, along with the use of suitable cleaning agents to maintain hygiene. Pest control is critical, requiring traps, pesticides, and preventive measures to eliminate pests. Personnel must adhere to strict hygiene practices and wear appropriate PPE, such as gloves, masks, and protective clothing. For recyclable materials, safe management processes must be in place to ensure they do not compromise packaging safety, including proper separation and

recycling methods. Storage and transportation of raw materials and finished products must prevent contamination through clean facilities and controlled temperature and humidity conditions. Where chemical migration from packaging to food is a risk, measures such as safe material selection and migration testing are necessary. Finally, proper labeling—including production dates, serial numbers, and storage instructions—is required to ensure traceability across the supply chain.

8.3. International Standards Used in Russia

8.3.1. ISO 11683
This standard, titled *"Packaging of Dangerous Goods,"* is used for packaging hazardous materials. It ensures that dangerous goods are safely packaged and transported.

8.3.2. ISO 2234
This standard, titled *"Packaging – Testing of Resistance,"* is used for testing the resistance of packaging. It helps companies ensure that packaging can withstand harsh transportation conditions.

8.3.3. ISO 45001
This standard, titled *"Occupational Health and Safety Management Systems,"* is used for managing occupational health and safety. It helps companies create a safe and healthy work environment for their employees.

8.3.4. ISO 14001
This standard, titled *"Environmental Management Systems,"* is used for

environmental management. It helps companies reduce the environmental impact of their activities and improve their environmental performance [Federal Agency for Technical Regulation and Metrology, 2015].

9. Comparison of Packaging Standards and Requirements in Iran and Neighboring Countries

To compare the packaging standards and requirements in Iran and its neighboring countries (Iraq, the United Arab Emirates, Turkey, Azerbaijan, and Russia), the following criteria are established:

1. Regulatory Organization and Main Standards
2. Import and Export Regulations
3. Quality Management Systems
4. Labeling and Information on Packaging
5. Transportation of Hazardous Materials
6. Packaging Technologies
7. Waste Management and Recycling
8. Cultural Impacts and Consumer Preferences

9.1. Regulatory Organization and Main Standards

In Table 1, the organizations responsible for setting packaging standards and the main standards used in each country are listed. This table shows which standards (national or international) each country follows and which organizations oversee these standards.

Table 1. Regulatory Organization and Main Standards

Country	Regulatory Organization	Main Standards
Iran	INSO	National Standards (INSO)
Iraq	Ministry of Commerce	ISO, GHS
UAE	ESMA	GSO, ISO
Turkey	TSE	ISO 9000, ISO 14001, ISO 22000
Azerbaijan	Ministry of Economy	Incoterms 2020
Russia	GOST	ISO/TS 22002-4, ISO 22000

Analysis:

• **Iran:** The National Standards Organization of Iran (INSO) is responsible for setting packaging standards. Iran's national standards (INSO) are based on international standards such as ISO, but further alignment with global standards is needed.

• **Iraq:** The Ministry of Commerce and customs organizations are responsible for setting standards. Iraq follows international standards such as ISO and GHS, but enforcement faces challenges.

• **UAE:** The Emirates Authority for Standardization and Metrology (ESMA) is responsible for setting standards. The UAE is a leader due to its high alignment with international standards (GSO and ISO) and focus on safety and quality.

• **Turkey:** The Turkish Standards Institution (TSE) is responsible for setting standards. Turkey has made significant progress due to its developed packaging industry and alignment with EU standards.

• **Azerbaijan:** The Ministry of Economy and customs organizations are responsible for setting standards. Azerbaijan follows Incoterms 2020 and international regulations for hazardous materials but needs to improve customs infrastructure.

• **Russia:** The Russian standardization organizations (GOST) are responsible for setting standards. Russia has made good progress due to its alignment with European standards and focus on food safety.

9.2. Import and Export Regulations

In Table 2, the regulations related to the import and export of packaging in each country are examined. This table shows the laws each country applies for international packaging trade and the extent to which they align with international standards.

