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Institutional Change and Acceptance of Quality Assurance: The Case of Organic Farming in Germany

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Abstract

The institutional framework of the certification scheme is a crucial factor for the future success of the organic market. Increasing complexity and a few scandals indicate that the current control structures might be insufficient. A better understanding of farmers' attitudes is necessary to increase acceptance and to guarantee the longer-term success of the organic certification system. Against this background we designed a theoretical framework based on a cognitive perspective. The empirical basis of the study was a survey conducted with organic farmers in Germany. Results highlight that the majority of the farmers accept the present organic certification system, but are not convinced of its cost-benefit relationship.

Keywords: organic certification system, food quality, institutional change, guidelines and control

1. Credence quality and organic certification

In Europe, the reliability of organic agriculture is secured by the EU regulation No. 2092/91, introduced in 1992 (EEC No. 2092/91). The principal part of this regulation is a third party certification system to control the whole organic supply chain. Currently, the structure and the accomplishments of this scheme are critically discussed. On a national level, the introduction of a German "organic production law" ("Ökolandbaugesetz"; June 17, 2005) has reformed some important aspects of the system, but, however, has not simplified the system. In addition, its excessive bureaucratic requirements are openly criticized. Furthermore the number of institutions involved in the organic certification process is very high due to the federal structure of the German state. Against this background, some authors call for a private quality assurance scheme. In other agribusiness sectors, a variety of new private systems for quality certification such as EurepGAP, IFS, BRC or QS have emerged. These systems pursue similar targets. As a consequence of this situation, the question arises as to whether a private control scheme might be less bureaucratic.

On the other hand, the Agricultural Council has agreed on a proposal of the European Commission for a new regulation on organic production and labelling of organic products (COM(2005)0671 final; December 19, 2006). The new regulation aims at integrating organic certification deeper into national control plans and tries to have a stronger link to the state-run food and feed control regulation (No. 882/2004). Certification procedures by private bodies should be supervised more strictly. In general, the regulation can be interpreted as a step towards a more formal and state-controlled system.

Furthermore, the organic market is growing rapidly. Organic production is a "process quality" that cannot be detected in the final product. A high degree of information asymmetry can occur in markets with such credence attributes, the consequence of which could be a market failure

(Akerlof 1970; McCluskey 2000; Giannakas 2002). Information asymmetries and the high surplus for organic produce in the fast growing market raise the question of mislabelling and the risk of food scandals. Rough estimations for the southern states of the EU suspect that the fraud rate in organic labelling may be between 15 % and 40 % (Giannakas 2002). Other examples of imperfect monitoring standards can be found in Anania and Nisticò (2003), GfRS (2003) and McCluskey (2000).

All in all, the institutional framework of the certification scheme is a crucial factor for the future success of the organic market (Jahn et al. 2005a). The following paper tries to contribute to this aspect by taking the viewpoint of the supervised enterprises. In a farmer survey, the experiences and attitudes of organic farmers are revealed. A better understanding of farmers' attitudes is necessary to increase acceptance and to guarantee the confidence of the consumers in organic certification in the long run.

So far, only few studies have dealt with farmers' attitudes towards quality assurance systems in the food sector. Referring to initial studies, two main problems have been uncovered: (1) the cost-benefit ratio is often negatively evaluated, and (2) communication, which is necessary for successful implementation, is neglected (Fitzgerald et al. 1999; Böcker et al. 2003, Jahn and Spiller 2005a/b). As a consequence, a "gap of acceptance" has been revealed in the literature. Acceptance and positive motivation are important because a scheme which is recognized as a bureaucratic burden will not lead to quality improvements. The second topic deals with the preferred institutional framework, i. e., whether the farmers favour a private or a state-run certification system.

