# Suppliers´ Reactions to ERAs – A Systematisation and Empirical Examination

Extended Abstract for a Working Paper

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**Professor Dr. Dr. h.c. Ulli Arnold**
**Chair of Industrial Marketing and Procurement**
**University of Stuttgart**
0049 711 685 83161
ulli.arnold@bwi.uni-stuttgart.de

**Wolfgang Schnellbaecher**
**Chair of Industrial Marketing and Procurement**
**University of Stuttgart**
0049 711 685 83127
wolfgang.schnellbaecher@bwi.uni-stuttgart.de

**Abstract**

The introduction of electronic reverse auctions [eRAs] has been one of the heaviest discussed developments in business-to-business commerce over the last decade. Numerous research- often times triggered by buying companies- has been conducted on how to achieve the highest price reductions and how to conduct most efficient eRAs. Response opportunities of supplying companies however have been examined only rarely. A fact even more surprising considering that these opportunities are of great relevance for selling as well as for buying companies. The following article delivers a systematisation of these opportunities, examines their spreading in practice and tests how these reactions are linked to the suppliers´ perception of eRAs.

**Introduction And Purpose Of The Study:** Electronic sourcing tools promise various cost saving opportunities in the field of procurement. Additionally they enable procurement managers to design new processes and new ways to influence sourcing markets. One of these tools is the electronic reverse auction [eRA]. In general “an auction is a market institution with an explicit set of rules determining resource allocation and prices on the basis of bids from market participants” [McAfee and McMillan, 1987, p. 701]. A reverse auction is initiated by the buyer who describes demanded objects and potential sellers try to underprice each other in order to get the contract. Is the eRA conducted as an English auction a high price is the starting level and suppliers bid each other down till no one is willing to submit a lower offer [Kaufmann [2003a] S. 201, Jochen/Resch, 2007, p. 311]. An eRA conducted as a dutch auction starts with a low price that is raised in fixed rates and time frames until one supplier accepts the contract [Jochen/Resch, 2007, p. 311, Katok/Roth, 2004, p. 1045]. In 2004 Wagner/Schwab categorised the existing literature about eRAs into three groups [Wagner/Schwab, 2004, p. 15]: The first group examines purchasing management-related conditions favouring or opposing eRAs. The second one

deals with a best suited auction design and the third group analysis the eRA supported procuring process [Arnold/Schnabel, 2008]. Research papers published after that classification for example examined perceptions of opportunism among suppliers and effects of these perceptions on supplier performance [Carter/Kaufmann, 2007], the relation of weak bidding behaviour and a suppliers willingness to invest into a business relationship [Jap/Haruvy, 2008] or what groups of suppliers like or dislike reverse auctions [Caniëls/Raaij, 2008]. These works show that the research focus is no more solely on most efficient ways to achieve short term price reductions but also on long-term consequences of the auction. In that regard the response possibilities of suppliers and their application in practice are unknown. The following article targets that research gap by systemising the different reaction options suppliers have, illustrating their spreading in practice and identifying their conjunction to suppliers` perception of eRAs.

According to the Structure-Conduct-Performance Paradigm market conduct results from companies attempts to adapt to a given market structure [Bain, 1968, p. 7 and p. 9; Kaysen/Turner, 1959, p. 59]. Therefore, in a first step we introduce market structure changes caused by eRAs and the eRA-perception by suppliers. In a second step a systematisation of possible supplier reactions is derived out of these changes. Based on this theoretical framework an empirical study reveals the spread of these reactions in practice and the assignment to suppliers´ attitudes towards the procurement tool. As a last step implications for science and practice are conveyed from the results.

**Market-Structure-Changes Through ERAs:** *[a] Price reductions:* Achieving lower prices can be seen as the main motivation for buying firms to use eRAs [Arnold et al., 2005, p. 117]. Consequently purchasing managers measure an eRAs success in terms of price savings compared with traditional sourcing activities [Beall et al., 2003, p. 48]. Empirical

examinations of price reductions revealed different results [Arnold et al., 2005, p.117: 5-12%; Beall et al., 2003, p. 26: 10-20%; Emiliani, 2003, p. 66: 10-30%]. Generally the findings indicate that prices dropped and that these reductions were significant. The results consequently are heavily reduced margins on the supplier side [Emiliani/Stec, 2004 and 2005].

