Trust in the US-EU Fruit and Vegetable Chain:
Do US Exporters Understand EU Importers?[1]

Christoph Ameseder[1+2], Lisa House[1], Rainer Haas[2], Oliver Meixner[2], Melanie Fritz[3],
Ellie Dahl[1], and Gert Jan Hofstede[4]
[1]*Food and Resource Economics Department, University of Florida, USA*
[2]*Department of Economics and Social Sciences at BOKU, Vienna, Austria*
[3]*Food and Resource Economics Department, University of Bonn, Germany*
[4]*Wageningen University, Delft University, The Netherlands*
christoph.ameseder@boku.ac.at ; lahouse@ufl.edu ; rainer.haas@boku.ac.at ;
oliver.meixner@boku.ac.at ; m.fritz@uni-bonn.de ; ellie01@ufl.edu ; gertjan.hofstede@wur.nl

Abstract

Research on organizational and inter-organizational trust has become an important field in management and marketing literature, as it is perceived as a pivotal aspect of business transactions. However, clarifications are still needed on the issue of *whom* we trust; is the person whom we are trading with trusted, or the organization, or just the product-quality? Not only has this question not been answered within this field of research, neither have cultural differences have been described to any great extent. Additionally, if the perceived factors important to establish trusting relationships may or may not be the same on the buyers and the sellers side in international business transaction in food chains. The primary objective of this research study therefore is to identify how well US exporters understand the elements of trust that establish strong relationships with EU importers. The Analytical Hierarchy Process was used to evaluate the importance of different trust elements in interviews conducted with US exporters and EU importers of fruits and vegetables. Results are compared, providing both a picture of the important facets of trust, as well as whether the partners understand the perspectives of the other partner.

Keywords: *trust, perceived trust, importance of trust factors business transaction, supply chain, fruit and vegetable, US, EU*

1   Introduction and Problem Description

In recent years, there has been an increased amount of discussion in the literature on the effect of inter-organizational and interpersonal trust on exchange performance on an inter-organizational level. The major idea is that trust may enhance the performance by lowering transaction costs of exchange. Two early articles on organizational trust (Bromiley and Cummings, 1995; and Cummings and Bromiley, 1996) suggested that research on trust would extend the research framework of transaction cost economics. However, this call for further research on the effect of trust has been widely ignored within the transaction cost economics research for three reasons. First, it is argued that individuals and organizations cannot discern the trustworthiness of other actors *ex ante*, and therefore they have to act as if others cannot be trusted (e.g. Wiliamson, 1993). Second, and even more important, is the argument that trust per se does not manifest itself in economic exchanges, which lead to problems of quantifying trust. The third argument, trust doesn't add any explanatory power to organizational research. While this may explain why transaction cost economics widely ignores research on trust, it does not explain if there is no correlation with transaction costs;

only that there is a lack of research within the field of transaction cost economics on trust. Bromiley and Harris (2006) therefore stress the need for further research in this area. In fact, trust exists not only in interpersonal, social relations, but also in between companies and within economic transactions. As Sen (1970, 1977) argues: "Our economic system would collapse and organizations could not viably exist in the absence of trust." Last, but not least, this has been recently verified by the economic crisis, as billions of dollars have been spent on to reestablish trust between banks.