2. Procedure

The analysis reported in this paper was conducted on data obtained from a sample of 126 organic farmers in Germany. In July 2005, farmers were questioned via an online survey. The indicators in the survey are Likert-scaled and semantic differential items that had partly been previously tested in a survey about the attitudes towards the QS system in the German meat sector (Jahn and Spiller 2005b). The average interview took about 12 minutes. All in all, the sample includes larger sized farms (81.5 hectare per farm) than the average organic farm in Germany (57.4 hectare per farm; SBD 2006). The respondents were on average 45 years old and 81.6 % of them had a further agricultural education. The majority of these farmers (60 %) were members of the leading German organic associations (Bioland) (Demeter = 16 %). Overall, the sample is a "convenience sample" and does not fulfil all the criteria of representativeness. It includes more "future-oriented" and bigger farms than the average in Germany. However, these farms might be decisive for future developments as larger farms gain more importance due to the structural changes in German agriculture.

The analysis of the data is divided into three parts. First we present selected descriptive data about the preferred institutional framework and the attitudes of farmers' towards the organic certification system, followed by a factor analysis to capture the dimensions of the potential influencing aspects. This factor analysis is based on a conceptual framework, presented in chapter Conceptual framework. In a last step multiple linear regression analysis is conducted to measure the impact of the identified factors on the attitudes of the farmers towards the organic certification scheme. In the following chapters we will firstly introduce the institutional framework of the organic certification scheme and the conceptual framework, then present the results of the empirical analysis and finally draw some conclusions and indicate future directions of our research.

3. Institutional framework of the organic certification scheme

In most countries, the organic certification system has a core structure as illustrated in figure 1. A key feature is that inspections are carried out by independent bodies (third party audits) beholden to standards laid down by EU regulation 2092/91. The starting point is the flow of goods between farmers, processors, retailers and consumers. The supplier provides the organic certificate serving as quality signal, which is issued by a neutral certifier based on the respective quality and certification standards.

