

Review Article

Implementation of Quality Systems to Improve Performance in Food Sector Business

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Abstract - In this study, the contribution of Quality Systems to the economic performance in Food Sector Companies in Greece is discussed. Non-fixed questionnaires were used to collect the necessary information. Results show that all companies surveyed implement at least one Quality System. ISO 22000 is the prevailing system implemented. IFS, BRC, HACCP are also implemented widely. Implementation of Quality Systems resulted in improved quality of products, decreased product failures, reduced consumer complaints, improved relationships between producers, suppliers, and consumers, and finally increased profits. Training of personnel was employed to conform to requirements raised due to the Systems implementation. Products conformed to System requirements were perceived as safer by consumers. Implementation of Quality Systems can help collect information on a wide range of issues relating to the internal environment of the companies but also to the external environment as well as their competitors and finally strengthen their competence and position in the market.

Keywords - Quality Systems, Food Sector, Economic Performance, Personnel Training, Consumer Complaints.

I. INTRODUCTION

In order to understand the impact and contribution, whether positive or negative, of quality systems in the economy and the financial management in the food sector, understanding the evolution of the economy in the course of time is necessary. Initially, individuals or families tried to produce as much as possible of the food and goods in general to meet their needs. In those days, people produced few goods, both in kind and quantity and certainly much less than needed.

To address the shortage of goods, humanity has moved on to the next stage of the economy pattern, which in fact consists of a form of solidarity, the exchange economy (Chang and Stauber, 2009; Loh and Agyeman, 2019). Thus, among the people, goods and services were exchanged in order for everyone to acquire what they lacked, giving in return their products that were missing that time from someone else. This marked the beginning of the trade. People had the opportunity to exchange goods

necessary for their livelihoods, such as food or wool, without the intervention of a third actor.

The next step was the evolution to the monetary economy and later the open economies (Alba et al., 2020), in which the supply of goods is not done by direct exchange of products but through the intervention of money, which represents the value of the goods being traded. Money has gained more value because whoever has the money can buy goods that are on the market, while the reciprocal is not guaranteed, as in the case where many offers of product exist the value of goods decreases and eventually some goods remain unsold or little money is directed to producers.

In the past, the lack of advanced technology that would help preserve food, the lack of suitable means to transport food over long distances, and the livelihood of a large part of the population in the countryside near the sites of production contributed to the trade and consumption of agricultural products and food at or near the place of production. Over time, the market has evolved into what we call a globalized market. Goods and food are consumed in any continent far from the place of production (Gobewole, 2020). Also, strong competition between producers (either individuals or collective schemes such as producer groups or even at the state level) exists, the digital economy has developed, the legal and normative frame is complex (Ghadimi et al., 2016). Consumers receive a different stimulus to attract their attention and form perceptions (Kendall et al., 2019). So we are looking for a factor that will establish the sense of balance and security in the market, improve the financial performance of a business and further stabilize the economic environment either on a small or large scale and regulate the market.

A Quality Management System is defined as a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives. Elements and requirements of a Quality Management System are, among the rest, Procedures, Instructions and Records, Data Management, Internal Processes, and Customer satisfaction from product quality (<https://asq.org/quality-resources/quality-management->



system), whereas the adoption of a food safety management system, such as ISO 22000, is a strategic decision for an organization that can help to improve its overall performance in food safety (<https://www.iso.org/obp/ui/#iso:std:iso:22000:ed-2:vl:en>). According to ISO, Quality Management Standards help work more efficiently and reduce product failures, whereas Food Safety Standards help prevent food from being contaminated (iso.org/standards.html).

II. METHOD OF SURVEY

In order to understand the impact of the implementation of Quality Systems in the food sector, a survey was employed (Yang et al., 2012). Non-fixed questionnaires were answered in order for respondents to freely develop their opinions (Topliceanu et al., 2015). The information was obtained from food companies and, in particular, from Dairy and Ice Cream Industries, Winemaking and Brewery Industries, Bread and Bougatsa Production Industries, Spices Production Industries, Halva Production Industries, and Processed Meat Companies, in Greece. The questions concerned the impact and benefits from the implementation of quality systems in the operation of companies, the difficulties they faced during the implementation, the measures they implemented to overcome any difficulties encountered.

