

**Corporate Spirit as Secret Ingredient
Proximity in Corporate Culture as Moderating Success
Factor in Collaborations**

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Proximity in Corporate Culture as Moderating Success Factor in Collaborations



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Abstract

Successful collaborations between organizations lead to effectiveness and economic growth. Accordingly, collaborating partners strive to optimize factors contributing to collaboration performance. Earlier research on collaboration offers a variety of success factors. However, there are still aspects, of which the effects are not completely clarified, as in the case of distance between collaborating organizations due to corporate culture. While the literature claims that economic activities are culturally embedded, investigations on the contribution of distance in corporate culture on economic interactions' success remain superficial and unclear. Addressing this deficiency, the present paper investigates direct and indirect effects of distance in corporate culture on collaboration performance. Empirical evidence reveals a negative direct effect of distance in corporate culture. At the same time, as a moderator, high distance compensates for the negative effect of social distance, while proximity compensates for the negative effect of cognitive distance.

Keywords: collaboration performance; proximities; proximity in corporate culture; Hofstede; Germany

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1 Introduction

Collaboration is a key element in economic activities (e.g. Dyer, Singh 1998). Yet, not every collaboration is equally successful (e.g. Combs, Ketchen 1999). Accordingly, more research is needed on factors influencing collaboration performance. General characteristics of collaborations (such as funding (Czarnitzki, Fier 2003) or the number of involved organizations (Okamuro 2007)) have been extensively investigated due to their effect on collaboration performance (e.g. Perkmann et al. 2011; Mora-Valentin et al. 2004). Moreover, the importance of behavioural aspects for collaboration has been acknowledged (e.g. Mora-Valentin et al. 2004). However, corporate culture and distance in corporate culture between collaborating organizations have been getting less attention (e.g.; Aguiléra et al. 2012; Beugelsdijk et al. 2006; Werker et al. 2016; Brunetta et al. 2020). Approaching this research gap, the present paper investigates distance in corporate culture as influencing factor of collaboration success.

The literature has identified a variety of factors influencing collaboration success, reaching from organizational aspects of the joint work to characteristics of the partners involved (e.g. Bizan 2003; Okamuro 2007; Anzola-Román et al. 2019). One very unique organizational characteristic is corporate culture. It shapes the employees' behaviour in general and hence as well towards partners' employees (Hofstede et al. 2010; Beugelsdijk et al. 2006). Disagreements arising from different cultural backgrounds can have detrimental effects for the whole project (in the worst case even leading to the failure of the collaboration) (Werker et al. 2016; Brunetta et al. 2020; Hofstede et al. 2010; Crescenzi et al. 2017). Accordingly, it is crucial to know more about distance in corporate culture and its influence on collaboration success.

Distance in corporate culture is part of the broader concept of cultural distance, which exists at different levels, such as the regional, national, industrial or corporate level (Hofstede et al. 2010; Werker et al. 2016). First empirical investigations on the consequences of distance in corporate culture for the collaborative output do not reach a conclusive picture (e.g. Pothukuchi et al. 2002). To get clear results, the present paper proposes to disentangle direct and indirect effects of distance in corporate culture on the collaboration success. Therefore, the concept of corporate culture by Hofstede (1989) has been applied to a unique dataset of German organizations. Empirical evidences reveal, that distance in corporate culture has a direct negative effect on the technical success of a collaboration. As a moderator high and low distance can have positive impacts.

The remainder of the paper is organized as follows: Section two presents the theoretical framework, including collaboration success, the different distances in inter-organizational collaborations and the moderating role of distance in corporate culture. Hypotheses for the likelihood to have a successful collaboration are derived. In section three the empirical

approach and the dataset are described, before in section four the empirical evidence is presented and discussed. Section five concludes.

2 Theoretical Framework and Hypotheses

2.1 Collaboration and Collaboration Success

Collaboration is known as one possibility to tap into external knowledge, to overcome the lack of internal resources, to share innovation risks or to enter new markets (Miotti, Sachwald 2003; Bayona et al. 2001). Yet, not every relationship is equally successful. The empirical literature differentiates between technical and commercialization success. A joint project is technically successful, if the collaboration meets the set goals. Being technically successful, it can as well be commercially successful, referring to the sales generation of the joint project (e.g. Bizan 2003; Okamuro 2007). As the commercial success can be part of the goals of a collaboration, technical success can be seen as the basic definition for collaboration success. Accordingly, for the present study, collaboration success was broadly defined as meeting the set goals (including being research or production oriented or being of strategic nature).

