

Practitioners' perceptions of the credibility of food quality assurance schemes: exploring the effect of country of origin

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Abstract

Food safety and quality certificates can be viewed as credence characteristics because different actors (e.g. intermediaries, processors, retailers, consumers) in the food supply chain are not able to observe the quality of the audits *in situ*. This becomes more critical in the international food trade as information asymmetries increase with time and distance and the credibility of the standard behind the certificate may decrease as a consequence. In this context, the aim of this study was to assess from a global perspective the effect of country image on the perceived credibility of food standards. Data were collected through an on-line survey during Spring 2010. In total, responses provided by 301 practitioners from developed and developing countries were analysed. Respondents were asked to evaluate the credibility of food standards from eight countries (Ghana, Italy, Australia, Mexico, China, UK, India and USA). Data were analysed using descriptive statistics, independent-samples t-test and Mann-Whitney U tests. Principal component analysis was used to categorise groups of standards according to their perceived credibility. The findings reveal that country image exerts a significant influence on practitioners' credibility assessments of food standards. Standards from the UK were perceived as the most credible whereas standards from China were perceived as the least credible. Based on the results of this study, we discuss some implications for food suppliers and policy makers.

Keywords: certification, country-of-origin, credibility, food standard

1. Introduction

With increasing globalisation, the transnational trade in food and agricultural products has proliferated. This situation drives retailers and suppliers to purchase goods from different countries around the world in order to provide a wide range of products on their shelves (Hatanaka and Busch, 2008). In many cases, purchasing agricultural products from distant countries provides costs advantages compared to buying products on the domestic market. However, global food trade also comes with possible drawbacks as the retailers face greater information asymmetries and have a greater chance of being exposed to food safety risks or opportunistic behaviour that may arise in exporting countries, e.g. the illness in the USA in

2006 caused by *Escherichia coli* O157:H7 in fresh spinach (Grant *et al.*, 2008) and melamine contamination in milk powder from China in 2008 (Byrne, 2008). Food crises do not only have a negative impact on human welfare, but also have a negative effect on the food industry as they undermine consumer confidence in the food supply chain and have a detrimental effect on the image of products and the reputation of the retail industry. Therefore, it is crucial for retailers and other actors in the food chain to select their suppliers carefully.

In order to control the quality and safety of food products, retailers and importers use voluntary quality assurance schemes (QAS) as a *de facto* mandatory standard in order to ensure a certain level of quality control for products

(Fulponi, 2006). QAS certification aims to guarantee and provide assurance to customers that certified products possess specific characteristics and/or are produced according to a particular contract/standard (Holleran *et al.*, 1999). In the late 1980's, the ISO 9000 norms family represented an attempt to introduce a general set of standards for all industries (ISO, 2005a). However, the ISO 9000 standards did not perfectly fit the demand of all sectors of the economy and, as a result, new sector-specific and voluntary certification norms and control procedures were developed later. Examples of specific QAS currently operating in the food industry are the ISO 22000 (combination of ISO 9001 and hazard analysis and critical control points principles (ISO, 2005b)), the International Food Standard, British Retail Consortium (BRC) for processed food products and food-related services, GLOBALGAP for fresh produce and organic certification for both produce and processed food products. QAS are primarily used to reduce information asymmetries related to credence attributes (Akerlof, 1970; Caswell, 1998; Jahn *et al.*, 2005). Credence attributes are those that are not verifiable by customers when purchasing and even after consuming the product (Nelson, 1970; Olson and Jacoby, 1972), e.g. food quality and safety. Jahn *et al.* (2005) provide an extended classification of attributes based on information economics. In this context, QAS serve as a risk-reducing strategy for buyers in order to avoid problems with product liability and due diligence issues and to establish trust in business-to-business relationships. At the same time, suppliers and retailers have used them as a differentiation tool to strengthen their market position and facilitate market access (e.g. Henson and Reardon, 2005; Holleran *et al.*, 1999; Jahn *et al.*, 2005; Schulze *et al.*, 2008). As a result, there has been a proliferation of private QAS in several developed and developing countries. Currently, 23 QAS schemes for good agricultural practices have already been developed in several countries and benchmarked against GLOBALGAP; 10 standards that are fully benchmarked (e.g. New Zealand GAP, SwissGAP Hortikultur) and eight standards that use approved modified checklists (e.g. MEXICO GAP, CHINAGAP) (GLOBALGAP, 2012). An interesting case is the effect of a private standard such as GLOBALGAP on the market of standards. Even though a wide variety of QAS have been developed and implemented, the outbreak of several food scares in recent decades suggests that QAS are susceptible to failure in the monitoring of food quality and safety in different countries.

