Determinants of quality and food safety systems adoption in the agri-food sector

Gema Barbancho-Maya and Alberto A. López-Toro
Universidad de Málaga, Málaga, Spain

Received 16 September 2021
Revised 14 February 2022
9 March 2022
Accepted 11 March 2022

Abstract

Purpose – In order to meet the increasingly demanding needs of international markets, quality and food safety systems have become widespread among companies in the agri-food sector. This has led to a transformation of the agri-food sector that has also been detrimental for companies seeking to adopt such standards. Therefore, the aim of this paper is to define the determining factors that affect the process of adopting quality and food safety standards in agri–food companies, from the implementation of standards in company quality management systems to the process of certification of these standards.

Design/methodology/approach – To this end, a literature review is carried out in which the motivations, benefits, barriers and contingency factors are identified, analyzing and delimiting the scope and contribution of each of them to the company's quality management.

Findings – The results show that the most important benefits and motivations are access to new markets and compliance with legislation, while the most important barrier is the high cost of adopting QFS systems within the company. Finally, the most relevant contingency factor when adopting these systems is the size of the company. Furthermore, the analysis shows that the results are closely interrelated. In conclusion, the consideration of the determinants identified in the paper contributes to a better implementation of agri-food quality and safety standards by companies.

Originality/value – This paper combines an analysis of the determining factors for the adoption of quality systems in the agri-food industry with the identification of contingency factors that, despite their importance throughout the process, are scarcely analysed in the rest of the literature. Finally, the work points out future lines of research that are still underexplored, such as the relationship between quality assurance and financial development; the role of contingency factors in the process of adopting these systems and the analysis of HACCP systems in the agri-food sector.

Keywords Quality assurances, Agro-food sector, IOS 22000, HACCP system, Motivations, Benefits, Barriers, Food safety

Paper type Research paper

1. Introduction

The agri-food industry has been profoundly transformed in recent years (Prieto *et al.*, 2008). The successive food crises and their devastating effects on people's health have increased the risks and insecurity in these markets (Almeida *et al.*, 2010) and consequently, there is greater awareness of quality and food safety in the industry (Prieto *et al.*, 2008; Murrieta, Ochoa and Carballo, 2020). In addition, consumer demands have increased (Murrieta *et al.*, 2020) because they are becoming better informed about everything related to food safety (Escanciano and Santos-Vijande, 2014a; Psomas and Kafetzopoulos, 2015; Khalid, 2016). Moreover, openness to international trade brought by economic and social globalization has further emphasized

The authors would like to thank the anonymous reviewers for their valuable and helpful comments to improve the quality of the paper. Funding for open access charge: Universidad de Málaga/CBUA.

British Food Journal
Vol. 124 No. 13, 2022
pp. 219-236
Emerald Publishing Limited
0007-070X
DOI 10.1108/BFJ-07-2021-0752

the need for intervention in these markets to ensure quality and safety throughout the supply chain to the final consumer (Pop *et al.*, 2018).

In this context, government regulations in each country have contributed to set the minimum quality and food safety (QFS) standards that guarantee the availability of safe food for the entire population and fight fraudulent practices in these markets (Pop *et al.*, 2018). However, although these regulations have evolved in complexity and rigor over the years (Pop *et al.*, 2018), they have also delegated individual responsibility to industry companies to implement their own QFS standards (Albersmeier *et al.*, 2009).

Therefore, private and voluntary certification standards have gained importance within the international agri-food industry (Albersmeier *et al.*, 2009; Pop *et al.*, 2018; Escanciano *et al.*, 2014a). These standards seek to find a unified approach on how to produce quality food safety, thus contributing to the harmonization of agri-food regulations in all countries (Pop *et al.*, 2018). As a result, an increasing number of distributors and supply chains are seeking certification by independent bodies to guarantee the safety and quality of the food they sell, while improving their reputation with the final consumer and differentiating themselves from competitors (Escanciano *et al.*, 2014a; Murrieta *et al.*, 2020; Pop *et al.*, 2018).

Thus, companies located in institutional environments similar to the European one, where large supermarket chains have exponentially increased their bargaining power (Escanciano *et al.*, 2014a; Almeida *et al.*, 2010), have suffered the consequences of the generalization of voluntary QFS standards, among which the following stand out:

(1) Loss of added value and fewer benefits in terms of innovation and differentiation as the number of certified companies increases (Carmona- Calvo *et al.*, 2016, Dí az Romero and Rodr í guez- Rojas, 2016).

(2) Increasing confusion for businesses and consumers due to the appearance of many regulations of a very similar nature but emitted by different entities (Escanciano *et al.*, 2014a, b; Ramírez *et al.*, 2003; Rincón-Ballesteros *et al.*, 2019; Montoya, 2018).

(3) Reduction in the quality of audits and introduction of subjective assessment criteria (Albersmeier *et al.*, 2009; Almeida *et al.*, 2010; Carmona- Calvo *et al.*, 2016).

Given this situation, we could ask ourselves: what are the motivations for companies to undertake the implementation of standards? What are the benefits they expect to achieve? What barriers do they encounter in their implementation?

Until now, there has been no literature review focused on companies in the sector that identifies the determining factors in the adoption of agri-food quality and safety standards. Furthermore, the sector lacks studies that address the contingency factors that affect the process of adopting agri-food quality systems, despite the importance given to them by some authors, who define them as relevant variables that affect the results of their analyses (Păunescu *et al.*, 2018; Macheka *et al.*, 2013).

To help companies in the sector to successfully adopt the standards, this paper aims to identify factors that are determinant for the correct adoption of quality and food safety systems in companies. Their identification by agri-food companies will contribute to reduce the negative consequences derived from the generalization of quality and food safety standards. These determinant factors have been organized into motivations, benefits, barriers and contingency factors.

In the authors' opinion, the consideration by companies of the determining factors contributes to a better implementation of agri-food quality and safety standards. In this way, companies will become aware of the motivations and benefits, but also of the barriers and difficulties they encounter when undertaking a certification process. In addition, the

contingency factors help companies to understand the particularities of their organization and the advantages and disadvantages that derive from it.

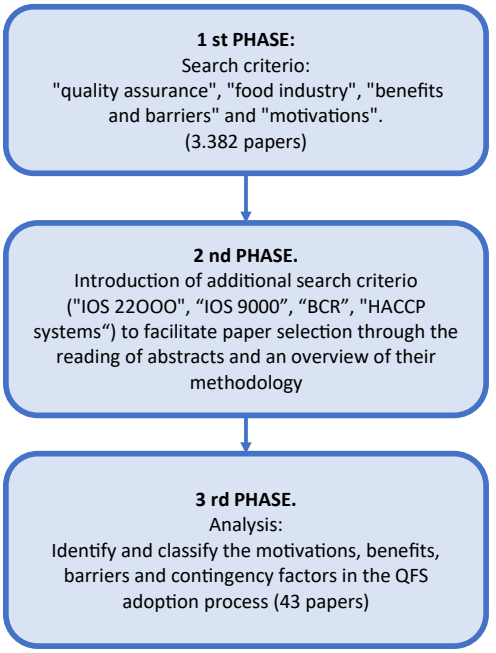
2. Methodology

To achieve this objective, a systematic review of the literature on QFS in the agri-food sector is carried out, using different databases (Proquest, ABI/INFORM, Web of Science, Scopus and Science Direct). To ensure the validity and reliability of the review, a three-stage search was planned (Figure 1): search criteria, paper selection, and analysis and synthesis (Tranfield *et al.*, 2003).