*[b] Increased number of competitors:* Authors argue that eRAs are enabling buyers to broaden the geographical reach of their tender procedures [Beall et al., 2003, p. 53]. Since eRAs are mostly conducted over the internet, suppliers from all over the world may theoretically participate without significant negotiation costs [Beall et al., 2003, p. 27]. In that context it is also believed that cultural boundaries during price negotiations are reduced through eRAs [Kaufmann, 2003a, p. 213]. Besides the integration of distant suppliers the simultaneity of the negotiation should allow a general rise of competitors. Previous empirical research on the purchase side showed however, that buyers mainly fall back to already known suppliers when conducting an eRA [Arnold et al., 2005, p. 122]. The costs that evolve from conducting an eRA might result in higher concentrated purchasing volumes [Beall et al., 2003, p. 53], which means higher attractiveness of the contract favouring an additional increase of competing suppliers.

*[c] Switch of knowledge advantage:* In traditional sourcing processes selling companies often posses a more detailed market-knowledge regarding a specific product than the buying company [Beall et al., 2003, p. 54]. Through eRAs buyers can develop detailed market knowledge on items, bottom prices and price elasticitys´ of their suppliers [Beall et al., 2003, p. 27]. This enforces a switch of market knowledge advance from the selling to the buying side [Giampietro/Emiliani [2007] S. 81; Beall et al., 2003, p. 27-28]. On the long run that switch of market knowledge and power might be reversed if some suppliers are

driven out of business and market power is concentrated on only few [Kwak, 2002, p. 18]. It depends on the auctions design and the information policy of the auction conducting institution [the procuring company itself or an external provider] whether sellers may also profit from the aggregated knowledge. The auction can be designed in a way that all bids are visible to bidders or suppliers could be informed in a post event analysis about their competitive performance [Beall et al., 2003, p. 29]. In some cases the sole motivation to participate in an eRA for suppliers could be the potential gain of market knowledge [Kirchner, 2001, p. 35].

*[d] Modification of required products:* In a face-to-face negotiation there are various opportunities of highlighting special features and benefits of products offered. Those opportunities are omitted through eRAs [Jap, 2003]. The price becomes the only measure to outpace a rival.

*[e] Modification of sales processes:* Previous research has shown that the negotiation through eRAs has led to many changes in the purchasing process of the buyer [Arnold/Schnabel, 2008]. The modification of the suppliers` sales processes has not been examined yet. It is possible, that the reduced cycle times from the first tender for offers till the contract will be awarded [empirical findings estimate decreases in cycle time of up to 50% [Smeltzer/Carr, 2003, p. 483] will lead to a decrease in process costs]. On the other hand it could also be that sales employees are working more intense in those decreased time frames and that process costs remain the same level or even rise.

Figure 1 illustrates the impact on these market structure changes on the market conduct of supplying companies.

