

## Present-Day Situation of Food Safety and Traceability

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**Abstract.** Food safety plays these days a key role in all segments of food industry. A series of problems affecting the food chain, such as BSE, dioxin contamination and the recent pepper contamination incident, has served to increase consumer anxiety over food quality in Europe over the past few years. EU policies aim to develop a common internal market. Consequently, any food must comply with strict food safety regulations irrespective of the country of origin, which requirement necessitated a more efficient and dynamic food policy as well as complex standard and transparent measures. The main objective of traceability is the exact identification and isolation of the source of any potential contamination, thus enabling the return and withdrawal of such products from the market. The main aim of this paper is to examine the consumers' awareness and judgment of traceability of food products. Primary questionnaire was used to collect data for the research and the data has been assessed by statistical methods. The results highlighted that three-fourth (75.1%) of female consumers and a little less than two-third of male consumers pay attention to the traceability of products that they purchase. The number of consumers making conscious decisions during food purchase is increasing. The majority of the respondents think that the traceability of a product guarantees high quality, safety and it offers many other benefits as well. Traceability consequently guarantees safety.

**Keywords:** food safety, traceability, identification, quality assurance

### 1. Introduction

Food safety plays these days a key role in all segments of food industry. A series of problems affecting the food chain, such as BSE, dioxin contamination and the recent pepper contamination incident, has served to increase consumer anxiety over food quality in Europe over the past few years. High quality food contains a high proportion of healthy ingredients and it supplies the body with the necessary nutrients. However, the most important requirement, which even has priority over the above mentioned factors, is food safety for the consumers Fig.1, [1].

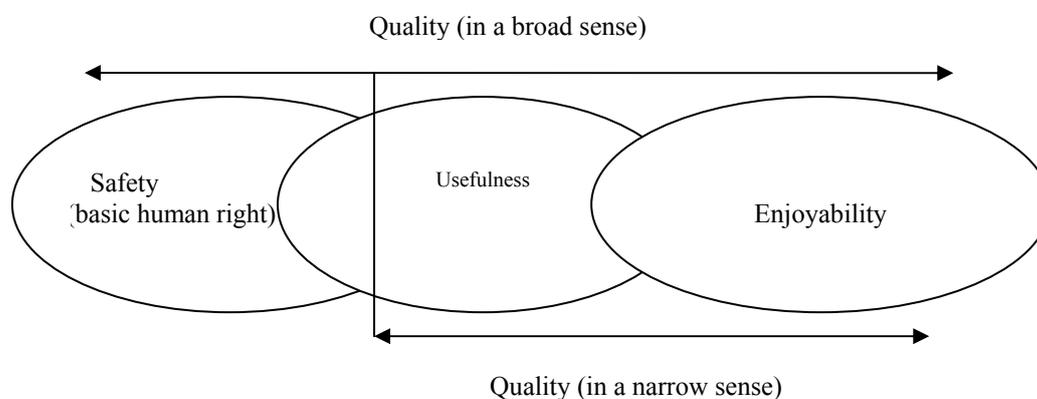


Fig. 1: The interpretation of quality.

### 2. Application of Quality Systems

Food production is separated from food processing in time and space. Mass produced food quickly reaches massive amounts of consumers on a global level. EU policies aim to develop a common internal market. Consequently, any food must comply with strict food safety regulations irrespective of the country of origin, which requirement necessitated a more efficient and dynamic food policy as well as complex standard and transparent measures [2,3].

The first step was the compilation of the so-called White Book.

The White Book sets out the following principles:

- The establishment of an independent European Food Safety Authority
- Harmonisation of national food safety systems
- Realisation of product traceability
- Better communication between consumers and food producers
- Having modern complex quality assurance systems in food industry is no more optional, each participant must use them.
- Potential hazards in the food chain can be divided into the following groups:
  - Physical hazards
  - Microbiological hazards
  - Food chemistry hazards
  - Other hazards (e.g. radioactive contamination)

### **3. Overview**

#### **3.1. Costs and Forms of Return on Investment**

So-called quality costs resulting from the application of food safety and quality assurance systems can be divided into four groups:

Error prevention costs. These are expenditures related to the development and introduction of quality assurance systems.

Examination costs.

- Internal error costs. Extra costs related to waste products produced during production.
- External error costs. Extra costs related to warranty issues.

However, costs may be recoverable in various forms:

Central governments and the EU currently make considerable financial support available for the development of modern quality assurance and environmental systems.

The introduction of quality assurance systems can help decrease the ratio of waste and low-quality products.

Each supplier must possess the appropriate certificates, this is a requirement imposed by bigger multinational companies.

Claims resulting from quality deficiencies and fines resulting from shortcomings revealed during official controls will be avoidable.

Customer satisfaction will increase, which will consequently result in increasing demand for the products.