In the first phase of the research, we have defined search criteria that had to appear in the title, keywords or abstract of the articles. These search criteria were "quality assurance", "food industry", "benefits and barriers" and "motivations". Using these search criteria, we ensure that all those articles that deal with quality assurance in agri-food companies and that, in addition, describe one or all of the determinant factors will be considered within the scope of our research. A total of 3,382 papers were filtered out, most of which were published in scientific journals.

During the second phase of the analysis, new search criteria such as "IOS 22000", "IOS 9000", "BRC" and "HACCP systems" have been defined in order to filter the large number of results obtained during the first phase, limiting the results to the articles most closely related to sector certifications and to the objective of our analysis.

This allows us to select the articles that would form part of the analysis sample using the following procedure:



Source(s): Own elaboration

Figure 1.
Phases of the systematic review

(1) Complete reading of the abstracts of the articles to verify whether they analyze any of the determining factors that affect the process of adopting a quality management standard.

(2) Analysis of the methodology used to analyze the articles: preferably empirical studies that statistically analyzed the impact of the determining factors on a real sample of agri-food companies were selected.

The result has been the identification of 43 papers published from 2003 to 2020. Most of the articles selected for the study were published between 2013 and 2018, with 2016 standing out due to the high number of articles selected.

Table 1 provides an overview of the papers analyzed in our sample, organized by journals. The journal with the highest number of published articles that meet the defined search and selection criteria, and which is therefore mentioned the most throughout the document is Food Control.

Finally, in the third phase, the 43 articles were analyzed according to the following procedure, which can be divided into two main parts:

(1) Analysis of motivations, benefits and barriers:

- The determining factors, i.e. the key words in the text (motivations, benefits and barriers) have been identified.
- The results of the articles were analyzed to determine whether the factors identified above are relevant to the process of adopting quality standards, according to the analyses carried out.
- The factors identified as relevant in each of the articles have been listed.

Order	Academic journals	N.Analysed
1	Food control	14
2	British food journal	6
3	Total quality management and business excellence	2
–	The quality management journal	1
–	International journal of retail and distribution management	1
–	Amfiteatru economic	1
–	Arxiu d'Etnografia de catalunya	1
–	Suma de negocios	1
–	European research and business economics	1
–	Quality - access to success	1
–	SIGNOS	1
–	World development	1
–	The estey centre journal of international law and trade policy	1
–	Agricultura, sociedad y desarrollo	1
–	Benchmarking: An international journal	1
–	Universidad y empresa	1
–	Biomedical and biopharmaceutical research	1
–	Boletín de asociación de geógrafos españoles	1
–	ICONTEC	1
–	Revista en- contexto	1
–	Patrimonio cultural en la nueva ruralidad andaluza	1
–	International journal of operations and production management	1
–	$M + A$. Revista electrónica de medio ambiente	1
–	Journal of food protection	1

Source(s): Own elaboration

Table 1. Academic journals and number of papers which meet search criteria

- They have been analyzed to determine which type they correspond to within our classification (external or internal).
- A table of results has been drawn up showing the number of articles (by author) in which some of the factors in our classification are mentioned, grouped by their internal or external nature.

(2) Contingency factor analysis:

- We counted the number of articles in which the country of reference, the size of the companies and/or the age of the companies in the industry are included as a variable affecting the results of the analysis and the definition of the motivations, benefits and barriers of the process.
- The results have been presented in a double-entry table with the contingency factors defined and the number of articles that include them as relevant variables in their analysis (by author).

With regard to the country of origin of the research institution, the highest number of contributions comes from Central Europe (50%). This is largely due to the greater proliferation of international standards, and specifically, those that are the subject of the second phase, at a European level, especially in Central Europe.

In order to perform the literature analysis, we considered those papers whose content refers to one of the most widely used voluntary certification standards in Europe and the whole world. These standards include those issued by the International Organization for Standardization (IOS), especially IOS 9001 and IOS 22000: 2018 standard for food safety management systems (Escanciano *et al.*, 2014a, 2014b). At the same time, voluntary private certifications created by the main European distribution chains to ensure the quality of certified food for the final consumer have also been considered (Pop *et al.*, 2018). In this group, the GLOBALGAP (Global for Good Agricultural Practices) certifications of Good Agricultural Practices, the BRCGS (Brand Reputation through Compliance Global Standards) - Global Standard for Food Safety and those of the International Featured Standards (IFS) stand out. All of them are considered Business to Business (B2B) certifications, that is, required from retailers to producers (Cruz Gómez, Lucena Cobos, Méndez Rodríguez and Cáceres Clavero, 2004).

Finally, following the recommendations of other authors (Escanciano *et al.*, 2014a), those papers that referred to the benefits and barriers of the implementation of the Hazard Analysis and Critical Control Points (HACCP) plan have also been considered. These procedures are mandatory for compliance with agri-food legislation and are taken into account by food safety and quality management systems (Escanciano *et al.*, 2014a; Rincón-Ballesteros *et al.*, 2019; Macheka *et al.*, 2013; Psomas *et al.*, 2015).

3. Results

In this section, the motivations, benefits and barriers to the adoption of these quality systems will be analyzed, considering different contextual factors that promote or obstruct the adoption process.

The results of the analysis are organized in summary tables in which, on the one hand, the determining factors identified in our analysis are mentioned, organized by their internal or external nature and, on the other hand, the authors who mention these factors in their articles.

3.1 Motivation factors

Motivation factors are understood to be the reasons that lead firms to adopt the certification process and to overcome the barriers originated throughout the process (Escanciano *et al.*, 2014a). The classification of the above-mentioned motivations is shown in Table 2.

Internal motivations	
Improved productivity and efficiency	Paunescu *et al.* (2018)
Improving the relationship between employees and managers	Carmona- Calvo *et al.* (2016)
Reducing errors, waste and costs	Kafetzopoulos *et al.* (2014), Carmona- Calvo *et al.* (2016)
Improving QFS	Macheka *et al.* 2013, Carmona- Calvo *et al.* (2016), Maldonado-Siman *et al.*, 2014a, Fernando *et al.* (2014)
Increasing consumer welfare	Rincón-Ballesteros *et al.* (2019, 2021)
External motivations	
Access to new markets and fulfillment of legislation	Macheka *et al.* (2013), Paunescu *et al.* (2018), Stranieri *et al.* (2016), Maldonado-Siman *et al.* (2014b), Fernando *et al.* (2014)
To obtain a competitive advantage and improve the company's position in the market	Carmona- Calvo *et al.* (2016), Kafetzopoulos *et al.* (2014), Paunescu *et al.* (2018), Fernando *et al.* (2014)

