Corporate culture and its impact on the willingness to cooperate in the distribution channel: conceptualization and empirical finding in the German hospital industry

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ABSTRACT

From an instrumental view, corporate culture plays a role as an organizational parameter influencing a company's competitive situation. Nevertheless, it has not been included in the IMP-interaction model explicitly. Corporate culture can be regarded as an intangible resource and in this indirect way, it is integrated into the model. The question whether corporate culture has far-reaching influence on the interaction process and should therefore receive more attention shall be traced. A focus is set on the impact of corporate culture on the shift of the interaction process from transaction episodes to a long-term relationship in the form of vertical cooperation. We differentiate between a general willingness to perform such a shift and willingness with respect to a specific vertical partnership in the form of Efficient Consumer Response. Findings show the highest willingness in hospitals being externally oriented, i.e. market and adhocracy type. To receive acceptance as a suitable partner, the perception as an externally oriented culture type, especially an adhocracy type seems appropriate. However, the influence of a cultural fit can be neglected.

INTRODUCTION

The relationship between supplier and buyer can always been described by competitive elements. Concentration processes and super sessions on both the supplier and buyer side, increasing system costs (for CRM-systems) and increasing expectations of customers characterize the scenery. These developments cause an aggravation of both horizontal and vertical competition. As both parties are dependent on each other and share a common aim in the need to meet customers' demands, a shift to a vertical partnership seems conceivable. Furthermore, the competitive environment requires a high efficiency. However, the realization of efficiency increasing opportunities within its own value chain are limited, therefore, an interlocking of the value chains of vertical partners can offer new opportunities. The superiority of vertical cooperation to traditional competitive vertical relations has already been stated (Wilson (1995). Regarding the economy of the knowledge-driven future being a network society, embeddedness in networks creates competitive advantages. Following Achrol and Kotler (1999), network forms, understood as independent coalitions of task or skill

specialized economic entities, grow and multiply. Vertical market networks are likely to predominate in markets in which competition demands leadership in production as well as product innovation.

Such value adding-partnerships, performed by legally independent partners, includes all the partners in the entire value chain as a unit. All actors depend on each other's success. This requires a closer relationship. Therefore, cooperation in the distribution channel requires a shift in thinking towards relationship management. This paradigm shift in marketing from a transaction-based exchange towards a relationship orientation is stated by Grönroos (1997). As a result, industrial relations between manufacturers and their customers have been the focus of a range of scholars including Dwyer, Schurr and Oh (1987), Anderson, Hakansson and Johanson (1994), Anderson (1995) and Wilson (1995).

Since buyer-seller relationships are the core issue in relationship management, the underlying theoretical tenant of this work is delivered by network-based, inter-organisational relationship marketing, that has its origins in transaction cost theory (see Heide and John 1990, 1992), or to social exchange theory (see Anderson and Narus 1984, 1990) and for an overview see Möller and Halinen (2000).

Overcoming an episode-restricted exchange of products, services, information, monetary and social contacts, in favor of long term oriented, intensified relationships may offer a range of advantages:

- a secure distribution channel (by just-in-time concepts, delivery commitments);
- a cost reduction (caused by stock reduction, improvement in replenishment routines, reduction of the new product failure rates); or
- access to the partners' technical know how (customer demands, technological practicability)

Cooperation can be understood as "*similar or complementary coordinated actions taken by firms in interdependent relationships to achieve mutual outcomes*" (Anderson and Narus 1990 p. 45). Efficient Consumer Response (ECR) embodies such a form of cooperation in the distribution chain. A reengineering of value chain processes serve to synchronize, improve and accelerate the product flow and all related transactions (Whipple 1999; Joint Industry Project 1994; Kurt Salmon Associate 1993).

The ECR concept combines four basic strategies:

- *Efficient Replenishment* optimizes the flow of goods and information along the supply chain by reconciling replenishment processes oriented on the factual demand of the customers.
- *Efficient Assortment* deals with the melioration of the range of products to gain higher returns and a higher customer satisfaction. For hospitals, the range of products has to be translated into the services offered: They consist of therapeutical, diagnostic, nursing, and hotel performance in an optimal organized form.
- *Efficient Product Introduction* embodies a collaborative approach to develop new products or services with regard to both meeting customers' demands and following technical and economic restrictions.
- *Efficient Promotions* intend to remove inefficiencies in sales promotions and public relations.

One critical factor for successful ECR-activities is the traditionally high barrier between industrial buyers and sellers that has to be overcome (ECR Europe 2001). The step from the episode-based exchange to a stable relationship must be taken. Any action in accordance with the theory of planned behavior (Ajzen and Fishbein 1980) is preceded by the intention that again follows the willingness to take action. We investigate the willingness to undertake the shift to an intensified collaboration. To shed light on our study, we decided to perform our empirical trial in an industry where no ECR-partnership exists so far: the German hospital sector, in cooperation with its suppliers of medical products.

The IMP interaction model focuses the relationship between seller and buyer. Based on the system theory, organizations are regarded as social systems consisting of elements that interact with each other and the environment. The interaction between the buying and selling companies is described and influenced by the parties involved (organizations and individuals) and the interaction atmosphere (Hakansson 1986; Ford 1997; Turnbull and Valla 1986). Wilson (1995) offers a five-phase model of the relationship development process, where partner search and selection builds the first phase. As not all actors are appropriate partners for a cooperative partnership, Wilson selected a set of variables that are supposed to be successful predictors of relationship performance.

In accordance with Wilson, we add corporate culture. Norms and standards of the relational exchange exist prior to and are brought into social exchanges. They exert

powerful influences on behavior and, furthermore, lead to commonly shared values (Dwyer, Schurr and Oh 1987). As tangible resources *"become less important to the firm in terms of their contribution to value added and as a basis for competitive advantage*" (Grant 2000, p. 115), the meaning of corporate culture has risen. Deal and Kennedy (1982) describe how corporate culture influences a company's competitive situation. This leads to the concentration of one of the intangible resources, culture.

In this paper, we concentrate on the corporate culture of the parties involved, namely of the own and the partner's organization and the cultural influence on the interaction process.