Although food standards and third-party control systems in many countries aim to regulate the market and reduce information asymmetry, the reliability of the inspection system has been a matter of debate in numerous studies (Anders *et al.*, 2010; Giannakas, 2002; Hatanaka *et al.*, 2005; Jahn *et al.*, 2005). This suggests that standards from some companies or countries may be more accepted than others if customers perceived them to be more credible. In

an international context, food safety and quality certificates that communicate claims along the food supply chain can be classified as credence goods on their own as buyers cannot observe the quality of audit procedures in different countries. In this respect, reputational issues may play a major role in the credibility assessment of quality assurance systems. Reputation in this case can be judged from three different perspectives: (1) the reputation of the certification body; (2) the reputation of the standard; and (3) the reputation of the country supplying the products or services. In the last case, however, the extent to which country image can influence the assessment of the credibility of food standards remains unknown. In this context, several research questions arise. For example, is the credibility of food standards affected by a country-of-origin (COO) effect as the literature reports for several goods and services? If so, are there any differences between countries or group of countries in terms of food standards credibility? What are potential reasons for these differences? Which countries or group of countries are perceived to provide more credible food standards? Are there any strategies that food standards owners and local authorities might follow to improve the credibility of their standards?

To fill this gap, we aim to investigate whether the country's image affects the credibility of food standards. In this respect, we want to clarify that 'credibility of food standard' must be understood in this specific study as the credibility stakeholders attach to the whole quality assurance system, that is, the standards, the implementation practices and the certification procedures.

There are two goals of this study: (1) to assess how practitioners perceive the credibility of food QAS from different countries; and (2) to analyse whether there is any difference when comparing the credibility assessments stated by practitioners from developing and developed regions. Regarding this, we need to clarify that this study intends to assess the credibility of food standards establishing a link with the image of the country where the standard has been developed and implemented. Thus, we do not try to judge either the technical features or the credibility of a specific QAS currently operating in the food industry. In our attempt to isolate the effect of country image as a signal of credibility of hypothetical standards, we are trying to evaluate the relevance of a 'prejudice' (and how it can affect the perception of credibility) towards countries developing and implementing food standards, regardless of its actual requirements and procedures, that the respondents did not know. From managerial and marketing perspectives, it is useful for producers and suppliers to know whether COO exerts a positive or negative influence on practitioners' assessments of standards as this may affect their purchasing decision and their confidence in the effectiveness of the QAS. For policy makers who are trying to improve the reputation and acceptance of local

QAS on the international market, the understanding of the COO effect on the credibility of food standards may help them to design and implement effective policies to increase acceptance amongst international buyers.

2. Conceptual framework

In markets where asymmetric information is particularly frequent, the credibility of standards and monitoring systems plays an important role as buyers cannot verify the truthfulness of the claims (Caswell, 1998; Henson, 2008; Henson and Northern, 1998). The credibility of standards is based on three main sources: (1) structural; (2) technical; and (3) marketing. Structural sources relate to the type of governance policies (e.g. public, private, public-private) and procedures for setting standards (Tunçer, 2001). Technical sources are associated with the effectiveness of conformity assessment rules, i.e. their reliability in assuring quality and safety (Albersmeier *et al.*, 2009). This is highly associated with audit performance (Anders *et al.*, 2010; Jahn *et al.*, 2005). The marketing sources include marketing efforts (Nilsson *et al.*, 2004), the reliability of labelling programs (Amstel *et al.*, 2007; Giannakas, 2002), COO (Bilkey and Nes, 1982) and the adoption of benchmarking strategies (Mazé *et al.*, 2007).