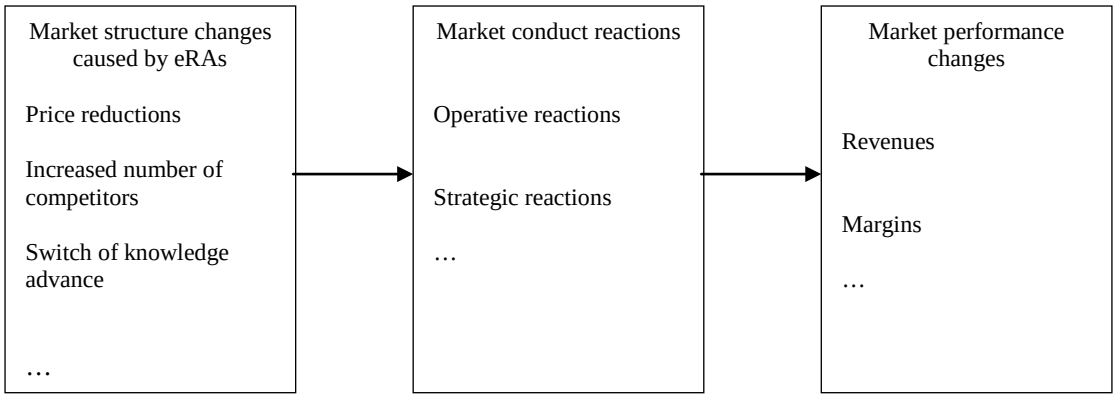


Figure 1: Market-Structure-Conduct-Performance Paradigma applied to eRAs

**Suppliers´ ERA-perceptions:** Considering these market structure changes it is of interest whether eRAs are viewed as a fair or an unfair sourcing tool. Previous research has shown that suppliers view eRAs as an opportunistic, unfair measure by purchasing firms [Emiliani/Stec, 2004, p. 68; Jap 2003]. Especially previous suppliers feel treated unfair [Jap, 2000]. This is not really surprising considering that for incumbent suppliers' margins and business relationships are at stake and new suppliers take part in a free lottery for additional business [Tassabehij et al., 2006].

More crucial than the fairness perception of the auctions is the impact on quality of the business relationship which suppliers perceive if they get involved in eRAs. The current literature shows two different points of view on that question. Loesch/Lambert believe that the suppliers` perception on the business relationship remains unchanged despite the eRA-usage [Loesch/Lambert, 2007]. Indeed there are good arguments supporting that opinion. One is that eRAs disable the buyers ability to make wrong or fake statements regarding offers of other competitors [Germer/Kaufmann, 2004, p. 62], since every bid is visible for all suppliers involved. The whole bidding process can be transparent for each supplier [Carter et al., 2004]. This effect however requires that the auction is credible and that suppliers do not believe in opportunistic behaviour by the buyer. A concern which is appears quite frequent among suppliers [Jap, 2002]. Such unreliable behaviour would be caused if a

buyer would insert bids by himself to stimulate price dynamics. Another supporting argument is that eRAs force buyers to make exact specifications of their demands. All relevant parameters of the product or service have to be defined ahead of the eRA [Arnold/Schnabel, 2008, p. 67]. Suppliers get a clear view of requirements and specifications they have to fulfil and later adjustments/modifications occur less often [Kaufmann, 2003b, p. 32; Smeltzer/Carr, 2003, p. 485]. This and a less time consuming negotiation phase should lead to a more efficient bidding process than face-to-face negotiations [Smeltzer/Carr, 2003]. The majority of authors however hold a different point of view. Pearcy et al./Jap argue that suppliers confronted with eRAs lower their willingness to cooperate with the buyer [Pearcy et al., 2002; Jap, 2003]. Jap/Haruvy discovered that aggressive bidders [who are most likely to win the contract] do not have the willingness to commit themselves into a long lasting or sustainable business relationship [Jap/Haruvy, 2008, p. 558]. Carter et al. discovered a negative impact of eRAs on the suppliers perception of the business relationship [Carter et al., 2004]. Some authors even argue that eRAs will damage the purchasing firm because of decreased trust by incumbent suppliers [Jap, 2000; Emiliani, 2004; Emiliani/Stec, 2004].

**Suppliers´ reactions to eRAs:** *a] Negotiation related behaviour:* In 1968 Albert O. Hirschmann described three alternative responses of individuals confronted with a declining market performance of an organisation or a system: Voice, Exit and Loyality [Hirschmann, 1970, p. 4]. They can complain [voice] and enable the management of an organisation to countervail to the decline [Hirschmann, 1974, p. 4]. They can leave the organisation [exit]; [Hirschmann, 1970, p. 37] or remain within the organisational frame despite the negative development [loyality] [Hirschmann, 1974, p. 66-67]. Considering the direct effects which the introduction of eRAs develops on the suppliers´ transaction system with the customer- price reductions, higher number of competitors, loss of market transparency- there is

evidence that the eRA-introduction will be perceived as a negative development by suppliers. Besides the three general possibilities described by Hirschmann suppliers also have economic options like the reduction of product quality or a higher charging of additional services. The reaction options can be differentiated according to their time frame and considering this we found two operative reaction fields and one strategic.