Source(s): Own elaboration

Table 2. Motivations for companies to adopt QFS systems

Most of the literature coincides in classifying these motives as internal and external (Huerta-Dueñas and Sandoval-Godoy, 2018; Carmona Calvo, Suárez, Calvo-Mora and Periáñez-Cristóbal, 2016; Boiral, 2012). In this way, the internal motivation factors would be related to the improvement of the operation of the company itself. These include improving productivity and efficiency (Păunescu *et al.*, 2018), improving relations between employees and managers (Carmona-Calvo *et al.*, 2016), reducing errors and waste and therefore costs (Kafetzopoulos and Gotzamani, 2014; Carmona-Calvo *et al.*, 2016) and improving QFS (Macheka *et al.*, 2013; Carmona-Calvo *et al.*, 2016; Fernando *et al.*, 2014a, Maldonado-Siman *et al.*, 2014a). In addition, internal motivations would also include ethical factors, i.e. that companies respond to a sense of social responsibility to the benefit of consumer welfare (Rincón-Ballesteros *et al.*, 2019, Rincó n-Ballesteros *et al.*, 2021). On the other hand, the external motivation factors most mentioned in the literature include using these certifications to access new markets and comply with mandatory legislation (Maldonado-Siman *et al.*, 2014b; Macheka *et al.*, 2013; Paunescu *et al.*, 2018; Stranieri *et al.*, 2016; Fernando *et al.*, 2014), obtaining a competitive edge and improving the company's position in the market by meeting consumer demands (Carmona-Calvo *et al.*, 2016; Kafetzopoulos *et al.*, 2013; Păunescu *et al.*, 2018; Fernando *et al.*, 2014).

The main difference between the two factors is that when a company adopts QFS certification motivated by internal reasons, it requires full management involvement to obtain the benefits of the system (Carmona-Calvo *et al.*, 2016). Thus, it can be stated that the internal or external nature of the motivations will have a decisive impact on the performance of the systems. As shown in some studies (Montoya, 2018; Dí az Romero and Rodr í guez-Rojas, 2016; Stranieri *et al.*, 2016), the fact of having motivations where their origin lies within the company will positively influence the ability to obtain better results and a higher degree of management commitment to the quality aims. On the other hand, other authors conclude that there is a negative and significant relationship between legitimacy motivations and the degree of effective implementation of food safety management system (FSMS). In other words, they observe that when agri-food companies implement these systems to comply with external pressures (of a legislative nature or to meet consumer expectations), they obtain a lower degree of effective implementation of the FSMS (Rincón-Ballesteros *et al.*, 2021).

3.2 Benefits

The benefits of adopting those systems include those advantages that companies in the sector expect to obtain once they successfully overcome the barriers of the process and

achieve certification. These expected benefits act as drivers of the certification process and can impact the internal or external area of the company. Table 3 below shows the benefits, grouped according to internal and external benefits.

First, we will analyze those benefits derived from certification that affect the internal environment of the company, since they are the ones that have the greatest impact and can be the triggers for the external benefits that will be analyzed below (Teixeira and Sampaio, 2013; Carmona-Calvo *et al.*, 2016).

The first benefit considered is the improvement in internal efficiency (Escanciano *et al.*, 2014b) or improved management of operations (Chen *et al.*, 2015; Păunescu *et al.*, 2018). This is because most of these schemes introduce the PDCA (plan, do, check, act) cycle of continuous improvement in their QFS management systems, whose objective is to achieve maximum performance of all activities and the elimination of all processes that do not generate value to the company (Lizarzaburu, 2016). In addition, this allows for better standardization of work

Internal benefits	
Improvement of internal efficiency - Internal efficiency improvement - Standardization of work processes and better use of resources - Improved productivity and reduced production costs	Escanciano *et al.* (2014a), Chen *et al.* (2015), Păunescu *et al.* (2018), Lizarzaburu (2016), Carmona-Calvo *et al.* (2016), Kafetzopoulos *et al.* (2013), Díaz-Romero and Rodriguez-Rojas (2016)
Improving QFS	Kafetzopoulos *et al.* (2014), Păunescu *et al.* (2018), Chen *et al.* (2015), Macheka *et al.* (2013), Qijun and Batt (2016), Carmona- Calvo *et al.* (2016), Escanciano *et al.* (2014a), Teixeira *et al.* (2013), Casolani *et al.* (2018), Fontaine *et al.* (2018)
Improvement of internal communication - Improvement of skills and increase of commitment and motivation of workers	Song *et al.* (2017), Macheka *et al.* (2013), Teixeira *et al.* (2013), Carmona- Calvo *et al.* (2016), Escanciano *et al.* (2014a), Păunescu *et al.* (2018)
Innovation and technological improvement	Escanciano *et al.* (2014a), Botello Peñaloza (2016), Díaz- Romero and Rodríguez- Rojas (2015), Hobbs (2010)
External benefits	
Improving the relationship with all stakeholders - Increased customer satisfaction - Compliance with the requirements and demands of the distributors	Păunescu *et al.* (2018), Qijun and Batt (2016), Botello-Peñaloza (2016), Escanciano *et al.* (2014a, b), Song *et al.* (2017), Carmona- Calvo *et al.* (2016), Chen *et al.* (2015), Sans *et al.* (2005), Karaman *et al.* (2012)
Regulatory compliance and improved internationalization of companies: Access to new markets and increased exports	Karaman *et al.* (2012), Macheka *et al.* (2013) Escanciano *et al.* (2014a), Păunescu *et al.* (2018), Chen *et al.* (2015), Qijun and Batt (2016), Aguilar *et al.* (2016), Huerta- Dueñas *et al.* (2018), Botello Peñaloza (2016), Teixera *et al.* (2013), Song *et al.* (2017), Rincón- Ballesteros *et al.* (2019), Maldonado-Siman *et al.* (2014b), Casolani *et al.* (2018)
Improving the environment and rural development: Sustainable development and rural tourism	Tolón *et al.* (2009), Lozano *et al.* (2010), Aguilar *et al.* (2016), Millán *et al.* (2014)
Improvement of the competitive position: Obtaining competitive advantages of differentiation and improvement of the image and reputation	Song *et al.* (2017), Qijun and Batt (2016), Murrieta *et al.* (2020), Botello Peñaloza (2016), Huerta- Dueñas *et al.* (2018), Escanciano *et al.* (2014a), Kafetzopoulos *et al.* (2013), 2014, Macheka *et al.* (2013)
Obtaining economic benefits: Indirect relationship via sales, increased market share, cost reduction . . . Versus controversy	Macheka *et al.* (2013), Díaz Romero *et al.* (2016), Kafetzopoulos *et al.* (2014), Păunescu *et al.* (2018), Teixeira *et al.* (2013), Qijun and Batt (2016)

Source(s): Own elaboration

Table 3.
Benefits derived from adopting QFS systems in the agro-food sector

methods (Carmona-Calvo *et al.*, 2016) and a better use of resources (Escanciano *et al.*, 2014b) avoiding costs stemming from incidents, breakdowns, complaints about defective products and returns. Therefore, the result will be improved productivity and lower production costs (Chen *et al.*, 2015; Kafetzopoulos *et al.*, 2013; Dí az Romero and Rodr í guez- Rojas, 2016; Escanciano *et al.*, 2014b).

This internal improvement has a positive influence on the improvement of QFS (Kafetzopoulos and Gotzamani, 2014). This is one of the most perceived internal benefits for certified companies when applying this type of system (Păunescu *et al.*, 2018; Chen *et al.*, 2015; Macheka *et al.*, 2013; Qijun and Batt, 2016; Carmona-Calvo *et al.*, 2016; Escanciano *et al.*, 2014b; Teixeira *et al.*, 2013; Casolani *et al.*, 2018; Fontaine *et al.*, 2018). Many of these certifications include the HACCP system of critical control point analysis. For this reason, companies have mechanisms to respond to potential emergency situations that compromise food safety (Escanciano *et al.*, 2014b). Thus, companies guarantee safe products by eliminating possible sources of risk and withdrawing those foods that are harmful to health (Teixera *et al.*, 2013). Further reinforcing this idea, Psomas *et al.* (2015) demonstrated through their study in the Greek dairy industry that ISO 22000 certified companies were better able to identify, manage and control food safety hazards.

