

# **INNOVATIVE FOOD QUALITY MANAGEMENT MODEL - DEVELOPING A SUSTAINABLE BUSINESS AS AN INTERFACE FOR MODERN CONSUMER – oral 0%**

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## **Abstract**

The development of contemporary global markets correlated with the modern consumer's demands led to a new complex approach concerning the food sector and its' main determinants. Old theories that describe the food market mechanisms as a simple three point process: "to produce – to sell – to buy" are now growing into elaborate models based more determinants that have one common challenge: quality.

Thus, the present study aims to highlight the importance of producers' accountability in ensuring the quality of food products, by implementing standardize methods of production and correctly and completely informing the consumers.

In other words, the research focuses on quality management systems as defining instruments that can assure high-quality food products are delivered at competitive prices to domestic and international markets.

In this sense, food quality management principles are analyzed from the point of view of one of the biggest actors in the food industry. Having as a starting point the interview results with the Procurement Innovation Manager in Quality for Mondelez International UK and particular company's quality models this paper manages to outline a consumer preference based model that can be applied by food companies in order to optimize food product design as a quality requirement.

**Keywords:** Quality management, Food safety, Consumer Inspired Design, Sustainable business, Innovative model, Modern consumers' needs

**JEL Classification:** L15, L660, Q550, M11

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## **Introduction**

The importance of quality has significantly grown in the last decades, transforming the notion from a cultural perspective to a performance evaluation tool for modern companies. Today, quality and its' constantly improvement in accordance with modern customer's needs must represent key priorities for sustainable businesses all around the world. As a response to the increasing global food safety issues, a legal framework, based on

regulations and international standards regarding food safety and quality management, has been adopted by many countries, for the food industry.

In this context, the main objectives of the paper are to identify the current position of quality management and food safety standards, reported to both business environment and consumers' demands, in one of one of the biggest multinational companies that acts on the food market. Therefore, the research is divided into three main parts that provide a better understanding of the subject. The starting point is represented by identifying the current position of food quality management in modern economy, based on different contemporary literature perspectives.

This study uses the information and expectations provided by Solenne Alech, Procurement Innovation Manager in Quality of Mondelez International UK, in order to analyze the factors that influence a food quality and safety management model and the implication that consumer's demands have in designing new food products. Based on the interview results, the research methodology consists of a scenario planning model regarding food product design as an interface between consumer's expectations and quality and as a trigger that drives the liking of a food product to quality parameters.

### **1. Food Quality Management – the interface between innovation, technology and global markets**

For the modern consumer, food products, more than other any products, must fit in a certain level of expected quality. Globalization and expending the food trade distances brought to public attention more and more safety issues along the food supply chain. During the last couple of decades, the credibility of the food industry was heavily challenged after a number of food crises, such as Bovine Spongiform Encephalopathy (BSE) or mad cow disease, Dioxin in chicken feed, Food-and-Mouth Disease (FMD) and issues such as the use of Genetically Modified (GM) crops in foods. (Aung, 2014)

The main results of these issues represented the starting point for a new approach regarding the management of food in terms of the objectives companies want to achieve: safety, legality, consistency and consumer acceptability.

In this context, the innovative factor within the food sector, as a linking point between technology and the market, determined food companies to develop new principles based on quality perspectives and safety managements systems that can provide the consumer with real quality guarantees. Thus innovation for a sustainable business is now seen as developing a new product or a significantly improved one, that can generate business value based on its high quality characteristics that meet the modern consumers emerging needs, using as main instruments quality management systems and safety management systems.

Recently, another approach, closely related to quality and safety issues, has been developing fast through traceability systems. According to the European Union legislation, the notion of traceability involves “the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution, applied both upstream (where does this product come from?) as well as downstream (where did this product go to?)”. Food traceability systems are not relevant only to the industry, but also to the consumer, aspects which determine the implementation of certification systems that provide guarantee on quality claims.

