Customer Communication of Regional Quality Efforts: A Case From the Grain Sector

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Abstract

Usually, marketing communication efforts in the agrifood sector address the end consumers and concentrate on products that are processed and ready for consumption, thus quality efforts often concentrate on the final product. Moreover, there's a widespread view that agricultural commodities like wheat aren't suitable neither for product focused marketing nor branding. However, recent developments in the in agrifood sector challenge this view. The increasing use of biotechnology, the globalisation of markets and changing consumer demands for quality, food safety and process attributes require improved communication concepts and information sharing along whole production chains. This paper considers the development of a quality communication system to support a regional wheat brand and prerequisites for quality management efforts.

Key words: *prototyping, quality communication system, region of origin*

1 Introduction

In the agrifood sector there is a widespread view that agricultural mass products are difficult to differentiate and hence are not suitable for a product focused marketing. This is why price is often the main differentiating factor. But recent developments challenge this view. The increasing use of biotechnology in agricultural primary production, the globalisation of markets and changing consumer demands for quality and food safety and new technology open the door for innovative mass product related differentiation and the chance for improving the competitiveness of wheat with an regional identity.

Nevertheless, there's no doubt that the core agricultural products like wheat, milk and other commodities are indeed difficult to differentiate. For this reason commodity marketing efforts focus on services, specialised abilities, knowledge and processes that go together with the commodities in order to reduce the importance of price as the main determinant for demand (Enke et al., 2005).

However, any effort of value creation will miss its objective, if customers – either private or organisational buyers – will not perceive the added value. This is why it is important to communicate the extra value effectively. Hence, communication is a central issue in commodity marketing. Successful product marketing communication is based on the availability of information, an appropriate communication concept and an appropriate information representation.

In this context this paper deals with the design of a quality communication system to support the branding of regional agricultural commodities with special respect to bread wheat (*triticum aestivum*). For this reason aspects of quality, quality perception and inference making

are introduced. After that the concept of prototyping in combination with quality function deployment is described and finally, quality information is visualised to promote regional wheat.

2 Dimensions of quality and quality perception

Dealing with quality issues is quite complex because quality can be viewed from many different viewpoints. Thus, there's no static definition of quality. However, there's an agreement that quality has an objective (measurable) dimension that refers to the physical characteristics of a product and a subjective dimension that relates to the buyer's perception of quality. Both dimensions are strongly linked to each other. This is why products have not only to be designed according to the customers' wishes, but also in a way that customers can make inferences about the desired quality in order to perceive the real quality that a product offers them (Grunert, 2005).

In the real world the core wheat quality cannot be changed easily unless new varieties are bred and introduced. The core wheat quality is often defined by only a few product-related intrinsic attributes, e. g. protein quantity, moisture content, dockage or falling number. These indicators state the physical and functional characteristics of certain wheat varieties. They also determine whether a certain batch of wheat is suitable for an intended end product. Usually, these types of parameters can be measured easily either visually or with simple tests (Kennett et al., 1998). But the determination of quality goes beyond these kinds of physical respectively intrinsic attributes. There are also quality attributes that are not inherent to the product, but related to processes or the producing company itself. They are often referred to as extrinsic parameters. They aren't a part of the physical product, e. g. guarantees, brand name or the seller's reputation (Olson and Jacoby, 1972).

Often attributes cannot be verified or observed directly in the end product prior (search attributes) or after purchase or consumption (experience attributes) (e. g. King and Venturini, 2005). These attributes are referred to as credence attributes. In this context inference making is an important issue because particularly in the agricultural and food sector there's a lot of information asymmetry about certain types of process related quality attributes like animal welfare, food safety or environmental friendly production. Inference making makes use of quality signals to assess the inherent quality of a product (e. g. branded products signal higher quality)

In this context Figure 1 shows a model of electronic quality communication. The model is based on the assumption that wheat quality is a bundle of intrinsic and extrinsic search, experience and credence attributes. A grain seller (sender) on the one side that communicates wheat quality using an electronic information system has to encode (collect, store, process and deliver) information that are related to all kinds of the above mentioned quality attributes.

The receiver of the information has to decode the information. Problems can occur, if the receiver cannot decode the information accordingly or if the receiver cannot understand the provided information. This depends on how the information is transmitted and on how well the information is represented. For decision making – e. g. buying or not – the information has to meet a given information demand (Meyer, 2009). This is true for all types of information.

