Food quality and safety situation in Turkey: governance and barriers to success

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Abstract. The institutional environment for food quality and safety in Turkey is rapidly changing in the last decade but there are still some inconsistencies compared with the EU. High costs of establishing quality assurance systems (QAS), inefficient capacity of the institutional frame, unknown consumer attitudes, low level of production techniques and lack of awareness of producers and consumers are important weaknesses, when evaluating the current food quality and safety situation in Turkey. Whereas, rapid development of QAS, increase in consumer demands, harmonisation of legislation with the EU, increase in the research and incentives for quality production, and production potentials were determined as strong points. When analysing the socio-economic situation of farms, producers' knowledge, perception and interest in quality with Rapid Rural Appraisal (RRA), it is found that producers did not accumulate capital because of the low profits, a handicap for expanding and investing into production and product quality. Moreover, the producers' knowledge is limited and their quality perception mainly focuses on food safety. As a result, academic studies and research projects needs to be extended and the adaptation of the Turkish legislation with the EU should be completed accordingly.

Keywords: Food Quality Governance, SMEs Barrier for Food Quality, Food Quality Assurance

1. Introduction

Agriculture still plays an important role in Turkey's economy, even though its share has decreased significantly during the last decades. The agricultural sector accounted about 22 per cent of the GDP at the beginning of the 1980s, but has declined to less than 10 percent in recent years. However, it is still an important buffer against urban unemployment and nearly 30 percent of the economically active population lives in rural areas, while agricultural employment accounted for 23.7 percent of all employment in 2008 [1]. Moreover, agriculture, fishery, food products and beverages contributed around 8.1 percent to the total export value of US$ 132.0 billion in 2008 [2].

The value added of Turkish food sector is an estimated 45 billions Euros annually [3]. The food sector has a 20 per cent share in total production of the manufacturing sector and contributes approximately 5 percent to the GNP. The food sector employs more than 250,000 registered workers and technical staff in nearly 30,000 enterprises. Most of these are small to medium-sized enterprises [4]. USDA (2004, GAIN TU#4008) reports that only 17 per cent of these enterprises use formal quality control tools which also implies that there is only a small proportion of firms that meet EU safety and quality norms [5]. These figures have been improved rapidly during the last few years due to the request for formal quality control by multinational food retail chains and export markets. Therefore, food quality issues have become important issues for all stakeholders in food chain[1].

[1] Food quality could be defined as the quality characteristics of food including external factors (texture, flavour, origin and appearance; size, shape, colour) and internal factors -chemical, physical, microbial [6]. Food quality also deals with product traceability of the raw material, ingredients and packaging as consumers may be susceptible to any form of contamination and also require trust on manufacturing and processing standards. In addition, food quality also deals with labelling issues to ensure that there are correct product, ingredient and nutritional information.

Policies dealing with food safety and quality in Turkey started to develop in the mid-1990s due to the custom union with the EU in 1995 and strengthened in 2000s, because of increasing exports to developed market economies, which require higher standards of food safety and quality. The penetration of supermarkets into the domestic retail market is another driving force for food safety and quality [5]. Analysis of the long-term impact of the EU accession suggest that the increasing market access into the EU could generate a significant rise in demand for both, quantity and quality that would support a significant growth of agricultural and food sector in Turkey [7]. Turkey has formally adopted a number of typical elements of food safety regulations and control systems in the accession period to the EU. There are developments which signal some of the more formal approaches to deal with food safety.

The European Union (EU) continuously established a registration system for geographical indications (GIs) that would provide protection to products across international borders, not only for wines and spirits but also for other food products [8]. Regulations (EEC) No 2081/92 and (EEC) No 2082/92 have been repealed and replaced by Regulations (EC) 510/2006 and (EC) 509/2006, respectively, and further discussion in the framework of the Green Paper on agricultural product quality policy (COM(2008) 641) illustrate the EU process. Comparable protection for GIs in Turkey is provided by Decree-Law 555 of 1995 that covers both food and non-food products. In addition, draft legislations have been prepared in Turkey to become in accordance with the new EU laws and regulation EC 1898/2006. As of June 2009, 113 products are registered with GI certificate, of which 71 are agricultural and food products (www.tpe.gov.tr). However, Gonenc (2007) indicates that consumers and producers were unconscious about GIs and the coverage and distinguishing characteristics of the GI-certified products were not well defined [9].

The food quality concept, particularly used in brands, is a product differentiation beyond obligatory food safety standards. Therefore, it is important to review factors influencing the formation of quality brands for especially agricultural and food products. Hayes and Lence (2002) defined the criteria for the successful differentiation of an agricultural product as;

- The product must transmit price signals from consumers to producers.
- The production scale must be sufficiently large to justify the costs of creating and maintaining a differentiated image among consumers.
- Imitations of the product must be prevented.
- Methods of supply control must not violate laws against price fixing [10].

Furthermore, some models were developed for the optimal choice of quality assurance systems (QAS). Carriquiry and Babcock (2004) modelled two decisions; the profit-maximizing rate of output and a buyer of an input should implement a QAS as a way to gain information about product quality that can be provided to its potential customers. They found that the stringency of the QAS will be higher for more easily discoverable traits, more patient firms, and more attractive markets (only when the output rate is fixed); firms are more likely to implement a QAS when the future is important, the quality trait is harder to observe, and, of course, when the demand for the differentiated product is stronger; and the effect of both the discoverability of the quality trait and the value firms place on the future on the per period output rate is in general ambiguous [11].