First of all suppliers can show reactions that affect the direct negotiations and their results. One option in this operative approach is a simple complaint at the buyer about his way to use and practice eRAs. Suppliers conducting that step can choose between two strategies: The first one is to highlight negative effects that emerge for buyers from the eRA usage. Indeed one might argue that the lower prices of some suppliers [who probably will win the eRA] lead to reduced margins of purchasing companies caused by lower quality levels and less additional services that have to be compensated [Beall et al., 2003, p. 25]. Choosing the second, more offensive strategy the supplier in addition to his complaint threatens the buyer not to participate in future eRAs and other biddings. In that case the voice option is combined with a menace of the exit option which increases the success chances of a complaint [Hirschmann, 1974, p. 70]. Another option concerning an eRA supported negotiation is not to participate in the auction. Three nuances of that step can be differentiated. The first one [ii] is that suppliers officially participate in the auction but refuse to hand in any bids- or only bids on a high price level [Millet et al., 2004, p. 176; Emiliani, 2005, p. 528]. Suppliers choosing that option could try to gain valuable knowledge about the competitive situation and price elasticitys´ in the market “bird watching” [Sashi/O`Leary, 2002, p. 109; Beall et al., 2003, p. 29; Carter et al., 2004]. They could also try to disrupt the auction. The next nuance of the step [iii] is the refusal to participate in any auctions conducted by the buyer. Analyzing the motivation of suppliers to participate in eRAs one gets similar results like those revealed in analyzing the fairness perception of suppliers.

While incumbent suppliers participate unwillingly and out of fear of loosing business relationships, new suppliers appreciate the additional sales opportunities [Beall et al., 2003, p. 9]. An incumbent supplier refusing the eRA participation will not ultimately loose the business. Especially Emiliani and Emiliani/Stec highlighted that supplier changes through eRAs are often times reversed because of discontent on the buying side [Emiliani, 2004; Emiliani/Stec, 2004]. The general willingness to participate probably is also highly dependent on the overall economic situation. In boom phases with capacity constraints suppliers should react more dismissive to eRAs than in economic downturns. The last nuance of the exit option [iv] is a complete ending of the business relationship. In that case suppliers lose all future contracts assigned by the purchasing firm. An enragement on the supplier side leading that fare should be rare. The buyer however could severely suffer from that consequence. Under certain circumstances not only an eRA bidder is lost but also a strategic supplier. Even though strategic items are not part of eRA negotiations [Kaufmann, 2003a, p. 205] it can happen that the same supplier delivers strategic and non-strategic items.

Last but not least suppliers could react with collusive behaviour. In that case eRA participants align in order to influence the auctions result. Not all bidders have to participate in order for the collusion to work. Theoretically it is sufficient if the two most competitive suppliers negotiate a price higher than both of their bargain prices to manipulate the auctions result. In general there are two possibilities for collusive behaviour: [i] The suppliers can decide to collectively refuse the eRA participation trying to enforce a traditional negotiation procedure or [ii] they can agree on a weak bidding behaviour. In that case eRA participants align in order to prevent the competition of an auction and to influence the auctions results. Not all eRA bidders have to participate in order for a collusion to work. Theoretically it is sufficient if the most competitive suppliers negotiate a

price higher than one of their bargain prices and the auctions result is manipulated. In that case a “winner” of the auction has to be nominated before the event. That winner can alternate within the group or pay a compensation fee to the auctions losers. An analysis of existing literature on collusions in eRA supported negotiations reveals a mixed picture. Some authors believe in a rise of the number of collusions through eRAs [Kaufmann/Carter, 2004, p. 20], some in a lower number of collusions [Sashi/O`Leary, 2002, p. 105] and some argue that collusions are impossible in context with eRAs [Wambach, 2004, p. 19].

| Individual counter reactions | Collective counter reactions |
|---|---|
| [i] Complaint at the buyer [Voice] | [i] Collective weak bidding [Exit] |
| [ii] Weak/ no bidding [Exit] | [ii] Collective refusal to attend the auction [Exit] |
| [iii] Refusal to attend the auction [Exit] | |
| [iv] Total ending of the business relationship [Exit] | |