CORPORATE CULTURE AND COOPERATION

Grant (2000) classifies three kinds of resources. Besides tangible (financial or physical assets) and human resources (skills, knowledge, motivation), he identifies intangible resources where culture is included. According to Wilson (1995), "*the atmosphere of the relationship can be thought of as hybrid culture that develops between the buying and the selling firm and reflects elements of both firms' culture but is different from either firm's culture*". In an initiating state of cooperation, a common culture still has to develop. So, in contrast to Wilson, we follow Grant's definition that leads to an integration of the corporate culture within certain elements of the IMP model.

As a resource, culture has to be incorporated into the participants of the interaction process. *"The organizational culture is the organization itself"* (Burton and Obel 1998). Nevertheless, when regarding the cultural fit of the participating organizations, culture can be classified as an atmosphere element of the interaction model.

Based on anthropology, the cultural concept was transferred to the organizational and management research in the 1980's (Denison 1984: Schein 1984; Smircich 1984; Deal and Kennedy 1982; Ouchi 1981). Following a positivistic perspective, culture is regarded as one component of a company besides others (Ebers 1985).

In accordance with Schein (1984), corporate culture can be understood as a *"pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems*". (p. 3).

Deshpandé and Webster (1989, p. 4) define corporate culture as a *"pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them with the norms for behavior in the organization*".

Both definitions elucidate the function of organizational culture: commonly shared beliefs and values constitute the basis for; (1) the arrangement of external relations; (2) for internal coherence; and (3) for the mediation of sense, identity, and behavioral norms to the members of an organization (Smircich 1983).

Based on a long-term horizon, corporate culture influences the stability of a socio-economic system. In sum, norms and values build a system, which helps to achieve the organizations purposes.

Thus, the above mentioned functions of corporate culture indicate their meaning for the arrangement and successful performance of cooperation within the distribution channel. Both phenomena are long-term oriented and should support the business, therefore we propose an influence of a company's corporate culture on the willingness to cooperate.

In a dyadic vertical cooperation, two counterparts are involved and thus the corporate culture of the (potential) partner has to be considered as well. This consideration should be taken in two ways.

In the first step, the influence of the own corporate culture and the perceived culture of a particular partner on the willingness to cooperate is analyzed separately.

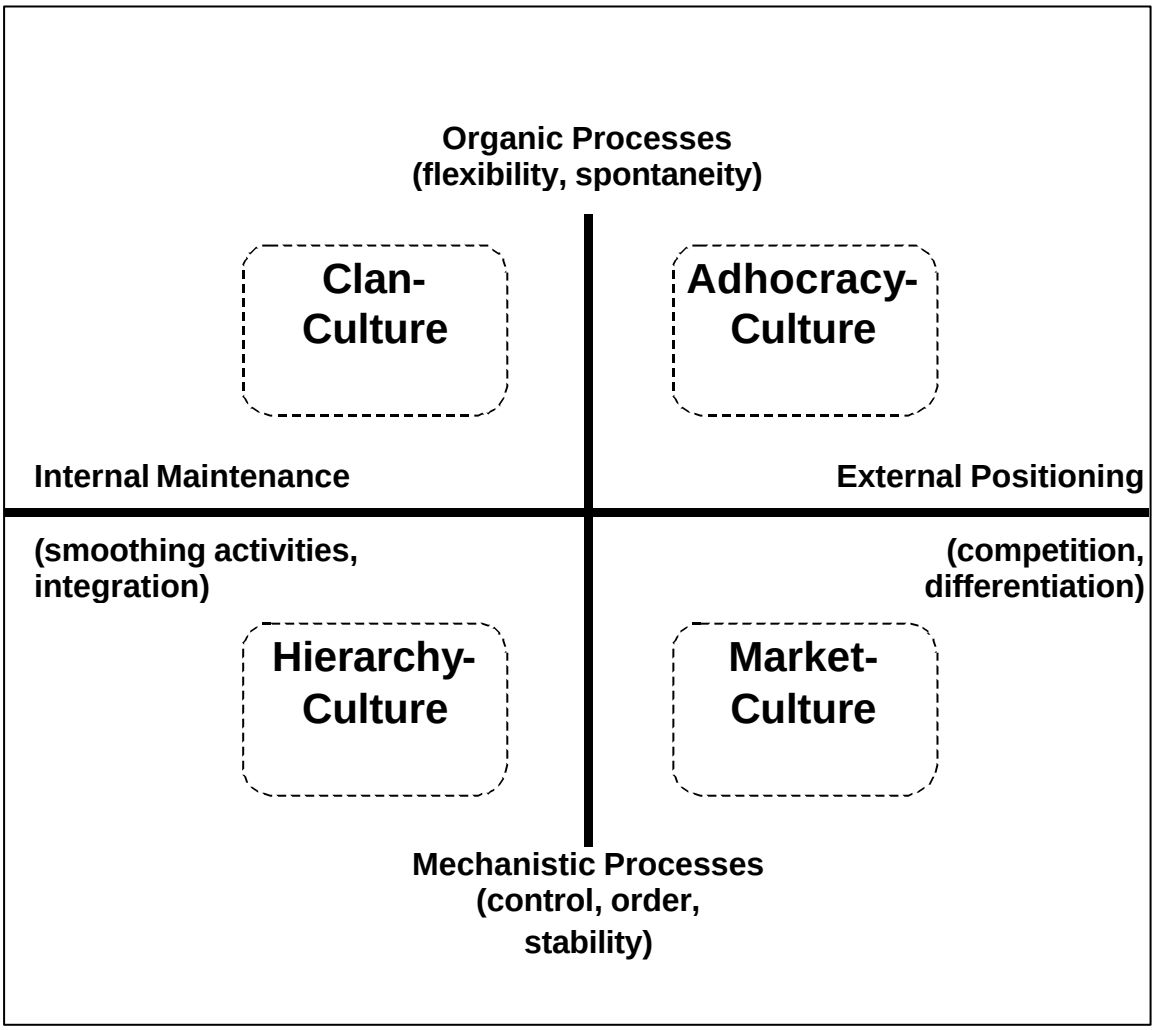
In the following step, a fit of both the own culture and the perceived culture of the potential partner and its influence on the willingness to cooperate is supplemented.

