

Food Quality and Security Focused on Consumer Needs

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Abstract

The development of today's global markets in line with modern consumer requirements has led to a complex new approach to the food sector and its key determinants. Food quality is attracting increasing interest from consumers and producers alike. An enterprise must make products with a level of quality that meets the requirements of the market and the level of quality of the competition. The development of today's global markets in line with modern consumer requirements has led to a complex new approach to the food sector and its key determinants. One of the main concerns of companies in the food industry is to implement a product design from both the consumer's and the manufacturer's perspective. The main challenge facing companies in the food industry is to transpose the subjective needs of the modern consumer in terms of product quality and safety requirements. The objective of this empirical research is to identify and present the key factors that a food company needs to focus on in order to determine consumer preferences and meet quality standards. Consumer dissatisfaction and its main causes must be taken into account and must be kept to a minimum through the process of continuous improvement.

Keywords: Consumer Needs, Food Industry, Food Quality, Food Safety, Smart Packaging.

Introduction

Knowledge of goods is becoming increasingly important as a result of the intensification of international trade in goods requiring commodity knowledge (Little et al., 2018), the development by governments of laws and regulations based on commodity arguments (Peet & Hartwick, 2015): for example, regulations on what to write on the labels of the goods, the standardization of the composition, the specification of the ingredients to be avoided or allowed in food, cosmetics, packaging, regulations regarding the effects of production and use of goods on the environment, etc., the dissemination at the media level (Semwal & Rani, 2019) and others.

Nowadays, food quality is attracting increasing interest from consumers and producers alike (Scarpato et al., 2017). An enterprise must make products with a level of quality that meets the requirements of the market and the level of quality of the competition.

The development of today's global markets in line with modern consumer requirements has led to a complex new approach to the food sector and its key determinants. Previous theories describing the mechanisms of the food market as a simple three-step process - "producing - selling - buying" - are now growing in models developed on the basis of several determinants that have a common challenge: quality (Goodman & Goodman, 2016). The recent progress of the functioning of quality management models and systems has important effects on strengthening the competitive advantage through innovation (Dima, 2020). Issues related to the risk of consumption or the risk of the production process are directly related to the quality characteristics of the products and the protection of consumer interests. Before starting the production and marketing processes, any producer must be aware of the legal requirements regarding food safety, sensory characteristics,

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legislative regulations and the needs of consumers internationally (King et al., 2017). Once all this is established, the manufacturer can create a quality control system that provides safety to consumers (Dobrin et al., 2015).

Literature Review

Strong companies and their business models have persevered over time, succeeding in overcoming challenges and adopting pricing and management strategies (Deac et al., 2016) towards a smarter economy, as demonstrated in this paper. The success of multinational companies in the food industry is due to business strategies that focus on innovation, research and development and presence in foreign markets, but also on risk management and productivity gain (Gellynck, Vermeire & Viaene, 2007). In this context, the innovative factor in the food sector, as a link between technology and the market, has led food companies to develop new principles and management systems that can offer the consumer real guarantees of quality (King et al., 2017).

A successful management model creates a logic that connects the ethnic potential of the organization with the creation of economic value (Schoemaker, Heaton & Teece, 2018). The management model unlocks the latent value of a technology (in this case applicable in food production), facilitating, over time, the subsequent search for new models, alternatives for the development over time of other technologies (Pittaway & Autio, 2015).

One of the main concerns of multinational companies in the food industry is to implement a product design from both the consumer's and the manufacturer's perspective. In this sense, companies are constantly trying to develop and improve product and process strategies, in order to better understand the modern vision of the food sector, globally. As a result, the most common barriers are the fact that producing companies and consumers have different ranking criteria for the quality characteristics of food (Gold, Kunz & Reiner, 2017). Thus, companies focus more on productivity, in line with food safety issues and in terms of product and production processes (Dima, 2018), while consumers are concerned with the aesthetic elements of the product, such as packaging or shape (Porter & Kramer, 2019).

Therefore, the main challenge facing companies in the food industry is to transpose the subjective needs of the modern consumer in terms of product quality and safety requirements (Pamfilie et al., 2016). Current food companies that produce in accordance with food quality and safety standards have a major competitive advantage, but this advantage will not materialize in the long run if the innovation factor falls only within the limits of quantifiable characteristics.

Due to the growing importance of quality and safety requirements in recent decades in the food sector, quality and food safety management today is a guarantee of modern consumer confidence, which removes barriers with a direct impact on consumption (Mania et al., 2018). With the expansion of the quality sphere, encompassing new features of the modern consumer, these barriers have become increasingly difficult to overcome.

Methodology

The aim of this paper is to explore food quality and security focused on consumer needs from a theoretical point of view. In order to achieve this main objective, the literature review of the most recent articles, studies, reports and books was used, to provide a current and complex analysis on the targeted topic. The research aims to provide an answer to the following questions:

- What are the main fraudulent practices committed on product food safety at the international level?
- What visionary models of food packaging contribute to the development of the food quality and security focused on consumer needs?
- What are the main features of smart packaging technology in the food industry?