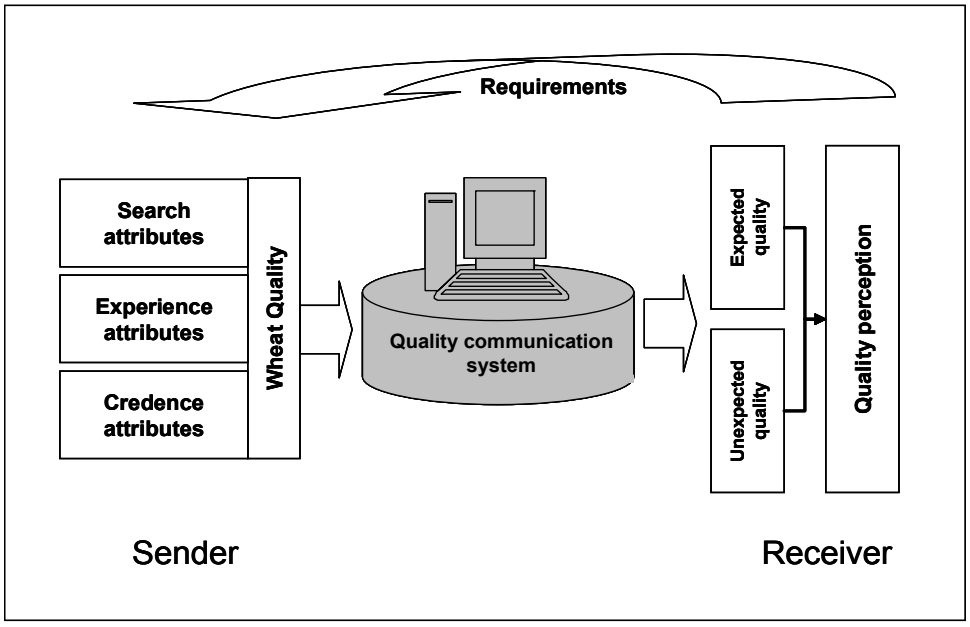

Figure 1. A model of electronic quality communication

3 Usability engineering and system acceptance

On the one hand communication of quality attributes is relevant for customer communication. On the other hand the customer has to accept the given communication medium. Hence, the user's acceptance of the quality communication system is important. To increase the user's acceptance of an information system the user has to be integrated in the system development process in order to make the user feel comfortable with the system. Since an information system involves human-computer interaction the design of the user interface and the presentation of data requires special attention. On this account usability engineering aims at providing a system that is easy and efficient to use. The system shouldn't contain any errors and the user should feel comfortable to work with the system (Nielsen, 2005).

This is crucial for the success of the information system in the context of commodity differentiation, because on the one hand much value is added by creating information products like guarantees and additional electronic services. However, on the other hand bad usability creates a barrier for using the system in order to benefit from it. The potential or real value cannot be perceived by the buyer then.

For this reason target groups have to be addressed. Where mills require certain batch related information like moisture content or protein quality for processing, a simple list of available information could fulfil the task. Retailers have different interests since they're not processing batches of wheat but selling wheat flour made from many batches. They have a stronger interest in food safety.

4 Development of a quality communication system using Quality Function Deployment

For the development of a marketing information and communication system prototyping is an adequate approach. The basic advantage of prototyping is that there's a model (prototype) of the information system at an early stage of the developing process (Stahlknecht and Hasenkamp, 2005). The early prototype of the system can be used to discuss the system's features with potential users. Thus, the user can be integrated in the development process

from the beginning. This provides the system developer with valuable insights about the user's objectives, thoughts and requirements.

Prototypes can appear in various ways. Some prototypes are intended just to collect ideas and experience before the full system is being programmed. Some prototypes represent just parts of the full system and some prototypes are just sketches on a piece of paper (paper prototypes). Against this background, Quality Function Deployment (QFD) can be seen as a prototyping process. Originally QFD stems from Japan and was used in several industries to match users' requirements (customers' wishes in a customers's language) with technical efforts (Hauser and Clausing, 1988). Today QFD is a widespread approach in quality planning and also used in software development. Within QFD the House of Quality (HoQ) represents a conceptual map that comprises various tables and matrices that can be used for discussions between users and software developers. Thus, the HoQ can be seen as a prototype. The value of QFD is its contribution to identifying areas where improvements lead to enhanced competitiveness. Particularly in highly relevant areas where a company fails to meet the customers' demand, action has to be taken.