Quinn and Rohrbaugh (1983) presented the competing values approach based on an empirical (multidimensional scaling) analysis of the values individuals hold for organizations. "*These key dimensions represent a merging of two major theoretical traditions from the organizational behavior literature, the systems-structural perspective (...) and the transaction cost perspective*" (Deshpandé, Farley and Webster 1993, p. 25; Burton and Obel 1998).

One axis opposes organic and mechanistic processes. The organic side of the continuum emphasizes flexibility, spontaneity and individuality, whereas the mechanistic process stresses control, stability and order. On the second axis, internal maintenance and external positioning face each other. The first implies smoothing activities and integration, while the latter represents competition and environmental differentiation.

The opposition of the two dimensions results in four clusters of cultural archetypes, labeled – in accordance with Cameron and Freeman (1991) – clan, adhocracy, hierarchy and market (Figure 1).

Figure 1. The four cultural archetypes and their dimensions



(Adopted from Deshpandé, Farley and Webster 1993, p. 25)

In awareness of some shortcomings; (1) no commonly accepted definition and concept of culture – as they are based on different perspectives – exists; (2) the concept leads to limitations using statistical methods caused by the scaling method. Since we choose this way of conceptualizing corporate culture, it tends to be the only one which has already been applied and repeatedly validated (Homburg 1998, p. 202; Deshpandé, Farley and Webster 2000).

The cultural archetype named "clan" describes organizations distinct by a strong solidarity and a familiar atmosphere. Cohesiveness, participation and teamwork, which ensure the commitment of the organizational members, are stressed. The adhocracy culture embodies an archetype described by entrepreneurship, creativity and adaptability. Being flexible shows a predominant meaning resulting in a concentration on finding new markets and new opportunities for growth. The third archetype, labeled hierarchy culture is described by order, rules and regulations. The organization is kept running by surveillance, evaluations and directions to reach clearly stated goals. The cultural types are complete with the fourth, market culture. This last form emphasizes, like the hierarchy type, goal achievement, but in combination with competitiveness. Market mechanisms govern the organizational actions.

These four culture types – as they are developed on the continuum of the two dimensions – are not mutually exclusive, but dominant ones. *Most organizations can and do have elements of several types of culture. However, over time, one type of culture emerges as the dominant one* (Deshpandé, Farley and Webster 1993, p. 26). This overlapping aspect is accentuated by the broken lines (Figure 1). Moreover, an organization does not necessarily have to show consistency over the organizational variables with respect to the dominant culture type. If this constancy exists, we speak of a congruent culture; otherwise we observe an incongruent one (Cameron and Freeman 1991).

Empirical investigations applying the introduced model covered the influence of cultural congruence, strength, and type on organizational effectiveness (Cameron and Freeman 1991), its effect on business performance in Japanese firms (Deshpandé, Farley and Webster 1993), the test of individual country differences of corporate culture and performance in five countries (Deshpandé, Farley and Webster 2000), and individual country-specific differences of cultural types in US-American, Canadian and British hospitals (Gerowitz et al. (1996). An overview is provided by Pflesser (1999). We observe a range of studies focusing on performance what might be helpful to evaluate the willingness to cooperate. Similar to the companies' performance, the four cultural archetypes give the impression of showing a varying degree of willingness to participate in a vertical partnership. A vertical partnership is from a transaction cost view, seated between an internal and external position, or, in Williamson's (1985)

words, between market and hierarchy. A step towards cooperation is taken when it promises benefits. Compared with external orientation, cooperation offer admission to the market partners' knowledge, whereas in difference to pure internal orientation, cooperations promise the advantage of reduced supply costs. When knowledge builds, the core competitive force, especially in external oriented companies, should show a readiness for cooperation (Achrol and Kotler 1999). Moreover, the mechanic orientation determined by order and stability seems to be more suitable for a stable vertical partnership than an organic orientation characterized by flexibility. This leads to the following hypothesis for the general willingness to cooperate, and furthermore for the willingness to take part in an ECR-partnership with a voluntarily chosen potential partner:

H1: The general willingness to participate in a vertical partnership is highest in hospitals with a dominant

- *market culture, followed by*
- *adhocracy culture and*
- *hierarchy culture.*

The lowest willingness can be observed in hospitals with clan type.

H2: The willingness to perform an ECR-partnership with a specific partner is highest in hospitals with a dominant

- *market culture, followed by*
- *adhocracy culture and*
- *hierarchy culture.*

The lowest willingness can be observed in hospitals with clan type.

With respect to H2, one can presume that this influence of the cultural type will be of different importance concerning the elements of the ECR-willingness. Grounded on the idea of the ECR global scorecard, we split the ECR-willingness into three factors, where "*supply management*" represents the strategy of Efficient Replenishment, "*demand management*" combines Efficient Assortment, Efficient Product Introduction and Efficient Promotions, and "*enabling technology*" represents items that cover a companies willingness to use technologies necessary to use the ECR concept.

To explore the effect of the cultural type in more detail, we expanded the hypothesis on the factors of the ECR-willingness with the following hypothesis:

H2a: The dominant cultural types discriminate with regard to their willingness in the particular domains of ECR, namely

- *supply management,*
- *demand management,*
- *use of enabling technologies.*

In accordance with Cameron and Freeman (1991), addition to the dominant type, the strength of corporate culture has to be taken into account, where information not only about the most respected but the least appropriate cultural type, and also the difference between the types and their suitability for cooperation is delivered. Similar to H2, the strength follows the same pattern as the dominant type. So we hypothesize:

H2b1: The stronger the market culture is presented, the higher is the willingness to initiate an ECR-cooperation.

H2b2: The stronger the adhocracy culture is presented, the higher is the willingness to initiate an ECR-cooperation.

H2b3: The stronger the hierarchy culture is presented, the lower is the willingness to initiate an ECR-cooperation.

