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**Determinants of Trust between Buyers and Suppliers in Agribusiness:  
Empirical Evidence from the German Pork Sector**

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# Determinants of Trust between Buyers and Suppliers in Agribusiness: Empirical Evidence from the German Pork Sector

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## Abstract

There are several hints that there is lack of trust in the relationships between farmers and processors in the meat industry. To generate instruments of trust management, a survey is conducted in the German pork chain measuring the level of trust perceived by farmers as well as the antecedents of trust. Overall satisfaction, the perceived neutrality of the carcass grading system, fairness and farmer orientation are the most important factors explaining trust.

**Keywords:** *Satisfaction, reliability, regression analysis, pork chain*

## 1 Introduction

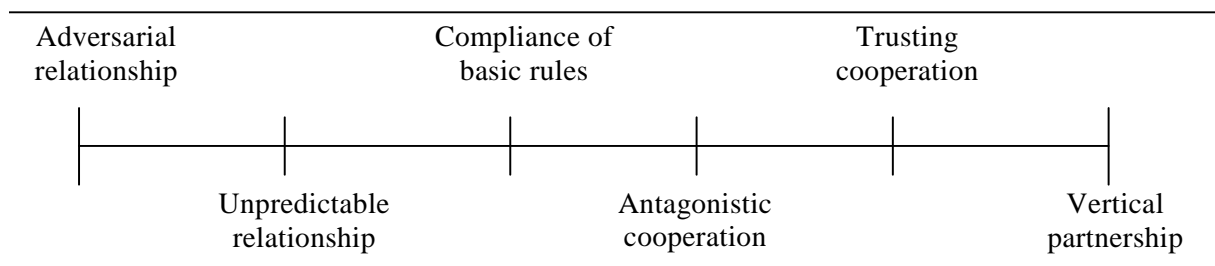
It is well accepted by researchers that trust plays an important role as a mediating variable in business relationships (Barney and Hansen, 1994; Ganesan, 1994; Dyer and Singh, 1998) by reducing transaction costs (Doney and Cannon, 1997; Galizzi and Venturini, 1999). However, there is still a controversial debate amongst different schools of thought about how to define and measure trust and its determinants (Kramer, 1999). There are some scientific contributions that emphasize the importance of trust in vertical relationships in agribusiness (Fearne, 1998; Batt and Rexha, 1999; Sporleder, 1999; Clare et al., 2005) and the need for stronger collaboration between the different levels of the supply chain; from retailer to farmer (Fearne, 1998; Hornibrook and Fearne, 2001; Clare et al., 2005). In particular, hints that relationships between farmers and processors are lacking trust stem from the meat sector (Palmer, 1996; Urlings et al., 1999). It is argued that this will lead to inefficiencies in the chains and failure in their adaptation to market changes, which will consequently result in a loss of international competitiveness. However these are only some impressions given by practitioners, which are not proven on a broader empirical basis.

The objective of our study is triple. Firstly, we contribute to the ongoing debate about trust, its determinants and measurement by proposing a comprehensive basic model of trust in business relationships, which we adapt to the specific characteristics of the German pork chain. Second, we test our model empirically via a large-scale survey (357 pork producers) in order to find empirical evidence about the current level of trust in the pork sector. Finally we draw several conclusions for trust management within a sector which lacks some basic requirements for trustful relationships.

## 2 Theoretical Framework

### 2.1 A Continuum of Trust in Business Relationships

Trust research is widely applied in business to business marketing research (Järvelin, 2001). However, although practitioners commonly refer to trust, they do not use the concept as a management tool. There is a huge gap between commonsense knowledge about trust and its rare consideration in business decisions. One reason might be that trust-distrust is mainly seen as a dichotomy. In figure 1 we introduce a continuum of business relationships in terms of trust and conflict.