But, literature indicates that the implementation of such systems depends on organizational factors such as the size of the organization, the type of suppliers and

customers, the degree of automation, the type of products, quality assurance requirements and importantly the top management's commitment. (Goubergen, 2013)

Taking into consideration the sustainable attribute of a modern business model, food companies can choose today from a wide range of management tools in order to be able to better understand, develop, improve and control quality and safety matters. According to Peter Overbosch (2014) the biggest impact in the food industry is brought by the following food safety initiatives:

- **GFSI** - The Global Food Safety Initiative
- **HACCP** - Hazard Analysis and Critical Control Points
- **ISO 22000** Food safety management
- **ISO 9001** Quality Management Systems
- **6 Sigma** – quality focused methodology

Beside the methodology and the tools, a sustainable business model must take into consideration modern consumers' perspectives and emerging demands. These modern approaches developed new directions regarding innovation and how to launch new types of products on the market. In the context of a well - regulated market, where basic quality determinants (ingredients, biological and chemical characteristics, safety potential) represent already a culture, competitiveness is driven by consumer's needs based on subjective perceptions including design, promotion methods etc.

Thus, the perception of quality may be different from one consumer to another, from a country to other. Recent studies highlight that consumers can be classified 4 main groups depending on their attitude toward food quality guarantees ((Paraschivescu, 2006):

- Consumers that consider price as a quality parameter (12%),
- Consumers that count the product's design as a quality parameter (41%),
- Consumers that trust quality marks – label details, designations of origin (14%),
- Consumers that appreciate the notoriety of the retailer and brand mark (33%).

The above percentage structure was identified as defining the perception of French consumers, perception that is highly important in considering the buying decision for food products, especially new ones. Other studies highlight that other European consumers value more the ecological aspects (German) or a trade marks with history in quality aspects (British). These aspects highlight the fact that the modern consumer's quality perceptions involve new quality characteristics, which are based on sensory cognitions, that cannot be easily standardize.

Given these trends, consumer behavior, in many cases, does not represent an adequate basis for decision making in quality planning. (Paraschivescu, 2006) Therefore, a sustainable business approach must consider mandatory analyzing the reasons that produce the certain behavior.

## **2. Procurement Innovation Manager in Quality Interview from Mondelez International UK**

For the present study, an interview was conducted in order to analyze food quality management principles in the vision of one of the biggest actors in the food industry: Mondelez International UK. The structured interview was used as a qualitative research instrument, taking into consideration the method's potential of depth studying and identify both specific elements for the company and common ones for the entire food market.

In summary, the interview results with Solenne Alech, Procurement Innovation Manager in Quality, conceive to outline a consumer preference based model that can be applied by food companies for optimizing food product design as a quality requirement.

When asked which is the strategy used by Mondelez International to implement innovative management models for food quality and safety, Miss Alech responded that *it is important to secure the foundation of the consumer preference based model, define the quality program globally and follow the Lean Six Sigma Pillars, and implement the strategy into the way of working of the company.*

A different question is related to the key factors that differentiate the company's strategy from the competition. In this case, Mondelez International *is delivering superior consumer value by introducing innovative products to market, at a better price that the competition offers using product quality and trust, packaging quality, sustainability, ingredient sourcing and brand image.*

Being a multinational company is a challenging aspect, therefore a consumer preference based model and strategy for example has to be implemented across different product categories and regions. The company's perspective on this matter is that *designated teams should conduct a study on consumers to see which are their preferences in regards to different product categories and regions. Afterwards the data has to be analyzed and the strategy should be centered on the consumer's preference. Of course, all the strategy has to be aligned through all product categories and regions.*

Moving forward, when asked how to define an effective quality management model for a sustainable business in the food industry, the manager responded that *the quality system that is in place in the company has to be effective and the technical working part should be mixed with people management. For this to happen there are a few important aspects that need to be in place: compliance with audit, quality incident elimination, product quality defect elimination.*

The next question answered by the manager is related to how Mondelez International is maximizing value from consumer feedback and minimizing dissatisfaction. *If the consumer quality is met then this consumer will repeat purchase of the product. Therefore the consumer's sensory experience when consuming one of the company's products can be monitored through tests and the best product assortment can be created to minimize dissatisfaction. For example, product texture can have an impact on overall product liking. If the company knows from the consumers, which are their preference, it can create a consumer driven quality product.*