Among technical sources, the credibility of audit procedures are claimed to be the main source of credibility for standards in any type of assurance system such as a financial or QAS audit (e.g. Dando and Swift, 2003; DeAngelo, 1981; Hatanaka and Busch, 2008; Moussa and Touzani, 2008). However, as the actual quality of the audit is not observable, audit companies may use strategies such as branding and reputation to communicate their quality in the market. This is typical for big audit companies, while this might not be the case for small audit firms, especially those from developing countries. Since retailers and buyers are not always able to check *in situ* how audits are working, they have to use other 'signals' to verify the credibility of audit procedures. The COO of products and services or 'country image' is one of the cues that buyers usually use when purchasing products or services from foreign markets (e.g. Bilkey and Nes, 1982; Knight *et al.*, 2007; Manrai *et al.*, 1998; Papadopoulos and Heslop, 2002).

Manrai *et al.* (1998) refer to COO as 'the consumers' perceptions of products from a particular country, based on their prior perceptions of the country's production and marketing strengths and weaknesses. Knight *et al.* (2007) add that COO affects consumers' perceptions of products from a particular country, their feelings towards and their desire to interact with those people from that country. On the other hand, each country possesses different cultural characteristics, levels of market maturity, economic development, political stability and access to information. Thus, products or services from different

countries are perceived differently according to country image. As a result, countries are not evaluated equally, i.e. more developed countries are usually perceived as having a better image, organisation and high quality controls, while developing or less known countries receive lower attention or lower evaluation (Manrai *et al.*, 1998). Manrai *et al.* (1998) find that products and services from (perceived) highly-developed countries receive the highest evaluation rate, followed by those from newly-industrialised countries, newly-marketing countries and finally developing countries. However, the impact of country image also depends on the product category because different categories have different levels of consumer involvement, access to information and perceived risk.

Knight *et al.* (2007) study the effect of COO on the choice of food imports for European distribution channel gatekeepers. They find that COO is a moderator of risk and an enhancer of trust for gatekeepers when they import food products. This is because they tend to link product-country image to confidence in the production, certification and regulatory systems rather than country image stereotypes themselves. This suggests that retailers or practitioners who rely upon technical information and knowledge, and who may be highly concerned about certain standards, could be susceptible to having their judgment on the credibility of standards influenced by country image.

The cultural context is particularly important as it is strongly related to the management within organisations and society and has a high impact on behaviour in work situations (Hofstede, 1984). Culture is also one of the most important variables for the creation of trust, which is the crucial element in trade relations and the correct function of certification programs (Hofstede and Hofstede, 2005). For agri-food chains where the quality of products cannot be observed or verified easily, the trustworthiness of quality assurance standards is essential, particularly in business-to-business relationships (Hofstede *et al.*, 2010). Culture also influences the trust in services that depend largely on human resources and control systems such as auditing tasks. According to Hofstede and Hofstede (2005), the culture of Northwestern Europe (Anglo, Scandinavian and Germanic countries) is characterised by individualism, small power distances and uncertainty tolerance. Therefore, it is assumed that the market environment is the object of trust and all actors are trustworthy; if there are defects, they will be detected and managed by effective regulatory institutions. On the other hand, Southeastern Europe (Latin and Slavic countries) is characterised by collectivism, large power distances and strong uncertainty avoidance. Hence, anonymous institutions (e.g. government, certification body, etc.) are trusted less but personal relationships are more important. Although this applies mainly to European countries, it could be one explanation why countries from Northwestern Europe are more trusted than those from the

south and the east of the globe with regards to certification and standards.

3. Materials and methods

Survey design

In order to evaluate the effect of COO on the credibility of food standards, developed and developing countries were selected. Four countries were chosen as representatives of each group. An online survey was used for data collection in this study. Respondents from different regions of the globe were asked about their perception of the credibility of food standards from the 8 selected countries: Ghana, Italy, Australia, Mexico, China, UK, India and USA. For this purpose, a five-point response format ranging from 1 (very credible) to 5 (not credible) was used. The question was worded in this way:

Food standards consist of a set of quality requirements (standards) and a set of audit rules that define how to obtain a certificate (certification system). In some cases, food standards that have been developed in different countries may differ in the standard content and/or in the audit demands. Taking this into consideration:

How credible do you think the food standards developed in the following countries are?

