The Balance of Risk Management in Business Networks and How to Enhance Trust Towards a Collaborative Food Network

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Abstract

The development in food network perspective forces the demand for a proper configuration of the risks that occur from the ongoing trend towards the globalized supply chain. The paper shows the requirement shift through globalized procurement. As an effect towards long distance purchasing activities the direct control of production, logistics processes and processing are out of direct control for most of the person in charge in downstream processes. Process transparency and information readiness are essential to reduce risk in (e-)business networks. Outputs of this requirement are vertical coordinations through interorganizational agencies as EurepGap and IFS. Especially for brand marks relationship management and vertical coordination are needed to secure the continuously high quality of the product. That is directly related to controlling the whole value chain – fulfilling additional traceability requirements in case of risk. A comprehensive control platform for decision makers is required.

Keywords: *BtoB, information readiness, e-business, quality control*

1. The current difficulties in providing food safety and quality through a public risk management system within the EU and Germany

The product quality of specific groceries can at least be differentiated into the three dimensions: *product oriented quality* (physical characteristics of the product), *process oriented quality* (process oriented to two characteristics of the product) and *utilization oriented quality* (subjective quality aspects of purchasers / consumers) (Grunert, 2002). Against the background of this multidimensionality food safety in the European Community is defined within the EU-Community law by the criteria “harmful to health” and “suitability for human consumption”(EC, Art. 14).

Risk occurs from the possibility of insecure products due to insecure processes along the supply chain. Even the existence of insecure processes does not necessarily result in the contamination of products. Likelihood and result of the impact on the product need to be taken into consideration when discussing risk management requirements to specific supply and production chains.

Bitter race can or insecure groceries is related to the likelihood that an agent has a negative effect on the consumer if consuming the specific product. On the other hand the products are

considered to be safe when they have an extremely low risk of damage – this does not necessarily mean that this risk must be equal to zero.

Due to the existing information asymmetry in contestable markets a risk reduction needs to be performed by either governmental/multinational institutions (to set minimum requirements on food safety) or BtoB-trust based by an adequate supply chain risk management.
Problems may increase whenever products are traded internationally. Depending on different production standards in terms of allowed remaining quantity of ingredients used during production processes no consistent picture of a quality map can be drawn.

Illustration 1 shows by a comparison of United States limits and German and Austrian limits (to point out differences even between neighboring countries with matching cultural background and consumer behavior) how allowance-levels for residue of selected pesticides range (see also Henson / Northern, 1997).

(mg/kg) Q-factors	USA	Germany	Austria	Others	
Benomyl	10	3,0	2,0	5,0	Canada
Cymoxanil	0,1	0,2	0,1	0,05	Netherlands
Imidacloprid	1,0	0,05	0,05	1,5	Canada
Glufosinate	0,05	0,1	0,1	K. A.	
Carbofuran	0,4	0,1	0,1	0,01	Belgium
Captan	50,0	3,0	3,0	3,0	France

Illustration 1.measurable quality by comparison, own illustration

In the last column additional information from a variety of countries is given. Whereas circles in the first three country columns show maximum allowances the circles in the column “others” highlight minimum allowances from the according country. The differentiation in limiting values doesn’t follow logical explanation. This simple example already shows a variation of factor 40 and even more. As long as the realization of a global standard for food quality is in remote future BtoB-solutions are required.

2. Requirement shift through globalized procurement and BtoB-solutions

Less influence of a single company to secure Food Safety along the whole supply chain lead towards an interface oriented exchange of risk management adequate information. In the long run a data exchange that allows an ongoing usage of the gathered information in preliminary processes are of resemble advantage for process transparency and risk management as EDI information is for efficient replenishment etc. nowadays.

As a first step process quality along all involved partners in the supply chain is required. If non conform behavior is not traceable due to missing information and documentation a disaster may destruct the whole supply chain. For instance illustration 2 shows the effect of additive usage of different pesticides without exceeding tolerance levels in any single residue. The final

product itself has on the other hand a contamination level that is far beyond any acceptable point – the result is a so-called „pesticides cocktail“.