Figure 2 shows requirement areas that organisational grain buyers see as important. The requirements are derived from expert interviews and literature (for details see Meyer, 2008). Based on those initial results a HoQ was constructed that was used as a base for discussion in further expert interviews. Data was collected among experts from three grain trading companies and three bread wheat millers. Figure 2 is derived from the HoQ.

Experts were asked to assess on a scale from 1 (bad) to 10 (very good) the performance of grain trading and processing companies in the region around Cologne-Bonn and Düsseldorf regarding to the given requirements. Despite the small sample size the experts represent a large share of grain that is traded and processed in this region. So the data can be regarded as representative for this particular region.

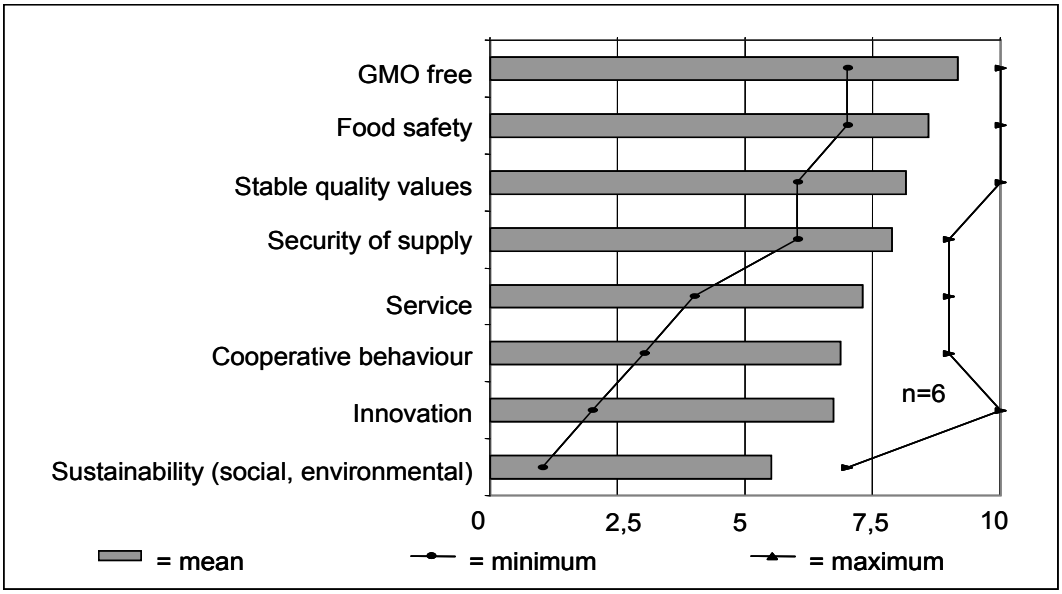

Figure 2. Fulfilment of requirements by regional grain companies

The graphs in Figure 2 represent the experts' estimate of the average performance (see blocks) of the region's grain trading and processing companies regarding the required issues

(grain without genetically modified organisms (GMO), food safety, stable quality values etc.) according to the experts' view. The experts' maximum and minimum estimations of the level fulfilment are also stated (lines).

Results suggest that it can be taken for granted that bread wheat from the region is free of genetically modified organisms (GMO) since there are no allowed bread wheat seed varieties that are genetically modified (GM). However, this view doesn't take into account that there could be cross over contaminations with GM material from elsewhere in the storing facilities.

Furthermore, the companies' performance regarding food safety and quality issues that relate to intrinsic and physical wheat characteristics earns high values, too. The millers state that a low variability of quality parameters is valuable for them, where the focus is on measurable quality attributes.

5 Customer communication of quality

Based on the experts statements different ways of visualising quality attribute were developed and tested stepwise in an expert workshop and with more expert interviews. Figure 3 shows a so called word cloud that is based on a list of wheat varieties that grow on test fields in the Rhineland area in North-Rhine Westphalia between Cologne, Bonn, Aachen and Düsseldorf.