In the EU, the Institute of Prospective Technological Studies (IPTS) of the European Commission conducted a research project on 'food quality assurance and certification schemes managed within an integrated supply-chain in the EU-25'[2] from 2004 to 2006, which was initiated by the European Parliament and DG Agriculture and Rural Development. The project aimed at (i) identifying the driving factors of the EU-25 food industry development and their impact on production and trade, and (ii) analysing the advisability of a community legal framework for protection of food quality and certification schemes. This project forms the background for the underlying work of this paper.

There are several large scale projects and a lot of national studies on food quality and protection of traditional products published in the EU. Two of the large scale projects are SINER-GI and DOLPHINS

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[2] For more information http://foodqualityschemes.jrc.es/en/index.html

which aim to build and share a coherent scientific basis world-wide on GIs, regarding economic, legal, institutional and socio-cultural conditions; and to ease and strengthen exchanges of the scientific results of the researches conducted in European countries on origin labelled products (OLP), respectively. At the end of the projects, a theoretical model for monitoring and measuring the impact of GIs was developed; a world-wide network of scientists actively studying and debating GIs has been established and consolidated; and a web based dissemination instruments in order to meet the needs of citizens, policy-makers, researchers, firms and all the other operators was activated[3].

Fragata et al. (2007) analysed the Portuguese situation with regard to public policies and product markets in relation to the GI regulations of the EC [12]. This study can be considered as an example for the national study which was realised by the DOLPHIN project partner. In this paper, some challenges were presented in the institutional frame of the protection system and rural development policies. The consumer knowledge concerning GIs has been found to be weak; however there is a strong correlation between the preference of GIs and key socio-economic variables.

This paper presents and evaluates the institutional environment for food quality and safety in Turkey including the relation to EU legislation, involved public and private organisations, and respective restructuring trends. The current food quality and safety issues are assessed using information obtained through interviews with key stakeholders in the food supply chain. The paper also presents the outcome from the Rapid Rural Appraisal (RRA) with producers of 9 major products in 12 different regions. The socio-economic situation of farms, producers' knowledge, perception of and interest in quality are analyses as part of the RRA.

2. Methodology

In this paper, following the review of the current legislation and institutions, two methods were used to analysis the Turkish food quality and safety situation. Firstly, the Strength-Weaknesses-Opportunities-Threats (SWOT) method was applied to the existing food quality system in Turkey. Secondly, the Rapid Rural Appraisal (RRA) method was used to explore the socio-economic situations of producers and to determine farmers' awareness, knowledge, perception and behaviour towards quality of their production.

SWOT analysis: Experts from public, semi-public institutions and non-governmental organisations (NGOs) related to and interested in food quality assurance system contributed to the SWOT analysis. The experts were from different departments of the Ministry of Agriculture and Rural Affairs (TKB), the Turkish Patent Institute (TPE), regional exporters union (Antalya), the Undersecretary of Foreign Trade (DTM), the Turkish Standardization Institute (TSE), the National Productivity Centre (MPM), the mercantile exchange (Izmir), private companies and universities. As it is already known, the opportunities and the treats of complying or non-complying with the well functioning quality assurance scheme are the access to or exclusion from export markets (such as the EU and Russia) and also from dynamic retail marketing chain, particularly for small scale producers. This SWOT analysis particularly focused on weakness and strengths of domestic food quality assurance systems in Turkey. The SWOT analysis was conducted in order to i) gather information on food quality assurance systems (working principles); ii) discuss existing and potential interests in the EU food quality systems (Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG)); iii) analyse potential food products that can compete with those in the EU markets.

Rapid Rural Appraisal (RRA) method: Information and socio-economic data on producers of selected agricultural products were obtained using the RRA method. The data was analysed in order to explore the current status of food quality assurance practices, awareness, knowledge and perception of local stakeholders. To serve this purpose, nine products and twelve regions were selected (Table 1). In each selected region, interviews were arranged with important regional and/or local stakeholders and a representative village (or town), with respect to the overall region were determined during the interviews with key stakeholders such as the provincial agricultural directorate or producers organisations. The RRA was conducted with producers panels composed of at least 8-10 participants. The demographic structure

[3] See www.origin-food.org for more information.

of the villages and the farm households, improvements and investments in production techniques and progress in product quality were addressed. A semi-structured questionnaire was prepared to obtain basic descriptive information and data related to the main aims mentioned above. In the first part of the questionnaire, questions on the demographic structure of the selected villages and the economic situation of the producers were placed. The questions of the second part aimed to explore the knowledge of the producers about their product and its quality as well as the producers' interest in quality issues and their expectations for improvements of their product quality in the near future. The RRA study regions were selected according to the importance of the products in terms of production volume in national agriculture and/or the reputation of the region for the respective products. Interviews aimed to obtain information on the production process, farm structure, developments in terms of food quality and safety, recent production and trade data on representative production regions in the province and/or sub-province.