Fraudulent Practices Committed on Product Food Safety

In the literature, counterfeiting is defined as the operation of obtaining and marketing those products that represent reproductions almost faithful, but of inferior quality, of some original products on the market, an operation carried out for fraudulent purposes to obtain income undue (Schnaars, 2002). The following are some examples of counterfeiting of food products posing threats to product safety (Maruchek et al., 2011; Spink & Moyer, 2011; Lizakowski & Krampichowski, 2019; Li et al., 2020):

- alienation of one or more natural components;
- alteration of the addition in normal parameters of chemical components;
- adding ingredients that are not specific to the respective food product;
- replacement of some components on a natural basis with components on an artificial basis that are not approved;
- selling on the market a product that is intended to be natural, but in fact it is not natural;
- completely counterfeiting the product using the above techniques;
- reproduction of a food product in order to hide its defects.

Fraudulent practices on food can occur in all types of transport, whether naval, air, rail or car, but most take place in shipping, and the main cause is the long distances to be traveled, so the time long required for transportation. All specialized transport companies have their own systems for detecting fraudulent practices on foodstuffs. Mainly the following factors are those that facilitate the emergence of fraudulent food practices (Shankar, Gupta & Pathak, 2018; Kendal et al., 2019):

- market economy, by supply and demand;
- increasingly diverse commercial transactions at national and global level;
- large number of commercial agents in a supply chain.

Law enforcement must play an important role in preventing and detecting food crime as this will surely have positive results and at the same time knowledge of the law can help to better understand how criminals operate (Ulberth, 2020). The main responsibility, however, lies with the food industry. Food market players need to develop ways to prevent food fraud or reduce cases of fraud through quality control systems, conducting audits, cooperating with trusted suppliers.

Collaboration with law enforcement in the public interest is therefore vital when the food industry identifies fraudulent actions. It is better for companies to be able to report and report any suspicions than to simply resolve them through their contractual relationships with suppliers. In this way, the bilateral exchange of information and knowledge between the public and private sectors can lead to better results for consumers and food businesses (Cillo et al., 2019).

Visionary Models of Food Packaging

In the age of new concepts for food packaging, the importance of food quality and safety is essential for the consumer. The future of food packaging through visionary models contributes to the development of the international market.

Packaging fulfills a number of vital functions in the supply process from the manufacturer to the consumer. Among the range of functions that packaging performs are the following (Sharma & Ghoshal, 2018; Nemat et al., 2020):

- **protection and conservation** - prevention of physical damage and stopping biological changes during transport and chemical, handling and storage;
- **information / promotion** - providing product information, instructions for use, storage and handling, readable barcodes / attracting sales, branding and image;
- **rationalization / efficiency** - to facilitate the distribution and storage of a certain quantity of product;
- **security** - highlighting unsealing, anti-counterfeiting measures;
- **comfort** - packaging with the possibility of re-closing, distribution.

Labeling also has many requirements that need to be considered from the beginning of product development, which are closely related to the advertising and marketing of the product. The label of the food must be clear and easy to read, easy to understand, easily visible and not misleading. It must also include the list of ingredients and certain warnings, such as information on allergens. The main functions of food packaging labels are: traceability and identification, decoration, information, promotion, efficiency, industrial advantage and practicality (Skaczkowski et al., 2016).

Food packaging innovation often involves a high degree of functionality (Schumann & Schmid, 2018). Nowadays, consumers are living at a fast pace, therefore, they are looking for valuable packaging solutions that can make their lives easier. Smartphones and QR code scanning apps now provide instant access to individual lifestyle information and statistics.

This is where functional packaging or smart packaging comes in, which gradually raises consumer expectations (Schaefer & Cheung, 2018; Kuswandi et al., 2021).

The following section of the paper presents some of the latest and most watched packaging techniques that benefit consumers and brand awareness.

Smart Packaging Technology

Smart packaging is the result of a combination of many integrated systems, such as chemistry and electronics, so that there is an interaction between the packaging and the food, highlighting, for example, an expired expiry date or changes in sensory properties (Chen et al., 2020).

There are four main types or technologies of food packaging - designed to meet consumer expectations - as follows:

- **Conventional packaging** - customized functional packaging focused on the integration of design and technology in packaging; decorating materials and capabilities for products on the shelf and launching the brand;
- **Hybrid packaging** - combines rigid and flexible materials in order to create customized solutions that build value for both the brand and consumers. The main advantages of this technology are the following: improved economic appearance, presence on the shelf, comfort and sustainability;
- **Active packaging** - advanced materials and electronic products to activate the additional function and protection of new packaging platforms and packaging devices;
- **Smart packaging** - personalized packages that offer dynamic and captivating experiences that allow the interaction between the brand, consumers and retailers.