Table 2. Import and Export Regulations

Country	Import and Export Regulations
Iran	Need for improvement in import and export regulations
Iraq	Need for improvement in import and export regulations
UAE	Advanced regulations aligned with international standards
Turkey	Advanced regulations aligned with international standards
Azerbaijan	Need for improvement in import and export regulations
Russia	Advanced regulations aligned with international standards

Analysis:

• **Iran:** Need for improvement in import and export regulations.

• **Iraq:** Need for improvement in import and export regulations.

• **UAE:** Advanced regulations aligned with international standards.

• **Turkey:** Advanced regulations aligned with international standards.

• **Azerbaijan:** Need for improvement in import and export regulations.

• **Russia:** Advanced regulations aligned with international standards.

9.3. Quality Management Systems

In Table 3, the quality management systems used in each country are listed. This table shows which standards each country uses to ensure packaging quality.

Table 3. Quality Management Systems

Country	Quality Management Systems
Iran	ISO 9000
Iraq	Need for improvement in quality management systems
UAE	ISO 9000, ISO 14001
Turkey	ISO 9000, ISO 14001, ISO 22000
Azerbaijan	Need for improvement in quality management systems
Russia	ISO 9000, ISO 14001, ISO 22000

Analysis:

• **Iran:** Use of ISO 9000, but improvements are needed in some areas.

• **Iraq:** Need for improvement in quality management systems.

• **UAE:** Use of ISO 9000 and ISO 14001.

• **Turkey:** Use of ISO 9000, ISO 14001, and ISO 22000.

• **Azerbaijan:** Need for improvement in quality management systems.

• **Russia:** Use of ISO 9000, ISO 14001, and ISO 22000.

9.4. Labeling and Information on Packaging

Comparative Analysis of Packaging Requirements, Laws, and Regulations in Iran and Neighboring Countries

In Table 4, the requirements for labeling and the information that must be included on packaging are listed. This table shows what information (such as nutritional information, expiration dates, and safety details) each country mandates.

Table 4. Labeling and Information on Packaging

Country	Labeling Requirements
Iran	Complete and clear information
Iraq	Complete and clear information
UAE	Nutritional information and expiration dates
Turkey	Complete and clear information
Azerbaijan	Complete and clear information
Russia	Complete and clear information

Analysis:

- **Iran:** Labeling must include complete and clear information. Iran has made good progress in this area, but improvements are needed for hazardous materials labeling.

- **Iraq:** Labeling must include complete and clear information. Iraq follows international standards for hazardous materials, but enforcement faces challenges.

- **UAE:** Labeling must include nutritional information and expiration dates. The UAE is a leader due to its high alignment with international standards.

- **Turkey:** Labeling must include complete and clear information. Turkey has made significant progress due to its developed packaging industry and alignment with EU standards.

- **Azerbaijan:** Labeling must include complete and clear information. Azerbaijan follows international standards for hazardous materials but needs to improve customs infrastructure.

- **Russia:** Labeling must include complete and clear information. Russia has made good progress due to its alignment with European standards and focus on food safety.

9.5. Transportation of Hazardous Materials

In Table 5, the requirements for transporting hazardous materials in each country are listed. This table shows which standards and regulations each country follows for the transportation of hazardous materials.

Table 5. Transportation of Hazardous Materials

Country	Hazardous Materials Transportation Requirements
Iran	Compliance with national and international standards
Iraq	Adherence to international regulations such as GHS
UAE	Compliance with international regulations and GSO standards
Turkey	Compliance with ISO standards and EU regulations
Azerbaijan	Adherence to Incoterms 2020 and international regulations
Russia	Compliance with international and European standards

Analysis:

- **Iran:** Compliance with national and international standards, but improvements are needed in enforcement.

- **Iraq:** Adherence to international regulations such as GHS, but enforcement is weak.

- **UAE:** Compliance with international regulations and GSO standards.

- **Turkey:** Compliance with ISO standards and EU regulations.