Table 1: Systematisation of negotiation related counter reactions

*b] Compensation of financial penalties:* If suppliers decide to maintain the businessrelationship to the buyer despite eRAs they will probably try to compensate narrowed margins caused by sunk prices. This can either be achieved by an increase in margins or a reduction of costs. Looking at an increase of revenues three different options to achieve that goal can be separated: [i] Suppliers can ask higher prices for additional services [Emiliani/Stec, 2005, p. 283; Emiliani/Stec, 2004, p. 150], [ii] they can charge their customers in case of ex post adjustments [Carter et al., 2004, p. 244] or [iii] they can raise prices of additional contracts not negotiated through eRAs. If decreased margins shall be compensated through cost reductions there are also three possibilities: [i] A cost reduction through lower quality standards of the product itself [Carter/Kaufmann, 2007, p. 16], [ii] a cost reduction by cutting additional add-ons and services that have formerly been included in the product [Jap, 2003, p. 104; Beall, 2003, p. 11] -in both cases minimum standards of product specifications have to be acknowledged and [iii] a cost reduction through improvements of efficiency. Two potentials are feasible in that case: Improvements

emerging from the changed sales process through eRAs and improvements that have already been possible before the eRA introduction and are now used because of a higher market pressure.

| Compensation of financial penalties | |
|---|---|
| *Compensations through revenues* | *Compensations through costs* |
| [i] Extra charging of additional services | [i] Reduction of quality standards |
| [ii] Extra charging of later adjustments | [ii] Cross out of additional services |
| [iii] Higher prices at future contracts | [iii] Cost reduction through efficiency |

Table 2: Systematisation of attempts to compensate financial penalties

*c] Strategic adoptions:* Besides the operative reactions suppliers might feel forced to conclude long term strategic adoptions from the market structure changes caused by eRAs. In 1957 Igor Ansoff developed the Product-Market Growth Matrix to systemise strategic growth paths of firms. If suppliers decide to remain in conventional markets with incumbent products they can try to raise revenues with existing costumers [as described before] or they have to [i] look for new customers within their market. Suppliers can also try to [ii] modify their product in order to make it less suitable for an eRA supported procurement. In that case buyers have to be convinced that the product is of strategic relevance for them. If suppliers do not want to modify or replace existing products they can [iii] look for new markets in which eRAs are not used yet. Last but not least they can [iv] look for new distribution channels.

| |
|---|
| [i] Search for new customers |
| [ii] Search for new products |
| [iii] Search for new markets |
| [iv] Search for new distribution channels |

Table 3: Systematisation of strategic adoptions

**Conjunction Of ERA Perception And Counter Reactions:** Looking at the conjunction of the suppliers´ eRA perception and the drawing of negation related consequences we

assume that a negative perception of the procurement tool eRA and a negative perception of the impact on the business relationship raise the probability of negotiation related responses. The first two hypothesis therefore are:

| |
|---|
| H1: A negative fairness perception of eRAs by a supplier raises the probability of negation related consequences. |
| and: |
| H2: A negative perception of an eRAs impact on the business relationship by a supplier raises the probability of negation related consequences. |

Table 4: Conjunction of the eRA-perception and negotiation related counter reactions

The compensation of financial penalties should be linked to these two perceptions as well. The third and fourth hypotheses are as follows:

| |
|---|
| H3: A negative fairness perception of eRAs by a supplier raises the probability of actions to compensate financial penalties. |
| and: |
| H4: A negative perception of an eRAs impact on the business relationship by a supplier raises the probability of negation related consequences. |

Table 5: Conjunction of the eRA-perception and attempts to compensate financial penalties

Strategic reactions to eRAs should also be more probable if the fairness perception and the perceived impact on the business relationship are negative. That assumption leads to the last two hypotheses:

| |
|---|
| H5: A negative fairness perception of eRAs by a supplier raises the probability of strategic adoptions by the supplier. |
| and: |
| H6: A negative perception of an eRAs impact on the business relationship by a supplier raises the probability of strategic consequences by the supplier. |

