Differentiation of Certification Standards: The trade-off between generality and effectiveness in certification systems
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Summary

The following study provides a conceptual framework explaining certification trends in the food sector. A growing number of certification systems indicates the importance of third party audits. On the other hand, this development also leads to an escalating variety of certification schemes implying the danger of “audit tourism” and, as a consequence, rising transaction costs. Therefore, the driving forces of this differentiation process will be analysed. The trade-off between generality of a system and its effectiveness is revealed which can be traced back to the disadvantages of general management system audits.

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1 Introduction

Quality control and quality management have a long tradition: Since many decades statistical quality control and quality management systems have been used to guarantee a high quality level in almost every industrial production process. In recent years another tool for quality assurance has come to the fore: certification systems. Main feature of these systems is that all inspections are carried out by independent bodies (so-called third party audit) grounded on standards laid down by well-known and accepted external organisations (standard owner). At the beginning there was the intention to create one standard for all economic sectors by establishing a general open-for-all certification scheme (ISO 9000). Unfortunately, this proved to be impossible. Today a large number of different certification schemes can be identified (Goldsmith et al., 2003). Instead of a one-for-all-standard more complex and industry-specific certification schemes are evolving throughout all sectors.

More than in any other industrial sector this holds true for the food-producing industry: In the agribusiness the amount of certification standards has boosted worldwide provoked by several food crises and an increasing consumer demand for high quality food products. Food processors have to adopt new standards due to changing requirements of the market (Böcker et al., 2003). Besides, the attributes associated with food products set a stimulus to this evolution: Most food products include process qualities, which cannot be observed by the consumers, so-called credence attributes (Nelson, 1970; Darby & Karni, 1973). Thus, reliable quality signals based on certificates and neutral control can be a suitable instrument to bypass information asymmetries (Sporleder & Goldsmith, 2001; Ward et al., 2004). Today a great number of different certification schemes can be identified.
This development raises one important question: What are the reasons for the inherent tendency to differentiate standards once generally applied and, thus, to abandon scale-effects? Our paper suggests a framework within which the development from quality-control-systems to certification systems, as well as the differentiation of the latter, can be analysed. First of all our paper will show that there is a fundamental need of certification as only third party audits can prevent information asymmetries in the food market (chapter 2). In chapter 3 the development of standards and third party audits and its tendency towards an increasing differentiation is described. The differentiation process will be analysed in chapter 4, it can be ascribed to a general trade-off between generality and efficiency of certification schemes. This trade-off can at least partly be explained using the theory of motivational crowding effects brought forward by Frey (cp., Frey & Oberholzer-Gee, 1997; Osterloh & Frey, 2000; Frey & Jegen, 2001). Lastly, we will briefly compile our findings and make some suggestions concerning the further development of certification schemes.

2 Certification and Economic Theory

Many economic approaches imply that both suppliers and buyers are fully informed about the commodities concerned. In fact, market activities are often characterised by far-reaching information deficits that impede the smooth functioning of markets (Akerlof, 1970; Spence, 1976). Depending on the degree of information asymmetry between supplier and customer, different types of goods can be identified according to the dominant quality attributes (cf. fig. 1) (Nelson, 1970; Darby & Karni, 1973).
In the following, another quality-dimension is added: Goods featuring the so-called Potemkin attributes (Tietzel & Weber, 1991; Bodenstein & Spiller, 1998) are characterised by the fact that neither the buyer nor external institutions are able to carry out controls at the end-product level. These process-oriented attributes (e.g., Organic Farming, Fairtrade or Geographical Origin) cannot even be detected in a laboratory analysis done by external third parties (Vetter & Karantininis, 2002). In the case of credence attributes, in contrast, product contamination can be revealed by inspections carried out by external organisations, public authorities, or competitors. The information asymmetry related to Potemkin attributes, however, cannot be bypassed in this way and potentially involves adverse selection, as quality statements can be made with impunity. What is needed to circumvent this process is an investigation scheme that covers the whole supply chain and ensures on-site inspections throughout the production process. Certifying systems are able to guarantee these inspections.

The main feature of a certification system is that inspections are carried out by independent bodies (third party audit) and are based on regulations laid down by external organisations (Juran 1962; Luning et al. 2002). That is why they are gaining popularity on all levels of the agri-food chain (Auriol & Schilizzi, 2002). Especially in the field of food safety quality labels have become the most popular consumer policy tool (Golan et al., 2001). By means of regular control and – where necessary – additional sampling, neutral inspection institutions monitor the entire supply chain.
Once having been awarded the requisite certificate, companies are entitled to make use of the quality label for business-to-business and consumer marketing purposes. Some examples of recent certification systems are the various labels for Organic Farming, Fairtrade, Protected Designation of Origin (PDO) and GM-free. New legal standards such as the EC regulation No. 178/2002 on traceability will surely fuel the discussion on those forms of quality assurance, which encompass all stages of production (Theuvsen, 2003).