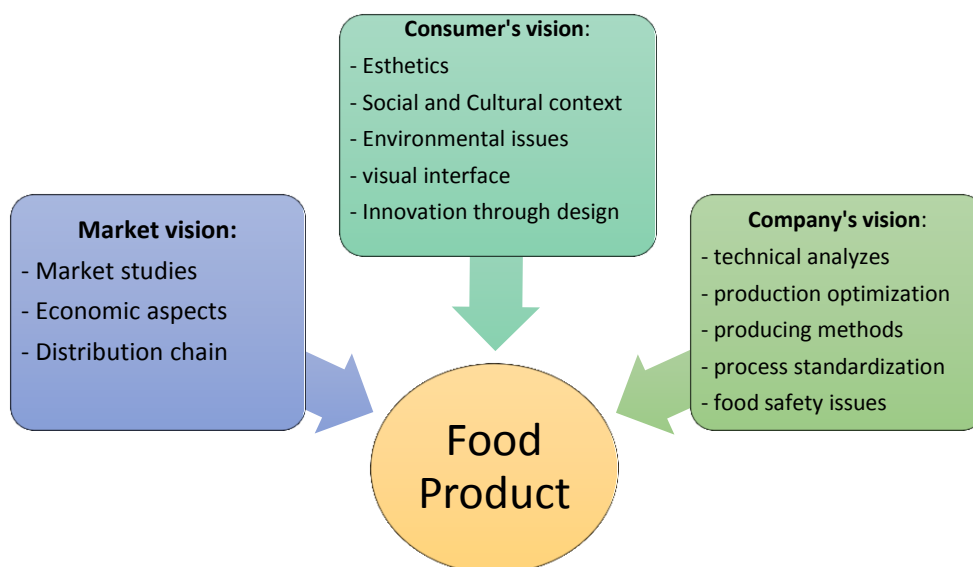
The next question is about the way that Mondelez International finds the right balance between food safety, compliance and consumer inspired quality. In this case the Procurement Manager in Quality response is that *the company puts effort in finding the right balance. All three processes are in place they all need to deliver with maximum efficiency. But these processes can be subject of consumer preference changes or regulatory changes therefore the company has to also adapt to the market specifications and to overcome the competition.*

## **2. Case Study - Quality inspired by consumer's needs**

One major focus of multinational companies involved in the Food Quality and Safety industry is to implement a product design from both the consumer's and factory perspective. One of the major problems that companies are facing today is understanding the modern vision in the food consumption sector. As a result, the most encountered barriers is that companies and consumers have different ranking criteria regarding food quality characteristics. Thus, companies focus more on food safety issues in terms of product and production processes while consumers are more and more concerned about the aesthetic elements of the product (package, form). This aspect is outlined in Figure no. 1

regarding the food product interface issue from the perspective of the main determinants (company, consumer, market).

**Figure no.1 - Ideal food product interface – Main Perspectives**



Source: adapted after Pamfilie, R., Procopie, R., 2014

In consequence, food companies must adapt and expand their quality perceptions from basic quality determinants (ingredients, producing processes, safety standards etc.) to more complex aspects like product design, packaging system or marketing program, aspects that have become very important to the consumers.

Therefore the consumer's satisfaction and needs have to be in the center of the company's strategy for a sustainable business in the food industry. Having as a starting point the information provided by the Mondelez International Procurement Innovation Manager in Quality, the present study tries to outline an innovative food quality management model that can be applied to multiple companies from the food sector.

#### **a. Objective of the study**

The objective of this study is to optimize the food product design, as a modern quality determinant, in order to meet consumer expectations and transform the drivers of liking into quality parameters, closely connected with the specialist's (company) vision regarding quality and safety issues. The expected outcome of this study is that the purchase of such food products will increase and therefore it will also position them into the consumer's top preferences, thus appreciated as superior products. The international food companies which conducted this study focused on the following key drivers, used for several food groups:

- The consumer will try a new product as a result of good marketing, good product placement, good shelf impact and good product availability,
- The reason why consumers repeat purchase of a product is that:
  - They had a good experience with the packaging
  - They like certain key attributes of the product

- The producer needs to understand the key drivers mentioned above, ensure they are measurable and understand the range of key attributes the consumer likes,
- The drivers of liking must be translated into specifications and compliance with quality standards, therefore the consumer's dissatisfaction must be also taken into consideration and must be kept at minimal level,
- These attributes must be carefully respected during manufacture,
- Food Companies are prioritizing to find the right balance between food safety, compliance and quality inspired by consumer needs.

