

Cost-Benefit Aspects of IT-based Quality Assurance and Traceability Systems - Results of a Delphi Survey

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Background

Food scandals have led to the establishment of several approaches to guarantee traceability of food of animal origin. Most of these approaches are not compatible among each other and often do not include relevant data from livestock farms or animal transportation. Facing these challenges, the IT FoodTrace project was established to create an IT solution without structural breaks and barriers that ensures traceability and quality along the supply chain of meat and meat products (DOLUSCHITZ and ENGLER 2009). Although an integrated traceability solution will generate benefits for the stakeholders, it might be possible that the acceptance of such a solution is low, due to costs and labour input (see Fig. 1). Therefore an analysis of cost and benefit aspects has been carried out by means of a Delphi survey.

Objectives

The aim of this study is to identify relevant cost and benefit aspects of stakeholders. Another aim is to detect the acceptance of IT-based traceability systems among potential stakeholders, such as livestock farmers, slaughtering facilities or food retailers.

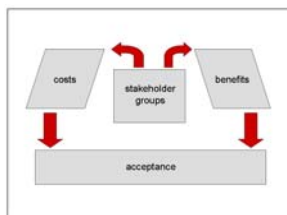


Fig. 1: Basic research design

Methodology

The study has been carried out in summer 2008 by means of a Delphi survey. Delphi surveys are suitable to use when dealing with uncertainties and imperfect knowledge (HÄDER, 2002).

In two successive surveys about 60 experts were asked about their opinion concerning cost and benefit aspects as well as acceptance issues of IT-based traceability and quality assurance systems.

The return rate in round 1 was 86,4% and 78% in round 2. The participants were experts from universities, farmers' associations, agribusiness and processing companies, retailers, interest groups and authorities. The results have been verified by means of a Wilcoxon test.

Results

Stakeholder orientation in software development is crucial for acceptance (OKUJAVA, 2006). The following stakeholder groups were identified in advance and therefore included in the Delphi survey (see Fig. 2):

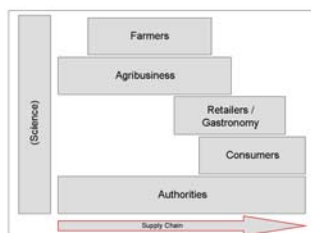


Fig. 2: Stakeholder groups

Selective as well as quick recall and information actions, better data quality and the warranty of information flow in process documentation are the most mentioned benefit aspects of the experts (see Fig. 3).

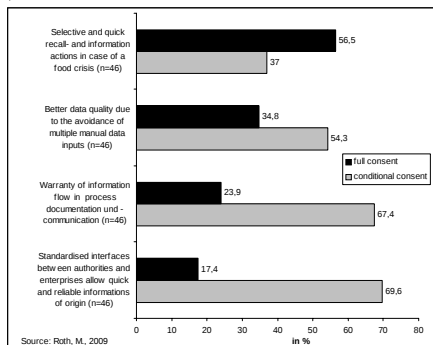


Fig. 3: Best rated benefit aspects of IT-based traceability solutions

The results show, that e.g. the willingness to pay an extra for meat products with guaranteed traceability is estimated low or even not existent in the eyes of experts. This result differs from the findings of a consumer case study (BREITMAYER, 2007), where the interviewed persons stated a positive willingness to pay.

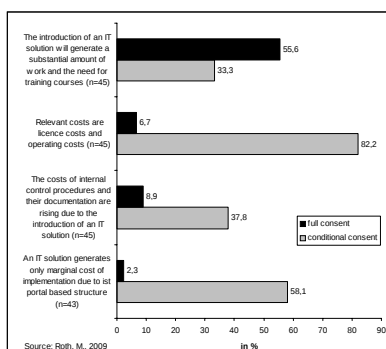


Fig. 4: Most mentioned cost aspects of IT-based traceability solutions

More than 86% of the experts estimate license costs as well as general running costs as the most relevant cost factors of an IT-based traceability solution, whereas 56% do not think, that IT-based traceability solutions will lead to an increase of internal control costs within processing companies (see Fig. 4).

Overall, 92% of the experts state acceptance of an IT-based traceability solution, if economical benefits will be certain (see Fig. 5).

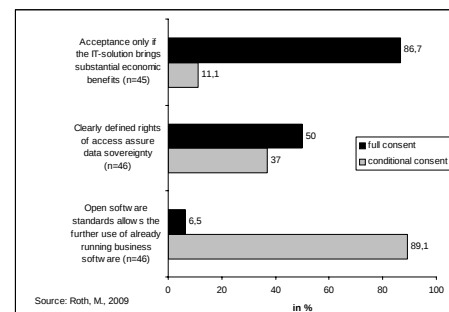


Fig. 5: Acceptance aspects of IT-based traceability solutions

Conclusions

The experts see clear advantages of an IT-based traceability solution, but costs and labour input are limiting factors for participation. General acceptance of an IT-based quality assurance and traceability system among the experts is high.

References

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