The first group of questionnaires concerned Dairy products and Ice cream production. All surveyed companies implement at least one quality system. Specifically, 75% of companies implement ISO 22000, while 25% of companies implement ISO 9002. Of the companies that implement ISO 22000, 30% also implement other systems, such as IFS, BRC, and ISO 9001, while of the companies that implement exclusively ISO 9002, few expressed intention to implement other systems such as IFS and BRC. All companies in this category recognized benefits from the implementation of quality systems. 50% of the companies confirmed that the final product was improved, while 25% of the companies stated that in addition to the product, the performance of the employees was also improved through the implementation of hygiene and food safety measures. All companies found that the documented procedures helped improve function. Regarding the acceptance of employees in the requirements of quality systems, 75% of companies initially encountered difficulties, specifically with the data recording. All these inconsistencies were corrected with the training of personnel.

In terms of sales, companies enjoyed an increase of 100%. In fact, 25% of companies answered that quality certificates are a prerequisite for accessing competitive markets or participation in public sector tenders. In all companies, production failures decreased, while in 25% of companies, production failures were monitored by indicators and tended to disappear completely, and profits were increased due to the reduction of failures and the improvement of the operation in general. They also improved the relationships with their suppliers while

complaints from their customers decreased. But although the recognized contribution of quality systems to the company performance, the acquisition of improved equipment is the main priority for the future.

The second group of companies surveyed concerned Winemaking and Brewery sectors. All companies implement quality systems. HACCP and ISO 9001 are implemented by all companies, whereas IFS is implemented by 25% of the companies in this category. No intention to implement additional systems was reported. All companies mentioned an improvement in their operation. In detail, 25% of companies recognize that certification helped the product to be considered safer and more accessible to consumers as certification ensures the quality of food. 25% of companies reported that the implementation of quality systems is an important factor in increasing the company's competitiveness in the global market. Implementation of a quality system caused difficulties for 25% of the companies surveyed. These difficulties were overcome after a short period of adjustment. 25% of the companies responded that they did not encounter any particular problems when implementing quality systems. In all cases, the difficulties were overcome with the training of the staff and the continuous effort on behalf of the top management for the success of the system implemented. At a rate of 25%, it was also reported that the companies were reorganized, and capable personnel that could meet the requirements was recruited. There has been a 100% increase in sales due to the reduction in product failures attributed to the controls that are in place and which ensure that the product is not going to hit the market if it does not comply with the consumer's requirements. Ultimately, the implementation of quality systems leads to a more reliable product. Respectively, they confirm an improvement in their profits due to sales increase. In addition, 25% of the respondents reported that there had been an improvement in relationships with their customers, as a certified product is better accepted by consumers, while 25% of companies reported improvement in the product itself. Complaints were reduced in all companies surveyed, while 25% of the companies stated that for any problems raised, it was more efficient to timely identify the cause during the production process and resolve it. Regarding future plans, half of the companies plan to invest in the quality system, and half of the companies plan to invest in improved equipment.

The next category concerned Bread and Bougatsa production. HACCP and ISO 22000 are implemented by all companies. In addition, 75% of the companies implement ISO 9001. No intention was expressed to implement extra systems as they consider already implemented systems sufficient for their function. As for the benefits, 40% of the respondents recognized that all stages of production were improved, 40% of the respondents observed improvement in the quality of the product, while 20% identified an increase in their market share. 40% of the companies did not face any problems during the implementation of the quality systems, contrary to the 60% of the companies

surveyed that encountered problems that were solved by training the personnel. All companies stated that their sales and profits increased, and this was due to the reduction of the failures of their product, so their product was considered safer by the consumers. Also, all companies consider that their relationship with customers was improved, while complaints have been minimized due to the improvement of the product. As for future plans, all companies plan to invest in improved equipment, while 20% of businesses cited staff training as a priority.

The next category of food businesses involved the production of Spices. HACCP and ISO 22000 are implemented by all companies which consider them sufficient for their operation. All companies faced minor problems at the beginning of the system implementation, which was controlled with personnel training. Sales and profits increased in all companies, and this was attributed to a 100% reduction in product failures. Also, all companies stated that the relations with suppliers and customers were improved. For 25% of companies, the implementation of quality systems has led to an increase in trust with suppliers and customers. All companies plan to invest to existed quality systems but also in improved equipment.

