

## **FOOD STANDARDS**

### **Learning Outcomes**

By the end of this lecture, learners should be able to:

1. Explain the meaning and importance of standardization and food standards.
2. Describe the various kinds of food standards.
3. Distinguish between mandatory/compulsory and voluntary standards and why they are important in food businesses.
4. Explain the role of local and international organizations in the formulation, development and implementation of food standards.
5. Identify the various ISO standards used in food businesses and the benefits associated with their use.

### **Meaning and importance of standards and standardization**

A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose. Product standards and code of practice assist manufacturers to produce commodities that meet minimum specifications for quality and safety. Standardization is a process of ensuring uniformity in products and services by use of appropriate standards. The process ensures efficient utilization of resources through reduction of wastes. Food standards are documents containing requirements, specifications, guidelines or characteristics that can be used consistently to ensure that food materials, products, processes and services produced are fit for human consumption. In any country, food standards are established by regulatory authorities and enforced by governments, food companies and retailers.

### **Importance of food standards**

1. Safeguards the health of consumers
2. Ensure confidence of consumers in the food systems (from farm to table)
3. Enable consumers to make informed decisions concerning the food they purchase.
4. Used to differentiate different food products
5. Used to communicate product quality and safety to consumers

6. Used as a competitive strategy to enhance product marketing- (standards provide opportunities to companies/firms who use them to their competitive advantage).

There are three kinds of standards, namely:

1. **Process standards:** which specify how the product should be produced
2. **Product standards:** which specify the features and characteristics of the food product
3. **Information standards:** These are concerned with labelling and other communications that go with the product. Labelling and packaging standards add value to food by ensuring that the food is protected, is well presented and that the right information on the food product is passed to the consumer. Labels also add value by providing ease of retailing and traceability through bar coding.

Standards may further be classified into:

- **Mandatory/compulsory standards:** These are minimum quality and safety requirements that a product needs to meet for to be allowed into the market. These requirements ensure that consumers are not exposed to unsafe foods. Governments, International organizations and private companies try to ensure food safety and quality by imposing compulsory minimum standards for a product and banning the sale of any item that does not comply with certain minimum criteria.
- **Voluntary standards:** These are extra standards adopted by food industries/firms in addition to the mandatory standards that give their products a competitive marketing advantage. Specific requirements related to grading and classification may be used to help in market stratification. This enables products to penetrate many more markets based on pricing, consumer preference and tastes.

### **Role of CODEX in formulation of international food standards**

Food standards are mandatory for international trade. They are considered barriers to trade due to technical and managerial difficulties faced in compliance. Harmonized mandatory international food standards are formulated by Codex Alimentarius Commission, an FAO/WHO joint committee on food standards. Codex carries out scientific food research and investigations to enable formulation of appropriate standards. Codex formulates:

- Standards covering processed, semi-processed as well as raw foods.
- Hygiene and technological codes of practice

- Evaluates food additives and veterinary drugs
- Sets minimum levels of pesticide residues
- Guidelines for food contaminants

### **Role of International Organization for standardization (ISO)**

This is the world's largest developer of voluntary international standards. Important ISO standards related to food safety include:

1. ISO 9000: Quality Management Standard
2. ISO 14000: Environmental Management Standard
3. ISO 22000: Food Safety Management Standard
4. ISO 17025: Laboratory Management Standard.

**ISO 9001:2000 Quality Management Systems (QMS):** This is one of the standards in the ISO 9000: Quality Management family of standards. It specifies requirements for a quality management system where an organization needs to demonstrate its ability to consistently provide products that meet customer and applicable regulatory requirements. ISO 9001:2000 QMS places emphasis on customer satisfaction and is recognized worldwide as an effective tool for facilitating regional and international trade because products produced by an organization certified to the ISO QMS have higher perceived quality in the market and therefore gives an implementing firm a competitive advantage in the market.

**ISO 9001: 2008:** is part of ISO 9000 family of standards that sets out the criteria for a quality management system. The standard is based on a number of quality management principles including a strong customer focus, the motivation and implications of top management, the process approach and continual improvement. Application of the standard ensures that customers get consistent good quality products and services, which in turn brings many business benefits. Audits that are important part of the standard are meant to check that the system works. An organization must perform internal audits to check how its quality management system is working.

### **ISO 22000: Food Safety Management Standard**

**ISO 22000** family of international standards addresses food safety management. The standard helps organizations to identify and control food safety hazards. Due to the enhanced international trade in food products, international standards are needed to ensure the safety of global food supply chain.

**ISO 22000: 2005** contains the overall guidelines for food safety management and sets out the requirements for a food safety management system. It maps out what an organization needs to do to demonstrate its ability to control food safety hazards in order to ensure that food is safe. It can be used by any organization regardless of its size or position in the food production chain.

**ISO 22005: 2007** focuses on traceability in the feed and food chain. It gives the principles and specifies the basic requirements for the design and implementation of a feed and food traceability system. It can be applied by any organization operating at any step in the feed and food production chain.