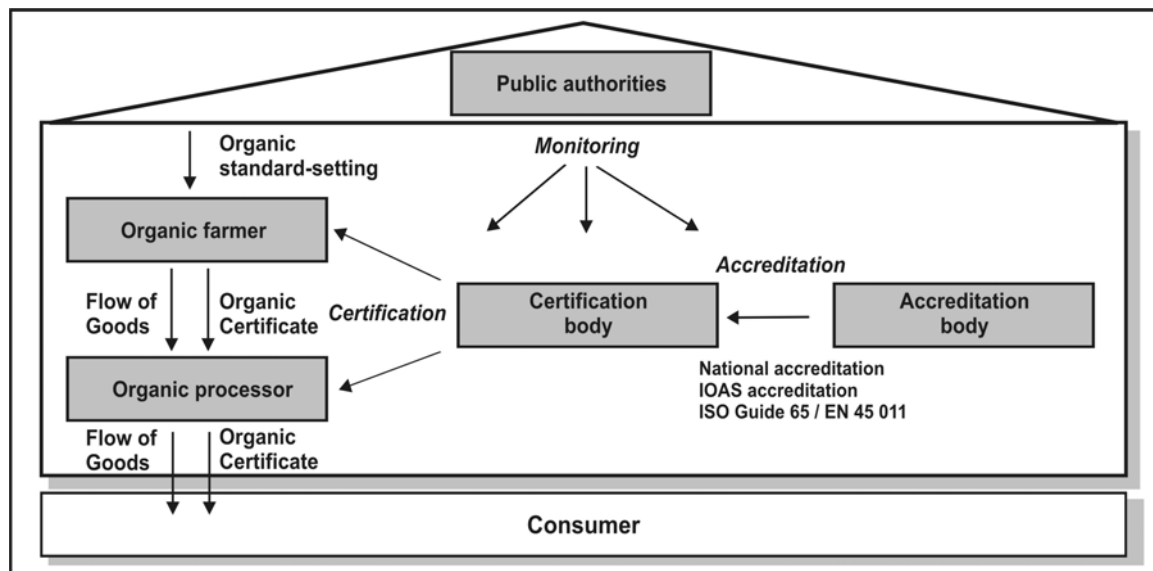


Figure 1. Basic structure of the organic certification system

Source: Authors' representation

According to the EU guidelines, the basic structure of organic certification is the same in all European countries. However, two main types of implementation can be differentiated: In most countries the operative inspection tasks are delegated to private certifiers, which can be either domestic certification bodies or foreign ones (Wynen 2004). Completely public driven systems as in Denmark are rare. In these countries both, monitoring and certification, are carried out by public authorities. Thus, the realisation of organic control is part of a bureaucratic governmental process (Seppänen and Helenius 2004). Similar is the organization principle in nations such as the Netherlands, where the public sector authorises only a single certification body to do all organic inspections (c.f., SKAL). In Germany all certifying bodies are private entities.

4. Conceptual framework

4.1 Theoretical foundations

Our theoretical foundations are primarily based on behavioural research, cost-benefits analyses and especially on the Technology Acceptance Model (TAM) developed by Davis (1989). TAM is a well-known and important modification of the Fishbein and Ajzen Theory of Planned Behaviour and the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen 1991). It is aimed at explaining and predicting the acceptance and use of information systems (see Figure 2: Technology Acceptance Model2).

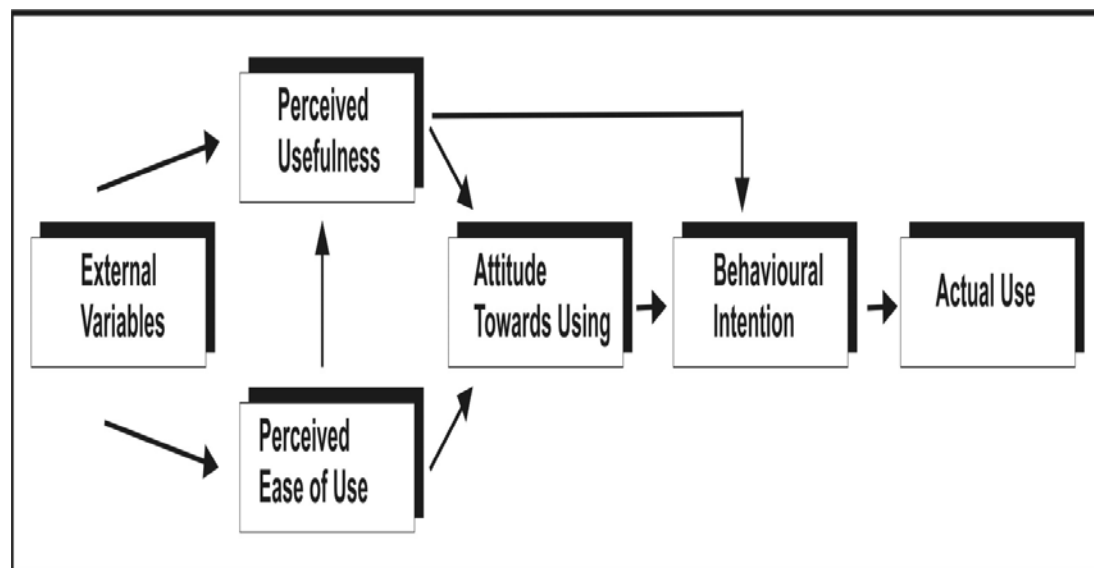


Figure 2. Technology Acceptance Model

Source: Davis (1989)

TAM's main focus is on measuring both the perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and the perceived ease of use, i. e. "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989: 320). Both factors determine the attitudes, the intentional behaviour and, finally, the observable use of an information system. In the last few years, TAM has been applied to various studies and has become a powerful model for predicting user acceptance (Chau 1996; Szajna 1996; Venkatesh and Davis 2000; Mathieson et al. 2001).