Please indicate the degree of credibility for each one of the countries using the scale from very credible to not credible.

The selection of countries was based on the authors' personal judgment, with the aim of including in each group countries that hold different levels of maturity in food standards development. Among developed countries, UK (as the country with the first food standards), USA, Australia and Italy were chosen, while Mexico, China, Ghana and India were included in the group of developing countries with very different market size as well as food supply chains.

During the survey, subjects were also asked to provide socio-demographic and firmographic information. All questions were formulated in English. Before undertaking the online survey, a paper-based questionnaire was pretested on 13 respondents during the Fruit Logistica Fair held in Berlin between 3 and 5 February 2010. The outcome of this pilot test was used to improve the clarity of some questions and also to consider other stakeholders' suggestions. The online survey was created using the software Enterprise Feedback Suite 7.0 (Questback GmbH, Köln, Germany).

Recruitment

In this study, participants were experienced practitioners working in the food industry at different stages of the fresh food supply chain (from supplier to retailer). Other professionals highly involved with food standards (e.g. service providers, development agencies, input suppliers, researchers) also participated. As a sampling framework, the info-mail contacts of GLOBALGAP were used to send e-mails to practitioners inviting them to take part in the online survey. Members and stakeholders of the GLOBALGAP standard were chosen as a sampling framework because it is widespread throughout the global fresh produce market. GLOBALGAP is a set of voluntary certification standards and procedures for good agricultural practices, managed by a private company, and it is the most widely adopted certification scheme in the international fresh produce market, with 123,115 companies using its services in 111 countries (GLOBALGAP, 2012). The mailing list did not only contain practitioners from primary production but also other stakeholders who have knowledge and experience regarding food standards. It is very likely that the sample is not representative of all possible food practitioners, but it certainly contains a wide range of people who are interested in food quality and safety, even though they are not necessarily customers of GLOBALGAP. Considering this situation, the sampling procedure was not based on random sampling. Instead, a convenience sample was used and efforts were made to diversify the type of respondents. Therefore, the results reported in this study must be interpreted from an exploratory research perspective, even though we are confident they may represent a good indication of the actual situation. The online survey was available for completion between March and April 2010. Initially, 835 individuals were contacted to complete the online survey. The net response rate was 85.15%, and the completion rate was 44.11%. Each completed questionnaire was checked and verified for inconsistencies. Finally, 301 questionnaires were considered valid for the analysis.

Data analysis

Basic descriptive statistics were used to describe the respondents' business and socio-demographic characteristics. Respondents' assessments of the performance of food standards in terms of credibility were described using mean, median and standard deviation. A Mann-Whitney U test (Mann and Whitney, 1947) and the independent-samples t-test were used to identify significant differences between respondents from developed and developing regions in terms of their credibility assessments of food standards. In addition, three exploratory factor analyses (principal components extraction method with VARIMAX rotation) were performed to identify groups of countries based on the respondents' assessments of

food standard credibility. In this respect, the principal components extraction method was used to verify whether the assessments about QAS credibility were provided according to a specific pattern of correlations between the scores and to see which variables (countries) could be grouped together according to our data. The first factor analysis included the assessment done by respondents only from developing regions. The second factor analysis included respondents only from developed regions. The third factor analysis contains the pooled sample. The Kaiser-Meyer-Olkin test and Bartlett's test of sphericity were used to assess the suitability of the data for factor

analysis (Hair *et al.*, 2010). Cronbach's alpha test was used to verify the consistency and reliability of the factors extracted. All analyses were carried out using IBM SPSS Statistical Software 20.0 (IBM, Armonk, NY, USA).

4. Results

Respondents' characteristics

The respondents' socio-demographics and business profiles are shown in Table 1.

Table 1. Socio-demographics and business profiles of the respondents.