**ISO/TS 22002-1: 2009** specifies requirements for establishing, implementing and maintaining programs to assist in controlling food safety. The standard is applicable to organizations involved in food manufacturing. Food manufacturing operations are diverse in nature and not all of the requirements specified in this standard apply to any individual establishment. The standard specifies detailed requirements considered in relation to food manufacturing including:

- (a). Construction and layout of buildings and associated utilities
- (b). Layout of premises, including work space and employee facilities
- (c). Supplies of air, water, energy and other utilities
- (d). Supporting services, including waste and sewage disposal
- (e) Suitability of equipment and its accessibility for cleaning maintenance and preventive maintenance
- (f) Management of Purchase materials
- (g). Measures for the prevention of cross-contamination
- (h). Cleaning and sanitizing
- (h). Pest control
- (j). Personal hygiene
- (k). Re-work of products
- (l). Recall procedure
- (m). Warehousing
- (n). Product information and consumer awareness
- (o) Food defense, bio-vigilance and bioterrorism

**ISO/TS 22002-3: 2011** specifies requirements and guidelines for the design, implementation and documentation of requisite programs that maintain a hygienic environment and assist in controlling food safety hazards in the food chain. The standard is applicable to the farming of crops e.g. cereals, fruits vegetable,) living farm animals e.g. cattle, poultry, pigs and fish) and the handling of their products (e.g. Milk, meat and eggs). All operations related to farming are included in the scope (e.g. sorting, cleaning, packing of unprocessed products, on-farm feed manufacturing and transport within the farm).

### **ISO 14000: Environmental management standard**

The ISO 14000 family addresses various aspects of environmental management. It provides practical tools for companies and organizations looking to identify and control their environmental performance. ISO 14001:2004 and ISO 14004: 2004 focuses on environmental management systems. ISO 14001: 2004 sets out the criteria for an environmental management system and its use provides assurance to a company management and employees as well as stakeholders that environmental impact is being measured and improved. The benefits of using ISO 14001:2004 standard include:

1. Reduced cost of waste management
2. Savings in consumption of energy and materials
3. Lower distribution costs
4. Improved corporate image among regulators, customers and the public.

Companies can be certified to this standard.

**ISO 14004:2004** provides guidelines on establishment, implementation, maintenance and improvement of an environmental management system, and its coordination with other management systems. The guidelines are applicable to any organization, regardless of its size, type, location or level of maturity.

### **Benefits of ISO standards**

1. They ensure that products and services are safe, reliable and of good quality.
2. They are strategic tools for minimizing waste and errors,
3. They increasing productivity and enhance customer satisfaction.
4. They level playing fields for developing countries and facilitate free and fair trade.
5. They breaking barriers to international trade which assist food companies access new markets,
6. They help to harmonize technical specifications of products and services making industry more efficient

Conformity to the above international standards helps reassure consumers that products are safe, efficient and good for the environment.

## Development and implementation of food standards in Kenya

The standard Act Cap 496, laws of Kenya is meant to promote the standardization of the specifications of commodities and to provide for commodities and codes of practice. The Act established the Kenya Bureau of Standards. The Kenya Bureau of Standards (KEBS) is a national standards body charged with the following functions:

- To promote standardization in industry and commerce
- To make arrangements or provide facilities for testing and precision instruments, gauges and scientific apparatus for the determination of their degree of accuracy, and
- To make arrangements to provide facilities for the examination and testing of commodities and materials or substances, and determine the manner in which such commodities may be manufactured, produced, processed, produced or treated.

The aims and objectives of KEBS include:

1. Formulation, development and harmonization of standards relating to products, measurements, and material production processes and their promotion at national, regional and international levels. KEBS draws a lot from CODEX and ISO standards and those of other countries The agency has developed over 3800 Kenya standards and harmonized 265 East African Food Standards.
2. Certification of products and industrial processes that assist in production of quality products. Certification is a term used when a third party gives a written assurance that a product service, system process or material conforms to specific requirements. KEBS gives third party assurance for both product and system certification through the following schemes:
  - a) **Diamond Mark of quality** for products that have consistently excelled in meeting the required product standards. The certification adds value to the product by assuring the buyer that the product is of good quality and therefore the diamond mark can be used as a marketing tool by the manufacturers.
  - b) **HACCP Certification:** Export markets are increasingly demanding for clean and safe foods free from harmful substances and food borne microorganisms. KEBS certifies organizations/firms that have successfully applied CODEX HACCP principles of 1997.

- c) **ISO 9001:2000 Quality Management Systems (QMS).** This specifies requirements for a quality management system where an organization needs to demonstrate its ability to consistently provide products that meet customer and applicable regulatory requirements. ISO 9001:2000 QMS places emphasis on customer satisfaction and is recognized worldwide as an effective tool for facilitating regional and international trade because products produced by an organization certified to the ISO QMS have higher perceived quality in the market and therefore gives an implementing firm a competitive advantage in the market. KEBS certifies firms to ISO 9001:2000 QMS as a means of adding value to products and services offered by certified firms
- d) **ISO 14001 Environmental Management System (EMS):** Is a means by which companies worldwide can ensure that their production does not impact negatively on the environment. KEBS certifies firms to ISO 14001 as a means of value addition to food products as it ensures the sustainability of the environment from which they are produced. Consumers and governments are increasing demanding that whatever food are offered for sale, they should be produced in an environmentally friendly manner
3. Quality inspection of import goods at ports of entry. KEBS has inspection offices at all legal points of entry in Kenya.
  4. Improvement of measurement accuracies and dissemination of information relating to standards. KEBS does calibration of equipment to enable them measure accurately. Accurate measuring equipment used in production ensures that products are up to the required standards as formulations and processing depends on these measurements. In addition, calibration ensures that the correct volume and weight are sold to the consumers.
  5. Assistance with implementation of standards. KEBS implements the Standards Code of Practice that ensures food is manufactured ethically to meet safety requirements of consumers throughout the world.
  6. Liaise closely and render efficient services to industry.
  7. Consumer protection through handling of complaints
  8. Training and technical assistance