While the basic TAM represents a suitable starting point for the development of a research model for organic certification, some specifics of quality assurance systems must be considered. The key difference is the fact that the adoption of organic certification is not voluntary, but a necessary requirement for market access. Therefore, we analysed the attitudes towards organic certification, not intention and decision. We defined three dependent variables which characterized the main attitudes towards the system: (1) the "overall satisfaction" of the farmers with the certification system, (2) the "perceived necessity" of the scheme, i. e., if it is useful and important for the organic market and (3) the "motivation" toward organic certification as a quality standard itself, which may indicate the impact of the approach on the farmers quality. In a next step we introduced five determinants which could influence these attitudes (see Figure 3: Attitude model towards organic certification). Two of them "perceived (bureaucratic) costs" and "perceived effectiveness" mainly refer to the direct impact of increasing bureaucracy procedures at farm level, while the third one "perceived usefulness" is more generally related to improvements in performance. These modifications are based not only on the Theory of Bureaucracy (Weber 1968), but also on the TAM modification mentioned by Chau (1996) and Venkatesh et al. (2003). These authors proposed splitting the original usefulness into two constructs: with reference to Chau (1996), we named them "Usefulness" and "Effectiveness". To that, we added two new constructs, i. e. "Organic motivation" and "Risk perception", which describe fundamental attitudes of the farmers towards organic farming. Against this background, we hypothesised a basic model which considers the effects of five possible determinants on each attitude construct (see Figure 3: Attitude model towards organic certification).

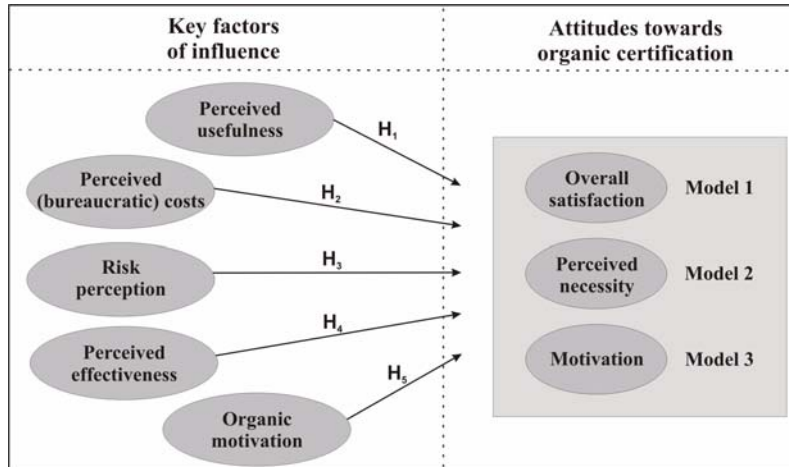


Figure 3. Attitude model towards organic certification

Source: Authors' representation

The “perceived usefulness” construct comprises improvements in performance which a farmer perceives through implementing organic certification. Numerous studies on quality management systems offer broad insights into their positive impact on a firm’s success and competitive power (Antony et al. 2002; Lin et al. 2004; McAdam and Henderson 2004). Brah et al. (2000), for instance, classified success factors into supplier performance, product quality, employee satisfaction, customer satisfaction, and manufacturing/service process quality. We, therefore, defined usefulness as the degree to which a farmer believes that using organic certification would enhance corporate quality and process management, the following hypothesis was formulated.

H₁: The higher the perceived usefulness, the better the attitudes towards the organic certification.

The “bureaucratic cost” construct is defined as the effort, which a farmer perceives by complying with the formal requirements for organic certification. This includes the costs of documentation, process modification, registration fee and organizational adaptation. Generally these costs are dependent on the size of the site and whether or not the company possesses prior experience with the implementation of quality standards. The following hypothesis was formulated.

H₂: The lower the perceived (bureaucratic) costs of documentation the better the attitudes towards the organic certification.

The “risk perception” construct is defined as the general perception of the farmer towards fraud practices in the organic production sector. Giannakas (2002), for example, mentioned a high degree of opportunism in organic labelling for the southern states of the EU. Farmers, who are afraid of mislabelling, should enforce the quality assurance system.