Variables	Respondents from developing regions (n=110)		Respondents from developed regions (n=191)		Pooled sample (n=301)	
	Frequency	%	Frequency	%	Frequency	%
Gender:						
Female	25	22.73	50	26.18	75	24.92
Male	85	77.27	141	73.82	226	75.08
Age group (years):						
25-35	30	27.27	30	15.71	60	19.93
36-45	39	35.45	50	26.18	89	29.57
46-55	29	26.36	60	31.41	89	29.57
56-65	7	6.36	40	20.94	47	15.61
>65	5	4.55	6	3.14	11	3.65
Years in the food industry (years):						
≤10	61	55.45	64	33.51	125	41.53
11-20	32	29.09	61	31.94	93	30.90
21-30	12	10.91	45	23.56	57	18.94
>30	5	4.55	21	10.99	26	8.64
Involvement with food standards:						
Very involved	68	61.82	104	54.45	172	57.14
Involved	26	23.64	58	30.37	84	27.91
Partially involved	11	10.00	22	11.52	33	10.96
Little involved	4	3.64	4	2.09	8	2.66
Not involved	1	0.91	3	1.57	4	1.33
Position in the company:						
Sales manager	3	2.73	10	5.24	13	4.32
Quality manager	15	13.64	38	19.90	53	17.61
Buyer	0	0.00	1	0.52	1	0.33
Technical expert	25	22.73	46	24.08	71	23.59
Auditor/inspector	26	23.64	24	12.57	50	16.61
Other	41	37.27	71	37.17	112	37.21
Business type:						
Retailer	2	1.82	21	10.99	23	7.64
Food service/restaurant	2	1.82	2	1.05	4	1.33
Manufacturer/packer	10	9.09	18	9.42	28	9.30
Trader (import/export)	11	10.00	17	8.90	28	9.30
Food supplier	10	9.09	18	9.42	28	9.30
Service provider	52	47.27	75	39.27	127	42.19
Other	23	20.91	40	20.94	63	20.93

The descriptive assessment of the data reveals that the majority of respondents come from developed regions. Considering the pooled sample, the share of male respondents is larger than the share of female respondents. In terms of age, the majority of respondents are from the middle age class, followed by young respondents and mature respondents. In addition, most of the respondents have more than 10 years of experience in the food industry. When assessing their involvement with food standards, the majority of respondents claimed that they are very involved. In terms of their position in the company, they vary quite significantly. According to business type, service providers (e.g. certification body, accreditation body, laboratory, consultants) account for the majority of the sample. Statistics on the subsamples containing individuals from developed and developing regions are presented separately in Table 1.

Credibility assessment

The results concerning the credibility of food standards are displayed by country in Figure 1 and Table 2.

The findings show that food standards developed in UK are perceived to be the most credible whereas standards developed in China are the least credible. From the median, it is quite clear that food standards from developed countries (UK, Australia, USA and Italy) are perceived to be more credible than food standards from developing countries (Mexico, India, Ghana and China). For the latter, high standard deviations indicate some uncertainty in the evaluation. In terms of food standards from developed countries, those from Italy are perceived to be the least

Table 2. Credibility of food standards.¹

Country	Pooled sample (n=301)	
	Median	Mean ²
UK	2	1.63 (0.836)
Australia	2	1.77 (0.912)
USA	2	1.99 (1.072)
Italy	2	2.35 (1.162)
Mexico	3	2.73 (1.343)
India	3	3.01 (1.464)
Ghana	3	3.20 (1.540)
China	4	3.36 (1.501)

¹ The respondents were asked to give a score between 1 (very credible) to 5 (not credible) for their perception of the credibility of standards from the listed countries.

² Standard deviation is in parentheses.

credible, whereas those from Mexico are perceived to be most credible amongst the developing countries.

Comparison between regions

In general, respondents from both developing (Africa, Asia and Latin America) and developed regions (Australia, Europe and North America) perceive that food standards from developed countries (USA, UK, Australia and Italy) are more credible than food standards from developing countries (India, Ghana, China and Mexico) (Table 3).