3 Differentiation of Certification Schemes

The importance of certification systems and their corresponding labels has grown steadily on all levels over the past years. Especially in the field of food safety, quality labels have become one of the most popular tools not only in buyer-seller-relationships but also as a consumer policy instrument (Golan et al. 2001). The historical evolution of certification systems can be divided into several stages:

Traditionally, incoming goods inspections and supplier assessment schedules have been the most important mechanism to control quality. These systems are used to assess the efficiency, reliability, and overall quality of important suppliers. Though statistical tests remain the primary method employed (Juran, 1962; Deming, 1986), in recent years they have been supplemented by “holistic quality control concepts” because new procurement strategies restrict their potential. Sourcing and production concepts such as Efficient Replenishment or Just-in-Time reduce storage times to a minimum. Developments like Global Sourcing and E-Procurement lead to short-term contracts and stimulate trading on spot-markets. Long-term buyer-seller-relationships, which can foster a sense of trust between the parties, are declining.

Additional second party audits carried out by customers try to evaluate management competence and organisational capacities of the supplier in order to secure a consistent quality level. Parallel to this development, since 1960, public organisations have been formulating Good Practice (GP) Codes in order to assure a minimum safety and hygiene
standard. The standards themselves have no legal status, but they do serve to establish a benchmark for second party audits (Luning et al., 2002). In addition to the GP Codes, the public sector supported the introduction of the HACCP methodology to ensure product safety (Codex Alimentarius). Given the wide use of second party audits, most suppliers had to go through a large variety of different audits.

During the 1990s, the ISO 9000 (third party audit) was introduced with the objective of establishing one general standard for all industrial sectors. However, as figure 2 illustrates, the ISO 9000 certification did not meet the requirements of all industries and the diffusion of sector-specific certification and audit schemes started again. Further complicating the picture, public agencies and stakeholders have begun to use certification systems in service of their own interests (e.g., Organic Farming or Fairtrade). As a consequence of several food crises many countries have chosen to develop national systems leading to intransparent and complex certification structures. In order to reduce costs, the harmonisation of the existing approaches has become an issue of vital importance. First umbrella organisations, like the Global Food Safety Initiative (GFSI) have already been founded to coordinate different certification systems. However, these organisations must gain power and credibility in order to successfully enforce a general harmonisation of standards, procedures and methods.
Starting from a single relatively general certification scheme (ISO 9000), a wide variety of different systems have been developed. What are the driving forces behind this differentiation process? To answer this question we identify four main factors, that contributing to the ongoing development of new certification systems:

1) First of all the notion of quality has changed. “Quality” is no longer defined as a uni-dimensional attribute, but has undergone a differentiation process itself. Today, not only functional quality but also quality dimensions such as organic production and animal welfare are certified. These new elements are mainly process attributes with high information asymmetry.

2) The use of a certificate depends on the respective target group, i.e., whether it is used in B-2-B or B-2-C Marketing. As figure 3 shows, there are considerable differences in the orientation of privately organised certification schemes stimulating the overall differentiation process. The particular aims are laid down by
the respective standard owner, which range from international standardisation organisations to stakeholder schemes.

![Diagram of certification systems]

Figure 3: Typology of certification systems

In addition to privately organised schemes, there is an increasing number of state-run certification projects (e.g., EC regulation No. 2081/92). These standards are also used for varying purposes from consumer policy to rural development. In recent years operative inspection tasks have been delegated predominantly to private certifiers monitored by public authorities (e.g., Organic Farming or PDO labelling).

Whereas public systems are mainly focussed on consumer protection through product labelling, most private schemes concentrate on business-to-business marketing. However, certification systems, which cover the whole supply chain like the Dutch IKB, and standards developed by external stakeholders like the Marine Stewardship Council, begin to integrate consumer marketing objectives.

3) Another influence evolves from the tendency of some certification systems to include protectionist elements: Similar quality assurance schemes are built up in different countries and regions to protect local producers. In the meat industry, for instance, the Dutch IKB (“Integrale Keten Beheersing”), the British ABM (“Assured British Meat”), the Belgian Certus or the German QS (“Qualität und Sicherheit”) are basically certifying the same standards. In federal states like Germany or France, there are similar schemes for each region (e.g. “Qualität aus
Bayern”/“Quality from Bavaria”). Partly, these certification standards are trade barriers supported by local or national authorities.

