The International Quality Systems Environment

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Abstract

Enterprises in the agri-food sector are increasingly confronted with the need to adjust their production processes and operations to the requirements of quality systems and to integrate these requirements into their own individual integrated process management system. Integra- tion efforts are further aggravated by correlations of quality system requirements with other process related requirements.
First initiatives have started to benchmark the requirements of different quality systems to have an analyse about the level of the same requirements.
Output of this article will be a description of an advisory model (database model with computerized support), which presents a support tool for the implementation of quality, environ- mental and occupational health systems into the individual integrated (process) management system of enterprises. This tool includes at the moment two main parts: a benchmark of quality standards and a cost and benefit analysis approach.

Keywords: quality standards, benchmark, harmonisation, advisory model

1. Introduction

In the past years, a number of issues and trends have brought increased attention into safety and quality considerations in the agri-food sector. These include the “mad cow” disease crisis and expansion of the international trade of food, fuelled by advances in production, transport, information technology and other deployments in the cooperation of supply chains. In order to promote food trade and maintain consumer’s trust in product quality and safety, quality management is of high importance for agri-food enterprises. Safety and quality standards, assurance systems and a legislative framework could build around the business concept “quality management”.
The development of quality standards with focus on processes is not a new concept, having begun to receive attention in the eighties. Systems based on “good practices”, encompassing good agricultural, good hygienic, good manufacturing and good trade practice were developed.
Since the nineties, the international standard ISO 9000 ff. has been popular in the agri-food industry. The reason for the development of the ISO 9000 was the publication of a consistent norm, which formulates a framework for quality management. In 1993, the European Union officially recognised the HACCP methodology as a standard production method for food manufacturers to implement and maintain a production control system. Furthermore, quality systems have been developed with specific requirements for the agri-food-industry and with the view on supply chains and networks (Krieger and Schiefer, 2004; Luning et al. 2002).

These specific quality systems were developed by different organisations, both private and public. Whereas mandatory safety and quality systems exist, often enterprises have a choice on whether or not they should adhere to a specific system of norms and regulations. Hence, cost and benefit considerations are likely to be taken into account in decision processes regarding safety and quality management system adoptions.
This paper will give an overview about international quality system organisation (Chapter 2). However, the aim of this paper is to present different benchmark activities (Chapter 3) and the presentation of a developed advisory model for the implementation of quality standards (Chapter 4). Chapter 5 gives a short conclusion.

2. Internatinal Quality Systems

2.1 Overview

Quality and the organization of quality systems that support product and process quality through process organizations, process controls, or process management beyond legal requirements has been a relevant concern in the agri-food-industry since long. However, since some years, the development of standards for quality systems has intensified, as have requests from markets to utilize them in firms at all stages of the agri-food chains.

Quality system standards could contain requirements related to

a) the organization of production processes (e.g. setting requirements to the utilization of pesticides in farms),
b) the management of the quality system (e.g. requirements concerning the documentation; setting of an quality policy),
c) product characteristics like quality (e.g. cleanliness), safety (e.g. pesticide residue) and authenticity (e.g. geographical origin) and
d) the infrastructure environment (e.g. special requirements to the size of a cot) (e.g. Giovannucci and Reardon, 1999; Q&S 2007, IFS, 2004).

Depending on the focus, the orientation of standards could be towards enterprises at a certain stage of the value chain (horizontal) or towards enterprises throughout the value chain (vertical).

Vertically oriented quality system standards (e.g. IKB, Certus ,Q&S, GMP) set requirements for compliance at several or all stages of the value chain. The approach delivers chain encompassing quality guarantees at the end of the value chain.

Horizontally oriented quality standards (e.g. IFS, BRC, EurepGAP) set no overlapping requirements for subsequent stages of the value chain as, e.g. the EurepGAP standard, which is relevant for farmers only or the BRC standard which applies to own brand product suppliers of retails groups

2.2 Internal Structures

In general, quality system standards are presented in manuals that include requirements and interpretations, plus checklists for self-control and audits. In some system standards, requirements are structured hierarchically, distinguishing between classifications as “high and low priority

(IKM)", must and criteria and recommendations (EurepGAP), basic and high level and recommendation (IFS) or as 1,2 and 3 (SQF 1000 and SQF 2000).
The different hierarchical levels imply certain implementation flexibility in system certification by external auditors. As an example, in the "International Food Standard" (IFS), the fulfilment of 75% of the basic requirements including all so-called "KO-Criteria" is sufficient to receive a basic level certification. The "SQF 1000" and "SQF 2000" standards distinguish between three certification levels, which build on the cumulative implementation of different sets of requirements. Level 1 involves fundamental food safety requirements, level 2 extends requirements towards an accredited "HACCP Food Safety Plan", and level 3 incorporates special requirements for quality management. However, the hierarchy principle is not a general one, system standards like the "Danish Quality Guarantee (DQG)", ask for a complete fulfilment of all requirements.

Audit checklists give a precise specification on what an enterprise needs to prove for an appropriate implementation of a quality system (Krieger and Schiefer, 2006).

3. Benchmark and harmonisation activities

The benchmark and harmonisation of different quality standard requirements have started during the last years. The reason is the complexity of the "quality standard world" and the increase of international trade and competition during the last years in the agri-food industry.
Possible approaches for the harmonisation and benchmark of quality standards are the following:

i) benchmark with the result of an acceptance between different standards: two checklists are benchmarked and small differences are matched
ii) benchmark of standards and the development of an additional checklist (e.g. QSGAP)
iii) development of a task Force with participants of quality standard owner with the result of a benchmark of quality standards (e.g. European Meat Alliance)
iv) development of main criteria for the benchmarking of quality standards (e.g. Global Food Safety Initiative Guidance Document) (Luning et al., 2002)
v) a "one way" benchmark, where one quality standard is basic for the benchmark (e.g. EurepGAP-Benchmark)
vi) improvements or coordination of audit activities with the inclusion of internal audits, external audits and combined controls (Mazé et al., 2006).
vii) development of a new standard with the harmonisation of different standard requirements (e.g. ISO 22000, EurepGAP) (Dreusch, A.B., 2006; Mazé et al, 2006).