- **Azerbaijan:** Adherence to Incoterms 2020 and international regulations.

- **Russia:** Compliance with international and European standards.

9.6. Packaging Technologies

In recent years, the packaging industry has emerged as a key pillar in supply chain and marketing strategies across various countries, undergoing significant technological transformations. The integration of advanced technologies into production and packaging processes has considerably enhanced efficiency, safety, and environmental sustainability. However, the extent to which these technologies are adopted varies across nations,

depending on factors such as the level of industrial development, economic policies, access to modern technologies, and investment in research and development. Table 6 presents a comparative overview of the level of technology used in the packaging industry

across six countries. The comparison is based on four main indicators: overall technology level, degree of automation, adoption of advanced packaging technologies, and key technological challenges.

Table 6. Comparative analysis of technological indicators of the packaging industry

Country	Overall Technology Level	Degree of Automation	Adoption of Advanced Technologies
Iran	Medium	Limited to Moderate	Limited (developing)
Iraq	Low	Very Limited	Almost Non-existent
UAE	Very High	Advanced	Active (smart, sustainable, digital)
Turkey	High	Advanced	Growing and Diverse
Azerbaijan	Medium to Low	Limited	Limited (early stage)
Russia	High	Relatively Advanced	Active in select sectors

Analysis:

• **Iran**: Iran's packaging industry still faces challenges such as heavy reliance on imported machinery and specialized raw materials. State-of-the-art equipment like automated filling machines, smart labeling systems, or vacuum packaging technologies are mostly imported from Europe or East Asia. Digital technologies such as digital printing, smart sensors, and RFID tracking are in early stages of development and are primarily used in export-oriented sectors like pharmaceuticals and select food products.

• **Iraq**: Iraq's packaging industry is still in its infancy, with most factories relying on traditional or semi-automated technologies. Imported second-hand machinery from neighboring countries like Turkey, Iran, and China is common. The level of automation remains low, and there is virtually no use of smart packaging, active packaging, or quality-monitoring sensors. Due to infrastructural and economic limitations, investment in packaging technologies is minimal, and most small-to-medium enterprises use outdated equipment.

• **UAE**: The UAE is one of the regional leaders in adopting advanced packaging technologies. Fully automated systems in food, cosmetics, and pharmaceutical sectors are widespread. Technologies such as digital

printing on packaging, dynamic barcodes, interactive QR codes, smart biodegradable materials, RFID, and smart product tracking are extensively used. The country acts as a regional hub for innovation in sustainable and intelligent packaging, with several multinational R&D centers based in Dubai.

• **Turkey**: Turkey, with its strong domestic manufacturing base, has successfully localized much of its packaging technology. Industries such as food, pharmaceuticals, and beverages commonly use advanced equipment with PLC controls, packaging robots, digital printers, and automatic quality control systems. Turkish firms have also focused on sustainable packaging solutions and eco-friendly designs. There is increasing attention on smart packaging features such as interactive labels and spoilage detection sensors.

• **Azerbaijan**: Azerbaijan's packaging sector is developing, though it has yet to reach the sophistication of leading regional players. Most technology in use is imported, primarily from Turkey and Russia. Semi-automated systems and basic packaging lines are more common, while advanced technologies like vacuum sealing, smart bioactive packaging, or digital printing are not yet widespread. However, recent government initiatives aimed at boosting non-oil exports have

spurred investment in modern technologies from Europe and China.

● **Russia**: Russia boasts a large-scale packaging industry, particularly advanced in sectors such as food, pharmaceuticals, and chemicals. Fully automated systems, industrial robots, smart sensors, and RFID are standard in large enterprises. Some Russian companies have developed indigenous packaging technologies tailored to harsh climate conditions and extreme temperature variations. Additionally, Western sanctions have fueled a shift toward domestic innovation, accelerating independent technological advancement in industrial packaging.