H₃: The higher the perception of the farmer towards “fraud practices in the organic production sector”, the better the attitudes towards the organic certification.

The “perceived effectiveness” construct deals with the control performance of the organic certification. We defined this construct as the degree to which a farmer believes that the certification system is reliable enough to detect non-compliance with regulations. Beyond single case

studies, anecdotic information or rumours, statistical analysis clearly indicates the threat of weak auditing procedures in quality certification systems (Schulze et al. 2006).

H₄: The higher the perceived effectiveness, the better the attitudes towards the organic certification.

The “organic motivation” construct describes the fundamental attitude of the farmers towards organic farming. Intrinsic motivation as shown in the theory of motivational crowding effects (Frey and Jegen 2001) may increase the willingness of the organic farmers to accept the certification system. Farmers, who are ethically motivated, should be more willing to accept the burdens of a control system.

H₅: The higher the fundamental attitude of the farmers towards organic farming, the better the attitudes towards the organic certification.

4.2 Measures

To capture the latent variables of the conceptual framework, different measurement scales that had partly been tested in previous surveys (Jahn and Spiller 2005a/b) were used. All the constructs were measured by means of Likert-scaled or semantic differential items (-3 to +3). Descriptive analysis and an explorative factor analysis were used to explore the sample. After minor modifications, a principal component analysis was applied for data reduction and to build up factors according to the hypothetical constructs. These constructs were tested with Cronbach's alpha (α). Additionally, an item-to-item correlation analysis was calculated for excluding any problem of multicollinearity between the factors.

5. Results

5.1 Acceptance and motivational impact

The first part of the analysis was aimed at gaining insight into the pattern of farmers' attitudes towards organic certification. The result shows on the one hand that 91.2 % thought that the system is important. On the other hand only 41.1 % of the farmers were satisfied with the system and only 36.5 % agree with the statement that the certification system is motivating. These results indicate that there is, compared to other certification systems in the food sector (e. g. QS or QM), a high acceptance for the organic system. However, it is not motivating for the farmer, but a necessary tool (see Table 1: Items of the endogenous variables¹).

Table 1. Items of the endogenous variables

Construct	Mean	Standard deviation
Perceived necessity , Cronbach's alpha = .89		
The organic certification is useful – not useful	2,26	1,18
The organic certification is important – not important	2,29	1,25
Motivation		
The organic certification is motivating – not motivating	-0,24	1,63
Overall satisfaction		
I'm content with the current system of organic certification. scale from +3 = totally agree to -3 = totally disagree	0,31	1,41

Source: Authors' calculation

Some descriptive results for the exogenous variables presented in Table 2: Factors and items of the exogenous variables² provide initial impressions of the organic farmers towards the certification scheme. All in all, the respondents perceive the (bureaucratic) costs as high and the effectiveness and the usefulness of the certification system as rather low. For example only 31.7 % of the farmers think that the certifying (process) gives them useful tips for their operational management and 89.7 % believe that the bureaucratic burden of the organic control process has increased very much over time. As regards the reliability of the system, only 51.2 % of the farmer suppose that „Black sheep“ will be discovered during the control. The respondents have on average a high intrinsic motivation to produce organic products but are a little bit worried that the number of cheaters in the sector might increase.