The improvement of communication and the elimination of information asymmetries between the different processes and members of a company is another internal benefit (Song *et al.*, 2017). In this way, the production process becomes more transparent and allows traceability to be improved and a reduction in transaction costs generated within the company itself (Song *et al.*, 2017). This, in turn, has an impact on improving internal efficiency (Song *et al.*, 2017) and increasing workers' skills (Macheka *et al.*, 2013), as well as their commitment and motivation to meet the challenges they face (Teixeira *et al.*, 2013; Carmona-Calvo *et al.*, 2016; Escanciano *et al.*, 2014b; Păunescu *et al.*, 2018).

Finally, QFS certification processes drive innovation and technological improvements (Escanciano *et al.*, 2014b; Botello Peñaloza, 2016). Most of these systems introduce novel production methods that favor technology transfer within the industry (Díaz Romero and Rodr í guez- Rojas, 2016). In addition, companies that implement them continually search for innovation in their management systems in order to anticipate and exceed consumer expectations.

On the other hand, among the external benefits derived from QFS systems, the improvement of the company's relationship with all its stakeholders stands out (Păunescu *et al.*, 2018; Qijun and Batt, 2016). As was the case within the company itself, there are also information asymmetries between the different agents in the supply chain, which are especially important as a result of relocation and opening up to international trade (Botello Peñaloza, 2016). In this way, certifications serve to improve coordination and effective communication between all stakeholders (Song *et al.*, 2017) and to eliminate the transaction costs that are generated until they are delivered to the final consumer (Escanciano *et al.*, 2014b). This, in turn, leads to another benefit: increased consumer confidence and satisfaction (Carmona-Calvo *et al.*, 2016; Păunescu *et al.*, 2018; Chen *et al.*, 2015; Karaman *et al.*, 2012). Particularly in the agri-food sector, consumers have difficulty identifying food quality before consumption and valuing some of its attributes (Sans *et al.*, 2005). This also has an impact on improving the relationship between suppliers and retailers, especially in Europe, since the main food distribution chains demand QFS systems from farmers as a requirement for commercializing their products (Sans *et al.*, 2005; Escanciano *et al.*, 2014a).

Similarly, quality assurance favors the internalization of the company, insofar as this allows access to new markets and increases the level of exports (Escanciano *et al.*, 2014b; Păunescu *et al.*, 2018; Macheka *et al.*, 2013; Chen *et al.*, 2015; Qijun and Batt, 2016; Aguilar, Amaya and López, 2016; Huerta-Dueñas *et al.*, 2018; Botello Peñaloza, 2016; Teixera *et al.*, 2013; Song *et al.*, 2017; Rincón-Ballesteros *et al.*, 2019; Maldonado-Siman *et al.*, 2014b;

Casolani *et al.*, 2018). This is the case in the European countries where most of these voluntary standards emerged and where they are required for access to preferential distribution (Rincón-Ballesteros *et al.*, 2019).

Another benefit is regulatory compliance (Karaman *et al.*, 2012; Macheka *et al.*, 2013; Casolani *et al.*, 2018). This is because, although certifications are not mandatory, they include many of the requirements that are demanded by agri-food regulations in some countries. This is particularly the case when companies from developing countries seek to introduce their products into markets such as Europe, where legislation is stricter than in other countries (Karaman *et al.*, 2012).

Environmental improvement and the promotion of rural development is another benefit that can be drawn from implementing QFS certifications. QFS management systems promote the operation of sustainable agricultural systems (Toló n and Lastra, 2009) and these are also promoted by the Rural Development Policy to ensure the maintenance of the socioeconomic fabric of rural areas and fight against the loss of value of farms (Lozano and Aguilar, 2010; Aguilar *et al.*, 2016; Millán, Morales and Pérez, 2014).

On the other hand, certification is used by companies as a differentiation tool for stakeholders, conferring the company a competitive edge (Song *et al.*, 2017; Qijun and Batt, 2016; Murrieta *et al.*, 2020; Botello Peñaloza *et al.*, 2016; Huerta-Dueñas *et al.*, 2018; Escanciano *et al.*, 2014b). Furthermore, the combination of internal efficiency, cost reduction and quality results help improve their competitive position (Escanciano *et al.*, 2014b; Kafetzopoulos *et al.*, 2013, 2014; Song *et al.*, 2017) and contribute to the configuration of a prestigious image and reputation with their stakeholders (Macheka *et al.*, 2013; Song *et al.*, 2017).

Finally, there is an indirect relationship between QFS certifications and economic benefits. This is explained by the fact that obtaining QFS certifications improves operational management and increases sales, which has a positive impact on the company's economic-financial situation (Macheka *et al.*, 2013; Díaz-Romero *et al.*, 2016; Kafetzopoulos *et al.*, 2014). However, other authors argue that such a relationship is non-existent and state that many companies could obtain profits without the need for any voluntary quality assurance (Teixeira *et al.*, 2013; Qijun and Batt, 2016). The existence of these controversies shows that the relationship between economic benefits and quality assurance may be a relatively undeveloped and conclusive field of study (Dí az Romero and Rodr í guez- Rojas, 2016).

3.3 Barriers

In this section, we analyze the main obstacles that companies face when implementing and certifying their QFS systems. Kafetzopoulos *et al.* (2013) talk about critical factors for effective implementation and refer to all issues, both internal and external, which affect the proper functioning of the QFS system and which jeopardize the achievement of the strategic objectives. Table 4 lists the barriers mentioned throughout the section and are grouped again according to their internal or external nature.

First, we analyze the internal barriers related to the capacity of the personnel and the available infrastructure of the company to carry out the QFS certification process efficiently (Carmona-Calvo *et al.*, 2016).

The first factor analyzed is resistance to change (Escanciano *et al.*, 2014b; Păunescu *et al.*, 2018; Rincón-Ballesteros *et al.*, 2019; Teixera *et al.*, 2013). This obstacle is directly related to the human factor of the company and refers to the lack of experience and technical knowledge when implementing the standards (Karaman *et al.*, 2012; Qijun and Batt, 2016; Lowe and Taylor, 2013; Macheka *et al.*, 2013; Khalid, 2016; Chaoniruthisai *et al.*, 2018), the lack of training of workers and the absence of training programs for them (Karaman *et al.*, 2012; Qijun and Batt, 2016; Macheka *et al.*, 2013) along with the lack of support from senior management (Macheka *et al.*, 2013). Several studies conclude that resistance to change is one of the main obstacles faced by companies in their QFS management systems, and removing it