9.7. Waste Management and Recycling

Waste management and recycling systems are vital to achieving sustainable environmental practices. This section compares the performance, infrastructure, and regulatory mechanisms of each country based on data from 2022–2025. A comparison of recycling rates and landfill dependency reveals significant disparities. Figure 2 illustrates the plastic recycling versus landfilling rates by country, while Table 7 provides the Environmental Performance Index (EPI) scores for waste recovery and recycling.
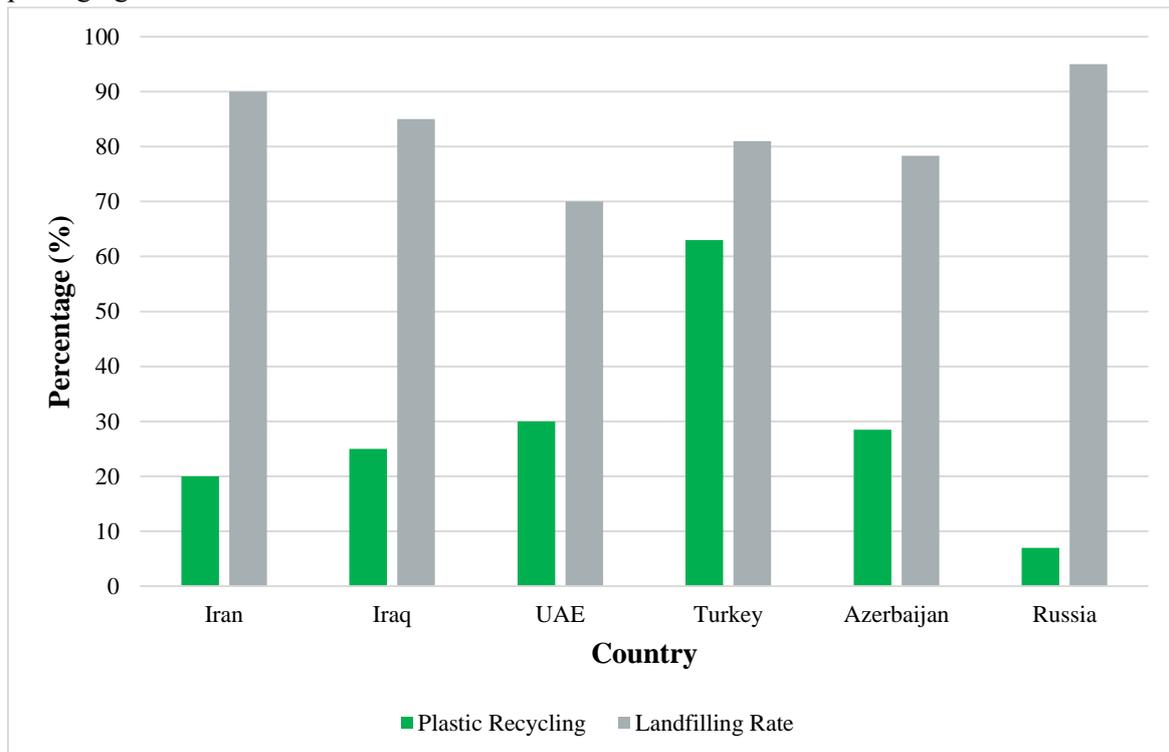

Figure 2. Plastic Recycling vs. Landfilling Rate by Country

Table 7. Environmental Performance Index (EPI)

Country	EPI Waste Recovery Score (2024)	EPI Recycling Score (2022)
Iran	17	16.8
Iraq	4.8	15.4
UAE	5.9	24.5
Turkey	12.3	32
Azerbaijan	12.6	14.4
Russia	4	5.3

Analysis:

● **Iran:** With a Waste Recovery Score of 17 and a Recycling Score of 16.8, Iran ranks in the mid-range among the selected countries. The plastic recycling rate is only 20%, while 90% of waste is landfilled. These figures indicate that despite some national-level policies, recycling and source separation systems are not effectively implemented, and the country remains highly dependent on landfilling (Middle East Industrial Packaging Market Report, 2025).