Although the effect of trust on the performance of business relationships and business transfers has not yet been proven, at least some evidence exists in the field of trust research. McEvily and Zaheer (2006) observed that inter-organizational trust was strongly related to lower transaction costs and increased performance, while interpersonal trust was only indirectly linked to these outcomes, although this findings were only preliminary (see Zaheer et al. 1998). Dyer and Chu (2003) link transaction costs to business performance, by including *ex ante* (search and contracting) and *ex post* (monitoring and enforcement) components. In their study of the automotive industry, they supported the effect of trust in lowering *ex post*, but not *ex ante* transaction costs. Even more interesting, they further showed that supplier's perception of a buyer (e.g. a automaker's) trustworthiness is negatively related to buyers transaction costs and positively related to the buyers profit performance. However, Luo (2001) stated that the effect of trust on performance is amplified when the alliance is younger, as trust aids in overcoming the liability of newness and foreignness, and when market uncertainty is higher. These studies together lead to two important points. The first point is that trust in general seems to be more relevant during the execution of transactions; and less important in an early stage of business transaction. The effect on trust in an early stage of a transaction is only noted, when the business partners are foreign to each other and/or when market uncertainty occurs, as it is often the case in the globalized food industry. Market uncertainty and a high percentage of small and medium sized enterprises (SME's) in the food industry of Europe, along with a globalized trade of food in very complex supply chains, lead to a lot of new and foreign business partners for the companies. The second point is this study focuses on is the *suppliers* perception of the trustworthiness of the buyer, reporting an effect on performance on the *buyers* side. Until now, there is no evidence whether or not the suppliers perception of the trustworthiness (of the buyer) is congruent with the buyers perceived trust!

Another topic within the field of trust research is the issue of whom we trust. When purchasing commodities in a globalized food supply chain, do we trust the quality of the product, the seller or its organization, or the market the product comes from? And which of these factors matters the most? In and in between organizations the phenomena of trust may involve a complex interrelated network, or hierarchy, of factors influencing the perceived trust or the perceived trustworthiness. Hofstede et al. (2008) developed a hierarchy for of trust factors in international business transactions within the agri-food sector. By applying the Analytic Hierarchic Process, the importance of different trust elements on the perceived trust can be measured (Ameseder et al. 2008). Results of the study performed by Meixner et al. (2009) in ten countries indicate the importance of the product (especially price/performance ratio, and some quality aspects) as a factor to build trust in business transactions in food chains. Although less important, the relationship with the seller, especially reliability of the seller, is also an important factor. Differences in importance of factors were observed based on cultural factors, as well as which part of the food sector was being analyzed.

The objective of this study is to compare the factors influencing trust from two perspectives:
- The buyers perceived importance of trust elements in buyer-supplier relationships in food chains
- The sellers perception of which factors are important for the buyer

Using this data we can highlight the previous asked question: Is the suppliers perception of the trustworthiness (of the buyer) congruent with the actual perceived trust form the buyer. Or to be more specific: Does the importance of trust elements differ in the assessment of the buyer on the one side, what the supplier thinks about the buyers importance of trust elements on the other side. This question will be highlighted here in a comparative study between suppliers in the United States and buyers in Europe.

2   Transactions between Europe and the US

The question of perceived trust between US exporters and EU importers is especially interesting from a practical point of view. The US and EU account for the largest bilateral trade alliance in the world (both goods and services), accounting for about 40% of the world's trade (European Union 2008). For US agricultural exports, the EU represents a primary market for several of the products produced in the US (USDA 2008a). In 2008, the US exported a value of $115.4 billion, while the EU imported $10.1 billion equaling 8.75% of total US agricultural exports (USDA 2008d). In the same year, the EU ranked fourth in total agricultural US imports by US dollar values (USDA 2008c).
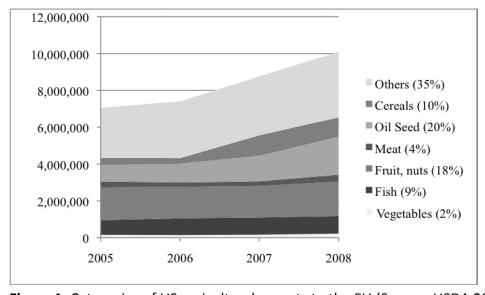

Figure 1. Categories of US agricultural exports to the EU (Source: USDA 2008b)

As in the world, high value products are increasing at a rapid rate for exports going to the EU. Fruits and nuts are the largest trade area within the specialty high value product crops (Figure 1. Categories of US agricultural exports to the EU (Source: USDA 2008b)1). The top two fresh fruit products exported to the EU are grapefruit and apples (USDA 2008d). Within the processed fruit sector, the top two products exported to the EU are prunes and raisins (USDA 2008b). Due to the importance of the fruit sector for US exporters, the study focuses on the fruit and vegetable chain.