Internal or organizational barriers	
Resistance to change - Lack of management commitment - Lack of training for workers	Escanciano *et al.* (2014a), Păunescu *et al.* (2018), Rincón-Ballesteros *et al.* (2019), Teixera *et al.* (2013), Kafetzopoulos *et al.* (2014), Trafialek *et al.* (2017), Karaman *et al.* (2012), Qijun and Batt (2016), Chaoniruthisai *et al.* (2018), Khalid (2016)
Lack of internal motivations to drive this process	Ramírez *et al.* (2003), Lowe *et al.* (2013), Kafetzopoulos *et al.* (2014), Escanciano *et al.* (2014a), Boiral (2012), Qijun and Batt (2016)
Deficient technological infrastructure: Low investment and poor concern for innovation	Aguilar *et al.* (2016), Kafetzopoulos *et al.* (2014), Karaman *et al.* (2012)
External barriers	
High economic cost and long-term expenditure	Teixera *et al.* (2013), Carmona- Calvo *et al.* (2016), Boiral (2012), Escanciano *et al.* (2014a, b), Păunescu *et al.* (2018), Karaman *et al.* (2012), Ramírez *et al.* (2003), Lowe *et al.* (2013), Rincón- Ballesteros *et al.* (2019), Chen *et al.* (2015), Aguilar *et al.* (2016), Soderlund *et al.* (2008), Casolani *et al.* (2018), Sfakianaki and Kakouris (2020)
Poor knowledge of certification standards - Lack of information - Increasing confusion among regulations	Escanciano *et al.* (2014a, b), Ramírez *et al.* (2003), Rincón-Ballesteros *et al.* (2019), Montoya (2018)
Institutional environment - In advanced economies: Reduction in the quality of the certification process - In developing economies: Insufficient institutional support	Rincón- Ballesteros *et al.* (2019), Carmona- Calvo *et al.* (2016), Ramírez *et al.* (2003), Huerta- Dueñas *et al.* (2018), Albersmeier *et al.* (2009)

Table 4.
Barriers derived from adopting QFS systems in the agro-food sector

Source(s): Own elaboration

would have a very positive influence on profits (Escanciano *et al.*, 2014b; Păunescu *et al.*, 2018; Kafetzopoulos *et al.*, 2014; Trafialek and Kolanowski, 2017; Karaman *et al.*, 2012; Qijun and Batt, 2016).

The second obstacle analyzed is the lack of internal motivations to drive the certification process (Ramírez and Martín, 2003; Lowe *et al.*, 2013; Kafetzopoulos *et al.*, 2014; Escanciano *et al.*, 2014b; Boiral, 2012). Some businesses believe a food safety system is costly, difficult to implement and not actually necessary (Khalid, 2016). For that reason, a lack of motivation and resistance to change are closely related obstacles. When companies implement these systems because of external demands and not because of their own conviction, they are likely to fail to obtain additional benefits or even fail to implement them (Lowe *et al.*, 2013; Qijun and Batt, 2016).

Finally, the level of technological infrastructure that companies have when implementing these certification procedures has a positive influence on obtaining better results (Kafetzopoulos *et al.*, 2014). Therefore, if the company does not have a solid infrastructure at the start of this process, this will become a difficult barrier to overcome. This is especially relevant in developing countries, where the lack of government support and investment means that companies do not have enough technology in their food production systems (Karaman *et al.*, 2012). Additionally, technological infrastructure becomes a barrier in those traditional production sectors where technological innovations put the survival of many other companies in the market that do not have access to such technology at risk (Aguilar *et al.*, 2016).

On the other hand, external obstacles are related to the certification process itself. Among these, we can find the high cost of obtaining this type of certification, excessive bureaucracy and the time investment that this entails. This barrier, present in most of the literature analyzed (Teixera *et al.*, 2013; Carmona-Calvo *et al.*, 2016; Boiral, 2012; Escanciano *et al.*,

2014a, 2014b; Păunescu *et al.*, 2018; Karaman *et al.*, 2012; Ramírez *et al.*, 2003; Lowe *et al.*, 2013; Rincón-Ballesteros *et al.*, 2019; Macheka *et al.*, 2013; Qijun and Batt, 2016; Soderlund *et al.*, 2008, Casolani *et al.*, 2018, Sfakianaki and Kakouris, 2020) refers to the set of investments needed to properly comply with the certification process. Chen *et al.* (2015) differentiate between the initial costs for the implementation of the process and the operational costs that are maintained over time to undertake regular audits (external audit costs, cost and time of training workers, cost of hiring consultants and managers, documentation required. . .).

In this sense, it is worth mentioning the unequal distribution of the aforementioned costs along the food chain, which are mainly borne by producers, affecting their profits (Aguilar *et al.*, 2016). However, standards are usually imposed by the main distributors and consumers, who are the main beneficiaries. This factor has meant that, particularly in times of crisis, crop and livestock farmers do not face these barriers and lose the benefits derived from certification and mass distribution, and focus on distribution that is close to consumers and allows a direct relationship with them (Aguilar *et al.*, 2016).

Another external obstacle to obtaining these certifications is the lack of knowledge about these standards, which are mostly voluntary (Escanciano *et al.*, 2014a, b; Ramírez *et al.*, 2003; Rincón-Ballesteros *et al.*, 2019). This increases the difficulty of understanding and interpreting the required specifications by both businesses and consumers, who are mostly unaware of their differences.

In this sense, the institutional environment in which the company develops its activity also becomes a barrier (Rincón- Ballesteros *et al.*, 2019; Huerta-Dueñas *et al.*, 2018). In the most advanced economies, due to the generalization of QSF certifications, a host of standards have emerged for each industry and sector (Rincón-Ballesteros *et al.*, 2019). This aspect, in addition to making it very difficult for companies and consumers to understand, has also led to increased competition between certification companies and a reduction in the quality of audit processes (Albersmeier *et al.*, 2009). Sometimes, firms perform assessment and evaluation tasks together, thus forgetting the mandatory independence between the two activities and introducing subjectivity and distrust regarding the criteria of inspectors (Carmona-Calvo *et al.*, 2016; Ramírez *et al.*, 2003; Albersmeier *et al.*, 2009; Khalid, 2016).

On the other hand, the lack of institutional support in less developed countries means that agri-food companies have to make greater efforts to adapt their infrastructures, which in turn leads to higher costs (Huerta-Dueñas *et al.*, 2018; Rincón-Ballesteros *et al.*, 2019). In this case, the institutional environment is an external barrier that influences the emergence of other internal barriers such as the lack of technological infrastructure of companies.

3.4 Contingency factors

Contingency factors are variables that are related to the context of each company and that affect the certification process (Boiral, 2012; Carmona- Calvo *et al.*, 2016). Table 5 lists the contingency factors that determine the adoption of QFS systems.

Contingency factors	
Company's size	Carmona- Calvo *et al.* (2016), Escanciano *et al.* (2014b), Karaman *et al.* (2012), Chen *et al.* (2015), Qijun and Batt (2016), Rincón- Ballesteros *et al.* (2019), Păunescu *et al.* (2018), Boiral (2012), Teixeira *et al.* (2013), Ehrich *et al.* (2018), Hobbs (2010), Casolani *et al.* (2018), Sfakianaki and Kakouris (2020)
Country of origin	Carmona- Calvo *et al.* (2016), Rincón- Ballesteros *et al.* (2019), Sans *et al.* (2005), Hobbs (2010), Ehrich *et al.* (2018)
Company's age	Carmona- Calvo *et al.* (2016), Escanciano *et al.* (2014a), Chen *et al.* (2015), Qijun and Batt, 2016, Casolani *et al.* (2018)

Source(s): Own elaboration

Table 5. Contingency factors that determine adopting QSF systems

The first factor is the company size. It can be said that the larger the company, the more likely it is to have some form of QFS systems (Carmona-Calvo *et al.*, 2016). This is because small- and medium-sized enterprises face significant economic barriers due to the lack of resources, technical expertise and technological infrastructure (Escanciano *et al.*, 2014b; Karaman *et al.*, 2012; Chen *et al.*, 2015; Qijun and Batt, 2016, Casolani *et al.*, 2018, Sfakianaki *et al.*, 2020). In contrast, larger companies are more capable of taking risks and making greater economic and operational efforts (Rincón-Ballesteros *et al.*, 2019; Păunescu *et al.*, 2018).