Table 2. Factors and items of the exogenous variables

Construct	Mean	Standard deviation	Factor loading
Factor analysis “Determinants and benefits of relationship quality”; KMO: .73/ 61 % explained variance			
Perceived (bureaucratic) costs, Cronbach’s alpha = .79			
The bureaucracy of the organic control has increased very much.	2,04	1,27	0,877
The bureaucratic expenditure for certification has increased in the last years.	1,72	1,58	0,800
The time expenditure, I have for the certification process, is exaggerated.	0,81	1,64	0,760
The managerial costs for the control are not in relation to the use.	0,46	1,73	0,660
Perceived effectiveness, Cronbach’s alpha = .78			
„Black sheep“ will be discovered during the control.	0,56	1,39	0,796
Offences against the guidelines are rarely noticed.	-0,28	1,42	-0,793
The organic certification is reliable – not reliable	0,79	1,54	0,692
Even if I sometimes don’t follow the guidelines, the inspector will notice it.	1,23	1,47	0,676
Perceived usefulness, Cronbach’s alpha = .73			
The certification (process) gives me some useful tips for my operational management.	-0,24	1,61	0,784
Our course of business gets clearer through the certification process.	0,21	1,56	0,722
The auditor gives me some good tips beside.	0,44	1,69	0,695
The audit report is very informative.	0,63	1,49	0,672
Organic motivation, Cronbach’s alpha = .66			
I would never farm conventionally.	2,31	1,10	-0,810
If the prices don’t get better, I will return to conventional farming.	-2,48	1,00	0,753
Nowadays I would never change to organic farming.	-2,38	1,06	0,683
Risk perception, Cronbach’s alpha = .52			
Worries about an increasing number of cheaters in the sector are exaggerated for me.	0,49	1,59	-0,773
Today, you can no longer only rely on the reliability of the farmers towards the compliance with the organic regulations.	0,97	1,65	0,744
I’m worried about, that the number of “black sheep” will rise in the organic farming sector.	0,11	1,44	0,549
scale from +3 = totally agree to -3 = totally disagree			

Source: Authors’ calculation

The second issue of the analysis was to take up these results and to test the five hypotheses, presented in chapter Conceptual framework, concerning their causal effect on the attitudes towards the organic certification system. Therefore, a factor analysis and a regression analysis were applied including the constructs as illustrated in Figure 3: Attitude model towards organic certification 3.

A first factor analysis (using a principal component analysis) is conducted to test the hypothesis that the two variables of the endogenous “perceived necessity” construct build a unidimensional scale. Cronbach’s alpha of 0.89 indicates a high reliability.

As a second step, 18 theoretically derived statements of the exogenous factors as proposed in Table 2: Factors and items of the exogenous variables² were reduced by means of a factor analysis. Five factors were extracted. After minor modifications for double loading and nonloading items, the measures demonstrated acceptable levels of fit and reliability (KMO = 0.73; explained variance = 61 %). All the constructs revealed reliability, i. e. an higher than 0.60. Only one construct “Risk perception” had a low reliability score. In relation to the conceptual background we did not eliminate this construct. According to measurement theory, except for the “Risk perception” factor, this is altogether an acceptable statistical solution (Nunnally 1978).

Table 3. Results of the regression analysis

Independent Variable	Dependent Variable		
	Model 1 Overall satisfaction	Model 2 Perceived necessity	Model 3 Motivation
Perceived (bureaucratic) costs	-0.298*** (-4.507)	-0.187* (-2.292)	-0.277*** (-3.995)
Perceived effectiveness	0.211** (3.187)	0.280*** (3.423)	0.284*** (4.097)
Perceived usefulness	0.575*** (8.690)	0.273** (3.335)	0.478*** (6.900)
Organic motivation	0.071 (1.076)	0.123 (1.499)	0.195* (2.817)
Risk perception	-0.065 (-0.984)	-0.002 (-0.022)	0.052 (0.748)
	adj. R ² = 0.452 F = 21.624***	adj. R ² = 0.171 F = 6.116***	adj. R ² = 0.405 F = 17.848***
*** = p < 0.001. ** = p < 0.01 * = p < 0.05; first value = beta value; second value = t-value			

Source: Authors’ calculation

The impact of the exogenous factors (using factor scores of the extracted constructs) on the attitudes of the farmers towards organic farming was measured using three multiple linear regression models (see Table 3: Results of the regression analysis 3) by using the method of least squares (OLS) as the estimation procedure. All models are significant (F-test). Whereas the variance of the perceived necessity (model 2) is explained with 17 % (adj. R square), the explained percentage of the motivation (model 3) and the overall satisfaction (model 1) are higher, being 41 % and 45 %. All in all, the perceived usefulness construct is the dominating variable, which leads us to the conclusion that the higher the perceived usefulness of the organic certification system, the better the attitudes of the farmers towards the system (H_1). The results of Model 1 and 2 highlighted the fact that neither the risk perception of the farmers nor the growers’ motivation to produce organic crops had a significant effect on their overall satisfaction or perceived necessity with the organic certification system. Hypotheses H_3 and H_5 have to be rejected.