The next category concerned Fruit and Vegetable Canning companies. HACCP, ISO 22000, and AGRO2 (Greek national standard) are implemented by all companies. IFS and BRC are implemented by 50% of companies surveyed. All companies surveyed consider implemented systems sufficient for their operation. 75% of companies surveyed confirm the decrease in production costs, increase in sales due to increase in market share, improvement in product quality of at least 20%, and reduction in product failures. Correspondingly, 25% of companies surveyed confirm improvement in personnel hygiene measures implementation. Regarding the difficulties encountered, all companies experienced minor problems, mostly at the beginning of the implementation of the quality systems, but in all cases, problems were overcome with the training of the personnel. In terms of sales and profits, all companies experienced an increase whereas 75% of the companies experienced a decrease in product failure. 75% of the companies enjoyed an improved relationship with their suppliers. In terms of customer complaints, 75% of companies enjoyed a reduction of consumer complaints, in contrast to the 25% of companies that experienced increased complaints due to, as they stated, the constantly increasing demands by consumers. Finally, in terms of plans for the future, improving the efficiency of personnel is a priority for 75% of companies, while acquiring improved equipment is a priority for 50% of companies.

The next category concerned Halva Production. All companies implement HACCP and ISO 22000. In addition, BRC and ISO 14000 are implemented by 50% of the companies. All companies consider implemented systems sufficient and do not plan to implement extra

systems. Regarding the benefits, 50% of the respondents confirmed that all operations were improved, while 50% confirmed that the final product was improved and consequently, the market share was increased. Half of the companies stated that they did not face any problems during the implementation of quality systems, while for the remaining half of the companies, problems were alleviated by training the personnel. All companies confirmed improvement in the relation with the suppliers, decrease in consumer complaints and decrease in product failures which were returned as increased sales and profits. Finally, regarding the planning for the future, 100% of the companies stated that they would invest in new equipment and in improving the efficiency of the quality system they implement.

The last category concerned the Processed Meat Companies. HACCP and ISO 22000 are implemented by all of the companies, while ISO 14000 and IFS are additionally implemented by 50% of companies. All companies consider quality systems implemented sufficient for their operation. All companies enjoyed an improvement in the quality of the product and the performance of the personnel. 75% of companies faced difficulties in implementing quality systems as it involved additional work and requirements for the personnel. These were overcome by assigning and training appropriate personnel. All companies enjoyed increased profits, improved relationships with suppliers, and a decrease in customer complaints. Concerning the future, all companies plan to invest in improved equipment.

III. DISCUSSION

Quality systems are implemented to ensure the production of safe food products at a high and consistent quality (Nordenskjöld, 2012). Most of the companies surveyed (79% of the total) target both national and international markets, whereas fewer companies (14% of the total) target exclusively the domestic market. Only a small proportion of the companies surveyed (7% of the total) sell their products exclusively to international markets.

The general conclusion is that all companies that took part in the survey implement one or more quality systems (Tutuosei and Anfu, 2019), such as is usually observed in countries in the USA, Europe, and some parts of Asia (Papademas and Bintsis, 2010). The benefits of implementing quality systems are recognized, and force surveyed companies to continuously invest in this area in the future. The improvements concern the quality of the product, the performance of the staff, the hygiene measures implemented by the staff, the observance of the safety rules during the process of food. An increase in the competitiveness of companies is also observed and relates to customers and sales increase and in reduction of failures that accompany integrated control over production, from the selection of raw materials to the production of the final product. Specifically, reductions of failures result to cost

reduction and an increase in profit, strengthening the position of the companies in the open market.