### **4. Traceability**

ISO 8402:1994 defines traceability as the ability to trace the history, application or location of an entity by means of recorded identifications. The main objective of traceability is the exact identification and isolation of the source of any potential contamination, thus enabling the return and withdrawal of such products from the market. The fact that 20% of the European population suffers from various forms of food allergy or intolerance highlights the importance of traceability. The ratio of affected children is 4 to 8% depending on the region where they reside.

Product traceability must work in two directions: On the one hand, it must enable the step-by-step traceability of a certain product at each organisation involved at any stage of the production chain. This

forward moving activity in the production chain must be continuously conducted. On the other hand, it must enable the accurate identification of any end product, i.e. identification of the parts or ingredients as well as the production and distribution processes to which the product has been subject.

The following three factors are to be considered during the implementation of an efficient tracing system:

- The properties of the product that are to be examined.
- The depth of the tracing and the quantity of the traced product.
- The reliability of our system and the error margins we can accept.

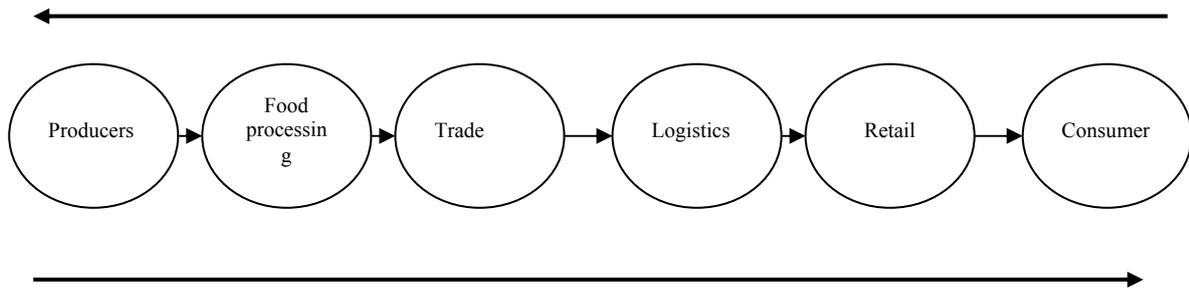


Fig. 2: Food processing chain.

## 5. Material and Methods

Primary questionnaire was used to collect data for the research. The research was carried out on the basis of standard questionnaire (n=414). SPSS 13.0 software application was used to evaluate the questionnaire results. We performed significance tests by assigning background variables to certain questions or question groups.

Instead of a comprehensive analysis of the whole questionnaire, the study rather focuses on the representation of significant results based on the analysis of the most emphatic questions. Quantitative and qualitative evaluation methods, most often cross and frequency tables were used. The independence in the correlation examinations was verified by Pearson's Chi-square test. Cluster analysis has been carried out for grouping the respondents and factor analysis to examine variables.

## 6. Results

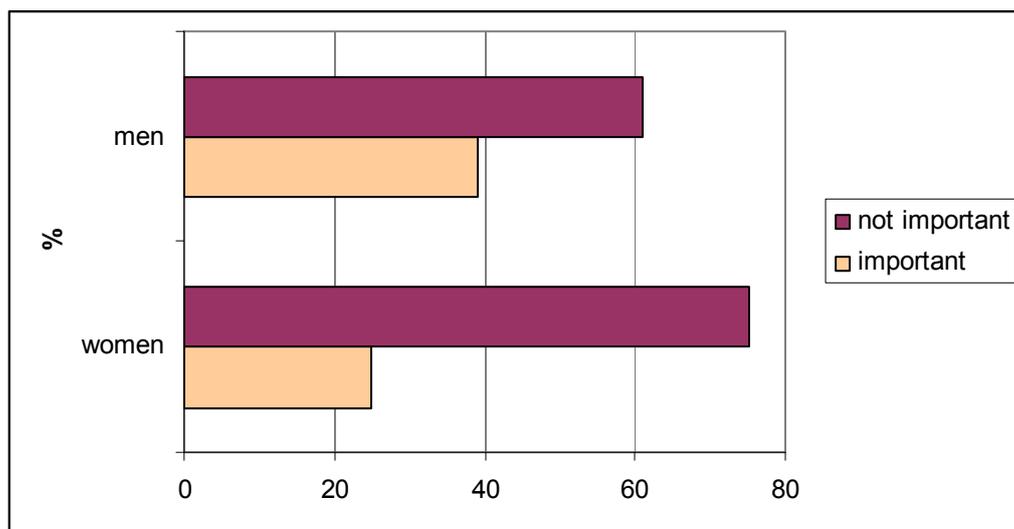


Fig. 3: The importance of traceability assessed by gender.

The analysis highlights (Fig. 3) that three-fourth (75.1%) of female consumers and a little less than two-third of male consumers pay attention to the traceability of products that they purchase. The number of consumers making conscious decisions during food purchase is increasing.

Health-conscious consumers are waking to the importance of traceability, therefore the number of consumers preferring traced products will probable be further increasing in the near future. A disadvantage is, however, that the application of such systems currently affects only a few sections of the entire food vertical. Consumers are not properly informed, therefore they do often not know that they are about to buy a traced product.