Interpreting the results of the model 1, the farmers’ overall satisfaction with organic certification is higher, if they perceive an increased usefulness of the system. Perceived effectiveness considerations are less important for the evaluation of organic certification than the bureaucratic costs. This result underlines the high importance of a good cost/benefit ratio. The lower this ratio the lower is the satisfaction of the organic farmers with the system.

The analysis of the perceived necessity (model 2) showed that the most important factor is the perceived effectiveness of the organic certification system. Only a system which is credible, will be able to convince the farmers of its necessity (H_4).

A negative influence on motivation is associated with the bureaucratic burden involved in the documentation and formalisation procedures (model 3). Two factors could reduce this: a better usefulness and effectiveness of the system. However, farmers with a higher organic motivation have also a higher motivation towards organic certification.

5.2 Public or private certification

To answer the question about the preferred institutional framework, i. e. whether the German farmers favour a private or a state-run certification system, we used a frequency analysis (see Table 4: Frequency analysis of the preferred institutional framework4).

Table 4. Frequency analysis of the preferred institutional framework

Statement			Frequency in %		
			(Partly) disagree	Neither/nor	(Partly) agree
I would prefer it if only the government conduct the control.	-1.69	1.49	84.94	6.35	8.73
Supervising by organic associations is more effective than organic certification.	0.52	1.85	30.65	20.16	49.19
A control by colleagues or by organic associations would be completely sufficient to guarantee the quality of organic products.	-0.31	1.99	57.14	10.32	32.54
I would prefer a more advice-oriented type of quality control in organic production.	1.57	1.36	5.56	15.08	79.37
= standard deviation; = mean; scale from +3 = totally agree to -3 = totally disagree					

Source: Authors' calculation

Only 8.73 % of the farmers were of the opinion that the government should be responsible for the organic certification system. The results indicate that the majority of the farmers prefer a more association- and advice-oriented control. Hence, the attempt of the EU to strengthen the influence of public authorities in the scheme is rejected by the farmers. The other questions deal with alternative institutional forms of regulation, i. e., should the control process be organized by organic associations like it was before the EU regulation had been introduced, or should it be a process of self supervising (by colleagues; peer review) or a kind of Total Quality Management. In these cases farmers are mostly insecure, but they clearly prefer certifiers who are able to support farms in case of quality or production problems.

6. Conclusions

The results clearly demonstrate that the modified transfer of the Technology Acceptance Model to the attitudes towards organic certification is possible and applicable. Our research shows that although the majority of the farmers accept the organic certification system, they are not convinced of its cost-benefit relationship. Especially the perceived bureaucratic burden of organic certification decreases its acceptance. A higher conviction and motivation are necessary to ensure farmers' diligence in the implementation of the guidelines. Such changes should be accompanied by a proper communication of the costs and benefits incurred in organic certification. However, the farmers prefer a more association- and advice-oriented control of the organic certification process. In addition the producer favour a privately run certification system as an institutional framework.

With regard to future strategies for organic certification, the relation of product and process management should be linked more closely in order to prevent pure “give-me-paper” procedures. For that purpose, laboratory analyses of organic quality and management metasystems can be combined.

This can also increase the effectiveness of the control procedure. In the long run certifications schemes should be able to detect fraud.

The reduced dimension of our sample limits, however, the conclusions, which may be drawn from our investigation not allowing too much inference from it to other European countries. To reach it a wider sample and more complex models (structural equation modeling) are required; further research is therefore needed, especially in countries with completely public driven systems, e g., Denmark or Finland.

7. References

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