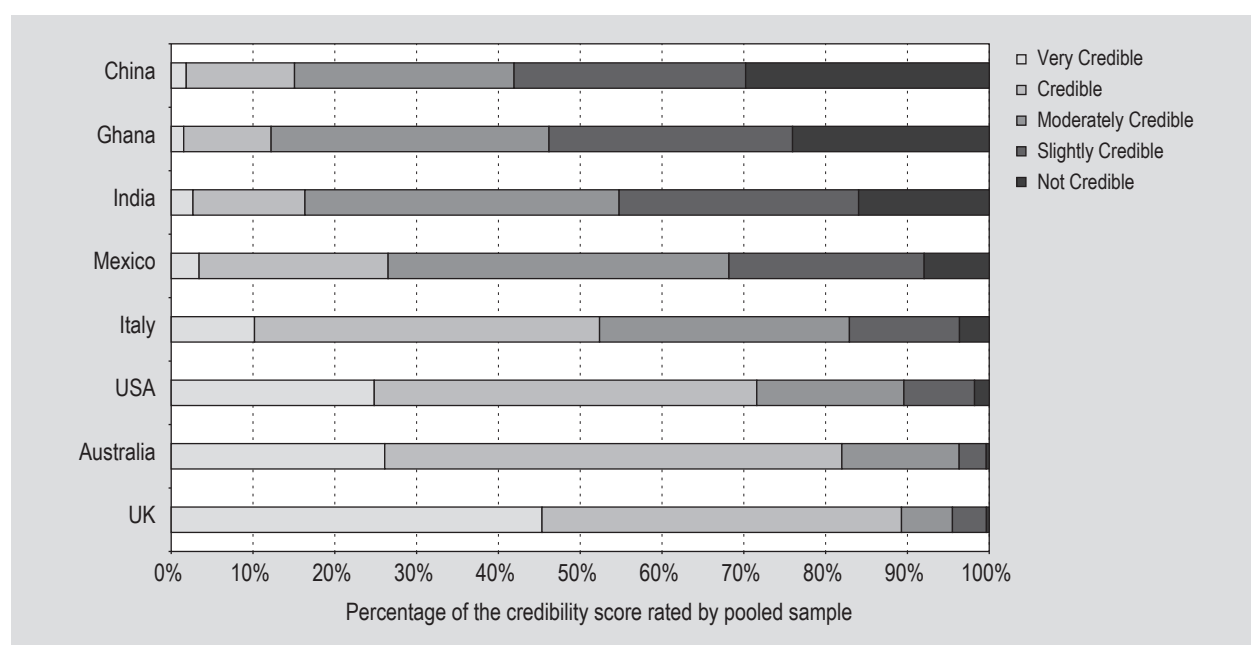


Figure 1. The assessment of the credibility of food standards rated by pooled sample.

Table 3. Comparison of food standards credibility according to respondents' region of origin.¹

Country	Respondents from developing regions (n=110)		Respondents from developed regions (n=191)		t-test ²	Asymptotic significance (2-tailed) ³
	Median	Mean	Median	Mean		
UK	1	1.55 (0.750) ⁴	2	1.69 (0.892)	1.392	0.232
Australia	2	1.68 (0.867)	2	1.82 (0.951)	1.271	0.193
USA	2	1.87 (0.920)	2	2.06 (1.164)	1.564	0.129
Italy	2	2.16 (1.146)	2	2.47 (1.182)	2.198*	0.028*
Mexico	3	2.57 (1.364)	3	2.80 (1.350)	1.407	0.061
India	3	2.86 (1.523)	3	3.06 (1.442)	1.130	0.221
Ghana	3	3.11 (1.564)	3	3.20 (1.537)	0.514	0.541
China	3	2.98 (1.490)	4	3.57 (1.478)	3.290**	0.000**

¹ The respondents were asked to give a score between 1 (very credible) to 5 (not credible) for their perception of the credibility of standards from the listed countries.

² The independent-samples t-test was used to test significant differences between regions.

³ Mann-Whitney U test was used to test significant differences between regions.

⁴ Standard deviation is in parentheses.

* Significant difference at 0.05 level; ** significant difference at 0.01 level.

In addition, among the food standards from developed countries, those from Italy are perceived to be the least credible, whereas those from China are perceived to be the least credible amongst developing countries. Overall, scores from respondents from developing regions are always better. Table 3 also displays the results of a comparison of the food standards credibility assessments between regions using the independent-samples t-test and a Mann-Whitney U test. Both tests yielded the same results, significant differences are observed when comparing respondents' assessments in the case of China, $t(299)=3.290$, $P=0.001$ (t-test) and $z=-3.710$, $P=0.000$ (Mann-Whitney U test) and Italy, $t(299)=2.198$, $P=0.029$ (t-test) and $z=-2.198$, $P=0.028$ (Mann-Whitney U test). In other words, unlike the assessments of respondents from developed regions, respondents from developing regions perceive that food standards from China and Italy are more credible.