● **Iraq**: Iraq has low scores in both the Recycling (15.4) and Waste Recovery (4.8) indices. Although the plastic recycling rate is 25%, a high 85% of waste is still landfilled. These numbers reflect weak infrastructure and insufficient policy execution in waste management. Despite a somewhat reasonable plastic recycling rate, the widespread use of landfilling indicates a lack of an efficient source separation system (Musheb, 2018).

● **UAE**: The UAE shows relatively good performance with a Recycling Score of 24.5 and a plastic recycling rate of 30%. Landfilling accounts for 70% of waste, which is lower than in most other countries reviewed. These figures suggest that waste management policies in the UAE have been relatively effective, particularly in reducing reliance on landfilling (Middle East Industrial Packaging Market Report, 2025).

● **Turkey**: Turkey has the highest Recycling Score (32) among the countries and a plastic recycling rate of 63%, indicating relatively strong performance. However, with 81% of waste still being landfilled, a large share of waste remains outside the recycling cycle, pointing to incomplete system efficiency (European Environment Agency, 2025).

● **Azerbaijan**: Azerbaijan has a Recycling Score of 14.4 and a plastic recycling rate of 28.50%, reflecting moderate performance. However, with more than 78% of waste being landfilled, the recycling capacity is far from fully utilized. This gap highlights the need to improve infrastructure and expand source separation, especially in rural areas (LEF Network Azerbaijan, 2023).

● **Russia**: Russia reports the lowest scores in the EPI indices (5.3 in Recycling and 4.0 in Waste Recovery). With a plastic recycling rate of only 7% and a landfilling rate of 95%, its overall waste management performance is poor. These figures show that recycling still plays a very limited role in Russia's waste system (Korobova et al., 2019). (World Population Review, 2025a, 2025b)

9.8. Cultural Impacts and Consumer Preferences

In the design and formulation of packaging policies, paying attention to cultural differences and consumer preferences is of great importance. Ignoring these factors can lead to market failure, especially in multicultural societies or during regional exports. Culture and consumer tastes play a fundamental role in product perception and selection in various aspects such as colors, symbols, language, script, packaging material, presentation of information, and images (Şener et al., 2015; Khal Hamza, 2015). Packaging is not only a means of protecting the product but also a cultural and communicative tool to convey values, identity, and trust. Table 8 compares the prominent cultural influences on packaging design to show how each country uses native and cultural elements to strengthen brand messaging, build trust, and increase consumer loyalty.

Table 8. Cultural impacts and consumer preferences on packaging design

Country	Cultural Features Influencing Packaging Design	Consumer Preferences
Iran	Use of Persian script, Islamic motifs, native colors, traditional arts	Emphasis on national identity, authenticity, and cultural aesthetics

Comparative Analysis of Packaging Requirements, Laws, and Regulations in Iran and Neighboring Countries

Country	Cultural Features Influencing Packaging Design	Consumer Preferences
Azerbaijan	National designs and colors, use of local language	High loyalty to packaging with native identity
United Arab Emirates	Minimalist design, natural colors, transparency of information	Preference for social and environmental responsibility
Turkey	High quality, durable design, complete information, cultural-historical influence	Focus on protective function and contemporary cultural fit
Iraq	Arabic language, transparency of information, simple and reliable design	Preference for authenticity, simplicity, respect for collectivist values
Russia	Use of historical, mythological symbols, churches, political figures	Preference for serious, nostalgic, ideologically meaningful design

Analysis:

• **Iran:** In Iran, the use of cultural elements and national identity such as Persian script, Islamic motifs, traditional arts, and native colors in packaging design—especially for export products—plays an important role in brand distinction and authenticity (Minaei, 2018; Zaryabi, 2024). Iranian saffron packaging is a prominent example of the integration of culture and audience communication strategy. Moreover, culture-oriented design in handicrafts packaging positively affects consumer attitudes and increases their loyalty from a consumer behavior perspective (Yavari & Mazochi, 2024). Thus, packaging can serve as a cultural ambassador and create added cultural value for the product.