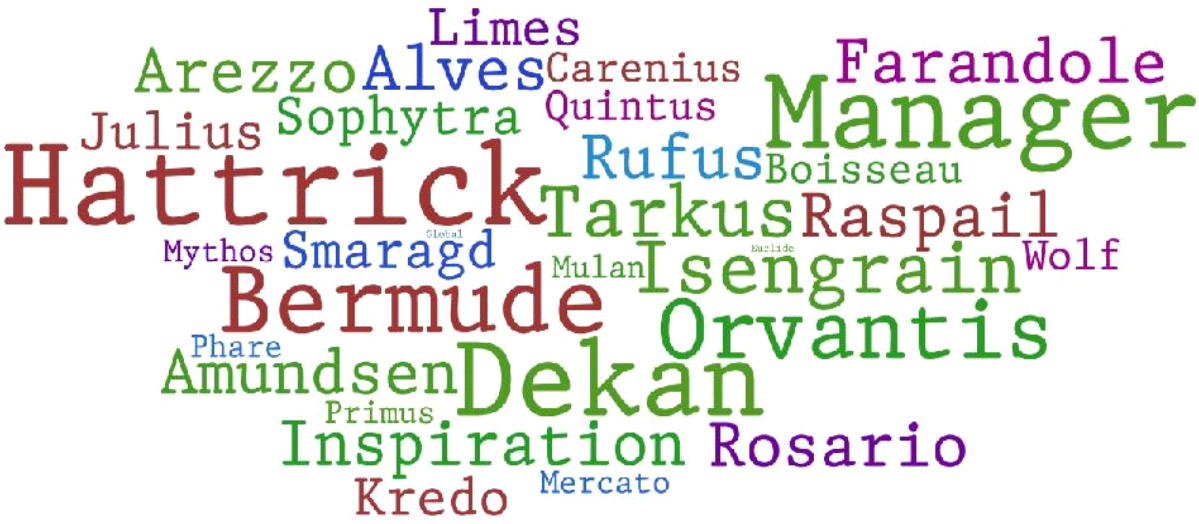

Figure 3. Visualisation of different wheat varieties in silos

In practice the farmers decide on what wheat variety they grow. This is why when the wheat is harvested many different batches are delivered to the local traders and grain cooperatives. Since many of the small to medium scale traders don't have enough silos to store each wheat variety separately, there's always a mix of different wheat varieties in the silos. This fact is illustrated by Figure 3.

Figure 3 visualises such a mixture based on the relative share of a particular wheat variety in a silo. The bigger the word the larger is the share of that variety in the mix. When presented to experts from the grain business, they intention of Figure 3 was immediately obvious. The experts expressed that they could make judgements about the quality characteristics of this batch of wheat mix. The experts' estimates indicate that the smaller the word cloud the more

homogenous a batch of wheat is. For processing reasons this is seen as added value and some experts state that there's a higher willingness to pay for homogenous batches. Regional wheat marketing initiatives have to take this into account when selling their products to the commodity markets.

A different approach to quality visualisation and communication is to combine quality data with geo-objects, those spatial objects that can be points, lines or areas. They can contain additional information und can account for changes over time (de Lange, 2002). Advanced systems for tracking and tracing enable customers to trace a batch of wheat through the grain chain back to the farm (Poignée et al., 2005). Mapping technology (e. g. google maps) can visualise the origin of a certain batch of wheat.

However, experts say since wheat flour is usually a mixture made from different batches of wheat from different silos that contain many different varieties delivered by many farmers from even more different fields, a list with all places of wheat origin would irritate the end consumer. This is what Figure 4 takes into account. It doesn't show the fields from where the wheat comes, but the different farms. In addition to that, using google maps farms can be highlighted with symbols like certification logos (in this case *Q&S – Qualität und Sicherheit* from Germany and the Dutch certification scheme *GMP+*).