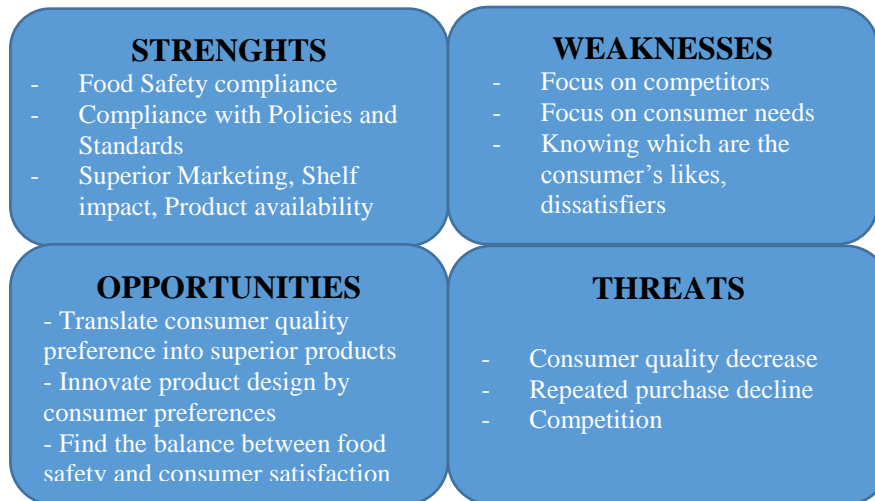
**b. Benefits of the study**

The benefits of delivering quality inspired by consumer's needs are the following:

- Driving new behaviors that involve high levels of repeat purchase, which can lead to a maintaining/growing business,
- Better pricing, allowing investment back into the company's brands,
- A food quality management model based on quality inspired by consumer needs is cross-functional and takes a consumer-defined characteristic of a product and transforms it into a superior product,
- A key deliverable of this model is that consumer drivers of liking and disliking are identified, and optimal levels and ranges of these drivers are defined and validated,
- Model was successfully implemented in a company, focusing on sweet products.

Based on the findings of the study the below SWOT ( Figure no. 2) analysis could easily be made to point out the (S)trenghts, (W)eaknesses, (O)pportunities and (T)hreats that food Companies are facing when implementing a process focused on quality inspired by consumer's needs.

**Fig. no. 2 SWOT analysis focused on quality inspired by consumer's needs**



**c. Samples analyzed**

The present study was successfully tested in a food company, specialized on sweet products. Reporting the consumer's requirement to the chocolate production process, allowed the Critical To Quality (CTQ) attributes to be identified. For identifying the

consumer's requirements, a questionnaire was applied, during the period December'14 – March'15, among 380 consumers, aged above 18 years, targeted in supermarkets.

The questioner highlighted that chocolate texture is the quality characteristic that raises most problems among consumer's satisfaction. The Consumer requirement is in this case to increase cocoa flavor intensity whilst keeping medium soft texture of the chocolate. The Analytical departments of the Food Company and the R&D Chocolate and Cocoa experts identify the CTQ attributes as: Cocoa butter (type), Cocoa powder (type and level) and Cocoa liquor (level and beans composition).

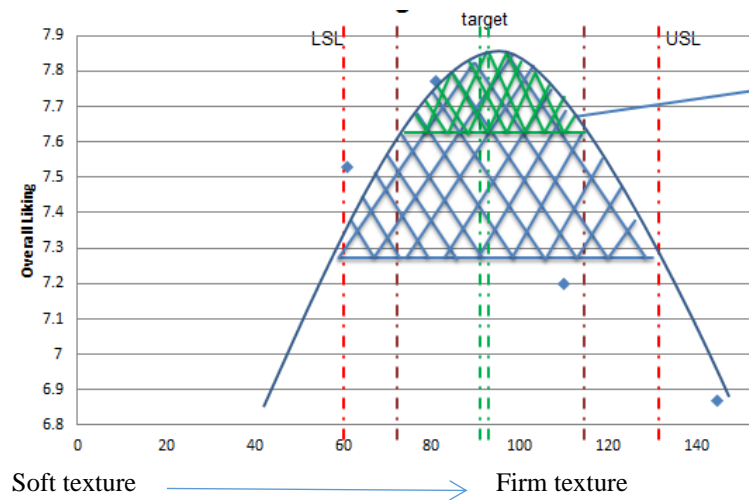
Samples were taken over an 8 week period according to statistical sampling plan. The samples are then validated by the above mentioned experts through sensory assessment and analytical results and conclude that CTQs have an impact on the cocoa flavor intensity.