H2b4: The stronger the clan culture is presented, the lower is the willingness to initiate an ECR-cooperation.

In an interaction process, at least two partners are involved. This leads to the enhancement of our analysis by the corporate culture of the (potential) partner. We state that the willingness to cooperate is higher the more a particular partner is considered as being suitable for a partnership. Similar to the own cultural type, a partner with a perceived external orientated cultural type gives the impression of presenting a higher willingness than internally oriented ones. Furthermore, suppliers that are perceived following a mechanistic orientation (determined by order and stability) seem to be better partners for a stable vertical partnership than an organic orientation characterized by flexibility. Therefore, a higher willingness to cooperate can be observed.

Hence, we add the following hypotheses for the willingness to participate in an ECR-partnership:

H3: The willingness to perform an ECR-partnership with a specific partner is highest, when the supplier's corporate culture is perceived being

- *market type, followed by*
- *adhocracy type and*
- *hierarchy type.*

The lowest willingness can be observed in hospitals with clan type.

H3a: The perceived cultural types differ with respect to their willingness in the particular domains of ECR, namely

- *supply management,*
- *demand management,*
- *use of enabling technologies.*

Having included the corporate culture of both partners and their suitability for a vertical partnership, a third step is taken now to round off our investigation. This leads to the atmosphere-element of the IMP model. Atmosphere can be described in terms of an "*overall closeness or distance of the relationship. There are reasons for the buying and selling firm to both develop a high degree of closeness with their counterparts as well as to avoid such closeness*" (Ford 1997, p.14). "*An important reason for closer connection with a counterpart can be to reduce the uncertainty*" (Ford 1997, p. 15). "*Alliances success depends on an effective and efficient alignment between the partners involved*", where cultural, besides operational and human fit is believed to be an important component (Douma et al. 2000, p. 581). Closeness and a reduction of uncertainty are obtained when the perceived corporate culture of a partner is similar to the own corporate culture. Therefore, in accordance with Cameron and Freeman (1991), we finally integrate cultural congruence of both partners' and the strength of this fit:

H4: When the cultural types of both parties involved are similar, the willingness to initiate an ECR-cooperation is higher than in partnerships with different corporate cultures.

H4a: The closer the cultural fit, the higher is the willingness to initiate an ECR-cooperation.

METHODOLOGY

Data Collection and Sampling

The data was collected with a standardized questionnaire, which had been pre-tested on representatives of the three occupational categories that form the executive board in German hospitals (administration, medical and nursing directors). The questionnaire was sent to the executives of German hospitals (in each hospital three persons were addressed). This led to a total sample of 668 executives in our data set.

For the purpose of this study, respondents seemed to be appropriate as key informants, as they make strategic decisions, which include the decision for vertical cooperation with the medical industry. Some addressees forwarded the questionnaire to assistants (medical managers, substitutes). As these groups prepare information for decisions, they can be considered as being part of or influencing the decision center and therefore they were not excluded from the evaluation.

Measurement

The proposed measures were purified by assessing their reliability and unidimensionality according to the methods described by Anderson and Gerbing (1988). Measure validity was performed in two steps. First, items developed for each construct were examined for internal validity. Items with a low item-to-total correlation were reviewed for their theoretical importance and deleted if they tapped no additional, distinct domain of interest. Second, scale reliability was measured by the Cronbach alpha coefficient and items were deleted as necessary to purify scales if a distinct theoretical domain was already being adequately measured.

Then, an exploratory factor analysis was performed on items from subsets of theoretically related measures to assess the extent to which they reflected a single dimension. As a more rigorous test of reliability and validity, a second order factor analysis using AMOS 4.0 was performed.

Conceptualization and Validation

Corporate culture was operationalized using a constant sum scale with four variables (kind of organization, leadership, organizational bonding, organizational focus) adapted from Deshpandé, Farley and Webster (1993), where 100 points had to be allocated to the four cultural items of each variable, depending on how appropriate the description of the items were to the hospital. Thus, in total 400 points were distributed. In the

evaluation, the dominant cultural archetype was specified by means of adding the points of each cultural type over all variables. The archetype that received most points was considered the dominant type. Bi- or multimodal cases were excluded from the evaluation, as an assessment of a dominant type was not possible.

Before building the dominant type, we evaluated the item-to-total correlation. A poor correlation was shown for all leadership items. By excluding these items, the Cronbach alpha was improved. The poor values might be explained by a lack of distance, because leadership style was generated by a self-assessment. This resulted in 357 hospitals with a dominant clan type, 50 hospitals with an adhocracy type, 115 hospitals with a hierarchy and 69 hospitals with a dominant market type. Table 1 gives us the validated constructs and their characteristics.

Table 1. Item-to-total correlations and Cronbach alpha of corporate culture

	Clan	Adhocracy	Hierarchy	Market
Kind of organization	0.5815	0.4232	0.5437	0.4082
Leadership	0.2605	0.3644	0.3393	0.2395
Organizational Bonding	0.5513	0.5536	0.5861	0.4146
Organizational Focus	0.5233	0.5093	0.4997	0.4454
Cronbach alpha (standardized)	0.6923	0.6676	0.6975	0.5817
Cronbach alpha (excl. leadership)	0.7400	0.6754	0.7363	0.6321
N	357	58	115	69

An exploratory factor analysis confirmed the theoretically imputed cultural archetypes by relating the specific item to the cultural factors (Table 2).

The four cultural factors explained 66% of the total variance. The number of factors has been extracted by means of the Kaiser-criterion, where as many factors are included as Eigenvalues $\geq$ 1.0 are reported. This generally leads to the integration of factors with only low contributions to the total variance explained.

Here we unfortunately observe only small contributions by the adhocracy and the market factor. Communalities and factor loadings are above the 0.5 level.