Table 6: Conjunction of the eRA-perception and strategic adjustments

**Set up Of The Survey:** In order to reveal suppliers reactions to eRAs a sample of 1639 German industrial goods suppliers was chosen out of the data base “Hoppenstedt Firmendaten”. It contains the data of 300 000 German companies. A selection of certain industries was not conducted. We wanted to avoid a tampering of results. Additionally most suppliers have customers in a wide range of branches, a categorisation therefore would have contained many distortions. The companies were contacted via e-mail. That mail explained the purpose of the study and contained a link to an online survey. The language of the mail as well as the questionnaire was German. Links were sent out from November 2008 till February 2009. The survey itself contained 24 mostly closed questions leading to an average response time of 10 minutes. Overall the questionnaire itself consisted of four parts. First a short briefing about eRAs and their appearance in B-to-B negotiations was given to ensure only respondents who already participated as bidders in eRAs would respond. The second part consisted of questions concerning general company information [e.g. gross revenue] and the auctions conducted by the respondent [e. g. the number of auctions, the auctions design]. In the third part the suppliers´ eRA-perception was investigated. The perception was separated into a fairness perception of the tool itself and the perceived input on the business relationship. Both variables were asked using a five point likert scale. The fourth and last part dealt with supplier reactions to eRAs as systemised above. Suppliers were asked whether they conducted any actions in each of the three reaction fields. If the answer was yes, they had to name the reactions in detail.

| | Highest | Lowest | Mean | Standard deviation |
|---|---|---|---|---|
| Gross revenue | > 10 bn | > 10 m | 172,73 m | 584,23 m |
| Number of auctions | 20 | 1 | 4,38 | 3,44 |

| Auction design | English | Dutch | No answer |
|---|---|---|---|
| Percentage | 243 | 37 | 78 |
| Visibility of competitors | Visible | Not Visible | No answer |
| Percentage | 57 | 135 | 166 |

Table 7: The participants and their auction experience

The 1639 created contacts led to 81 filled out questionnaires which equals a response rate of 4,47%. One reason for the weak response ratio may be that in the economical strong 2007 buyers abstained from using a procurement tool which is unpopular among suppliers. The 81 participating companies took part in 358 auctions in 2007 [4,47 auctions in average]. The supplier who conducted most auctions took part in twenty eRAs. Five suppliers reported they did not participate in eRAs at all in 2007 but that they reckon that procuring companies will increase their use in future economically rougher times.

**Examination Of Suppliers´ ERA-perceptions:** *[a] Fairness Perception:* Suppliers largely regard eRAs as an unfair procurement tool. A result consistent with various prior studies [Emiliani/Stec, 2004, p. 68; Jap 2003; Jap 2000]. In that context the eleven percent of suppliers that view eRAs as a fair measure by their customers are of interest. They indicate that the introduction of eRAs and the resulting changes in the market structure also produce winners on the supply side. Buyers should observe this negative perception by their supplying stakeholders and develop mechanisms to decrease the disadvantageous point of view.

*[b] Impact on business relationship:* Table 8 shows the impact of eRAs on the attitude of suppliers towards the business relationship. As well as the evaluation of the fairness of the procurement tool the results are mostly negative.

| Fairness Perception: | Very fair | Fair | Indifferent | Unfair | Very Unfair |
|---|---|---|---|---|---|
| Percentage | 0,0% | 11,1% | 24,7% | 40,7% | 23,5% |

| Percieved impact on the business relationship: | Very positive | Positive | No consequence | Negative | Very negative |
|---|---|---|---|---|---|
| Percentage | 0 | 2,5% | 19,8% | 56,8% | 21,0% |

Table 8: ERA-perception of suppliers

**Examination Of Suppliers´ Reactions:** Negotiation related behaviour in practice: 46,9% of supplying companies confronted with eRAs reported that they have responded with negotiation related actions. Table 9 shows the spreading of concrete reactions conducted by suppliers.

| Negotiation relatet counterreactions | Yes | No |
|---|---|---|
| Percentage | 46,9% | 53,1% |

| The 46,9% conducted the following concrete actions: | Percentage |
|---|---|
| Complaint at the buyer | 94,7% |
| Refusal to attend the auction | 44,7% |
| Weak bidding behaviour | 31,6% |
| Total ending of the business relationship | 2,6% |
| Collective refusal to attend | 2,6% |
| Collective weak bidding behaviour | 0% |