Despite this, the benefits that SMEs can obtain as a result of certification are greater than those of large companies (Boiral, 2012). These benefits are due to improved internalization and access to new markets (Teixeira *et al.*, 2013). In contrast, larger companies would already have this benefit because the company's size is a determining factor in the internalization process (Ehrich and Mangelsdorf, 2018; Hobbs, 2010). Furthermore, there is a positive relationship between the increase in the company's size and the implementation of QFS certifications to reduce production costs and improve the company's internal efficiency (Teixeira *et al.*, 2013).

The second factor is the company's country of origin. The higher a country's GDP or income, the more certified companies there are (Carmona-Calvo *et al.*, 2016). This is because developing countries must overcome institutional, economic and technological barriers that are higher than those of developed countries with strong agri-food legislation (Rincón-Ballesteros *et al.*, 2019).

Similarly, the motivations and benefits also vary depending on the country in which the company operates. Firstly, Latin American companies would be more concerned with ensuring the safety of their products (Rincón-Ballesteros *et al.*, 2019) while European companies would use these certifications to meet the growing legislative requirements that are increasingly dominated by large distribution chains (Sans *et al.*, 2005). Due to the QSF certifications, companies from developing countries would obtain a significant improvement in technological innovation and investment (Hobbs, 2010), while companies from higher income countries would see their participation in international trade benefit (Ehrich *et al.*, 2018).

Finally, the company's age in the market is a relevant factor (Qijun and Batt, 2016). There is a positive relationship between the company's age and obtaining a quality management system (Carmona-Calvo *et al.*, 2016; Escanciano *et al.*, 2014a). This is due to the fact that the process of obtaining quality certifications is long in terms of implementation and the final auditing phase (Chen *et al.*, 2015). In addition, quality adoption requires long-term maintenance, so the age and experience of the company will be decisive in organizing the resources needed for the adoption of standards and will affect the obstacles perceived by companies (Casolani *et al.*, 2018).

4. Discussion

In the previous section, the determinants and contingency factors that, according to the literature, most affect the process of adopting QFS systems in agri-food companies were defined. However, not all determinants affect this process in the same way. For this reason, this section will analyze the importance of each factor in the overall process and the implications they have on the performance of agri-food companies and on future lines of research.

The criterion used to determine the importance of each factor was the number of times they were mentioned in the selected bibliographical references. To this end, the total number of articles cited for each determining factor, as shown in the results tables in section 3, was aggregated. It is worth mentioning that in order to simplify the presentation of the results, some factors relating to motivations and benefits (both internal and external), as well as barriers and contingency factors (institutional environment and country of origin) have been

unified, as they were similar in both sections. Table 6 below shows the result of this aggregation.

As can be seen from the results in Table 6, the most important motivation for companies to adopt QFS systems is access to new markets and compliance with legislation. In turn, this factor is the most recognized benefit for agri-food companies when adopting these systems, and is therefore of an external nature. However, although the benefits recognized by companies are mostly of an external nature, the opposite is observed in the case of motivations, as more importance is given to motivations arising from within the company itself.

This result could be related to that obtained by Rincón-Ballesteros *et al.*, (2021), which states that some external motivations, such as compliance with legislation, could lead to a lower degree of effective implementation of QFS systems in companies. Therefore, even if companies pursue this motivation, it should be accompanied by other motivations of an internal nature in order to achieve the adoption of QFS.

On the other hand, the barrier that has appeared most frequently in the literature, and which can therefore be considered the most relevant, is the high cost of adopting these systems in agri-food companies.

In addition, another result obtained was that the most important contingency factor is the size of the company, which can be directly related to the previous barrier, since smaller companies have the greatest difficulties in meeting the costs of adopting these systems. This conclusion was already drawn by other authors, who stated that larger companies had more capacity than smaller ones to make economic efforts of this type (Rincón-Ballesteros *et al.*, 2019; Păunescu *et al.*, 2018).

	Motivations		Benefits		Barriers		Contingency factors
Improved productivity and efficiency	3		7				
Improvement of internal communication	1		6				
Improving QFS	4		10				
Increasing consumer welfare	2						
Innovation and technological improvement			4				
Access to new markets and fulfillment of legislation	*5*		*14*				
Obtaining competitive advantages in the market	4		9				
Improving the relationship with all stakeholders			10				
Improving the environment and rural development			4				
Obtaining economic benefits			6				
Resistance to change					10		
Lack of internal motivations					6		
Deficient technological infrastructure					3		
High costs					*15*		
Poor knowledge of certification standards					5		
Institutional environment/country of origin					5		5
Company's size							*13*
Company's age							5
	I.F	E.F	I. F	E.F	I.F	E.F	
	10/ 19	9/ 19	27/ 70	43/ 70	19/ 44	25/ 44	

Note(s): Highest value of items for each factor in italics
Source(s): Own elaboration

Table 6.
Total number of items for each factor identified

As can be seen from the results obtained, the contingency factors constitute barriers in themselves, as in the case of the country of origin, which means that companies, because they are in underdeveloped institutional environments, have few investment and innovation opportunities to overcome other barriers. In addition, contingency factors can intensify the effect of other obstacles, such as the size of the company and the difficulty of overcoming financial barriers. For this reason, contingency factors would not only hinder the process but could even make it impossible for companies to adopt these systems, as for example in the case of small agri-food companies located in developing institutional environments.

Therefore, the agri-food policies of countries should be oriented toward analyzing the contextual factors that surround companies in order to identify potential weaknesses and inefficiencies that could be resolved to obtain better results. In the case of developing countries, support for investment in infrastructure and systems, along with facilitating access to financing help prioritize the needs of enterprises with fewer resources. This last measure could also be applied to more developed institutional environments, where there is greater economic and technological development but where the agri-food fabric could be made up of small-scale enterprises, especially as we move back along the supply chain toward the origin of food.

Another contextual variable that could influence the results obtained by agri-food companies during the process of adopting QFS systems is the agri-food sector to which the companies belong. However, despite the fact that the literature analyzed takes this variable into account in the description of the sample of companies that are the object of analysis, its impact on the motivations, benefits and barriers obtained is not analyzed. For this reason, it has not been included in our study as a contingency factor, but we consider that it should constitute a future line of research.

5. Conclusions

This paper has highlighted the most important determinant factors affecting the adoption of QFS certifications in the agri-food sector, classified as motivations, benefits and barriers. These factors have been grouped into external and internal factors affecting the company. In turn, contingency factors have been highlighted as aspects that affect the adoption of such systems.

All these factors are closely related and influence each other across the board. On the one hand, it has been observed that some motivations coincided with the benefits that could be obtained by adopting these systems. In addition, the contingency factors analyzed were also related to the barriers of the process, either because they further intensified some of these barriers, as is the case of the size of the company and economic obstacles, or because some barriers also constituted contingency factors in themselves, as is the case with the institutional environment.