3   Purpose and Method of the study

Due to the nature of business transaction as an unstructured, fuzzy reasoning process (Turban, 1988) and the complexity of influencing factors such as trust, the yet mentioned typology of trust for international business transactions in the food chain was applied. This typology was tested and successfully applied to this topic (Oosterkamp and Hofstede, 2007; Ameseder et al. 2008. Canavari et al., 2008; Meixner et al. 2009).

Table 1. Typology of trust elements for the buyer

Objective	Objects of trust	Dimensions of the objects of trust	
Buyer's trust in transaction	1. Product	1.1 Reputation	
		1.2 Specification	
		1.3 Inspection	
		1.4 Certification	
		1.5 Price / performance ratio	
	2. Seller	2.1 Capability	
		2.2 Relationship	2.2.A Relationship between individuals
			2.2.B Relationship between companies
		2.3 Reliability	2.3. Adequate communication
			2.3.B Deliveries
			2.3.C Financial situation
		2.4 Reputation	
	3. Market environment	3.1 Control institutions	
		3.2 Informal institutions	
		3.3 Legal institutions	

The typology is organized hierarchically, with the main trust elements at the top and the specific trust-building elements at the bottom. It contains four levels of trust elements. The first hierarchy level forms the main goal of the typology: trust from the perspective of a buyer who is in the early stage of initiating a new purchase relationship. The second level consists of the objects of trust (product, seller, market environment). The third and fourth levels contain the dimensions of trust. In order to estimate the relative importance of trust elements from both sides (buyer and supplier), a specific decision support system was applied - the Analytic Hierarchic Process (AHP). The AHP is especially promising due to the context specific nature of trust and the difficulties to quantify (Seppänen et al. 2007). By using the AHP, these complex decision problems can be captured, allowing the researcher to assess all inter-dependencies within the decision hierarchy (Meixner, 2003). The AHP hereby divides the problem into smaller parts, which are incorporated in a predefined structure, the trust typology. One important further advantage of the AHP for is that individual evaluations by the respondents can be aggregated easily, so group results for the USA (suppliers) and Europe (buyers) can be obtained (Meixner et al. 2001).

4   The Assessment

Between May 2008 and February 2009, the partners of the EU-funded the project 'E-trust' conducted 21 interviews with importers in seven European countries (Austria, Germany, Italy, Greece, Slovenia, Spain, The Netherlands) and 14 interviews with exporters in the US. It is important to note that the sample varies for the seven different countries in Europe from one to seven. The relative importance of the trust elements was assessed through expert interviews with purchasers (Europe) and exporters (US) in the fruit and vegetable sector. For the selling perspective, the used typology was adapted, e.g. by replacing the term 'seller' with 'buyer' (see Meixner et al. 2008) and instructions were given to the sellers to imagine the perspective of the buyer:

- Buying perspective: "In an early stage of a b2b relationship with a possible supplier: Which factors are most important for you to develop trust in this relationship (using a pair wise comparison)."
- Selling perspective: "In an early stage of a b2b relationship with a possible client: Which factors you think are most important for your client to develop trust in this relationship (using a pair wise comparison)."
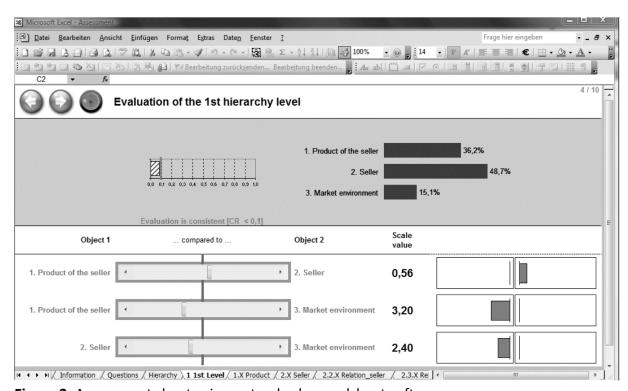