Table 1. Selected regions and their importance for the Turkish agricultural sector

Product	Region	Description
Beef	Afyonkarahisar	Represents 5.3 per cent of national registered cattle and buffalo meat production in 2005, respectively; two meat products have GI certificate
Olives and olive oil	Balıkesir (Ayvalik)	Recent data indicates 9 million olive trees on 71 thousand hectare and a production of 173 thousand tonnes of olive oil; there exists also GI-certified olive oil
Tomatoes	Antalya (Kumluca)	Represents 20 per cent of national production and more than 50 per cent of greenhouse production and exports
Apples	Isparta (Egirdir)	Represents 25 per cent of national production
Grapes and raisins	Manisa (Alasehir)	Represents 30 per cent of grape production and more than 50 per cent of raisin production
Dried figs	Aydin	Represents 60 per cent of national production
Dried apricots	Malatya	Represents more than 90 per cent of national production
Citrus	Antalya-Finike	Important production and export region, including Finike oranges with GI
Citrus	Mersin	Important production and export region
Milk	Afyonkarahisar	Represents 2.6 per cent of national milk production in 2005
Milk	Burdur	Represents 1.7 per cent of national milk production in 2005
Milk	Konya-Karaman	Represents about 5 per cent of national milk production in 2005; including a local cheese with a GI application

Figure 1. Map of selected products and regions in the RRA studies

3. Institutional environment for food quality and safety in Turkey

The Turkish Decree-Law No. 560 and the Turkish Food Codex were prepared in 1995. Accordingly, the Ministry of Health and the Ministry of Agriculture and Rural Affairs (TKB) were both responsible for registering and giving production permission to food manufactures and also for food safety controls at selling and serving points, as well as onsite inspections of food producing plants and of food retailers and markets. The EU accession process has called for a conversion of the food legislation. After the new Food Law No. 5179 was published in 2004, TKB has become the competent authority for food inspection at all stages from production to consumption and TKB took over the sole responsibility for food safety inspection; on the other hand, the inspection and analysis of drinking water remained in the responsibility of Ministry of Health.

Local administrations have certain authorities in terms of implementation of the food legislation such as issuing operation permits for food processors and food registration formalities under the Greater Municipalities Law No. 5216, the Municipalities Law No. 5393 and Law 5302 on Special Provincial Administrations, which were enforced in 2004 and 2005. However, this has created problems in maintaining a centralised structure for monitoring and intervention, in order to ensure effectiveness of food safety control and monitoring [13]. Although, there is no clear division between authorities, local municipalities have also responsibilities for food safety controls at selling points in their vicinities. Municipalities are not equally organised and competent for employing food inspectors in their area of responsibility; to our knowledge only Ankara Cankaya Municipality has an effective control team and most of the small municipalities do not even have food inspectors. There are five public and one semi-public institution with high importance for food quality and safety in Turkey. All institutions in the field of food safety and quality, their roles and harmonisation status with the EU legislation are presented in Table 2.

Table 2. Role of main institutes in Turkish food quality and safety

Institution	Main related laws	Issue date	Role in food quality and safety	Harmonisation status with EU law	Status
Ministry of Agriculture and Rural Affairs (TKB)	Food Law No. 5179	05.06.2004	Main responsible for food safety, animal welfare and agricultural production.	Food Law does not include feed and veterinary concepts. (Draft law prepared to eliminate inconsistency)	Public
	Organic Farm Law No. 5256	01.12.2004		Not harmonised with latest EU legislation.	
	ITU (GAP) Regulation No. 25577	08.09.2004		Same as requirements of GlobalGAP (not EU law)	
Turkish Standards Institution (TSE)	Law No.132 (establishment)	18.11.1960	Responsible for Turkish food standard preparation.	Some food product standards were harmonised with Turkish Food Codex.	Public
Turkish Patent Institute (TPE)	GIs Law No. 555	27.06.1995	Certification institute for trademarks and GIs.	There is no TSG concept. (Draft law prepared in 2008, containing TSG)	Public
The Undersecretariat for Foreign Trade (DTM)	Foreign Trade Technical Inspection Law No. 4703	11.07.2001	Responsible for inspection of product standards in foreign trade.		Public
	Communiqué about Turquality support	24.05.2006	Regulating incentives for the quality of exported products.		
The Undersecretariat of the State Planning Organisation (DPT)	Law No. 4004 (reorganisation)	16.06.1994	Responsible for the preparation of development plans and annual programme of the government including investment for		Public

Institution	Main related laws	Issue date	Role in food quality and safety	Harmonisation status with EU law	Status
			improving food safety and quality infrastructure.		
Turkish Accreditation Agency (TURKAK)	Law No. 4457 (establishment)	27.10.1999	Responsible for accessibility of standards and quality audits worldwide.		Autonomous ; semi-public
Ministry of Health	Law No.1593	24.04.1930	Responsible for inspection, safety and quality of drinking and usage water.		Public
Municipalities	Law No. 5216 Law No. 5393 Law No. 5302	10.07.2004 03.07.2005 22.02.2005	Responsible for food safety inspections at food selling points and food service sector.		Public
Ministry of Industry and Commerce	Law on SMEs Development and Support	12.04.1990	Responsible for SMEs organisation and supporting their requirements including establishing food safety and quality systems.		Public

4. The SWOT results: current food quality and safety issues in Turkey

The results of the SWOT analysis were obtained through opinions and interactions of experts from key stakeholders on the following subjects: i) working principles of the food quality assurance certification system (Table 3); ii) existing and potential interests to the EU food quality systems (Table 4); iii) potential food products to compete in the EU markets (Table 5). In the presentation of the results strength and opportunities as well as weaknesses and threats are grouped.