Factor analysis

Three exploratory factor analyses were carried out (Table 4). The eigenvalues suggested that the optimal solution was two factors for each case. Factor loadings after rotation (majority greater than 0.7) indicate that all items (standard credibility assessment by COO) should be included in the final solution. Considering the credibility assessments of respondents from developed regions and the pooled sample, the first factor groups the evaluation of standards from China, Mexico, India and Ghana, and the second one includes standards from Italy, Australia, USA and UK. Notably, when considering credibility assessments

of respondents from developing regions, standards from Italy are grouped together with China, Mexico, India and Ghana. Overall, the reliability assessment performed using Cronbach's alpha supports the consistency of the factors extracted in each case.

5. Discussion

The purpose of this study was to assess the potential effect of COO on the perceived credibility of foods standards. Although this is a first approach with restricted data, this study provides relevant information for practitioners, policy-makers and the scientific community. In line with previous findings pointing out that country image may have an impact on industrial buyers' decision-making processes (Chetty *et al.*, 1999; Knight *et al.*, 2007), our results show that COO influenced respondents' assessments of the credibility of food standards, despite the fact that a high proportion of practitioners in the sample are highly involved with food standards and have several years of experience in the food industry. Even though no specific food standards were tested in this study, country image affected the assessment practitioners from different regions gave on the credibility of food QAS. In other words, COO may have a positive or negative effect on respondents' evaluations of standard credibility.

In general, standards provided by developed countries are perceived to be more credible than those from developing countries. This holds true for the evaluation of practitioners from both developed and developing regions. Thus, our

Table 4. Factor analyses on food standards credibility considering country-of-origin effect.^{1,2}

Credibility of food standards from	Respondents from developing regions (n=110)		Respondents from developed regions (n=191)		Pooled sample (n=301)	
	Factor 1 ³	Factor 2	Factor 1	Factor	Factor 1	Factor 2
China	0.813		0.778		0.784	
Mexico	0.783		0.808		0.802	
India	0.884		0.856		0.860	
Ghana	0.863		0.859		0.863	
Italy	0.612			0.656		0.602
Australia		0.731		0.740		0.739
USA		0.790		0.732		0.760
UK		0.860		0.888		0.877
Cronbach's alpha	0.89	0.77	0.88	0.80	0.88	0.80
Explained variance (%)		71.36		70.0		70.18
Kaiser-Meyer-Olkin test		0.86		0.87		0.88

¹ Final factor solution for each case are displayed.

² The respondents were asked to give a score between 1 (very credible) to 5 (not credible) for their perception of the credibility of standards from the listed countries.

³ Factor loadings after rotation.

findings are in agreement with previous studies that indicate that products and services from developed countries are, in general, perceived to be of higher quality and less risky than the ones from developing countries (e.g. Bilkey and Nes, 1982; Chetty *et al.*, 1999; Knight *et al.*, 2007). The reasons behind this perception may be better access to information and the higher level of market and economic development in industrial countries (Manrai *et al.*, 1998). Cultural differences are another reason that may help to explain our results (Hofstede and Hofstede, 2005). Likewise, the low level of corruption in developed countries, which to a certain extent guarantees more trustworthy monitoring systems, arises as another plausible explanation. According to the Corruption Perception Index 2012 (Transparency International, 2012), the ranks of the respective countries are as follows: Australia (7); UK (17); USA (19); Ghana (64); Italy (72); China (80); India (94); and Mexico (105).

As mentioned previously, the credibility of food standards depends largely on the trustworthiness of audits (e.g. Dando and Swift, 2003; DeAngelo, 1981; Hatanaka and Busch, 2008; Moussa and Touzani, 2008) and the perceived strictness of control systems in general (Janssen and Hamm, 2011). Therefore, those countries where these aspects could be fulfilled are perceived as countries that can provide credible certification. While developed countries usually have a better reputation, as they can deliver products of high technical standards with low risk, developing countries

are often associated with weak law enforcement and low production costs (Haucap *et al.*, 1997).