For this reason, contingency factors not only intensify the obstacles, but also make it impossible for companies to obtain this type of certification, as in the case of small companies located in developing institutional environments.

Consequently, public policies and companies in the agri-food sector must take into account these determinants affecting the adoption of QFS systems, considering their real motivations and the benefits they can obtain, but also the obstacles and contingency factors they face.

Along these lines, we propose that future lines of research analyze in detail how each of these variables affects the results obtained. In other words, to analyze the motivations, benefits and barriers, differentiating between developed and developing institutional environments, between small and large companies and, additionally, differentiating between companies from different agri-food sectors.

During the study, a number of research gaps were identified which could also constitute future lines of research, such as the lack of work showing the relationship between obtaining QFS certifications and improving profitability in companies in the agri-food sector. Likewise, due to the importance of HACCP systems within quality management schemes and the supply chain in the agri-food sector, another possible line of research would be to study them in depth and determine their importance in obtaining better results, also identifying the determining factors, i.e. motivations, expected benefits, barriers and contingency factors for agri-food sector companies.

References

Aguilar Criado, E., Amaya Corchuelo, S. and López Moreno, I. (2016), "Alimentos con calidad. Nuevas estrategias rurales para nuevos consumidores", *Arxiu d'Etnografia de Catalunya*, Vol. 16, pp. 137-152, doi: 10.17345/aec2016137-152.

Albersmeier, F., Schulze, H., Jahn, G. and Spiller, A. (2009), "The reliability of third-party certification in the food chain: from checklists to risk-oriented auditing", *Food Control*, Vol. 20, pp. 927-935, doi: 10.1016/j.foodcont.2009.01.010.

Almeida, F., Pessali, H.F. and de Paula, N.M. (2010), "Third-party certification in food market chains: are you being served?", *Journal of Economic Issues*, Vol. XLIV No. 2, pp. 479-485, doi: 10.2753/JEI0021-3624440220.

Boiral, O. (2012), "ISO 9000 and Organizational Effectiveness: a systematic review", *The Quality Management Journal*, Vol. 19 No. 3, pp. 16-37.

Botello Peñaloza, H.A. (2016), "Las certificaciones de calidad y la internacionalización de las firmas industriales colombianas", *Suma de Negocios*, Vol. 7, pp. 73-81, doi: 10.1016/j.sumneg.2016.02.009.

Carmona- Calvo, M.A., Suárez, E.M., Calvo- Mora, A. and Periáñez- Cristóbal, R. (2016), "Sistemas de gestión de la calidad: un estudio en empresas del sur de España y norte de Marruecos", *European Research and Business Economics"*, Vol. 22, pp. 8-16, doi: 10.1016/j.iedee.2015.10.001.

Casolani, N., Liberatore, L. and Psomas, E. (2018), "Implementation of quality management system with ISO 22000 in food Italian companies", *Quality – Access to Success*, Vol. 19 No. 165, pp. 125-131.

Chaoniruthisai, P., Punnakitikashem, P. and Rajchamaha, K. (2018), "Challenges and difficulties in the implementation of a food safety management system in Thailand: a survey of BRC certified food productions", *Food Control*, Vol. 93, pp. 274-282.

Chen, E., Flint, S., Perry, P., Perry, M. and Lau, R. (2015), "Implementation of non- regulatory food safety management schemes in New Zealand: a survey of the food and beverage industry", *Food Control*, Vol. 47, pp. 569-576, doi: 10.1016/j.foodcont.2014.08.009.

Cruz Gómez, J.C., Lucena Cobos, B., Méndez Rodríguez, M.A. and Cáceres Clavero, F. (2004), "Sistemas de certificación de la calidad en el sector agroalimentario español", *Distribución y Consumo*, Vol. 76, pp. 23-39.

Díaz Romero, C.C. and Rodríguez- Rojas, Y.L. (2016), "Beneficios e impactos de la implementación de normas técnicas en las organizaciones: una revisión sistemática", *SIGNOS*, Vol. 8 No. 2, pp. 133-167.

Ehrich, M. and Mangelsdorf, A. (2018), "The role of private standards for manufactured food exports from developing countries", *World Development* No. 101, pp. 16-27, doi: 10.1016/j.worlddev.2017.08.004.

Escanciano, C. and Santos-Vijande, M.L. (2014a), "Reasons and constraints to implementing an ISO 22000 food safety management system: evidence from Spain", *Food Control*, Vol. 40, pp. 50-57, doi: 10.1016/j.foodcont.2013.11.032.

Escanciano, C. and Santos-Vijande, M.L. (2014b), "Implementation of ISO 22000 in Spain: obstacles and key benefits", *British Food Journal*, Vol. 116 No. 10, pp. 1581-1599, doi: 10.1108/BFJ-02-2013-0034.

Fernando, Y., Huan Ng, H. and Yusoff, Y. (2014), "Activities, motives and external factors influencing food safety management system adoption in Malaysia", *Food Control*, Vol. 41, pp. 69-75, doi: 10.1016/j.foodcont.2013.12.032.

Fontaine, A., Raposo, A., Millán, R., Sanjuán, E. and Carrascosa, C. (2018), "Degree of implementation and satisfaction in food companies with the international food standards (IFS) and British retail consortium (BRC) certifications on the canary islands", *Biomedical and Biopharmaceutical Research*, Vol. 15 No. 1, pp. 8-24.

Hobbs, J.E. (2010), "Public and private standards for food safety and quality: international trade implications", *The Estey Centre Journal of International Law and Trade Policy"*, Vol. 11 No. 1, pp. 136-152.

Huerta- Dueñas, M. and Sandoval- Godoy, S.A. (2018), "Sistemas de calidad como estrategia de ventaja competitiva en la agroindustria alimentaria", *Agricultura, Sociedad y Desarrollo*, Vol. 15 No. 1, pp. 19-28.

Kafetzopoulos, D.P. and Gotzamani, K.d. (2014), "Critical Factors, food quality management and organizational performance", *Food Control*, Vol. 40, pp. 1-11, doi: 10.1016/j.foodcont.2013.11.029.

Kafetzopoulos, D., Gotzamani, K. and Psomas, E. (2013), "Quality systems and competitive performance of food companies", *Benchmarking: An International Journal*, Vol. 20 No. 4, pp. 463-483, doi: 10.1108/BIJ-08-2011-0065.

Karaman, A.D., Cobanoglu, F., Tunalioglu, R. and Ova, G. (2012), "Barriers and benefits of the implementation of food safety management system among the Turkish dairy industry: a case study", *Food Control*, Vol. 25, pp. 732-739, doi: 10.1016/j.foodcont.2011.11.041.

Khalid, S.M.N. (2016), "Food safety and quality management regulatory systems in Afghanistan: policy gaps, governance and barriers to success", *Food Control*, Vol. 68, pp. 192-199, doi: 10.1016/j.foodcont.2016.03.022.

Lizarzaburu Bolaños, E.R. (2016), "La gestión de la calidad en Perú: un estudio de la norma ISO 9001, sus beneficios y los principales cambios en la versión 2015", *Universidad and Empresa*, Vol. 18 No. 30, pp. 33-54, doi: 10.12804/rev.univ.empresa.30.2016.02.