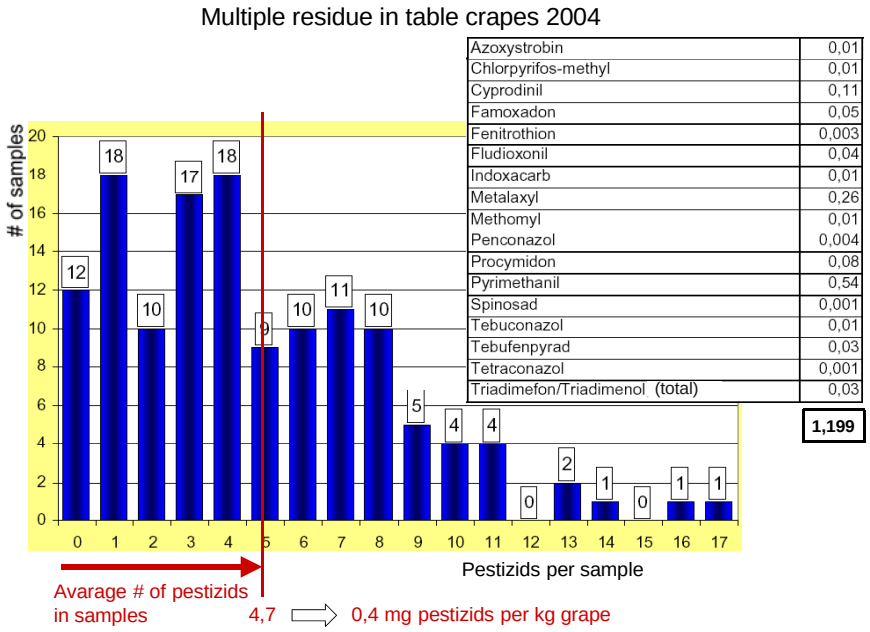


Illustration 2.pesticide cocktails as a result of process intransparency and missing documentation (CVUA, 2004)

3. Efforts to solve this problem on international and inter-organizational levels (actual status)

In order to reduce this information asymmetry problem (Stiglitz, 1987) as well as the issue of setting different standards for individual business relations (see chapter 1), a group of 20 leading European grocery retailers established the European Retailer Produce working group Good Agricultural Practice (EurepGap), including production, environmental, social and hygienic standards for fruit and vegetable. EurepGap fruit and vegetable is a normative document for certification and has been developed from a European group of representatives from all stages in the fruit and vegetable sector with the support from producer organizations outside the EU (EuropGap, 2006). It is accredited by ISO 65 (EN 45011) and has worldwide applicability. Likewise, the International Food Standards (IFS) – evolved from the Global Food Safety Initiative (GFSI) to primarily audit private label producers. Since March 2004 some retailers already require an IFS-certification from their suppliers. Both standardization programs allow a better control of risk relevant activities within the supply chain and support network efficiency through reduced fixed costs in maintaining such a system compared to one-to-one-relations.

As an effect towards long distance purchasing activities the direct control of production, logistics processes and processing are out of direct control for most of the person in charge in downstream processes. As a result the vertical coordination through interorganizational agencies as EurepGAP (European Retailer Produce Group Good Agricultural Practices) and IFS (International Food Standard) emerged and might overrule the multinational developments

of FAO. The contradiction of these democratic procedures versus the industrial solution may effect the risk management sustainable.

4. Vertical integration vs. adequate risk management to secure process and product quality and information readiness

As stated before, the internal solution by a vertically integrated supply chain may – if all processes are run properly – achieve the highest level of reliable risk avoidance. It has the second advantage that IT-interfaces can be set up to the required interchange of re-/traceability information. However, for most market players there is no possibility of bringing more value creating activities into the own enterprise. As long as transaction costs by external risk management solutions are competitive against internal solutions, there is no need for vertical integration. Thus, a system is required to handle all information that balance risk in a collaborative food network. As risk management is always balancing the cost of risk avoidance towards the probability of the event of an non-adequate output and its results in direct damage, evolving costs related to this direct damage as well as loss in goodwill etc. (Schiller, 2005 see also Caswell/Mojduszka, 1996) there must be a comprehensive overview on risk forcing/ defending practices of (potential) trading partners on the screen of the decision makers within each enterprise.