Based on the assessments of the credibility of standards considering COO, it was possible to distinguish two groups of countries. Interestingly, when considering the opinion of respondents from developing regions, Italy represents a case where assessments of standards developed in this country are pooled with standards from developing countries. Furthermore, the results reveal that for all respondents, standards developed in Italy are less credible than those from other developed countries. One possible explanation for this finding is the current economic situation in Italy, which is considered weaker than other developed countries according to the global competitiveness index, a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness used by the World Economic Forum (Schwab, 2012). In addition, Italy's culture is perceived as less systematic compared with countries such as UK.

Standards developed in China are perceived as the least credible even when comparing with standards from the less developed Ghana. Maybe the series of food scandals with high media coverage involving products from this country (e.g. Byrne, 2008; Foster, 2011) have negatively affected customer confidence in China's monitoring systems. Furthermore, products and services provided by China are usually perceived of low quality or of poor

performance. Unlike northwestern countries, the major role that the state still plays in China's economic system and the high perception of corruption (Transparency International, 2012) might also be factors strongly affecting practitioners' perception of the credibility of food standards from China.

The fact that the standards developed in the UK are perceived to be more credible than others may be founded by the role that the British Standards Institution played as the first institution that established standards for quality management, i.e. BS 5750 (BSI, 1979). Later on, BS 5750 was the basis for ISO 9001 (ISO, 2008), which is one of the most prominent quality management systems nowadays. In addition, BRC was the first retailer association that developed a standard to control food safety. Consequently, it is not rare for practitioners to recognise the UK as a source of highly credible quality management systems.

Different actors in the food supply chain may benefit from the results of this study when considering the adoption and use of QAS. The findings presented here also have political implications for those export countries where local food standards are perceived to be less credible. One way to increase acceptance of food standards that have lower perceived credibility may be to benchmark against highly accepted standards. In this case, benchmarking is understood as a formal evaluation and comparison of the technical content of a particular standard with the most prominent standard in the industry (e.g. GLOBALGAP and Global Food Safety Initiative or GFSI in the food sector), including the standard adjustment and up-grading towards the required level (Mazé *et al.*, 2007). In this context, the use of benchmarking may help to improve the credibility and image of local standards and to gain international recognition (Valk and Roest, 2009). Alternatively, independent monitoring systems (Anders *et al.*, 2010; Jahn *et al.*, 2005) and control procedures based on the suppliers' potential risk of fraud (Albersmeier *et al.*, 2009; Jahn *et al.*, 2005) can improve the performance and credibility of food QAS and consequently their image.

As country image can change over time (Bilkey and Nes, 1982), the provision of information through promotional campaigns about food quality and safety initiatives is critical to capture customer attention (Manrai *et al.*, 1998). Government agencies can play a key role in this respect in those countries where country image is poor and resources are scarce.

Although this study showed that the credibility of food standards is affected by the COO effect, other factors like the degree of independence and the reputation of control bodies might also play an important role in shaping practitioners' perceptions. Further studies should address the assessment of the COO effect considering explicit local and international food standards. In that way, a better

picture of the relationship between country image and the credibility of QAS can be provided to the scientific community and policy makers in different parts of the globe.

An important issue that was not tested in this research is the potential effect of COO on third-party accreditation systems and its relation with the credibility of food standards. In this context, it is plausible to think that a food standard from a developing country (e.g. China), which is accredited by an organisation operating in a developed country (e.g. UK), might enjoy a high level of credibility. However, this hypothesis deserves a tailored empirical investigation.

6. Conclusions

This study has shown how country image may affect the perceived credibility of food standards in some cases. In general terms, standards from developed countries are perceived more credible than standards from developing countries. In agreement with the development of the food industry and control procedures in an international context, food standards from the UK are perceived as the most credible, while food standards from China are perceived as the least credible. Furthermore, practitioners from developed and developing regions tend to have the same perception of credibility of food standards, except when they evaluate food standards from Italy. Based on the results of this study, political and market implications can be drawn.

Although this study faced some limitations, it shines light on how country image affects the evaluation of food standard credibility. Further research should be conducted in order to provide a more in-depth view about the reasons of such country images and about ways of improving credibility of food QAS.

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