Lowe, J.P. and Taylor, J.Z. (2013), "Barriers to HACCP amongst UK farmers and growers: an in-depth qualitative study", *British Food Journal*, Vol. 115 No. 2, pp. 262-278, doi: 10.1108/00070701311302230.

Lozano Cabedo, C. and Aguilar Criado, E. (2010), "Natural, tradicional y de la tierra: la promoción de la calidad agroalimentaria en los nuevos espacios rurales andaluces", in Soler Montiel, M.M. and Guerrero Quintero, C. (Eds), *Patrimonio cultural en la nueva ruralidad andaluza*, Consejería de Cultura, Sevilla, pp. 126-139.

Macheka, L., Manditsera, F.A., Tambudzai, R., Mubaiwa, J. and Kuziwa, L. (2013), "Barriers, benefits and motivation factors for the implementation of food safety management system in the food sector in Harare Province, Zimbabwe", *Food Control*, Vol. 34, pp. 126-131, doi: 10.1016/j.foodcont.2013.04.019.

Maldonado-Siman, E., Bai, L., Ramírez-Valverde, R., Gong, S. and Rodríguez-de Lara, R. (2014a), "Comparison of implementing HACCP systems of exporter Mexican and Chinese meat enterprises", *Food Control*, Vol. 38, pp. 109-115.

Maldonado-Siman, E., Bernal-Alcántara, R., Meneses, J.A., Altamirano-Cárdenas, J.R. and Martínez-Hernández, P.A. (2014b), "Implementation of quality systems by Mexican exporters of processed meat", *Journal of Food Protection*, Vol. 77 No. 12, pp. 2148-2152.

Millán, G., Morales, E. and Pérez, L.M. (2014), "Turismo gastronómico, Denominaciones de Origen y desarrollo rural en Andalucía: situación actual", *Boletín de Asociación de Geógrafos Españoles*, Vol. 65, pp. 133-137.

Montoya Villa, R.E. (2018), *Análisis de los impactos de la implementación de las normas técnicas y de las certificaciones de sistemas de gestión y de productos*, ICONTEC Internacional, Bogotá.

Murrieta Saavedra, Y.A., Ochoa Avila, E. and Carballo Mendívil, B. (2020), "Una reflexión crítica de los sistemas de gestión de calidad: ventajas y desventajas", *En-Contexto*, Vol. 8 No. 12, pp. 115-132.

Păunescu, C., Argatu, R. and Lungu, M. (2018), "Implementation of ISO 22000 in Romanian companies: motivations, difficulties and key benefits", *Amfiteatru Economic*, Vol. 20 No. 47, pp. 30-45.

Pop, S.Z., Dracea, R. and Vlădulescu, C. (2018), "Comparative study of certification schemes for food safety management systems in the European union context", *Amfiteatru Economic*, Vol. 20 No. 47, pp. 9-29.

Prieto, M., Mouwen, J.M., López Puente, S. and Cerdeño Sánchez, A. (2008), "Concepto de calidad en la industria agroalimentaria", *Interciencia*, Vol. 33 No. 4, pp. 258-264.

Psomas, E. and Kafetzopoulos, D. (2015), "HACCP effectiveness between ISO 22000 certified and non-certified dairy companies", *Food Control*, Vol. 53, pp. 134-139.

Qijun, J. and Batt, P.J. (2016), "Barriers and benefits to the adoption of a third-party certified food safety management system in the food processing sector in Shanghai, China", *Food Control*, Vol. 62, pp. 89-96, doi: 10.1016/j.foodcont.2015.10.020.

Ramírez Vela, A. and Martín Fernández, J. (2003), "Barriers for the developing and implementation of HACCP plans: results from a Spanish regional survey", *Food Control*, Vol. 14, pp. 333-337, doi: 10.1016/S0956-7135(02)00098-1.

Rincón- Ballesteros, L., Lannelongue, G. and González-Benito, J. (2021), "Effective implementation of a food safety management system and its relationship with business motivations", *British Food Journal*, Vol. 123 No. 3, pp. 990-1011, doi: 10.1108/BFJ-04-2020-0283.

Rincón-Ballesteros, L., Lannelongue, G. and González- Benito, J. (2019), "Implementation of the BRC food safety management system in Latin American countries: motivations and barriers", *Food Control*, Vol. 106, pp. 1-9, doi: 10.1016/j.foodcont.2019.106715.

Sans, P., De Fontguyon, G. and Briz, J. (2005), "Meat safety as a tool of differentiation for retailers. Spanish and French examples of meat 'supply chain brands'", *International Journal of Retail and Distribution Management*, Vol. 33 No. 8, pp. 618-635.

Sfakianaki, E. and Kakouris, A.P. (2020), "Obstacles to ISO 9001 certification in SMEs", *Total Quality Management and Business Excellence*, Vol. 31 No. 14, pp. 1544-1564.

Soderlund, R., Williams, R. and Mulligan, C. (2008), "Effective adoption of agri – food assurance systems", *British Food Journal*, Vol. 110 No. 8, pp. 745-761.

Song, H., Turson, R., Ganguly, A. and Yu, K. (2017), "Evaluating the effects on supply chain quality management on food firm's performance", *International Journal of Operations and Production Management*, Vol. 37 No. 10, pp. 1541-1652, doi: 10.1108/IJOPM-11-2015-0666.

Stranieri, S., Cavaliere, A. and Banterle, A. (2016), "Voluntary traceability standards and the role of economic incentives", *British Food Journal*, Vol. 118 No. 5, pp. 1025-1040, doi: 10.1108/BFJ-04-2015-0151.

Teixeira, S. and Sampaio, P. (2013), "Food safety management system implementation and certification: survey results", *Total Quality Management and Business Excellence*", Vol. 24 No. 3, pp. 275-293, doi: 10.1080/14783363.2012.669556.

Tolón, A. and Lastra, X. (2009), "Los alimentos de calidad diferenciada. Una herramienta para el desarrollo rural sostenible", *M+A. Revista Electrónica de Medio Ambiente*, Vol. 6, pp. 45-67.

Trafialek, J. and Kolanowski, W. (2017), "Implementation and functioning of HACCP principles in certified and non-certified food businesses", *British Food Journal*, Vol. 119 No. 4, pp. 710-728, doi: 10.1108/BFJ-07-2016-0313.

Tranfield, D., Denyer, D. and Smart, P. (2003), "Toward a methodology for developing evidence-informed management knowledge by means of systematic review", *British Journal of Management*, Vol. 14, pp. 207-222.

About the authors

Gema Barbancho-Maya is Double degree in Management and Business Administration and Economics at Unversidad de Malaga. Scholarship holder of the University-Business Foundation, studying the Master in Decision Making and Innovation 3.0 at the Universidad de Alcalá de Henares.

Alberto A. López-Toro (PhD) is a graduate in Business Management and an Associate Professor of "Production Operation Management" in the faculty of trade and management and the faculty of economy (University of Malaga). He teaches Social Corporate Responsibility in same masters and doctoral courses at University of Malaga, and is currently coordinator of Master in International Cooperation and development policy and member of Prevention and Social Corporate Responsibility at the University of Malaga and has been director of the research group, "Operations and Sustainability: Quality, ICT and Risk Prevention at Work". Alberto A. López-Toro is the corresponding author and can be contacted at: aalopez@uma.es