4) A fourth driving force of differentiation can be found in the depth of coverage: reaching from approaches covering only one level to ones covering the whole value chain. The German QS-System in the meat sector, for example, is a certification scheme covering the whole value chain. Starting with animal feed production up to the retailing business all involved parties are certified on the basis of standards laid down by the QS-GmbH. The QS-GmbH is an institution in which all members of the value chain are integrated with the same share. To change standards or operation procedures consensus decisions are needed. On the other hand, there are certification schemes which cover only one level of the supply chain like EUREPGAP in fresh produce sector. EUREPGAP refers to the farm level and has developed specific standards for the first stage of the supply chain. In many cases such one-level-schemes are dominated by powerful customers. At first sight, approaches covering the whole food chain seem to be the preferable alternative. They simplify the creation of standardised data-interfaces and data exchange within the supply chain. Control gaps between the stages can be closed more easily. Additionally, entire food chain concepts support consumer marketing strategies based on traceability and quality assurance. One decisive factor influencing differentiation, however, is the way how retailers and brand manufacturers interpret certification. Often they are the main drivers of schemes and tend to show a limited interest in becoming certified themselves. Further on, firms on different levels of the value chain have specific economic interests and emphasise different factors regarding the quality requirements of a certification scheme. Thus, it seems easier to achieve a consensus on only one level of the supply chain, as the interests tend to be more homogeneous. That is why only few approaches include all stages. Finally, it is not easy to harmonise approaches without a dominant company in the value chain to enforce decisions on standards. In industries without a dominant marketing leadership, standardization is a difficult and time consuming bargaining process.
4 Trade-off between Generality and Effectiveness

Analysing the described differentiation processes, a distinct trade-off between effectiveness and generality of certification systems becomes apparent: It seems to be systematic, as it can be traced back to the basic institutional framework of the certification systems as shown in figure 4.

![Figure 4: Trade-offs regarding certification systems’ basic orientations](image)

After introducing the first generation of certification systems (ISO 9000), most participating companies expressed high expectations towards their effectiveness and flexibility. By introducing general management system audits the overall quality motivation and, consequently, product quality were supposed to be increased, too. However, quality management meta-system, especially the ISO 9000, have never fulfilled these expectations.

In general, management meta-system audits try to influence the organisational structure of a company in order to institutionalise quality as a principal objective (Total Quality Management). The standard for all manufacturing processes and products should be increased. The underlying idea was that in the long run the optimisation of
organisational structure and business processes would lead to high-quality products instead of certified weak ones.

Contrary to these expectations, the ISO 9000 is often perceived as an unpopular burden. Management surveys demonstrate that most participating companies are not convinced of the economic benefits of third party audits and the extensive use of quality handbooks. Walgenbach (1998) analysed the adoption process of the ISO 9000 in the German industry based on a neo-institutional approach. He stated that most suppliers adopt the ISO 9000 only in order to fulfil the procurement requirements of their respective customers. This motivational gap can also be found in other surveys, e.g., Turner et al. (2000) revealed similar findings for South African Agribusiness Firms and Jahn et al. (2003a) explained the difficulties German farmers faced. The later study pointed out that only 7.7% of those farmers who have already been certified in the QS System claimed that they primarily aimed the enhancement of the overall quality by introducing the QS system, whereas more than 50% mentioned extrinsic motives like pressure from customers or price reduces (Jahn et al., 2003a).

As a result, external pressure exercised by certification systems may lead to decreasing intrinsic motivation as shown in the theory of motivational crowding effects (Frey & Oberholzer-Gee, 1997; Frey & Jegen, 2001). In its original version the theory suggests that external intervention via financial incentives or pressure reduced intrinsic motivation, the overall effect may result in a reduction beneath the initial motivation-level (cf. fig. 5).
This effect is well known to every employer who uses monetary incentives to motivate agents. On the one hand, monetary rewards involve positive relative price effects, i.e. the higher the payment the higher is the overall output level. This holds true due to the extrinsic motivational effect of a higher payment. On the other hand, they undermine intrinsic motivation and thus jeopardise the quality of the work. Under particular conditions the negative crowding effect outweighs the positive effect of higher payment. In general, the initial amount of intrinsic motivation, the perceived fairness of the incentive or pressure and the opportunities to control the agents’ work are factors which determine the occurrence of crowding effects (Osterloh & Frey, 2000; Frey, 2000). The same trade-off applies to external pressure.