Table 9: Empirical examination of negotiation related counter reactions

Looking at these reactions in detail there is a clear preference towards the complaint which almost all suppliers have chosen. To refuse the auctions` participation or weak bidding behaviour are also common reactions by suppliers in practice. Collusions or a total ending

of the business relationship rarely were named in the survey. Like described above an ending of the business relationship would be one of the least economical solutions. That explains the little preference for that step. Whether the nomination of collusive behaviour reflects real circumstances or is caused by a mental distance to provide information about that illegal step can not be answered at this point.

| Compensation of financial penalties | Yes | No |
|---|---|---|
| Percentage | 71,6% | 28,4% |

| The 71,6% conducted the following concrete actions: | Percentage |
|---|---|
| Cost reduction through efficiency | 55,2% |
| Extra charging of additional services | 44,8% |
| Cross out of additional services | 37,9% |
| Extra charging of later adjustments | 37,9% |
| Reduction of quality standards | 22,4% |
| Higher prices for future contracts | 17,2% |

Table 10: Empirical examination of attempts to compensate financial penalties

Table 10 summarises the spreading of attempts to compensate financial penalties in practice. 71,6% of suppliers conducted these attempts. The results show that suppliers hardly exclude a measurement to compensate financial loses caused by eRAs. Cost- and revenue oriented measurements are almost preferred equally. For suppliers confronted with eRAs the results show that the sustained price reductions are not definite. In order to keep current revenues the pricing of products sold over eRAs has to be rethought. A separation into competitive basic components to auction and high price additional services or adoptions could keep existing margins. Additionally reverse auctions with their fixed product specifications seem to allow cost cuttings in regards of quality. These cost savings also seem to be able to compensate financial losings. On the buying side the importance of clear product specifications prior to the auction becomes obvious. They restrain these compensation attempts and prevent reduced quality standards, missing additional services and higher costs through extra charging. Important for selling and buying companies are

the reported cost cuttings through increased efficiency. It is of interest whether these opportunities are solely caused from a more efficient sales process through eRAs in contrast to more time consuming face-to-face negotiations.

| Strategic adjustments | Yes | No |
|---|---|---|
| Percentage | 29,6% | 70,4% |

| The 29,6% conducted the following concrete actions: | Percentage |
|---|---|
| Search for new customers | 70,8% |
| Search for new markets | 50,0% |
| Search for new products | 37,5% |
| Search for new distribution channels | 37,5% |

Table 11: Empirical examination of strategic adjustments

In figure 11 the strategic adjustments caused by eRAs are shown. Only a minority of suppliers [29,6%] adjusted their strategies as an eRA-consequence. The few companies who carried out adjustments chose a wide variety of concrete measurements. The search for new customers as an easy to execute and inexpensive option clearly was preferred before deeper transpositions like the search for new markets, new products or new distribution channels.

**Examinition Of The Conjunction Of ERA-perceptions And Counter Reactions:** The conjunction of these reactions with the fairness perception of eRAs and the perception of eRAs influence on the business relationship was measured using a logistic regression. That regression type tries to identify the probability of an event depending on the magnitude of designated determining factors [Backhaus, et al., 2006, p. 426]. It is the most suitable method given the situation of an independent metric and a dependent nominal scaled variable. The chosen logit model bases on the following cumulative probability function:

$P_i = F [Z_i] = F [\alpha + \beta \ldots]$

$P_i$ represents the probability of a supplier reacting in a certain way to eRAs of its customer. $Z_i$ as independent variable either stands for the suppliers´ fairness perception of eRAs or the impact of eRAs on the suppliers´ perception of the business relationship. The above model was converted to:

$$\text{Log. } P_i / [1 - P_i] = Z_i = \alpha + \beta Z_i$$

The dependent variable is therewith the odds that a supplier will conduct counter reactions to eRAs of his supplier. That applied to the three reactions fields suppliers can engage in which were systemized above leads to the following equations:

| |
|---|
| Ln [ $P_1$ [negotiation related counter reactions] / $P_1$ [no negotiation related counter reactions]] = α + β fairness perception of eRAs<br><br>Ln [ $P_2$ [negotiation related counter reactions] / $P_2$ [no negotiation related counter reactions]] = α + β perception of the eRAs impact on the business relationship |
| Ln [ $P_3$ [compensation of financial penalties] / $P_3$ [no compensation of financial penalties]] = α + β fairness perception of the eRA<br><br>Ln [ $P_4$ [compensation of financial penalties] / $P_4$ [no compensation of financial penalties]] = α + β perception of the eRAs impact on the business relationship |
| Ln [ $P_5$ [strategic adoptions] / $P_5$ [no strategic adoptions]] = α + β fairness perception of the eRA<br><br>Ln [ $P_6$ [strategic adoptions] / $P_6$ [no strategic adoptions]] = α + β perception of the eRAs impact on the business relationship |