Table 2. Exploratory factor analysis on corporate culture

	Factor 1 (Clan)	Factor 2 (Hierarchy)	Factor 3 (Adhocracy)	Factor 4 (Market)
Kind 1	0.725	-	-	-
Kind 2	-	-	0.708	-
Kind 3	-	0.706	-	-
Kind 4	-	-	-	0.673
Bonding 1	0.824	-	-	-
Bonding 2	-	-	0.772	-
Bonding 3	-	0.706	-	-
Bonding 4	-	-	-	0.868
Focus 1	0.607	-	-	-
Focus 2	-	-	0.768	-
Focus 3	-	0.820	-	-
Focus 4	-	-	-	0.542
Eigenvalue	3.10	2.49	1.25	1.06
Explained variance	25.83%	20.71%	10.41%	8.79%

Perceived culture: For the measurement of the perceived corporate culture of a potential partner, the relating four variables for each cultural type were bundled. Four clusters were obtained. The respondents were first asked to select a medical supplier from a list of four companies offered. If the respondents were not able or not willing to choose from this list, they could choose any other medical supplier and give his name. In a next step, the respondents had to decide, which bundle best described the selected company. This procedure ends in the achievement of a categorical variable. Being aware that this restricts the number of usable statistical analyses, we nevertheless decided in favor of this approach.

The restrictions were accepted, because a detailed assessment of the partner's culture similar to the determination of the own corporate culture was judged by producing artifacts. As the respondents only have a general opinion about the other company's corporate culture, a differentiated appraisal is supposed to create only an artificial degree of accuracy.

Cultural fit was computed in two ways. First, we opposed the own and the perceived partner's dominant type. Similar types are defined presenting a cultural fit, whereas all others are labeled "non-fit". A second approach takes the strength of the own culture into account. With respect to the perceived partner's culture, all four variables of the

own culture, presenting the type similar to the partner's, were summed up. The higher the sum of this new fit-variable, the stronger is the fit.

Willingness to ECR-cooperation was measured by 22 items that were developed for this study. A six-point multiple-item scale was used. The items captured the willingness to cooperate on the supply side, demand side and in terms of enabling technologies. This three-factor approach was developed on the basis of the ECR Global Scorecard. An exploratory factor analysis was performed to detect whether the data reflected the theoretically postulated constructs. The variables explained a total variance of 64%. Four factors were isolated (Table 3).

Table 3. Cronbach alpha and item-to-total correlation of ECR willingness

Construct	Item	Reliability (Cronbach alpha)	Item-to-total Correlation	
			Mean	Range
Supply Side	10	0.9107	0.6789	0.5514-0.7663
Demand Side				
- Process	4	0.8357	0.6699	0.5774-0.7491
- Innovation	5	0.8434	0.6498	0.5881-0.6990
Enabling technologies	3	0.8642	0.7431	0.7062-0.8118

Factor 1 explained 39% of the variance. As expected, it presented variables concerned with optimization in the fields of ordering, stock keeping, internal logistics, budgeting, cost-benefit analysis, bundling of purchase and delivery and retro-distribution; the supply side of Efficient Consumer Response.

The demand side was divided into two factors. Factor 2 explained 10% of variance. Here the items concerned the hospitals' output; the Efficient Assortment aspects of the demand side construct. In particular, it integrated the optimization of processes in the wards and surgical facilities, optimized organizational structures and specializations on selected indications.

Moreover, the demand side was represented by Factor 3. The third factor explained 9% of variance with items related to Efficient Product Introduction and Efficient Promotions. This factor was composed of the joint detection of new diagnostic, therapeutic, nursing and accommodating ways, and, coordinated proceedings concerning public relations, advertising and networking.

As the demand side construct comprises the above-mentioned three basic strategies, a differentiation between more (than one) factors was not unexpected. We don't observe three factors - one for each demand side strategy - but a bundling of two strategies on Factor 3. As promotions can be regarded as innovative aspects in the German hospital sector, Factor 3 integrates the introduction of innovations.

Thus, Factor 3 can be labeled "Innovation", whereas Factor 2, since is represents core processes in hospitals was named "Process".

With Factor 4, the ECR-enabling technologies (items concerning the employment of electronic communication, electronic data interchange and an interlocked ordering system) were shown. This factor explained 6% of the total variance.

All but one of the communalities and factor loadings are above the required 0.5 level. Only the variable concerning collaborative introduction of new nursing opportunities shows a communality of 0.47. Three items could not clearly be related to one factor, as they loaded on two factors. This may lead to a distortion of the results of a structural equation model, because a strict relation of indicators to factors is required. As we collected a sufficient number of indicators explaining each factor, an elimination of three items could be taken into consideration. Although their elimination leads to a deterioration of the Cronbach alpha for the two factors concerned (Supply side: 0.8902, Innovation: 0.8231), they are still far below the critical value. Therefore, we decided to remove these items.

Integrating the remaining 19 items into a structural equation model, we were presented with a good fit of the theoretically postulated and the observed model. Thus, we can conclude, that our model of ECR-willingness is suitable for further analyses.

Summing up, the exploratory factor analysis confirms the theoretically stated constructs of the willingness to ECR-cooperation with a split of the demand side construct in the process and innovation factor.

To validate the constructs, we analyzed the item-to-total correlations and the Cronbach alpha of the ECR-willingness constructs. The observed results can be regarded as valid and reliable (Table 4). Additionally, we examined the reliability and validity of the construct using a confirmatory factor analysis. We can attest a good fit between the model and the theoretical construct. Using ANOVA, we computed the average of all ECR-items resulting in the mean ECR-willingness.