Next to this benchmark activities support tools for the implementation of quality system are on the market. These systems have the goal to support enterprises concerning the implementation of an integrated quality management system. Many benefits exist for an integrated management system in enterprises, which are for example: use of synergies, reduction of time and costs and an easier integration of new management systems (Petridis and Schlüter, 2001).
The "integrated quality assurance" (GQS) is an example of a support tool for the agriculture for specific federal stats in Germany. It is an instrument for farmers to have an integrated paper collection with legal and specific quality standard requirements (Glöckner, 2006).
These benchmark present a specific benchmark and support tool for the farm level, as most of these benchmark activities are concentrated on one stage of the agri food industry. But next to the specific quality standards for one stage in the agri-food exist also quality standards, which

are stages independent like the ISO 9000, ISO 22000, HACCP and so on (see Krieger, 2002). Next to, this element a complete integrated management with the focus on the environmental and occupational health is relevant for enterprises.
These additional aspects are also or will also be part of the advisory model "Qualint", which will be described in the following part of the paper

4. Advisory model "Qualint"

The analyse of these different benchmark activities shows the importance of this part in the agri-food research. Next to these main points, the calculation of costs and benefits of quality standards present a high relevance on the market like projects and excellence network activities show. The implementation of these viewpoints is content of the internet based advisory model "Qualint".

4.1 Description of the advisory model

The aim of the advisory model is the development of an integrated description model to simplify the management of different quality, environmental and occupational health systems in the agri-food industry. The main users of this system are enterprises and additional to these users advisory organisations and system developer can get important information out off this system.
The basic of this database are audit and implementation requirements (information out of the manuals that include requirements and interpretations) of different quality standards (in the future also requirements of environmental and occupational health standards) and the categorisation of these requirements (through benchmarking). The result of this benchmark is the presentation of requirements, which are also part of the selected other system or which are specific for the system.

4.2 Results

After the description of the advisory model, first results of specific scenarios will be presented in this chapter of the paper.
The advisory model includes quality standards, which are in some cases relevant for the same stage of the agri-food industry like the International Food Standard and the Safe Quality Food 2000. These two standards are important standards for the production industry and retailers can ask for the fulfilment of these different standards.
Next to the categorized presentation of the additional standard requirements of the SQF 2000 in comparison to the IFS requirements (see Figure 1), the user of the advisory have also the possibility to get detailed information about the additional requirements and the requirements, which are the same in both quality standards. The categories of the quality standard requirements: process, infrastructure, product quality and administration are also a basic for a calculation of the costs for an implementation of a new quality system in an enterprise or on a farm (see chapter 4.3).

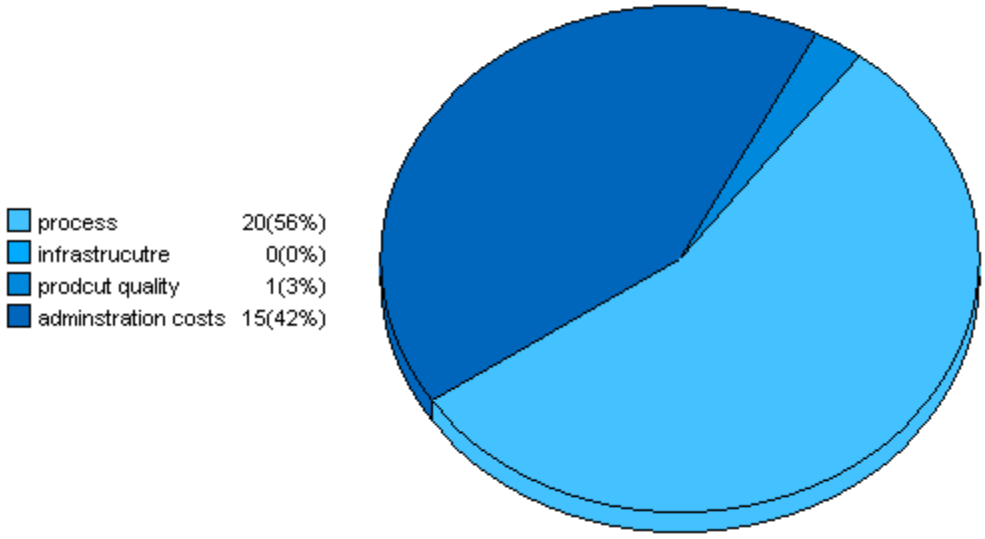

Figure 1. Benchmark IFS and SQF 2000: Additional requirements of the SQF 2000

4.3 Additional possibilities

Next to the benchmark procedure, an additional function of the advisory model is the calculation of marginal costs and benefits of different quality standards. The basic for this information output is the benchmark of the quality standard requirements and its categorisation. To have first estimations about the costs of a quality standard for enterprises in the implementation phase, expert interviews were done to have a hierarchical order about the level of the cost categories.

5. Conclusions

In conclusion: This paper has given an overview of quality standards and their structure in the agribusiness and food industry in Europe. The main aspect was to give an insight into the initiatives in the part of benchmark and harmonisation activities and the description of the advisory model for the integration of different systems in enterprises. The goal of this model is the estimation of marginal costs and benefits in firms concerning the implementation of standards. The next steps of this analysis will be the determination of the hierarchical order of the amount of costs and the importance of benefits and case studies to apply the model.

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