Smart Packaging Applications - Temperature Sensors

Companies such as Ripesense and Thinfilm are producing high-quality intelligent packaging technologies that include sensors enabled to detect product temperature, movement (product traceability), reaching consumers (facilitating blind customers) and proximity to the customer via GPS. The Ripesense temperature sensor is an example of smart packaging that can detect the juiciness of fruit depending on the number of days at room temperature. The Ripesense label shows a change in color depending on the ethylene levels in the package, after proper calibration. According to the sensor, up to two days, the fruit is ripe, and in the next five days it becomes juicy. The concept of sensory food design dominates this decade. This statement is demonstrated by Lindstrom (2008) who argues that the taste, smell and appearance of a product are classified together on the scale of importance to the consumer and therefore create new levels of sensory preference (Lindstrom, 2008).

Consumers require the packaging industry to innovate and focus on reducing costs and increasing revenue while brand awareness, sustainability, competitiveness, food safety and consumer satisfaction, shelf life and consistency are also key criteria for this industry to focus on. With the intensification of brand competition in developing countries and regions such as North America and Western Europe, innovation in the concept of packaging is becoming the key to meeting consumer needs. As the level of market saturation for consumer goods increases worldwide, brand owners need to differentiate themselves from the competition, therefore they can differentiate themselves through packaging methods.

Accessibility

The importance of accessibility is one of the key factors influencing the economic growth of packaging in the retail industry, with growth coming from developing regions where consumers are more price sensitive. Asia, the Middle East, Africa and Latin America provide a growing consumption base as a result of rising disposable income. This is due to rising middle-class incomes in China and rapid urbanization in India. On the other hand, consumers in Western Europe, North America

and Australasia are more flexible in terms of retail prices, but are looking for value for the price they pay for these products. Innovation in the packaging process will need to continue to bring added value, often in the form of greater functionality, such as suitability for quick consumption or easier preparation.

Functionality

The functionality of the packaging often takes the form of a solution, which is suitable for fast, moving consumption. Regarding food industry, brand owners can achieve the goal of functionality by using a distinctive type of packaging. Resealable packages also add functionality. In this way the product can be consumed in portions, not the whole amount at the same time, for example the resealable packaging of chocolate.

Environmentally Friendly Packaging

Packaging innovation can add value not only by providing greater functionality, but also by reducing operating costs for brand owners. In the beverage category, cost efficiency is the main reason for returnable bottles, being very notable in South Korea, Thailand, the Philippines, Mexico and Germany.

Visibility

Consumers want brands with which to establish a visual connection through packaging that optimizes the impact on the shelf and addresses the target audience. Positioning the product on the shelf is, as such, a key element of a marketing strategy, which can be achieved through packaging innovation. A brand can also continue to resonate with consumers by telling a story that they can identify with. This can be explored especially in the beverage industry and not only, such as beer, a typical category that induces both a social experience and an escape for consumers.

Customer loyalty is the way to reduce customers' desire to look for and choose an alternative to the current offer and can be achieved through incentives for recurring purchases, which offer products or services of unmatched quality or to generate an emotional attachment and loyalty to the company. Efficiency means for customers to facilitate access to products and services as much as possible, a major contribution in this regard being the advent of the Internet. Efficiency towards the customer is the extent to which the business successfully responds to customer objectives and can be achieved by increasing the range of products, adopting niche segments that allow customization of products for customers. Customer involvement involves the emotional involvement of the customer, which can be achieved by selling an entire experience and not just a product.

Conclusions

The starting point of this study was that a food company needs to focus on several key factors. It is important for companies to understand that the consumer will try a new product, as a result of a good marketing strategy, a good product placement, a good impact on the shelf and the high availability of the product. Moreover, the reasons why consumers repeat the action of buying a product are because they had a good experience with the product packaging and some essential attributes of the product are to their liking. Also, the producer must understand the key factors mentioned above, as well as the range of preferential attributes, and ensure that these factors are quantifiable. Another important aspect is that the factors that determine consumer preferences must be translated into specifications and meet quality standards. Therefore, consumer dissatisfaction and its main causes must be taken into account and must be kept to a minimum through the process of continuous improvement. These attributes must be carefully observed during the production process. Last but not least, food companies prioritize finding the right balance between food safety, compliance with standards and quality inspired by consumer needs.

Commitment to being a leader in sustainable development must be one of the core values of food industry corporations. Through its sustainability strategy, the company contributes both to sustainable development and to its economic success. This goal must encompass all the company's activities throughout the value chain. The impact on the organization by implementing a management system based on obtaining a competitive advantage makes the organization focus its vision and strategy on innovation. The strategy of a company in the food industry that aims to create a competitive advantage must have unmatched products and brand portfolio, continuous research and development capacity, international geographical presence, people, culture, values and attitude.

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