Table 3. Working principles of food quality assurance certification systems in Turkey

	Weaknesses/threats	Strengths/opportunities
Set up a new quality system	High costs	Developing exponentially
Institutional frame	Inefficient capacity	High interest from the institutions
Consumer oriented	Unknown consumer attitudes	Increase in consumer demands
Producer oriented	Low interests from producers	Food industry is gaining power
Accession period to the EU	Very slow progress	Adaptation of legislation is sustained

It is recognised that to set up a food quality assurance systems is costly for firms, particularly SMEs that also includes the cost of proper packaging, ads, bar-coding to the quality system. Moreover, there is no quality premium for certificated products in Turkey, although additional effort is needed to provide food quality. Therefore, especially small and financially-weak enterprises are facing problems in switching to the production of quality products. Nevertheless, the number of entities with ISO 9000 and 22000 accreditation is increasing. Additionally, food quality assurance systems have been developing, demand for quality product has been increasing and having a food quality assurance systems in place has started to be a competition tool. Furthermore, both producers and consumers have positive attitudes about the presence of ISO 9000, ISO 22000 and TSE certificates in the food chain.

In the institutional frame, small scale manufactures have limited capacity to obtain quality certificates and to receive the potential benefits. The role of governmental organisations is not well defined in the administration of quality assurance system and the coordination between governmental bodies appears to be inefficient. This might be originating from the overlapping responsibilities of government bodies and the slowness of bureaucracy. However, governmental organisations have been restructured during EU accession period and they have close relationship with similar bodies in the EU. Third party control has increased the efficiency of inspection and supplier audits have been more numerous.

So far, no comprehensive consumer survey has been analysed consumer expectations for and satisfaction with food quality in Turkey. In addition, consumers do not have sufficient knowledge about food quality. But there is an increasing demand by customers for product information. In fact, consumer demand for food quality is changing following changes in purchasing power, age, urbanisation and education level.

On the producer side, investment in food quality systems is in most cases not profitable (as no premium can be achieved). Producers or food plant owner are also unconscious about food quality and traditional entities are too conservative to these improvement. Food quality assurance systems can not be fully and effectively applied in the field. However, the large-scale food industry has been exporting to world food markets and they are fulfilling the linked safety and quality requirements. In addition, there is a large qualified workforce in Turkey to implement and complement food quality assurance systems.

The lengthy accession period of Turkey to the EU results in a slow harmonisation process with the EU legislation, though it leads to the enforcement of international legislation, and improvements of the traceability systems supported by these legislations.

Table 4. Existing and potential interests to the EU food quality systems in Turkey

	Weaknesses/threats	**Strengths/opportunities**
Quality awareness and interest in quality	Lack of awareness of the producer and the consumer	More interest for quality demand
Usage of communication	Communication channels are not used well enough	Increase in communication power to disseminate quality conscious
Institutional/organisational	Lack of implementation inside the Institutions	Competition in food industry
Interest		Increase in research and incentives for quality production
International agreements	Undefined technical barriers in trade	

Quality awareness of consumer in Turkey is weak compared to developed countries. There is also a big difference in the perception of quality between urban and rural areas, because of lower educational and income levels. Full trust in quality systems has not been established yet (products from specific rural areas are still more trusted than certification). However, there is an increase in consumer awareness that supports the product quality and safety improvements. There are also trends towards healthy diets, thus consumers demand healthier and safer foods. Another fact is that a higher educational level leads to increasing demand for quality products.

Considering communication tools, it was recognised that the information flow is not sufficient in amount and clarity. Moreover, enterprises are weak in using communication tools and communication channels and media have not given enough importance to the issue of food safety and quality. Nonetheless, the awareness due to increasing number of consulting, certification firms and variety of communication channels is raising.

There is also lack of trust in certification bodies as a result of unethical issues -like insufficient or pretended auditing. Documentation is also difficult for the entrepreneurs that have not enough employees. However, SMEs try to increase product variety by the researches on quality that leads to increase in competition.

In international food markets, technical barriers and sanitary and phyto-sanitary requirements exist, especially in developed countries. Positively, there is an increase in academic interest (R&D) in food quality related research. Furthermore, rural development incentives and support have sharply increased in recent years for the production of quality products.

Table 5. Potential food products in Turkey that can compete in the EU markets

	Weaknesses/threats	**Strengths/opportunities**
Production oriented	Low level of production techniques	Production potential
Product oriented	Lack of infrastructure of internal mechanisms	Large spectrum of present produce
International trade	Difficulties in trade with the EU	Attracting the interest of foreign demand

When Turkish food products can compete in the EU market, it is difficult to maintain the quality standard of product. Thus, in competitive markets quality standards have to obeyed, which are costly and may reduce profits due to higher production costs. Production and processing units in Turkey have in many cases not been audited sufficiently by the authorities; therefore, only few food producers can meet EU standards. There are a high number of small enterprises, who do not have any knowledge how to use advanced marketing strategies. Nevertheless, there exist abundant resources for agricultural production in Turkey. The producers are improving by switching to more efficient production methods and there is a potential to diversify production.