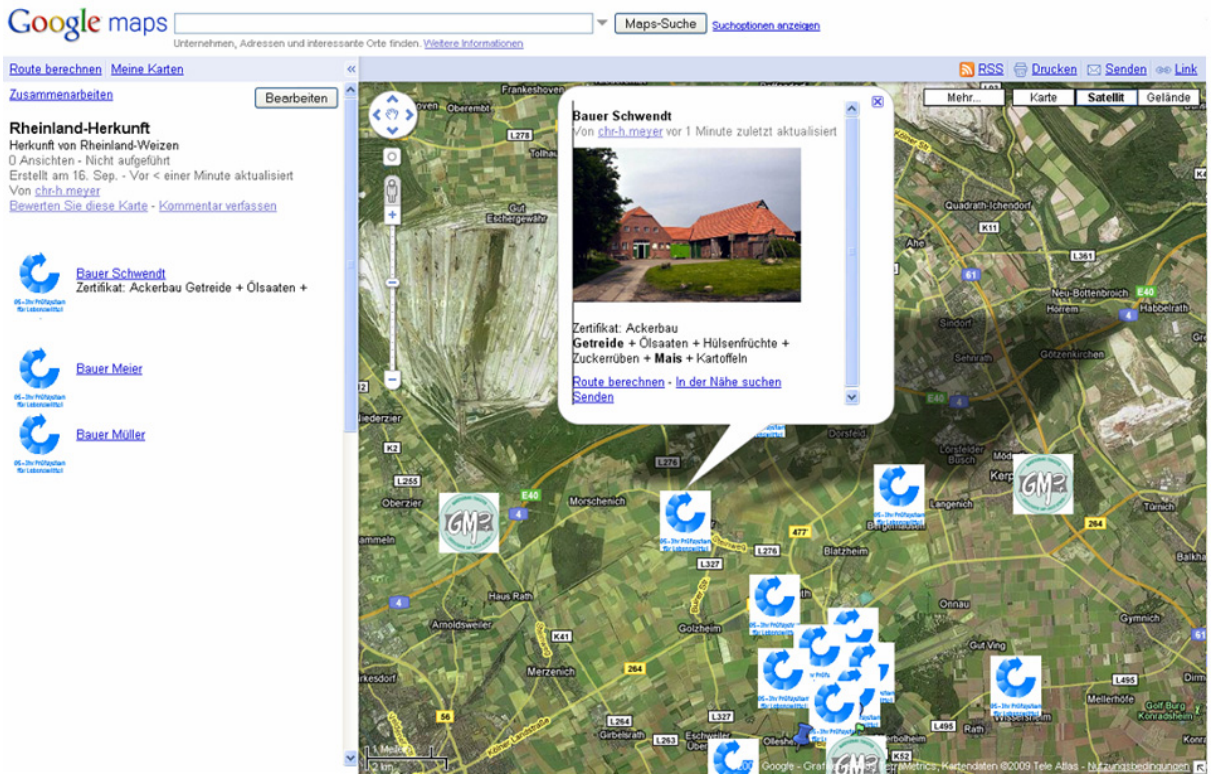

Figure 4. Visualisation of certified farm clusters

Dependent on the regional level of certified farms and traders regional clusters will evolve that can be visualised with mapping technology (see Figure 4 bottom centre). Thus, high levels of regional certification contribute to regional differentiation. As a consequence this kind of certified wheat production can be communicated along the chain. Alternative displays are possible.

Furthermore, there's another aspect of this kind of quality assurance. If people have trust in the quality assurance scheme, they might also have trust in the local producers, which in addition is another differentiating effect. But this effect hasn't been tested yet.

6 Conclusion

In this paper the issue of customer communication of regional quality efforts is addressed. It is argued that agricultural mass products like wheat are difficult to differentiate which turns them into commodities where price is the main factor for demand. It is also argued that the overall quality of wheat is defined by a bundle of intrinsic and extrinsic quality attributes. Furthermore, for quality communication all different types of quality attributes have to be considered.

Initial results of this research based on experts interviews indicate that quality attributes can be visualised and communicated along the chain using different kind of visualisation techniques. However, this kind of communication requires some organisational prerequisites. As the Quality Function Deployment approach revealed homogenous wheat supplies create added value for industrial millers. Results of expert interviews indicate that there's even a higher willingness to pay for homogenous wheat batches. Regional initiatives that want to exploit this, need to consider this. Word clouds can be an appropriate means to visualise different mixes of wheat.

Another technique to visualise and communicate quality efforts is to combine quality data with geo-objects. Using maps can differentiate regions according to different attributes. It was shown that high levels of regional certification can be displayed as regional certification clusters.

However, when companies put efforts on differentiating their products and services, they ask for rewards so that their investments pay of. Results of expert interviews indicate that there's a higher willingness to pay for homogenous wheat batches. But will the end consumer be willing to pay more for a kind of branded wheat flour that is made from regional wheat. This question hasn't be answered yet and is subject to further research.

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