Figure 2. Assessment sheet using a standard spreadsheet software

Due to the fact that most factors in the trust hierarchy have to be compared on a qualitative scale, a pair wise comparison was used to estimate the importance of trust elements (each element is compared with all the other elements of a specific hierarchy level; Saaty, 1995; Meixner and Haas, 2002). A standard spreadsheet software was adapted (Figure 2. Assessment sheet using a standard spreadsheet software2) for the assessment and the evaluation process itself did not require specific software. The questionnaire was designed to be self explanatory and the respondents obtained the results of their evaluation immediately after finishing the questionnaire. Two central figures were calculated interactively on each level of the evaluation, giving the respondents feedback immediately on the:

- Importance of the trust building elements, i.e. the estimation of the priorities confirming the eigenvector method suggested by Saaty (1995)
- Consistency ratio (due to the fact that respondents tend to make inconsistent evaluations for larger hierarchies)

This immediate feedback for the respondents is likely to have a positive effect on the validity of the results; respondents can adapt and modify their evaluations instantly if the results of the evaluation process do not meet expectations or the evaluation is inconsistent.

5   Results

The relative importance of trust elements are shown in Figure 3. Relative importance of trust elements, comparison EU-US3. Results from the EU interviews are shown by the bar graph, while results from the US interviews are marked with a black frame.

The most important factor in establishing trust in b2b relationships in food chains is the product, as already published by Meixner et al. (2009). The biggest difference between the perception of the importance of trust elements by US exporters and the perceived importance of trust elements by EU importers were also on the product level.
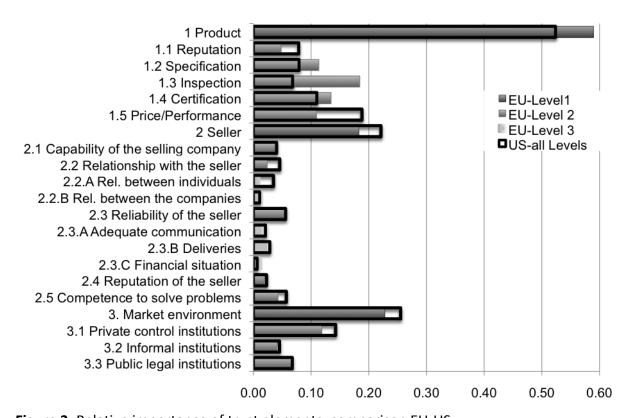

Figure 3. Relative importance of trust elements, comparison EU-US

A comparison between US exporters and EU importers in terms of the absolute and relative importance of trust elements is shown in Table 2. An ANOVA analysis was conducted using the absolute priorities of trust elements to determine if there were significant differences between the EU and US perceptions (Table 2). Results indicate there were four elements with significant differences. On the product level the differences concerning the trust elements "Inspection" (1.3) and "Price/performance" (1.5) are significant, and on the level of the seller, "The relationship with the seller" (2.2) and "The reliability of the seller" are significantly

different. Detailed results of the ANOVA analysis of these factors are presented in Table 3. ANOVA results for significant differences between US and EU3.

Table 2. Absolute and relative Priorities of trust factors for the US and the EU; Significance of differences

	US		EU		ANOVA-Sign.
	absolute	relative	absolute	relative	absolute Prior.
1 Product	**0.524**		**0.590**		**0.094**
1.1 Reputation	0.150	0.079	0.081	0.048	0.056
1.2 Specification	0.151	0.079	0.192	0.113	0.464
1.3 Inspection	0.130	0.068	0.313	0.184	0.000
1.4 Certification	0.210	0.110	0.228	0.134	0.711
1.5 Price/Performance	0.359	0.188	0.186	0.110	0.006
2 Seller	**0.221**		**0.183**		**0.630**
2.1 Capability of the seller	0.181	0.040	0.242	0.041	0.485
2.2 Relationship with the seller	0.206	0.046	0.130	0.024	0.007
2.3 Reliability of the seller	0.252	0.056	0.308	0.056	0.028
2.4 Reputation of the seller	0.103	0.023	0.105	0.019	0.693
2.5 Competence to solve probl.	0.258	0.057	0.234	0.043	0.994
3. Market environment	**0.284**		**0.228**		**0.108**
3.1 Private control institutions	0.558	0.142	0.521	0.119	0.148
3.2 Informal institutions	0.178	0.045	0.179	0.041	0.906
3.3 Public legal institutions	0.264	0.067	0.300	0.068	0.135