Support to quality products, with a competitive potential, has so far not been sufficient and there is no food product based organisations specialised in quality production. However, diversification of production is growing and there are an abundant number of endemic food products in Turkey with GI and traditional production protection potential, especially hazelnuts, raisins, apricots, capers, figs, frozen fruits and vegetables, olive oil, poultry products. There is a great variety of fresh fruits and vegetables, and fishery products (sea and inland water) with potential for organic production. Traditional products, medical and aromatic plants, goat meat and lamb, and milk (varieties of yogurt and cheese, local ice-cream) are also candidates for GIs.

In the trade between Turkey and the EU some constraints for Turkey are still exist because it is not a full member of the EU, e.g. EU import quotas for processed food products, the entry price system for fresh fruits and vegetables, diverting legislation for fishery products. There are also retailer, national and EU standard for food products, production and marketing. Moreover producers in Turkey can not produce at the same quality level as in the EU, mostly due to financial constraints, governance structure and fragmented production structure. Even so, Turkey has a potential in agro-eco tourism, and the presence of a large variety of food products may contribute to attractiveness for EU tourists. The number of Turkish citizens in the EU is another advantage for Turkish food products to enter the EU market. There is also a potential to differentiate product from EU products due to the different environmental and natural in Turkey.

5. RRA Method: Socio-economic situation of producers

At this stage, firstly the socio-economic and demographic structure of the selected villages were determined, and secondly, the answers of producers on the quality issues were evaluated using five different scales: 'too weak', 'weak', 'fair', 'good' and 'excellent'; taken as 1 to 5, respectively. During the evaluation of answers, no answers and wrong/false answers were categorised as 'too weak'; partially correct answers as 'weak'; correct answers combined with no applications as 'fair'; with some applications as 'good' and both correct answers and applications as 'excellent'.

Producers could not accumulate capital since they have got low profits from their products during last few years. This is a handicap for them to expand and to invest into quality (this could be an indicator for determining incentive policies for SMEs, current incentives on organic production and GAP application are more suitable for costly investments). Therefore, producers could be clustered in producer organisations to collaborate in quality production. Moreover, it is necessary to support products with a model when they produced in required quality and having GIs certificates. Legal regulations to allow price determination according to quality criteria or policies including quality premium may also lead to invest into quality to get a higher profits.

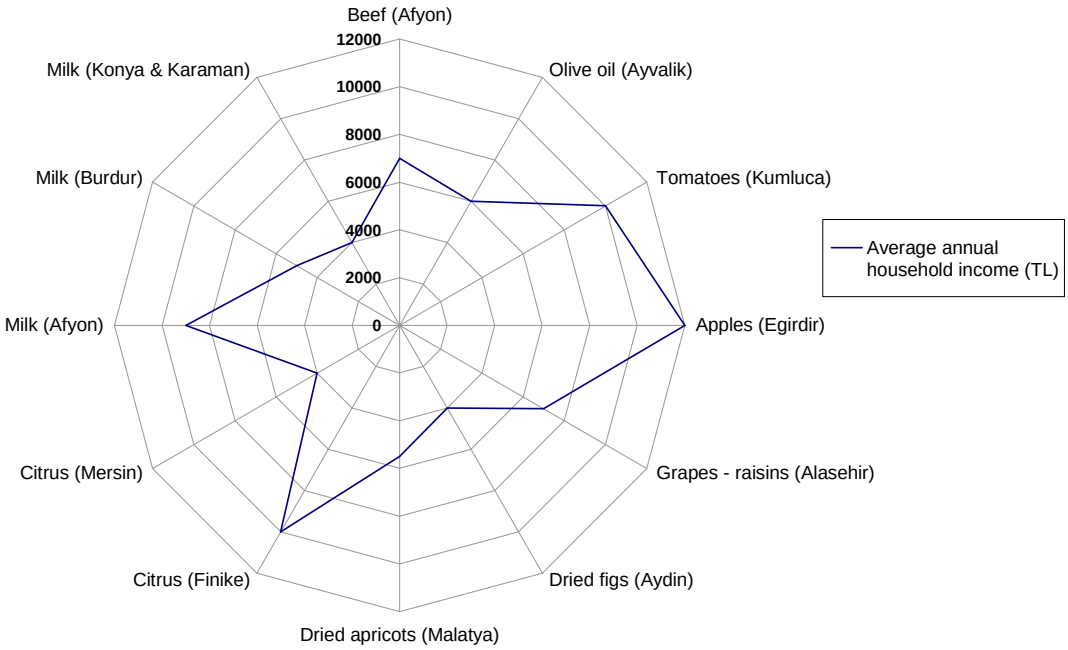

Figure 2. Radar chart for socio-economic structure of producers[4]

To measure producers' knowledge is important to obtain an overview of the food quality structure in a given country, in this case Republic of Turkey. As Carriquiry and Babcock (2004) pointed out, quality may be difficult to appraise for producers or processors because of the asymmetric information [11].