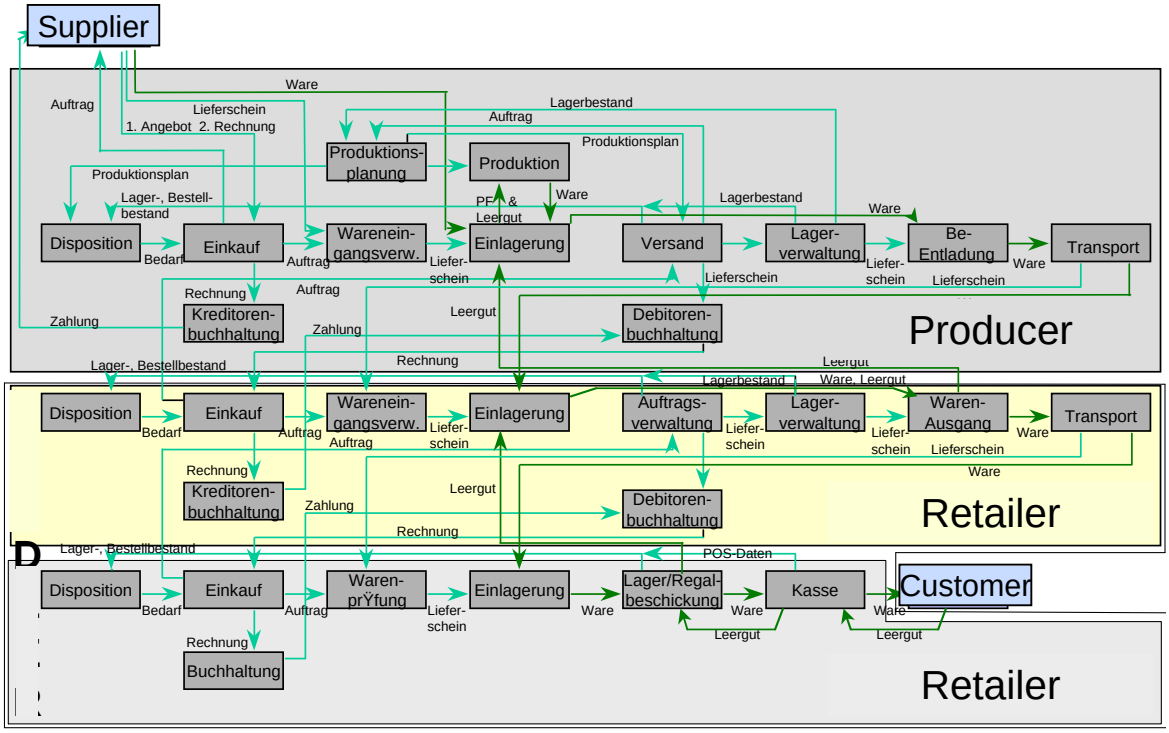


Illustration 3. interfaces along the supply chain, own survey

Illustration 3 shows details of information and flow of goods in a real supplier-manufacturer-buyer relation for a fast moving consumer product. As the complexity of information requirements illustrate there is need of combining risk management information detailed enough to avoid data loss on one side and information overflow that nobody can handle on the

other side. Securing and documenting processes within the own production process an mixture processes of raw materials and probable contamination risks through packaging, machinery cleaning etc. is as important as information on the suppliers processes.

Therefore relationship management and vertical cooperation becomes more and more important. As brands need to make sure that the quality of their products is continuously of high quality there is a direct relation towards controlling the whole value chain for the products. That doesn't necessarily lead to a vertical integration. More important is an appropriate risk management that combines trust through long-term relations with trading partners as well as definitive process and product quality levels and control systems throughout the process chain (Antle, 1999). Considering, that in following steps the relevant safety and quality could not be adopted through intensive control systems anymore.

5. Ways to enhance trust in collaborative business partnerships through e-market solutions

In e-market solutions the average trade process has to take the multiple influences of risk within the specific supply chain into consideration. Therefore a one-size-fits-all strategy for all industries is not practicable. As mentioned before, the buyers cannot handle a too detailed information exchange approach. The decision maker requires an easy information system, where additional information may be available upon request in different layers.

But risk management also involve risks in higher input prices, negative quality details due to non-specified requirements in the order specification process and the wrong setting of internet auctions. Illustration 4 gives an example of the result from a reverse auction from a major grocery producer in Europe, where the specifications for the auctioned input factor was missed – explaining the huge variance in bidders offer. The auction result was a price increase of almost 20 percent

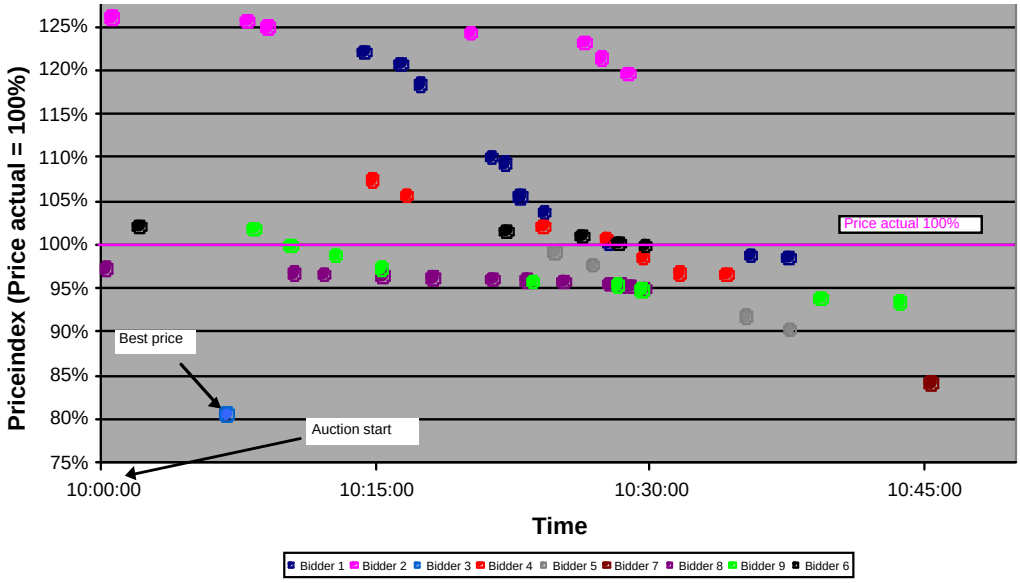


Illustration 4.e-markets reverse auction example – wrong parameter setting (missing specification)