**Figure 1.** Classification of B-to-B-relationships in terms of trust and conflict

At the one end of the continuum there are adversarial relationships which are characterized by a high level of conflict and opportunism. Each party tries to put through its interests, if necessary by abusing power imbalances. Whilst in this case, parties are sure that their counterpart will exploit them whenever possible, there may also be business relationships in which the other's behaviour cannot be anticipated at all. In this uncertain and incalculable business environment (not knowing if the other cheats or not) a high level of mistrust leads to cautious behavior. The third step is that at least compliance to basic rules is assured as sector-specific standards or general understandings about exchange behaviour are shared by all industry members. An antagonistic cooperation ("Co-Opetition", Brandenburger and Nalebuff, 1996) describes relationships where there is some goal compatibility whilst in other parts the relationship is strongly adversarial. In contrast to an unpredictable relationship, both parties have the aim to work together for a certain goal despite great differences of interests in other fields (e.g., prices and distribution of profits). A trusting cooperation is characterized by a strong confidence that the partner will not exploit oneself because he is interested in continuing the relationship. A vertical partnership is at the other end of the continuum. This type of relationship is characterized by strong interpersonal bonds, mutual goals and maybe even friendships between the partners.

### 2.2 Trust in Agri-Food Chains: Development of Hypotheses

Amongst economists, it is commonly accepted that trust plays an important role as it is argued that it can reduce opportunistic behaviour and thus transaction costs (Ganesan, 1993; Doney and Cannon, 1997; Galizzi and Venturini, 1999; Batt, 2003). Due to the multitude of researchers from different scientific backgrounds, trust is conceptualized differently. There is neither a commonly accepted definition of trust nor a shared sense of what the antecedents and

consequences of trust are (Zucker, 1986; Kramer, 1999; Batt, 2003; Handfield and Bechtel, 2004). As a comprehensive review of all relevant literature throughout the respective research streams is beyond the scope of this paper, we will try to discuss only some contributions which are especially useful for the development of our model.

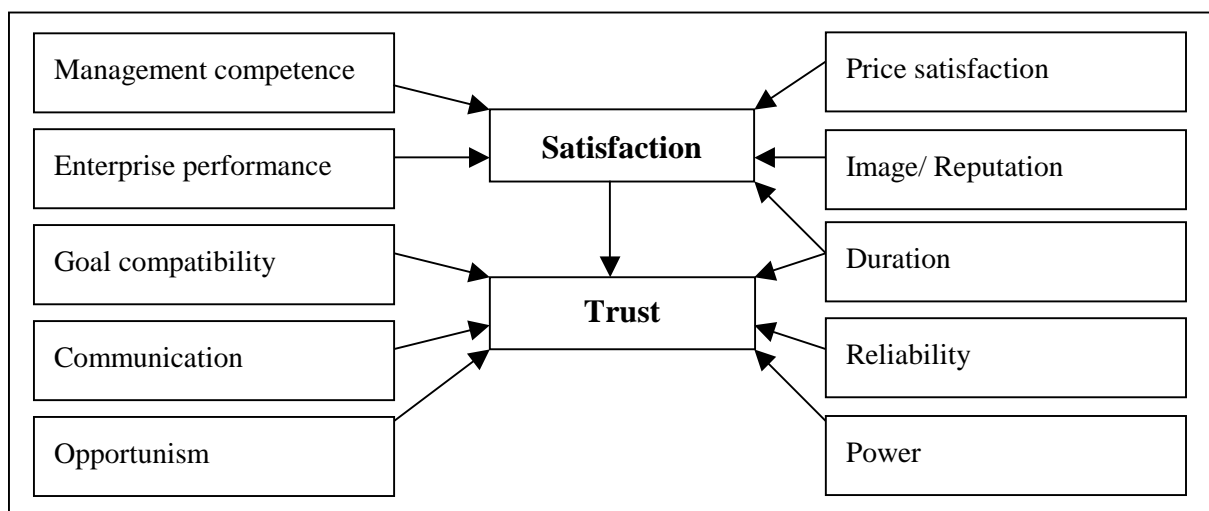
Despite the high interest of researchers from different disciplines and many contributions to the measurement of trust in industrial marketing, empirical work on agribusiness chains is rare. First attempts to measure the perceived trust in agribusiness supply chains were made by Batt and Rexha (1999), Hansen et al. (2002), Batt (2003), Clare et al. (2005) and James and Sykuta (2006). Hansen et al. (2002) suggested that trust between members of a co-operative and the co-operative management is an important variable to enhance group cohesion. Clare et al. (2005) evaluated the relationship between farmers, livestock buyers and slaughterhouses in the New Zealand red meat industry in terms of trust, commitment, symmetry, interdependence, communication, joint problem solving and planning, cultural compatibility, and coordination of work. These were based on the preliminary work of Spekman et al. (2000). However, the mentioned studies did not focus on the identification of determinants of trust but on a general assessment of the trust level.