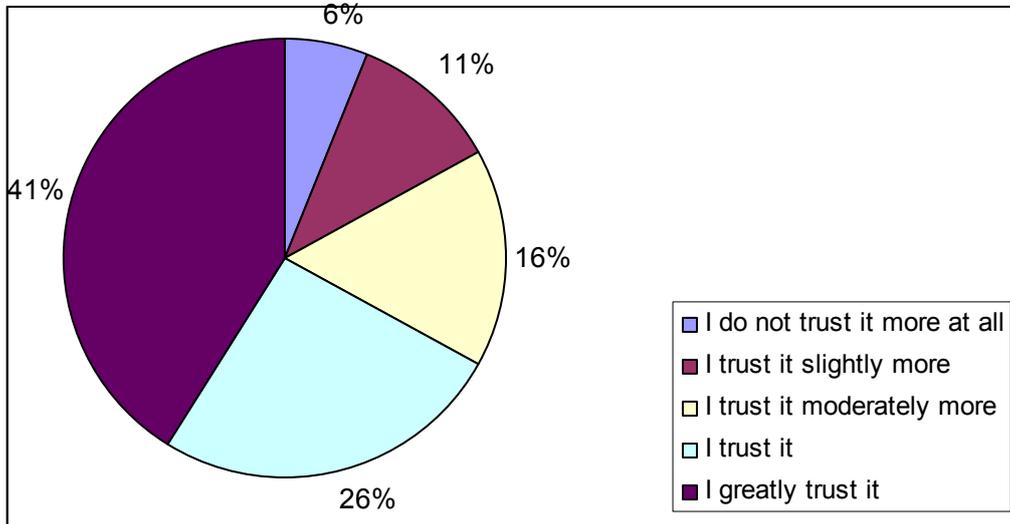


Fig. 4: Comparison of the respondents' motivations against the perceived results.

Fig. 4 shows that consumers preferring traceability greatly trust traced products. Consequently these are the customers who trust traced products more than other products. Almost half of the respondents (41%) greatly trust traced products.

The majority of the respondents thinks that the traceability of a product guarantees high quality, safety and it offers many other benefits as well. Traceability consequently guarantees safety.

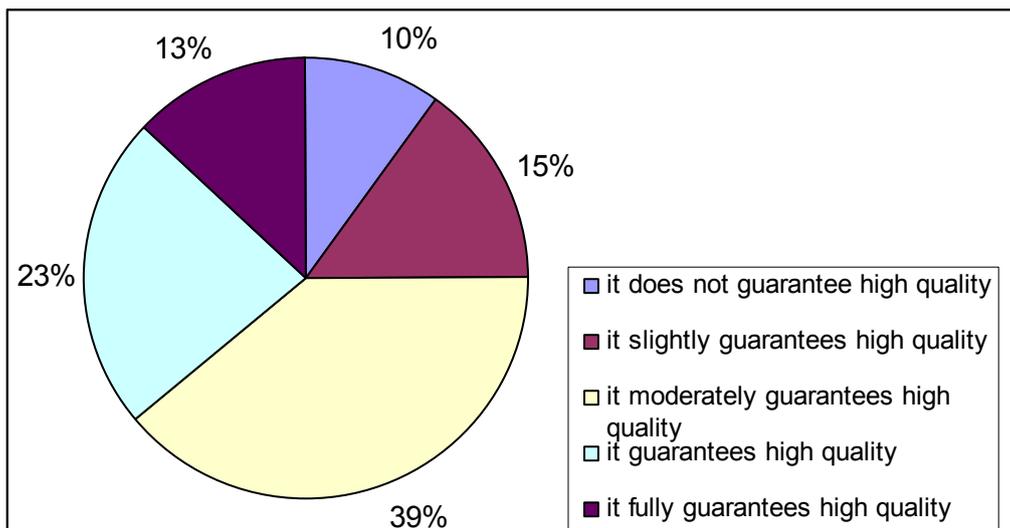


Fig. 5: The correlation of traceability and quality.

Fig. 5 reveals a lot about the difference regarding the respondents' opinion on quality. A minor segment of the respondents (10%) opines that traceability does not guarantee product safety. A somewhat bigger segment of the respondents (13%) thinks that traceability means a guarantee of high quality. For this consumer group, guaranteed quality is a dominant factor.

## 7. Conclusions and suggestions

It can be stated that a considerable portion of the respondents consciously decides on the purchase of traced products. Owing to the media coverage of constantly surfacing food incidents, the number of consumers preferring traced foods will be increasing. The consumers have a higher degree of trust in such products. The fact, however, that the majority of consumers fails to realise the importance of traceability due to lack of information and connects it to food safety raises concerns. Traceable products represent higher value for consumers but consumers expect guaranteed quality in return. Quality can, however, be not only a guaranteed feature of a product but it can be a functional one, too.

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