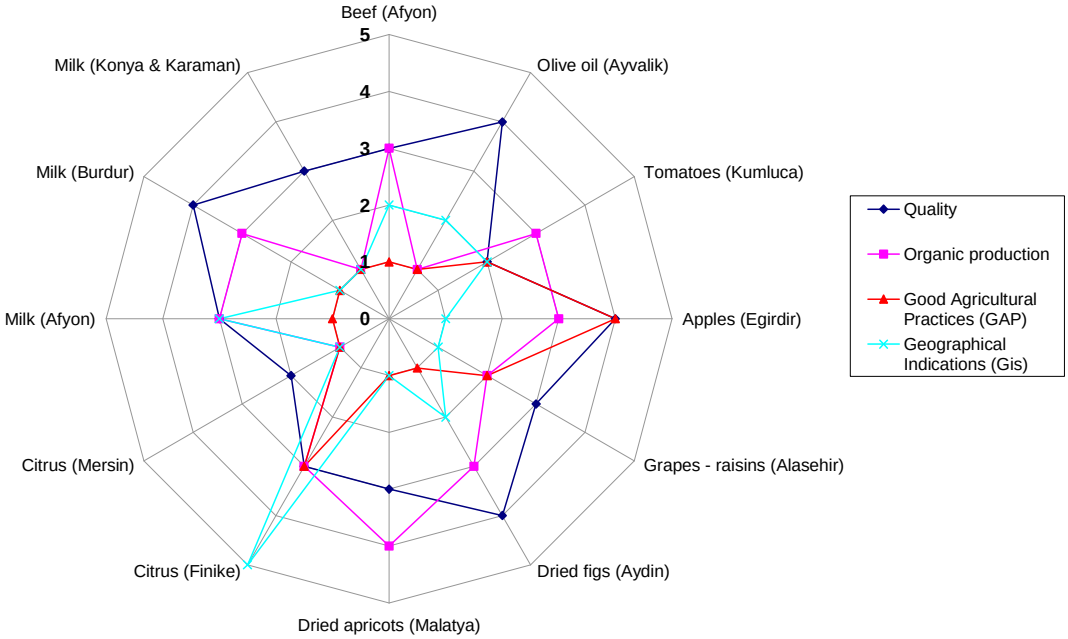

Figure 3. Radar chart for knowledge level of producers

There is also a misunderstanding regarding the concept of GIs. As an example, some products have a PGI certificate even if they are not eligible for PGI status but should be classified for TSG certificates. This

[4] The exchange rate for Turkish Lira (TL) in June, 2009 is 1 € = 2.15 TL

would certify the traditional production method and not be linked to the origin of the product or the location of the elaboration process. This option is not included in the current Turkish legislation concerning GIs. In addition, it is possible to obtain certification with other quality marks (like Woolmark) but there is no application as those quality marks are often unknown.

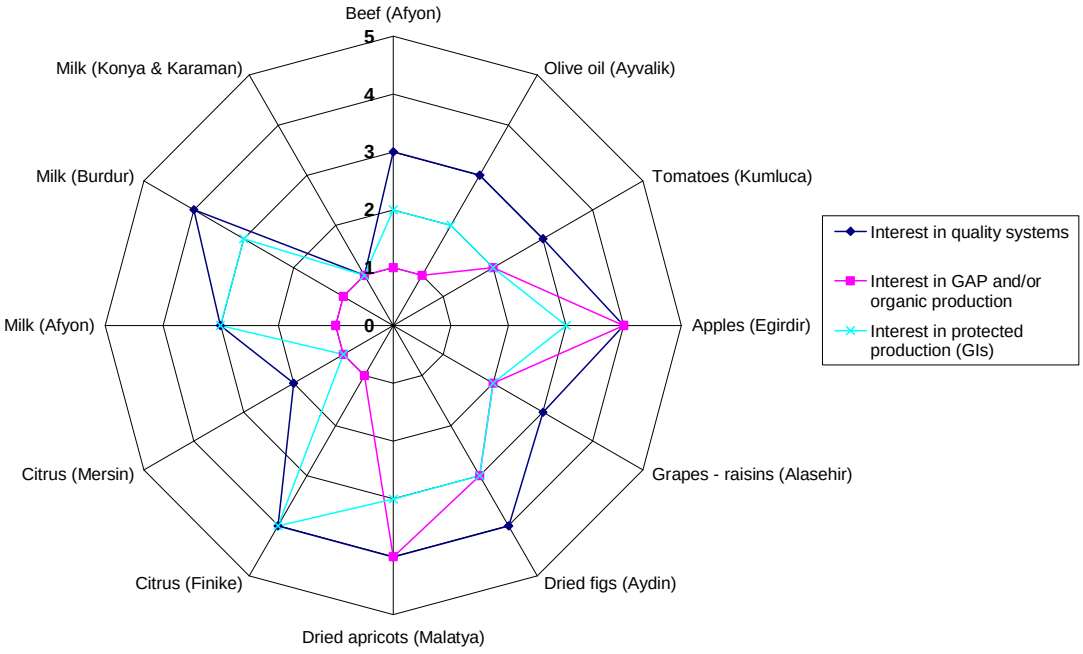

Figure 4. Radar chart of producers' interest

The interest of producers in QAS is developing rapidly, however their interest in organic farming and GAP is low. Most of them heard about and are interested in GIs whereas their expectations for benefits from GIs or from organic farming and/or GAP were not high enough to invest in them.