Table 4. 2nd order analysis of ECR-willingness

Global Model Fit					
X^2/df = 3.222 AGFI = 0.910 IFI = 0.951 RMR = 0.082 GFI = 0.932 NFI = 0.931 CFI = 0.951 RMSEA = 0.058					
Details on 1st order level					
Construct	Indicator	Factor loading	Indicator reliability	Factor reliability	Mean Variance
Supply Side	F01	0.62	0.37	0.89	0.51
	F04	0.78	0.61		
	F05	0.80	0.64		
	F06	0.81	0.66		
	F07	0.79	0.62		
	F08	0.64	0.41		
	F09	0.66	0.44		
	F10	0.55	0.30		
Processes	F11	0.66	0.44	0.81	0.53
	F12	0.80	0.64		
	F13	0.62	0.38		
	F14	0.80	0.64		
Innovations	F15	0.59	0.35	0.82	0.54
	F16	0.74	0.55		
	F17	0.80	0.64		
	F18	0.80	0.64		
Enabler	F20	0.78	0.61	0.87	0.69
	F21	0.92	0.85		
	F22	0.79	0.62		
Details on 2nd order level					
Construct	Indicator	Factor loading	Indicator reliability	Factor reliability	Mean Variance
ECR-willingness	Supply Side	0.69	0.48	0.80	0.51
	Process	0.81	0.66		
	Innovation	0.86	0.74		
	Enabler	0.42	0.18		

For all isolated factors, we computed the average of all items that load on the particular factor. Thus we achieved a mean supply-side willingness; process-willingness, innovation-willingness, and enabler-willingness.

General willingness to cooperate with suppliers of medical products was operationalized as singular six-point item.

RESULTS AND DISCUSSION

Own organizational culture

We first examined the mean differences in corporate culture with respect to the willingness to cooperate with the medical industry in general and with a specific, voluntarily selected supplier of medical products concerning an ECR-cooperation. Hypothesis 1 and 2 were for this purpose tested by using ANOVA. Table 5 shows the results.

Table 5. Mean willingness to general and ECR-cooperation incl. significance

Cultural Type	Mean General Willingness	Mean ECR-Willingness
Clan	4.25	3.92
Adhocracy	4.69	4.07
Hierarchy	4.50	4.13
Market	4.58	4.20
F-statistic	2.626	3.573
p-value	0.05	0.014

The general willingness to cooperate with any medical supplier and the ECR-willingness showed significant differences ($p \leq 0.05$). As expected in the evaluation of ECR-willingness, the clan culture presented the lowest mean willingness, followed by the adhocracy and the hierarchy type. The highest mean willingness was demonstrated by hospitals with a dominant market culture. The analysis of the general willingness to cooperate supports this range so far, as clan, hierarchy and market culture form the same order. Only the adhocracy type turns out to be an outlier. This can be explained by the inherent emphasis on flexibility and spontaneity, which on one hand indicates an open attitude towards new concepts. On the other hand, it can be interpreted as a clue for lower loyalty of adhocracy partners, as their tendency against control and stability collides with a steady partnership.

In a next step, we investigated the single ECR-factors. In all cultural archetypes, the mean willingness to cooperate on the supply side was observed as being highest, followed by the mean willingness to cooperate in processes. Joint innovative actions and the cooperative use of enabling technologies showed only lower willingness below the average total ECR-willingness.

To shed light on the question, whether and how the dominant cultural groups show differences concerning the single ECR-factors, we performed a discriminant analysis proceeded by a test of multicollinearity. In a first step, we estimated the discriminating factors. Our data set led to three different discriminating factors for the four groups. All factors together separate the four groups significantly on the 1% level with a variance explanation of 83% (Table 6).

Table 6. Results of the discriminant analysis

Function	Eigenvalue	% of Variance	Canonical Correlations
1	0.046	83.1	0.209
2	0.009	15.6	0.092
3	0.001	1.3	0.027

Test of Function	Wilks' Lambda	Chi-square	df	Significance
1 – 3	0.948	27.32	12	0.007
2 – 3	0.991	4.69	6	0.584
3	0.999	0.37	2	0.829

Neglecting the first discriminant factor, the remaining discriminant potential does not separate the four groups significantly, especially since the first discriminant factor is responsible for the significant result. This factor covers 82% of the entire discriminant potential. The "true" discriminant potential estimates only 5%, which can, following the classification by Cohen (1988), be considered poor.

Nevertheless, with respect to the overall standardized canonical discriminant coefficients, the willingness to collaborate in the use of electronic communication and data exchange determines the largest difference between both groups, followed by the willingness to co-operate on the supply side (Table 7). Cooperative demand side-actions presented only small differences between the groups.

To gain more detailed information, we subsequently performed separate discriminant analyses for the two dimensions that determine the cultural types. First, we investigated the continuum internal maintenance-external positioning. A significant separation of the two groups was detected.

Table 7. Canonical discriminating coefficient of the four factor analysis

Factor	Standardized Canonical Discriminant Coefficient
ECR-Enabler	0.749
Supply Side	0.394
Innovation	0.213
Processes	0.150

Interpreting the single factors, the willingness to collaboratively use technology delivered the strongest differentiation, followed by the supply side-cooperation. Cooperative action concerning the processes and performances presented only a small difference. The lowest was observed for joint innovative actions. Thus, the results are in accordance with the four group-approach as far as the enabling technologies and the supply side are concerned. Both demand side factors presented only a poor contribution to a separation of the groups, where the innovative actions can be interpreted as having no influence (Table 8).

Table 8. Canonical discriminant coefficient of the continuum internal maintenance - external positioning

Factor	Canonical Discriminant Coefficient
ECR-Enabler	0.826
Supply Side	0.531
Processes	-0.231
Innovation	-0.073

Therefore, we can summarize that hospitals with a cultural style based on competitive, external positioning as well as control, order and stability, show a higher willingness to cooperate with their supplier of medical products. Lower willingness can be observed in hospitals emphasizing internal maintenance, flexibility, spontaneity, and individuality. The differentiation between mechanic and organic processes did not show statistically significant results and is therefore neglected.

In a last step we examined the strength of the cultural types. Therefore, we analysed four separate SEM's. As the cultural variables were obtained by using the constant sum technique, the variables cannot be regarded as independent and uncorrelated from each

other. Therefore, an inclusion of all variables into one model should be avoided, as an enormous number of co-variances will be observed, which influence the results. So, we decided for the single approach. This led to the following results: The standardized effects of the cultural types were all small. With –0.03 respectively, –0.04 clan and adhocracy type present a small negative effect, whereas the market and hierarchy type have a small, but positive effect (0.03 and 0.06 respectively). Therefore, we interpret that types oriented on control, order and stability have a small, but positive effect, in contrast to hospitals with an orientation on spontaneity and flexibility, which leads to a negative effect.