Batt (2003) reveals determinants of trust based on a survey of 196 Australian fresh produce growers. The trust dimension in this study comprises perceived honesty, credibility of information, and reliability of promises. From our viewpoint, these are not ingredients but determinants of trust. The same holds for the factor “relational satisfaction” which he finds to be the most important factor in the development of trust between Australian growers of fresh produce and their buyers. It comprises constructs which in our opinion have to be distinguished from satisfaction, as perceived fairness of the buyer, complaint management, and conflict. Other influencing factors in his sample are goal compatibility, relational investments, power and opportunism, whilst the duration of the relationship does not have an impact on the trust suppliers have in their buyers but is often discussed as important in other studies (Ganesan 1994; Batt and Rexha, 2000). James and Sykuta (2006) analyse farmers’ trust in cooperatives and investor-owned firms for the soybean and corn market. They confirm their hypothesis of a higher level of trust towards cooperative. Furthermore, farmers perceive cooperatives to be more honest and have higher competence.

Apart from these studies, research on satisfaction and relationship quality provides us with some additional information on potential determinants of trust (Frazier, 1983; Anderson and Narus, 1990; Wilson and Mummalaneni, 1986; Järvelin, 2001). Price satisfaction refers to several relationship studies that state that the economic outcome is important for the evaluation of the relationship (Järvelin, 2001) and thereby positively affects the development of trust. Other often used variables in relationship management are shared values (Morgan and Hunt, 1994), perceived performance of the partner, communication quality and quantity (Matanda and Schroder, 2004) and friendships between partners (Wilson, 1995).

Figure 2 shows the measurement concept we propose in this paper. Some central constructs are similar to the results of Batt (2003). However, contrary to Batt, who subsumed many items under the term relational satisfaction, we first develop a strongly disaggregated model in order

to identify and distinguish determinants of trust sharply. Trust and satisfaction are at the centre of the model. Some items are supposed to have a direct impact on the development of trust between buyer and supplier, while others such as enterprise performance, management competence, and price satisfaction might affect trust only indirectly via satisfaction. Factors that may directly affect trust are goal compatibility, communication, and opportunism. Opportunism is measured with a number of sector specific items, e.g. neutrality of carcass grading and transparency of price grids. Relational investments in the definition of Batt (2003) are not relevant for the pork sector. Instead we introduced the factor communication which includes communication frequency and quality. In our view reliability should be a determinant rather than an integral part of trust. Although relationship duration did not have an impact on trust in Batt's study, we introduce this variable in our model as a possible influencing factor for both satisfaction and trust in the pork sector because sectoral differences might play a role in this regard. Another newly introduced factor is perceived management competence and reputation, which is sometimes viewed as linked to trust or even as a part of it in the literature (Luhmann, 1988). As the industry is facing an increasing concentration at the processor and retail level, the effects of power asymmetries and coercion have to be considered as important for relationship perception as well (Anderson and Narus, 1990; Dwyer et al., 1987).



**Figure 2.** Measurement concept of trust

### 3 Data and Empirical Methods

To test our model, extensive face-to-face interviews were conducted in spring 2005 in the Westfalen-Lippe and Weser-Ems regions located in North-western Germany, which represent the core of the German pork production. The sample is a convenient one, concentrating on large farms. In table 1 sample characteristics are reported. It is evident that future-oriented farmers were interviewed, as show the low average age ( $\bar{X}$  41 years) of the respondents and large farm sizes. There are significant differences in herd sizes in the two regions ( $F = 18.68^{***}$ ).