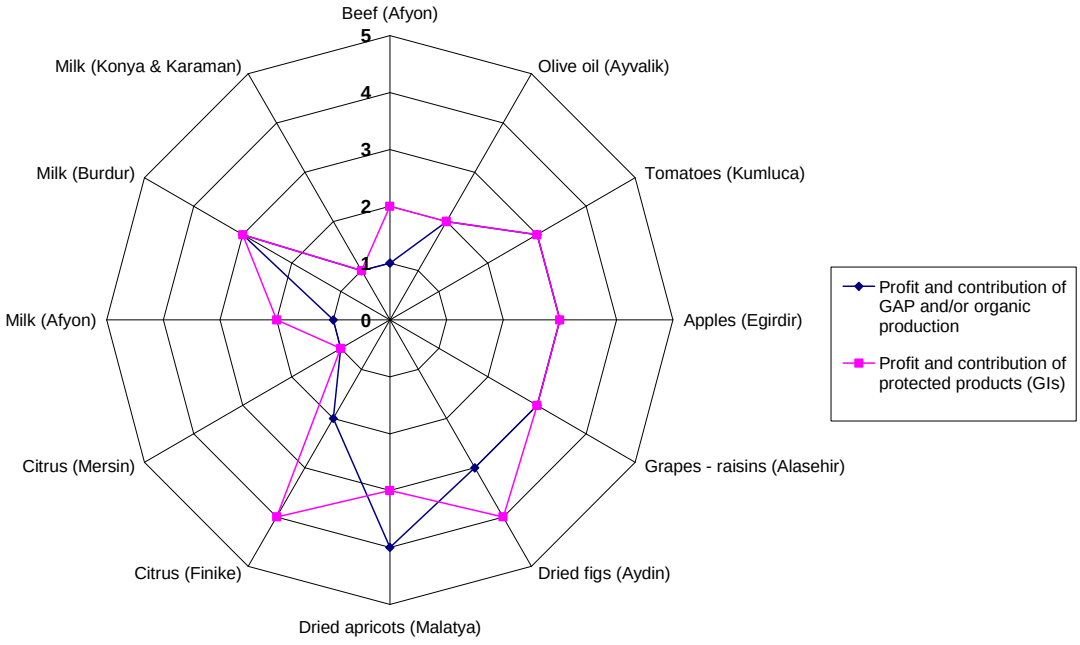

Figure 5. Radar chart of producers expectations

The quality perspective and the food chain structure of analysed products are described in the table below.

Table 6. Quality perspective and structure of the analysed products

Product	Region	Quality perspective			Vertical and horizontal relations		
		Authenticity	Process	Safety	Food distribution	Food industry	Agricultural subsectors
Beef	**Afyon**	PGI (Sucuk and Pastrami)	-	-	Own-shops and dealers are important	A few leading regional firms	Producers' organisation
Olive oil	**Balikesir-Ayvalik**	PDO	-	-	Own-boutique shops and wholesaler	A few national and a lot of regional firms	Co-operatives
Tomatoes	**Antalya – Kumluca**	-	GAP	Residues and sanitation	Wholesale market agent, exporters, local traders	A lot of packaging houses	Fragmented
Apples	**Isparta - Egirdir**	-	-	Residues and sanitation	Cooperatives, wholesale market agents and local traders	International fruit juice firms	Producers' organisation
Grapes - raisins	**Manisa - Alasehir**	-	-	Residues and sanitation	Cooperatives, exporters and local traders	A few manufacturing plants and packaging houses	Co-operatives
Dried figs	**Aydin**	PDO	-	-	Cooperatives, exporters and local traders	A few manufacturing plants	Co-operatives
Dried apricots	**Malatya**	PDO	-	Sulphite amount	Exporters, wholesaler and local traders	A few manufacturing plants and packaging houses	-
Citrus	**Antalya – Finike**	PDO	-	Sanitation	Exporters, wholesale market agents and local traders	A lot of packaging houses	Producers' organisation
Citrus	**Mersin**	-	-	Sanitation	Exporters, wholesale market agents and local traders	A lot of packaging houses	-
Milk	**Afyon**	-	-	Sanitation (microbial count)	Local traders	Some national and small scale regional dairy plants	Producers' organisation
Milk	**Burdur**	-	-	Sanitation (microbial count)	Cooperatives	Some national and a few small scale regional dairy plants	Co-operatives
Milk	**Konya and Karaman**	PGI for Obruk cheese was not accepted	-	Sanitation (microbial count)	Producers' organisation and local traders	A few regional and local small scale dairy plants	Producers' organisation

There are some important observations, which should be considered as pros and cons of these regions before analysing the products. In Afyon, the only aim of getting PGI for sucuk production is the protection of the traditional production methods, not marketing purposes. The labour costs in olive oil production are high and many small shops exist in Ayvalik (Balikesir). Food safety is priority in the tomato production in Kumluca, Antalya and the grape and raisin production in Alasehir (Manisa) to comply with export market requirements and requested export formalities. Apple production in Egirdir (Isparta) is so convenient for GAP applications because there is a limited but equipped production area (such as drip irrigation systems, pesticide preparation areas, warehouses, packaging units etc.). Fig producers in Aydin could get higher prices for their products because it is a unique place for producing high quality dry figs. Dried apricots are sold in bulk so it is impossible to use GIs in Malatya. Orange producers in Antalya also get higher prices for their products because Finike orange has unique taste and harvesting period is almost one month early. There are marketing advantages for orange producers in Mersin because its location is so close to the citrus exporters and fresh-cut fruit and fruit-juice producers. Buffalo milk producers in Afyon could add extra value to milk with producing traditional milk products (cream). Milk producers in Burdur get premium milk prices because the producers are very well clustered

within cooperatives in this region. Milk producers in Konya and Karaman could get value added product by producing cheese.