Table 3. ANOVA results for significant differences between US and EU

1.3 Inspection	Sum of square	df	Mean square	F	Significance
Between groups	0.424	1	0.424	26.71	0.000
Within groups	0.524	33	0.016		
Total	0.948	34			
1.5 Price/Performance					
Between groups	0.182	1	0.182	8.707	0.006
Within groups	0.689	33	0.021		
Total	0.871	34			
2.2 Relationship w. seller					
Between groups	0.066	1	0.066	26.71	0.007
Within groups	0.268	33	0.008		
Total	0.334	34			
2.3 Reliability of the seller					
Between groups	0.041	1	0.041	5.300	0.028
Within groups	0.254	33	0.008		
Total	0.295	34			

Overall, US exporters underestimate the importance of the product as a trust building factor, especially product inspection (1.3), which is a strong indicator for product quality. This factor is much more important for EU importers than estimated by US companies. On the other hand, US exporters consider the price (price performance ratio, factor 1.5) to be the most important factor, though this doesn't seem to be of much importance for importers from the EU. Strong differences are also notable when it comes to product reputation. US exporters perceive that the reputation of their product is much more important to the EU importers as a trust building factor than it actually is. However, these results are only marginally significant (reputation 0.056).

When it comes to the relationship as a trust building factor, only small differences can be seen. However, the factor "relationship with the seller" is outstanding. US exporters think it is especially important to have a good relationship with the importer, while the EU importers don't indicate this as that important. Within this factor, US exporters have the perception that the relationship between individuals is most important. In fact, EU importers seem to care much more about the product quality, as mentioned before, and don't care much about the person whom they are negotiating with. Although only small differences can be seen, when it comes to reliability of the seller, these differences are significant. The reliability of the seller is slightly more important to the importers form the EU than US exporters estimate. For all the other factors, especially regarding market environment, no big differences can be described.

6 Discussion and limitations

Understanding the factors of trust that are important in b2b relationships is important, but further complicating the matter is whether trading parties have the same perception of what factors are important. This research allowed us comparing the results from a EU fruit and vegetable buyer's perspective to a US seller's perspective

As shown, US exporters overestimate the importance of price, but underestimate the importance of product quality. It seems that US exporters have the perception that the most important thing for their buyers is the price (perhaps because negotiations often focus on price). However, to establish a relationship characterized by trust, a focus on the product quality seems to be more important. This as well fits to the results on the factor product reputation, which is far more important to US sellers. Apparently sellers rely on the good reputation of their product, while in fact buyers are still concerned about the quality of the product, and therefore evaluated the product quality cues, product specification, certification and especially product inspection as very important. On the other hand, the personal relationship was perceived to be more important for the seller in the US than it was by buyers in Europe, especially when it comes to differences between individuals

Furthermore interesting results were gained from a methodological point of view. The perception of the importance of trust elements differs between buyers on the one hand, and sellers son the other hand. In spite the small sample size, significant differences could be observed. As no studies have been conducted so far highlighting this difference, this study could be a contribution for further research on the topic of trust and its importance for the performance of b2b transactions.

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Of course there are limitations to the current study as well, largely focused on the small sample size of 35 companies in one sector, between two major trading partners. Though we did find significant differences, more might be found in a larger study. Additionally, further studies would be needed to determine if the differences in perceptions exist across different types of food companies. Finally, on the issue of cultural differences, based on the data

collected, it is unclear if the differences observed are due to the two different perspectives (buyer/seller) or due to cultural differences between the US and the EU.

Acknowledgements

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