The questionnaire mostly consists of seven-point Likert scales ranging from “strongly disagree” (scale = -3) to “strongly agree” (scale = +3) and some rating scales ranged from 0 to

100. As we aim at a disaggregated model with a multitude of different factors, all constructs are measured with at least two items. In a first step, the number of items is reduced via three factor analyses. Trust, satisfaction, and the above described determinants were analysed in separate steps. Principal component method is applied in combination with varimax rotation and the factors were tested for reliability analysis by cronbach's alpha values. To measure the impact of the identified factors on the level of trust in business relationship, linear regression analysis is applied. The identified factors as well as some single items which fell out of the factor analysis were used to test the hypotheses underlying the empirical model in two linear regression analyses. According to our measurement concept presented in figure 2, we first estimate the impact of our independent factors on trust. The second step is to have a closer look at the determinants of overall satisfaction, as we assume that some factors might only have an indirect impact on trust via relationship satisfaction.

**Table 1.** Sample characteristics

|                           | <b>Total</b> | <b>Westfalen-Lippe</b> | <b>Weser-Ems</b> |
|---------------------------|--------------|------------------------|------------------|
| Number of farms           | 357          | 188                    | 169              |
| Ø-acreage [ha]            | 93           | 97                     | 89               |
| Ø-herd size (feeder pigs) | 1,413        | 1,162                  | 1,681            |

#### 4 Results and Discussion

First, the current level of trust, satisfaction and commitment is assessed. Results of descriptive analyses are reported in table 2. While trust in the buyers is at a medium level (rather trust), farmers are on average somewhat satisfied with the cooperation. High standard deviations in table 2 reveal that trust and satisfaction differ widely between farmers. This is partially due to the different slaughterhouses they supply, but might also be due to different levels of dispositional trust of farmers.

The results of the factor analyses are reported in table 3. The cronbach's alpha values are satisfactory for almost all of the factors. The factors trust and satisfaction are each represented by the three items which directly ask for the level of trust and satisfaction respectively as shown in table 2. The factor farmer orientation comprises goal compatibility and benevolence of the buyer as well as understanding of the farmers' problems and complaint management. The price satisfaction factor comprises short- and long-term satisfaction as well as relative price satisfaction when comparing the own price received with the price paid by other slaughterhouses. Statements included in the factors are reported in Spiller et al. (2005).

Our regression results (table 4) are somewhat similar to the study of Batt (2003). Overall satisfaction is identified to be the most important influencing factor. Due to the high importance of carcass grading for the producer price, the prominent position of the "neutrality of grading" in the determinants of trust is logical. Farmer orientation and perceived fairness nearly have the same impact on trust. Reliability of the buyer as well as intensity of communication have a minor but still significant impact on the development of trust. Like Batt's study (2003), duration of the relationship is without significant relevance for trust level. But contrary to Batt's survey, power abuse does not have an impact in our regression. This can

partly be explained by high correlations of this item with farmer orientation, which causes multicollinearity problems. The regression model explains 62 % of the variance of trust. A part of the unexplained variance might be due to the individual level of dispositional trust and critical events during past transactions that led to disruptions in the relationship which are not integrated in the standardized questionnaire.

Regarding its great importance in explaining trust, the concept of overall satisfaction is modelled as the dependent variable in a second step, using factors and statements which are not enclosed in the trust model (table 5). The high relevance of the relationship duration indicates that satisfaction is somewhat self-stabilizing. Price satisfaction surprisingly is not the most important factor in explaining satisfaction, which might be due to a generally high price level at the time of our survey but it also expresses the importance of emotional criteria. All in all, experiences with the business partner, such as payment behaviour, do not play the most important role in developing relationship satisfaction. They are superposed by factors such as power and management competence which had initially been considered to have a direct impact on trust.

All in all, trust is an important factor in a market environment which is characterised by a high degree of arm's length transactions. The correlation between trust and switching behaviour (farmers changing the processor) is high ( $r = -.323^{***}$ ); that confirms the often stated important role trust plays for building more stable relationships.