As result, relating to the criteria elaborated by Hayes and Lence (2002) for successful differentiation of agricultural products, it is found that some products in RRA studies could potentially be successful cases as GIs;

- Ayvalik olive oil;
- Finike oranges;
- Afyon cream; and
- Sucuk (It should be analysed whether this product could achieve a premium price versus private brands).

Some products were determined as having potential for organic production;

- Dried Apricots;
- Dried figs;
- Milk (only for medium and large scale farms); and
- Beef (only for medium and large scale farms).

Some products were determined as favourable for GAP application:

- Citrus;
- Apples;
- Tomatoes;
- Milk (region needs to be announced as animal diseases free by TKB); and
- Meat (region needs to be announced as animal diseases free by TKB).

In addition, Divle Obruk cheese in Konya and Karaman could be certificated with a TSG.

6. Conclusion

Lack of quality awareness of consumer and producers is determined as the main problem by the SWOT analysis. Producers' knowledge about food quality aspects is limited and their perception about quality mainly focuses on food safety. Furthermore unorganised small scale producers are not in a position to solve quality issues by themselves. The coordination and collaboration among stakeholders in the food chain are too weak to develop/ensure quality assurance scheme, with continuous product supply of a defined quality level. Different organisations/institutions share the responsibility for parts of the final quality and quality control. Moreover, there are a lot of institutional conflicts, not only for the relationship between organisations/institutions but also within organisations.

There have been only few academic studies and research projects in this research field, funded by TUBITAK (the scientific and technological research council of Turkey) that also need to be extended towards quality assurance system.

Incentives for food quality need to be improved for primary production and all the processing levels to have a complementary perspective. Existing incentives are generally focused on safety and quality aspects covering organic agriculture, GAP and partly for processing levels. Thus, SMEs and small scale agricultural holdings are not financially supported to improve quality assurance that prevents their expansion and/or investment in production quality. Therefore, it is hard for small producers and enterprises to accumulate capital. This situation leads in consequence to their exclusion from dynamic food markets.

There exist export barriers due to quality requirements, which reduce the Turkish share in world food markets, besides, developments to improve infrastructure, generally with regard to food safety as minimum legal requirements, requested by importing countries and/or multinational food retail chains.

Key local stakeholders are not organised enough to obtain GI certification for important food products in their region. Moreover, producers are uninformed about GIs and are too far from this subject due to their fragmented and small scale characteristics. There was only one producer union established by regional producers which obtained a GI certificate. The other certifications were obtained by unions of cooperatives, chambers of commerce and industry, municipalities and/or provincial governments. Observations showed great improvements in milk production quality, which now exceeds minimum food codex requirements. The main driver for this improvement is the existence of large scale national and international dairy companies that push quality standards in the market. However, small producers could be excluded from this dynamic market because of their traditional production techniques and the non-compliance of their infrastructure with buyer requirements. Through the RRA studies, no case has been found where small producers are engaged in organic production and also their intention to involve in organic production is weak.

Quality awareness of consumers and producers needs to be improved by training and communication to overcome food safety and quality problems in Turkey. For this purpose, institutions like TKB, DPT, TPE, TSE, TZOB (Union of Turkish Chamber of Agricultural) etc. should corporate and arrange meetings with media representatives and journalists on food quality; public TV channels (TRT) and other national and also local channels should keep the topic on their agenda. Campaigns should be organised intended to raise public awareness, supported by sector associations, TKB and other public institutes. Cooperation between TKB and MEB (Ministry of National Education) could result in the preparation of leaflets and distribution to students. A complementary perspective and coordination among responsible institutions is required with regard to food quality. Infrastructure investments for improving food quality assurance systems should be sustained by TKB and other related institutes in line with the development of quality and safety demands on domestic and international food markets. Projects for quality infrastructure development should be sustained by using the EU and/or World Bank (WB) grants. TKB should design support schemes to further improve food quality, including GIs and 'Trade Mark' products. The Undersecretariat of Foreign Trade (DTM) should support the export of safety and quality guaranteed products and conduct market research for the product having potential to get organic label and a high level of quality standard for improving exportation of value added products. Recently, Commodity Promotion Groups has established to promote consumption of the product (including milk, citrus, hazelnuts, apricots) both in domestic and foreign markets. The product promotion groups are acted as a semi-public institution and directorate of the board is appointed by the DTM. The product promotion groups has budget to support market research as well.

KOSGEB (Small and Medium Industry Development Organization in Turkey) and TKB should associate rural development supports with traceability applications.

In conclusion, the EU accession period should not be interrupted and the adaptation of legislation should be completed accordingly. Future investigations should focus on supply chain analysis and obstacles for collaboration among key actors in the supply chain, on consumer response to quality in domestic markets and on the prevention of small scale producers' exclusion from restructuring markets.

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