However, the trust within a business network is mostly based on logistics performance and general quality aspects the end consumers link with that non-brand product or brand. However consumer behavior is a combination of factors that is not in focus of this paper. Essential for the BtoB risk and trust process are supply chain management solutions in logistics strategies that show how the supply readiness, product conditions etc. as well as the ability to provide information and the level of process documentation is solved.

6. The adequate set up of the risk management in different categories (example of conjoint project carried out)

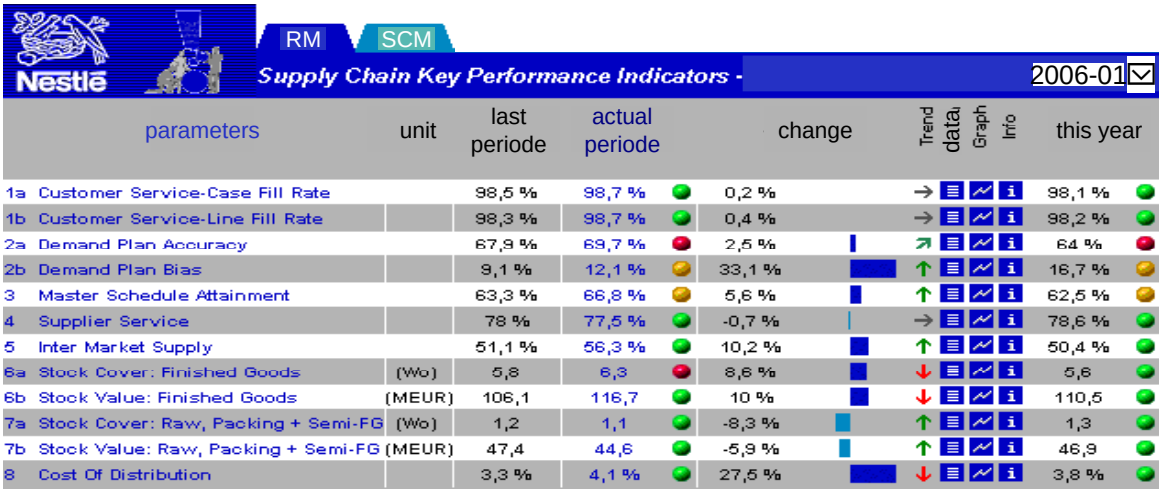
In order to establish an adequate Food Safety and traceability system, restrictions and typical issues of companies need to be taken into consideration. The basic idea behind this was, to deliver a consideration matrix that allows companies to evaluate the required level of food safety and supply chain control according to upstream, in-house, and downstream activities for specific products.

The appropriate level of details in terms of available information end to trust in documented information leads to product and process technical activities in the grocery supply chain. As a source of information can be used lot numbers (89/396/EWG, including best before date, lot and date of production); product labeling (labeling requirements as in 2000/13/EWG); number of pallet (barcode, transport labels with EAN 128 information); quality-control information; production planning information; audit reports; delivery notes (information accompanying the flow of goods); accounting information (information following the goods flow); further specifications etc.

ources, the remaining gap in information and transparency can be evaluated – assuming tha ll gathered information is trustful. Additional risk aspects through potential informatio nanipulation need further activities e.g. according to IFS and EurepGap procedures.

The higher the number of suppliers and customers the more technical efficiency in terms o lectronic data interchange is required (BLL-Online, 2001). The level to be reached i lepending on (re-) traceability affords and remaining risk – costs vs. benefit from ris management solutions. Enterprises participating in the same value chain should negotiat which data source should be used for what kind of information to suit all requirements best an n order to deliver traceability, information readiness and acceptable security of the foo upply chain.

First step for a single enterprise is an evaluation of the own potential risk within the thre rocess parts upstream, intern and downstream (Hammer, 1988). With target orientate uestions on the quality control und risk management system itself as well as on relevan spects regarding input and output factors a significant overview can be reached to suppo ecisions on risk management. In order to make the questions operable for further evaluatio



Easy overview of packed information
on risk management level of supplier

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