Hospitals focusing on competitive, external positioning are in contrast to hospitals with an emphasis on internal maintenance distinguished by a higher willingness to use collaborative electronic communication and data exchange and cooperative supply chain management. Therefore, we can conclude if a supplier of medical products wants to start an ECR-cooperation, hospitals with an external orientation combined with an emphasis on control, order and stability should be selected. Initiative projects should concentrate on a joint electronic communication, electronic data exchange and supply management.

The perceived partner culture

Corresponding with the own corporate culture, we now investigate the role of the perceived culture of a potential partner. Using ANOVA, a significant difference of the ECR-willingness ($p \leq 0.05$) came to light.

The willingness to start an ECR-partnership is highest with firms perceived as being an adhocracy type, followed by the market type. A lower willingness was observed for partnerships with a perceived hierarchy culture. The lowest willingness was shown concerning suppliers with a perceived clan culture (Table 9).

Clearly preferred are partners with an external, competitive orientation. When externally oriented on the continuum between organic and mechanistic processes, the willingness is higher to cooperate with a flexible and spontaneous partner. With a perceived internal orientation towards a frictionless running organization, a partner who emphasizes control, order, and stability is preferred.

Table 9. Mean willingness ECR-cooperation incl. significance

Cultural Type	Mean ECR-Willingness
Clan	3.82
Adhocracy	4.09
Hierarchy	3.89
Market	4.00
F-statistic	2.338
p-value	0.073

Similar to the evaluation of the own culture, we performed a discriminating analysis to uncover the contribution of the single ECR-factors to the particular perceived corporate cultures of the chosen supplier. No statistically significant results were observed for the four cultural types. A detailed investigation of the two dimensions brought further findings.

Whereas the continuum between mechanic and organic processes did not show significance, the perception of a supplier as oriented on internal maintenance versus external positioning presented a statistically significant result at the 5% level. Both groups differed concerning their willingness to cooperate (ordered by importance) on the supply side, the use of electronic communication and data exchange, and on processes.

Only co-operative innovative actions showed a very small selectivity (Table 10 and 11).

Table 10. Results of the discriminant analysis

Function	Eigenvalue	% of Variance	Canonical Correlations
1	0.018	100	0.132

Test of Function	Wilks' Lambda	Chi-square	Df	Significance
1	0.983	9.551	4	0.049

Table 11. Canonical discriminant coefficient of the continuum internal maintenance - external positioning

Factor	Canonical Discriminant Coefficient
Supply Side	0.713
ECR-Enabler	0.525
Processes	0.471
Innovation	-0.103

This can be interpreted as follows: If a supplier of medical products wants to be chosen as a partner in the mentioned fields, he should undertake efforts to be perceived as externally oriented, preferably being an adhocracy type.

Comparing the discriminant coefficients of both the analysis of the own and the partner culture, the supply side and the enabling factor are important in both cases. This emphasizes the above expressed recommendation to concentrate on the supply side and technological projects while initiating an intensified vertical partnership.

Cultural fit of both partners

To round off the study, we added the combined interactive view on both cultural measures. A MANOVA of the dominant own and perceived partner culture concerning the overall mean ECR-willingness brought no statistically significant result. Two groups, one with similar culture (the fit-group) and another group (the non-fit-group) were t-tested concerning the willingness to initiate an ECR-cooperation. No significance was found (F-statistic = 0.73, p = 0.393). With regard to the strength, only a small influence (0.03) of cultural fit on ECR-willingness could be observed.

IMPLICATIONS AND LIMITATIONS

Based on the results and reflections, some implications for theory and practice can be deduced. We can advise medical suppliers who intend to initiate a vertical partnership on an ECR-based concept, to search for hospitals being market type and avoid hospitals being clan type. Control and stability combined with external orientation seems to be the superior type, whereas internal oriented hospitals with an emphasis on flexibility and spontaneity showed the lowest willingness to cooperate. Nevertheless, whether these are the most attractive partner's depends on more characteristics than corporate culture. Among the market type hospitals, aspects like their financial state and their

purchase capacity should be taken into consideration. One must also keep in mind, that this paper focused on the willingness to start an ECR-cooperation. Which cultural type in an ongoing partnership appears to be superior still has to be found out.

To receive acceptance as a suitable partner, the perception as an externally oriented culture type seems appropriate. Most attractive partners were companies perceived as adhocracy types. For initiating a partnership, stressing adhocracy characteristics can be recommended; i.e., emphasizing innovativeness, competitive strength, entrepreneurship and the advantages of those characteristics for a vertical partnership. However, the influence of a cultural fit can be neglected.

Interaction effects between the cultural types have, in accordance with the empirical studies based on the competing values model, not been taken into consideration. Caused by the constant sum scale method, multiple correlations of variables could be observed. SEM does not seem to be the appropriate instrument for detecting interaction effects in this case. Further research using more rigorous methods, like PLS could provide deeper insights.

The presented construct remains in a static perspective. Further research can transfer this concept into a dynamic approach. This could be carried out by integrating this construct in the relationship life cycle model by Jap and Ganesan (2000) and by testing the influence of corporate culture on the willingness to initiate (or perform) a vertical partnership in the different phases of the life cycle.

To test the connection between corporate culture and the willingness to initiate an intensified vertical partnership, we developed a new model. Whereas the measurement of corporate culture could be adopted, the measurement of the willingness to cooperate had never been tested before. Therefore, further research should be performed to verify our results.

As the shortcomings of the measurement of corporate culture have already been mentioned, a newly developed approach based on rating scales could overcome these limitations. However, such a development and its testing of validity and reliability including a repeated verification seems to be very challenging.

Any further research has to take into consideration that the model was tested in the German hospital industry. This sector is known for a range of specific features that should not be hidden. The German hospital sector is – despite an increasing competitive

situation – still a regulated market. The service hospitals' offer – diagnosing, curing and palliating diseases – touches human health; a sensitive and highly important asset. These factors can influence the transferability to other industries. Therefore, the model should be validated in other sectors.