Another aspect identified based on the results of the questioner is related to the product's visual design. Taking into consideration contextual determinants (the questioner was conducted in the same period with theme events like Christmas or Easter) consumers manifested a concern regarding the products visual design. In other words, consumers expect products in different shapes and packages that are related to events that are important for consumers.

#### d. Study Results

As shown in the figure below (Figure no. 3), both analytical and sensory data confirm that texture impacts the overall product liking. The lower specification limit (LSL), is a value designating a lower limit below which the characteristic performance of the product is unacceptable to the customer. While the upper specification limit (USL) is a value designating an upper limit above which the performance of the product is unacceptable by the customer. Therefore, narrowing the texture range to reach the target – a single designated value for which the producer wants the product characteristic to perform at - will improve consistency of the consumer experience when consuming the chocolate.

**Fig. no. 3 - The impact of product texture on overall product liking**



In addition to the sensory characteristics results, the study results highlighted the need of a perfect relationship between a food product and its package. Thus the quality of the package must be in a direct relationship with the quality of the food product.

On the other hand, package quality is very important on a market where counterfeited products can be identified. Thus, the elements that help consumers identify a food product (like batch number, designations of origin) can represent real guaranteed for consumer and can only be accessible through a well-designed package.

In summary, outlining a consumer preference based model can provide highly valuable information for the food company, in order to optimize food product design as a quality requirement.

## Conclusions

Due to the growing importance that quality and safety registered in the last decades in relation to the food sector, food quality management represents today a strong guarantee of trust for the modern consumer that eliminates important barriers with direct impact on the level of consumption.

Taking into consideration the fact that the food sector is a very dynamic one, in the last period, these barriers have been more difficult to overcome, as the notional sphere of quality has expanded with new emerging characteristics which can be individualized from one modern consumer to another.

In this context, the following food safety initiatives determine the greatest influence in the food industry:

- **GFSI** - The Global Food Safety Initiative,
- **HACCP** - Hazard Analysis and Critical Control Points,
- **ISO 22000** Food safety management,
- **ISO 9001** Quality Management Systems,
- **6 Sigma**

Thus, in order to maintain competitiveness, companies that act in the food producing sector must develop innovative food quality models in order to optimize the design of new food products, taking into consideration modern quality determinants and consumer's demands. For a better understanding of these perspectives, a multinational food company was chosen for the case study – “Mondelez International UK” – which represents one of the biggest actors on the global food market. According to the Sector Manager in Consumer Quality the most important aspect that can constantly model the food design process is the consumer and his preferences. Also, it can be highlighted that a consumer based model applied by food companies represents today a food quality and safety requirement in order to optimize food product design.

The research focused on shaping an innovative food quality model, based on the main direction provided by Mondelez International's Sector Manager in Consumer Quality. In general terms, the main directions identified were cumulated under a SWAT analysis and adapted on a certain food product example. In this context, a food producing company was able to apply the model and provide a positive feedback for chocolate products assortments.

Improving quality can generate added value in both directions:

- For the company – economic benefits (manifested by an increase of productions and sales).
- For the consumers – social benefits (manifested by the outlining of quality patterns, environmental concerns).



Nevertheless, the psychosensorial quality characteristics are very important to the consumer. Taking into consideration the results of the current study, regarding the improvement of chocolate texture, we can say that consumers are willing to pay a higher price (determined by the increase in cocoa butter usage – a highly priced fat- for obtaining the requested texture) for higher levels of quality.

Thus we can confirm that both analytical and sensory data have a very important influence regarding the overall product impact on the market. In this sense, the food safety initiatives can represent important instruments in developing modern and innovative food quality management models in the context of a sustainable business.

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