• **Azerbaijan:** Consumers in Azerbaijan prefer packaging that incorporates traditional elements, national colors, native designs, and local language. This type of packaging strengthens feelings of trust, identity, and familiarity among consumers and plays a key role in fostering loyalty, especially in domestic and regional markets (Minaei, 2018).

• **UAE:** Consumer preferences in the UAE emphasize simple designs, natural colors, transparency of information, and social responsibility. Studies show that about 86% of consumers trust brands with social and environmental responsibility approaches more, and approximately 49% prefer products to be visible through transparent packaging (Şener et al., 2015; Alsoufi, 2023). This indicates the significant influence of social and cultural values on packaging choices in this country.

• **Turkey:** In Turkey, consumers value the durability of packaging, complete and accurate information, material quality, and protective design (Şener et al., 2015). Historical studies on the pasta brand "Piyale" show that its packaging reflects cultural and political transformations in the country—from Western modernization to traditional and family-oriented tendencies over recent decades (Karamullaoglu & Sandikci, 2019).

• **Iraq:** In Iraq, consumer culture is influenced by collectivism, family orientation, power distance, and the desire for information transparency. Packaging that provides complete information, uses Arabic language, displays standard certifications, and has simple and reliable design is more accepted by consumers (Khal Hamza, 2015; Alsoufi, 2023). Consumers tend to trust packaging that reflects authenticity, transparency, and respect for social values.

• **Russia**: In Russia, packaging goes beyond technical function and is used as a tool to represent national identity, history, and mythology. The use of symbols such as historical churches, imperial figures, and folkloric motifs is common (Roberts, n.d.). Some brands also use packaging to convey political ideology; packaging design in Russia is generally serious, nostalgic, and history-focused.

10.   Conclusion

This study shows that although Iran has made significant progress in areas such as food safety and labeling, practical and targeted actions are still required to enhance its packaging industry and increase competitiveness in global markets. As a first step, updating packaging standards through the adoption and implementation of international norms—and aligning with European Union packaging directives in areas such as waste reduction, use of recycled materials, design for recyclability, and environmental compatibility—is deemed essential. Furthermore, continuous monitoring and evaluation mechanisms must be established to ensure that domestic production aligns with global standards.

The development of specialized human resources is another fundamental requirement for this sector. This can be achieved through the design and implementation of specialized training programs in modern packaging technologies, the introduction of relevant university-level programs, the establishment of vocational training centers aligned with international standards, and the organization of workshops in collaboration with leading regional and international companies. Additionally, enhancing the technical knowledge of the workforce through academic exchange programs and sending students and professionals abroad for specialized training can prove highly effective.

Moreover, transforming waste management requires investment in modern recycling plants, the creation of segregated collection networks for packaging waste, and the formulation of mandatory policies for the use of biodegradable materials in packaging high-consumption products. Implementing Extended Producer Responsibility (EPR) laws can play a major role in reducing waste volume, increasing recycling rates, and improving material consumption patterns in manufacturing industries. The success of such initiatives relies heavily on broad public awareness campaigns focused on source separation and responsible consumption. Neighboring countries such as the United Arab Emirates and Turkey—with their successful experiences in enforcing international standards, developing modern environmental policies, and utilizing advanced technologies in the packaging supply chain—serve as suitable models for Iran. The UAE has effectively implemented EPR programs and established fully automated recycling centers, while Turkey has aligned its legislation with European Union standards and achieved a significant share in the export of packaged products. Learning from these experiences can help pave the way for Iran's development.

By implementing these strategies, Iran's packaging industry will be able to improve product quality and safety while securing a larger share of regional and global markets. These developments will not only reduce waste, increase efficiency, and optimize resource consumption, but also contribute significantly to sustainable industrial and economic growth through the creation of specialized jobs, development of indigenous technologies, enhanced non-oil exports, and improved international brand image. In this process, simultaneous attention to technical, environmental, economic, and cultural requirements will be a key factor in designing packaging that meets domestic market needs and remains competitive on the international stage.

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