**Table 2.** Trust in the buyer and satisfaction with cooperation

| Statement   | Mean  | SD     |
|---|-------|--------|
| <b>Trust</b>  |       |        |
| I can trust in XY.  | 1.04  | 1.197  |
| Please evaluate your trust in XY (0-100 rating scale).                  | 64.27 | 18.788 |
| Employees at XY are trustworthy.  | .91   | 1.192  |
| <b>Satisfaction</b>   |       |        |
| All in all, I am satisfied with the cooperation with my buyer           | 1.36  | 1.062  |
| Please evaluate your satisfaction with the cooperation with XY (0-100). | 74.86 | 17.07  |
| All in all, collaboration with XY is good.                              | 1.28  | .994   |

**Table 3.** Factor reliability

| Factor  | cronbach's alpha |
|---|------------------|
| Trust (71 % explained variance; KMO = .708)                     | .795             |
| Satisfaction (74 % explained variance; KMO = .684)              | .827             |
| Buyer Switching behaviour (76 % explained variance, KMO = .718) | .841             |
| Farmer orientation  | .873             |
| Management competence   | .702             |
| Price satisfaction  | .808             |
| Communication   | .815             |
| Transparency of price grids                                     | .590             |
| Reliability of promises   | .669             |
| Transportation problems   | .640             |
| Structural bonds  | .637             |



**Table 4.** Regression model to explain trust of farmers in their slaughterhouses

| Independent Variables                       | Beta | t-Value  |
|---|------|----------|
| Overall satisfaction                        | .398 | 5.909*** |
| Neutrality of grading process (single item) | .181 | 3.263*** |
| Fairness (single item)                      | .160 | 2.751**  |
| Farmer Orientation                          | .158 | 2.799**  |
| Reliability                                 | .129 | 2.688**  |
| Communication intensity                     | .125 | 2.768**  |

Adj. R<sup>2</sup> = .621; F-Value = 52.86\*\*\*; \*\*\* p .001; \*\* p .01; \* p .05

**Table 5.** Regression model to explain overall satisfaction of farmers with their buyers

| Independent Variables                       | Beta  | t-Value   |
|---|-------|-----------|
| Duration of relationship (single statement) | .348  | 5.999***  |
| Power abuse (single statement)              | -.258 | -4.465*** |
| Price-satisfaction                          | .198  | 3.510**   |
| Perceived management competence             | .171  | 3.125**   |
| Delay of payment (single statement)         | -.161 | -2.935**  |

Adj. R<sup>2</sup> = .477; F-Value = 35.33\*\*\*; \*\*\* p .001; \*\* p .01; \* p .05

## 5 Conclusions

The perceived neutrality of the grading process is the second most important factor explaining trust. Compared to our relationship-trust continuum, this leads us to the conclusion that in the German pork chain even compliance towards basic rules is not assured. This conclusion is further supported by the high relevance of variables like fairness and reliability. Therefore, a first step towards trust management in the German pork industry is to safeguard minimum requirements and credibly communicate this to farmers. A comparison between different processors shows huge differences, but especially the big slaughterhouses fall short of a secured cooperation. We suggest that an increasing alienation comes along with concentration processes in the industry and leads to a decrease of commitment and trust on both sides, and consequently to a loss of total chain performance. The other central factors explaining trust are overall satisfaction and farmer orientation. Satisfaction, which was modelled in another regression model, is notably determined by the relationship duration, perception of power abuse of the processor, price satisfaction, and perceived management competence, while farmer orientation means taking suppliers seriously, and considering farmers' problems. Thus, management behaviour and the manner of communication are crucial for the development of trust.

The differences to the study by Batt (2003) show that the determinants of trust are partly sector specific and have to be measured carefully. Further research is needed to get a broader understanding of the general antecedents of trust and especially of the instruments to build trust in a sector coming from a very low level of reliability. Our continuum in figure 1 provides a first conceptualisation of different levels of trust in the agribusiness chain.

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