However, for the successful operation of any quality management system, an important factor is the professionals that implement it. Without adequate and qualified personnel, the quality system will fail (Dora et al., 2013). Indeed, a survey has shown that in several cases, staff encountered difficulties when implementing quality systems. For many of them, it was a new and incomprehensible process. All difficulties were overcome with the training of personnel. Attention must be given when designing the context of a training seminar in order to maximize benefits to trainees (Kasim et al., 2013). According to the respondents, seminars on the company's policy, management system provisions, rules and guidelines for the staff, quality criteria for the final product contributed to improved performance. Investments were made on personnel as well as in the management system and the equipment. This represents an integrated and comprehensive managerial approach contrary to a one-sided approach of acquiring equipment without competitive personnel or suitable management guidelines. It is the Quality System that offers the appropriate frame to operate.

The quality systems implemented by the companies surveyed are internationally recognized and developed worldwide. These provide general guidelines and rules. Combined with the commitment of the top management and the ingenuity of responsible people, the positive results from their implementation are much better than what is initially perceived. Definitely, companies, through the implementation of quality systems, initially are looking for increased profits by improving the final product. But in the course of time, the implementation of quality systems helps the development of a frame of trust and confidence between producers and consumers (Albertsen et al., 2020), as well as the development of positive perceptions on behalf of consumers against producers. Due to the trust, relations with the suppliers are improved, while the market share is also increased. Relationships with the staff are improved, personnel becomes responsible, efficient. Thus, production costs decrease, and product failures decrease. Finally, the profile of the companies is credited.

IV. CONCLUSION

We need stable food production followed by stable food consumption (Pourroy et al., 2016), at a reasonable cost and fair income for the farmers (Anand et al., 2015), as these factors are of imperative importance to attain the highest levels of welfare (Battacharya and Jain, 2020). On the other hand, trade is made either by individuals or organizations in order to gain profit, create wealth, secure labour demand, and establish social peace. This must be in line with the protection of the environment as a diseased environment is inappropriate to support the production of safe and high-quality products.

Until recently, the primary sector and the food sector addressed local, geographically restricted markets. The familiarity between producers and consumers as usual. Consumption usually was taken place near the place of production, while there is often visual contact between consumers and food producers. Product demand was related to the geographical proximity with the consumers (Palacios-Argüello et al., 2020). Competition between producers was also restricted locally.

We are now in the era of a globalized economy. There is only one market. Not many small, remote, distanced markets. Trade is free. There are no barriers, at least in terms of technology or taxes, for a producer to enter into a market. In terms of products, even vulnerable products, there is sufficient know-how and appropriate technology to preserve them while the transport network is developed and can transport products from anywhere to anywhere in the world. But on the other hand, standards have changed, and consumers demand quality products, not only in terms of chemical composition, flavour, or taste but also in safety issues (Nyarugwe et al., 2020). Also, competition is stronger due to the trade development. Companies activate in a globalized open market. Consumers can only track the product in the market but do not access the production sites or the production process. There is no familiarity between producers and consumers. Consequently, confidence between producers and consumers is a demand, even for producers who are leaders in their field.

In order to reduce these risks, producers or companies implement quality systems in anticipation of creating products at high volumes of known quality in compliance with the requirements of the standards, at an affordable cost for the consumers. In this way, much of the trust between producers and consumers is restored. Ultimately, the implementation of quality systems and the compliance of products and services with the requirements and provisions of quality systems is a comparative advantage for the companies that implement them.

But in addition to helping access to a market as well as establishing trust between producers and customers, the implementation of quality systems provides an important additional advantage, which does not receive the necessary attention. Producers have the opportunity to receive important information relating to a wide range of important issues such as maximum allowable residual limits of plant protection products or the consumer perceptions for a specific issue, etc. This information is necessary not only to keep producers in the market but to maintain and increase their market share or to prevent crises for which the recovery cost would be greater than the budget necessary to prevent the crisis, especially if during the crisis a competitor taking advantage of this temporary weakness moves aggressively towards the company by extracting part, at least, of its market share. Information is also useful to know how a company operates, especially if it occupies a large number of employees or if it operates in more than one site. It is not

uncommon for the operation of a company to be unclear, even to the owners or the top management. All this information is used to prevent not only crises but also to shape developments in the field of interest. Collecting information helps to recognize the weaknesses that may exist in the operation of a company, identify the strengths or potential growth opportunities that the business would not otherwise be aware of. Thus, a company gains a comparative advantage over its competitors and ultimately strengthens its position in the market.

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