Table 12: Logit models for the conjunction of the eRA-perception and counter reactions

| | 2 LL | Cox & Snell $R^2$ >0,2 | Nagelkerkes $R^2$ >0,4 | Sig. | Hypothesis accepted |
|---|---|---|---|---|---|
| H1 | 58,142 | ,450 | ,503 | 0,000 | Yes |
| H2 | 56,622 | ,389 | ,698 | 0,000 | Yes |
| H3 | 93,979 | ,138 | ,187 | 0,551 | No |
| H4 | 95,251 | ,107 | ,185 | 0,010 | No |
| H5 | 75,624 | ,325 | ,437 | 0,001 | Yes |
| H6 | 63,745 | ,377 | ,463 | 0,000 | Yes |

Table 13: Quality criteria for the conjunction of the eRA-perception and counter reactions

The results of the logit analysis are shown in Table 13. According to the findings the fairness perception of eRAs as well as the perceived impact on the business relationship lead to a higher probability of negotiation related counter reactions. The odds of these reactions rise 3,17 with each grade of the likert scale measure of fairness perception and 2,52 with each likert scale measure of the perceived impact on the business relationship. This is an outcome that underscores the importance for buyers to improve the eRA-perception among their suppliers.

The data provides no evidence of a raised probability to the compensation of financial penalties if eRAs are perceived as unfair or the impact on the business relationship is perceived as negative. Suppliers seem to try to compensate financial losses regardless of their eRA-perception. If buyers want to terminate these tries [especially post-event attempts to raise revenues], a positive eRA-perception seems to be the wrong point to start. Probably more promising is a concentration on the specifications of the demanded goods or services ahead of the auction.

Strategic adoptions of suppliers are more likely if they perceive eRAs as unfair and negative for the business relationship. The conjunction however is not as strong as to the negotiation related counter reactions. The odds of strategic adoptions rise 2,58 with each likert scale grade of a less fair eRA-perception and 1,62 with each likert scale of more negative impact on the business relationship.

**Implications And Future Research:** The study leads to various managerial implications for purchasing as well for supplying companies. At first the widely assumed negative view of suppliers on eRAs could be confirmed in this work. Above that, both market participants gain an overview of eRA-reactions of their suppliers or competitors. Concerning those

reaction buyers should put a special emphasis on supplier complaints since they are mostly accompanied by other negotiation related counter reactions. All-clear can be given in regarding the danger of suppliers completely ending the business relationship. That uneconomical step seems to be totally obviated by suppliers. Interesting results have also been derived concerning the spreading of suppliers´ attempts to compensate financial penalties caused by eRAs and suppliers´ strategic adjustments.

The logit model introduced in this study showed which supplier reactions are linked to their fairness perception of eRAs and their perception of the eRAs impact on the business relationship. Buying companies that particularly fear negotiation related counter reactions or strategic adjustments of their suppliers [with the aligned danger of loosing the supplier] should put a higher focus on their suppliers´ eRA-perception. Procurement managers mainly fearing attempts by their suppliers to compensate financial penalties should rather focus on exact specifications of their demanded goods and services.

The systematisation of supplier reactions conducted in this paper is the first one of that kind. Future research should detail them critically and also test its completeness and accuracy. Beyond that it is unclear whether the reported quality reductions and cross outs of additional services are in the buyers advantage. One could argue that each reduction of quality or services of goods sold is against the objectives of a buyer. It is however possible that these decreases abolish unnecessary standards or product features and prepare the ground for future price reductions. A symmetric examination among buyers and sellers could deliver valuable contributions to answer that question.

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