The described relationship between internal and external motivation can be found in the field of quality motivation: We start with assuming that a specific level of intrinsic motivation to produce high quality exists in an organisation (S\textsubscript{1} in figure 5). Depending on the perceived external pressure (P\textsubscript{1}) a certain quality level (Q\textsubscript{1}) is reached. In order to participate successfully in a third party audit – as for example certification by ISO 9000 – the perceived external pressure is growing (P\textsubscript{1} is raised to P\textsubscript{2}) by introducing and controlling standards which are not customised. This pressure is thought to push the overall quality of the production process lastly reaching Q\textsubscript{2} in figure 5. However, the
theory of motivational crowding effects implies that the increasing external pressure displaces a significant amount of internal motivation shifting $S_1$ to $S_2$. As a result it may appear that the loss of internal quality motivation is larger than the amount added by the increased external pressure ($Q_1$ falling to $Q_2'$). Thus, the introduction of standards in the course of a third party audit can reduce the overall quality level of production, as more intrinsic quality motivation is destroyed than extrinsic quality pressure could be raised.

First, the net-outcome of the (quality) pressure effect on the one hand and the crowding effect on the other is determined by the effectiveness of the control procedures. All in all, the authors assume that general quality certification schemes have not succeeded in exercising sufficient pressure to create an adequate positive net outcome. This is due to a control gap, which can be traced back to 1) a general lack of validity given the rather bureaucratic procedures involved in the audits (“give me papers”) and 2) a low level of reliability, because of insufficient training of auditors resulting in low standards of certification quality (Jahn et al., 2003b).

In addition, especially for small and medium sized enterprises the large amount of regulations and documentation requirements become a source of “bad bureaucracy” (Theuvsen, 2004). These problems significantly reduce the willingness to implement the necessary programs and thus reduce intrinsic quality motivation. All in all, total quality management and kaizen-programs (continual improvement) are based on creativity and, thus, mainly on intrinsic motivation.

The resulting expectation gap (Epstein & Geiger, 1994) could be closed by launching new and more differentiated certification systems including detailed process and product requirements. These regulations are more suited to the specific requirements of the respective branch and thus more convincing for middle management. The evaluation of a certification process by the company being certified heavily depends on the certifier’s knowledge as we learned from our field studies. Only if the certifier is able to detect weak points and give valuable advice demonstrating his high industry specific know-how, his judgement will be accepted as a necessary element of a learning organisation. If the certification process is only based on controlling quality-handbooks
and checking bureaucratic routines it is hardly convincing quality managers and engineers. Open for all certification schemes are not able to guarantee that all certifiers involved have high industry- or even product-specific knowledge. They are developed to cover only the fundamental basics of quality management. Because of their high degree of generality they often tend to build up bureaucratic procedures not reaching the core of the specific problem. This, again, leads to raising external pressure but also to a loss of intrinsic motivation resulting in a declining level of quality. Highly specific standards on the other hand are a valuable tool to reveal product-related quality problems. They are expected as an instrument to strengthen the overall quality of the production process. However, they are specific to one industry or even one product category and can not be used as an one for all standard.

5 Conclusions

Certification systems play an important role in any market that is burdened with a high degree of information asymmetry and quality uncertainty. Especially this is true for the food sector with products including credence or Potemkin attributes. Initially, the aim was to create one global standard for nearly all industrial sectors. Unfortunately, the first generation of certification systems – the ISO 9000 – did not fulfil these hopes. This is due to new quality attributes, different stakeholder interests, protectionism, and efforts to cover the whole supply chain in one integrated scheme. Beyond theses obvious reasons we describe a general trade off between effectiveness and generality in certification schemes. Because of the above mentioned expectation gap a differentiation process was started that led to the development of a wide variety of certification systems but also resulted in increased transaction costs.

Against this background, we recommend international benchmarking and harmonisation of standards. Many institutions – private organisations as well as public agencies – are already discussing that question. Retailers in particular introduced umbrella organisations to ensure the same quality level for all their products independent of the country of origin. In 2000, the Global Food Safety Initiative (GFSI) began to formulate
common global standards. EUREPGAP has developed certain benchmark procedures. Recently, the Belgian, Dutch, Danish and German meat sector has founded the “European Meat Alliance” to create common standards. The European Union has traditionally played an important role in the harmonisation of new relevant approaches: In the early stages, for instance, the mid-term review in Common Agricultural Policy in 2002 suggested a common farm-audit for all member states.

These harmonisation processes, however, can only solve the complexity problems caused by the use of certification schemes for protectionist purpose. Highly specific product standards are necessary to close the control gap on the one hand and the motivational gap on the other.

All in all, the certification industry is still an infant one, fast growing but threatened through deficits in the main success factors – the knowledge and the independency of the certifier (Jahn et al., 2004).
References