Moreover, we tested with the ECR-concept the willingness to initiate a very specific relationship. Following the transaction theoretic nomenclature of exchanges on the continuum between market and hierarchy (Williamson (1981), there are even more forms of exchanges than the one presented here. The influence that corporate culture exerts on other relational forms still has to be tested.

Finally, as mentioned before, corporate culture is only one element of the IMP model. To illustrate reality more precisely, further factors influencing the change from a transaction episode towards a relationship exchange between vertical partners should be taken into consideration. These factors can include strategies, capabilities, environment-specific elements such as attitudes concerning the market or market orientation, atmospheric elements such as relationship satisfaction, and, not directly a part of the IMP model yet, individual factors, such as the respondent's attitudes towards a vertical cooperation. All additional factors and their interactions should be set in the focus of further research. This demonstrates an extensive range of needs for subsequent research.

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Appendix A (Corporate Culture)

1. Our hospital is a very
   … personal and human place. It is like an extended family. People seem to share a lot of themselves.
   … dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.
   … formalized and structural place. Established procedures generally govern, what people do.
   … production oriented place. A majorn concern is with getting the job done, without much personal involvement.
2. Leadership of our hospital is generally considered to be
   … a mentor, sage, or a father or mother figure.
   … an entrepreneur, an innovator, or a risk taker.
   … a coordinator, an organizer, or an administrator.
   … a producer, a technician or a hard-driver.
3. The glue that holds our hospital together is
   … loyalty and tradition. Commitment to this hospital runs high.
   … a commitment to innovation and development. There is an emphasis on being first.
   … formal rules and policies. Maintaining an smooth running institution is important here.
   … the emphasis on tasks and goal accomplishment. A production orientation is commonly shared.
4. Our hospital emphasises
   … human resources. High cohesion and morale in the firm are important.
   … growth and acquiring new resources. Readiness to meet new challenges is important.
   … permanence and stability. Efficient, smooth operations are important.
   … competitive actions and achievement. Measurable goals are important.

Appendix B (Perceived partner's culture)

Which block describes the medical supplier chosen best?

1. The company
   - is personal, human, like a family.
   - is managed by a father figure.
   - sets on traditions.
   - sets its focus on human resources.
3. The company
   - is dynamic, takes risks.
   - is innovative.
   - Sets its focus on growth and development.
2. The company
   - has many formalized structures and rules.
   - is sometimes beaurocratic.
   - runs smoothly.
   - sets its focus on stability and efficiency.
4. The company
   - is ambigios and active.
   - is strictly oriented on competition.
   - sets its focus on productivity and performance.

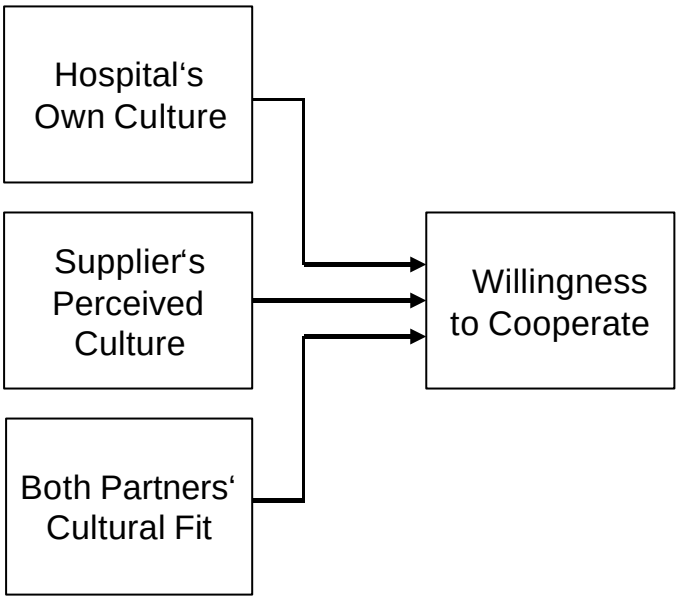
Appendix C (Willingness to ECR-co-operation)

1. I tend to a co-operation with the medical supplier chosen to optimise our supply management.
2. I am willing to co-operate with the chosen medical supplier to reduce the costs of utilities.
3. I am open for an integration of the chosen medical supplier in the realization of cost-benefit-analyses of the procured goods.
4. I tend to work together with the chosen medical supplier to minimize our stockkeeping costs.
5. I am open towards an integration of the chosen medical supplier to jointly optimising the distribution of goods inside the hospital.
6. I am willing to co-operate closer to secure the adherence to purchase budgets.
7. I am open for a bundling of purchasing activities together with the chosen medical supplier.
8. I am open to integrate the chosen medical supplier in the direct delivery of applying units in the hospital.
9. The bundling of the delivery of several suppliers by the chosen medical supplier is conceivable.
10. A cooperative retrodistribution with the chosen medical supplier is possible.
11. I am willing to cooperate with the medical supplier chosen to detect opportunities for specializing on selected indications.
12. I tend to a co-operation with the chosen medical supplier to secure an optimised selection of departments and assisting units.
13. To guarantee optimised processes in the surgery unit, I am ready for a co-operation with the chosen medical supplier.
14. I promote joint activities to optimise processes in the wards.
15. The search for new therapeutical and/or diagnostical ways together with the chosen medical supplier seems conceivable.
16. There is nothing to stop the search for new nursing care methods together with the chosen medical supplier.
17. I see the opportunity to search for new hotelling amenities together with the chosen medical supplier.
18. I support joint and/or coordinated public relation or advertising acitivities with the chosen medical supplier.
19. I am open for a consultation of the chosen medical supplier concerning building networks with practicioners.
20. We are ready for the use of electronic communication, e.g. internet and intranat, to communicate with the chosen medical supplier.
21. We are willing to perform data exchange with the chosen medical supplier on behalf of electronic ways.
22. We are willing to connect to the chosen medical supplier's order system.

Appendix D (General willingness to cooperate)

1. Altogether I am open towards a partnership with a medical supplier.

Appendix E


Hospital‘s Own Culture
Supplier‘s Perceived Culture
Both Partners‘ Cultural Fit
Willingness to Cooperate