There are different factors, affecting the successfulness of a collaboration. Beyond technological fit (connected to absorptive capacity (Cohen, Levinthal 1990)), these are structural aspects of an organization (like size and ownership) and of the collaboration itself (like duration and number of partners) (Bizan 2003; Okamuro 2007). Moreover, there are organization-internal factors, like the employees ability to solve conflicts (Anzola-Román et al. 2019), their openness and adaptability (Barnes et al. 2002), as well as their communication skills (Mohr, Spekman 1994). Finally, there is a strand of the literature dealing with the notion of different proximities between collaborating organizations and their effect on collaboration success (e.g. Heringa et al. 2014; Capaldo, Messeni Petruzzelli 2015).

2.2 Proximities and Collaboration Success

According to Boschma (2005), there are five different proximities to be considered for the success of the joint activities: geographic, social, organizational, cognitive and institutional proximity.¹ Numerous studies have investigated the effect of these proximities on innovative activities as well as their interactions and dynamics (e.g. Broekel 2015; Balland 2012; Crescenzi et al. 2017).

¹ Boschma (2005) refers to innovative collaboration, while the present work includes as well other types of collaborative activities. Nevertheless, his theoretical considerations can be applied here, as the basis for innovation is the exchange of knowledge and interactive learning, which are characteristics of every type of collaboration.

Geographic proximity refers to the spatial distance between partners. While being located next to each other facilitates interactions and raises the possibility to profit from knowledge spillovers, some geographic openness is important as well to avoid spatial lock-in (Boschma 2005).

Relationships are always embedded in a social context, expressed in notions like trust at the micro-level. On the one hand, Boschma (2005) theorizes that social proximity can help to exchange knowledge as it encourages to communicate. On the other hand, too much social proximity might raise the danger of opportunistic behaviour or a social lock-in as loyalty is held more important than economic factors.

Boschma (2005) describes organizational proximity as the degree of formal arrangements between organizations, ranging from autonomy to control and attributes low organizational distance a positive effect on knowledge exchange. However, again only to a certain degree, as too much organizational proximity might have negative consequences, due to lock-in effects and a lack of flexibility.

The notion of cognitive proximity is based on the overlap of the technological knowledge bases of the partners. At least some overlap is necessary to profit from the new knowledge (connected to the concept of absorptive capacity, described by Cohen and Levinthal (1990)) while too much overlap could hinder the development of something genuinely new (Boschma 2005).

Institutional proximity is based on the concept of institutions, consisting of formal and informal institutions (North 1991). While formal institutions comprise (written) rules and laws, informal institutions include implicit standards of behaviour and traditions. Being institutionally proximate (in both forms) can enable exchange, as common values lead to a higher willingness to work together. At the same time, being too proximate might lead to institutional lock-in, as it might be difficult to adapt routines or for newcomers to be able to enter the system (Boschma 2005). As former empirical research proxies institutional proximity with aspects predominantly covering formal institutions (e.g. Ponds et al. 2007; Balland 2012), the present paper focuses on the informal part. The described traditions and practices (informal institutions) are elements of cultural entities. Culture again can be described for different levels, being rather spatially defined, such as the regional or national culture or based on a thematical definition, such as the corporate (organizational) or industrial culture (Werker et al. 2016; Hofstede et al. 2010; Fink, Mayrhofer 2009).

Corporate culture belongs to the organizational characteristics (Barney 1986; Tether 2002). Distance in corporate culture is important in inter-organizational collaborations, sometimes even hold to be more important than distance in constructs of spatial (national) culture (Pothukuchi et al. 2002). Since the beginning of the 1980s the cultural perspective on

organizations has been on the agenda in organizational studies (organizational behaviour, organizational behaviour, organizational management (e.g. Smircich 1983; Crémer 1993; Denison 1996; Pettigrew 1979)). Over the years, many different concepts and measurements of corporate culture have been developed (Jung et al. 2009). Among these are the competing values framework by Quinn (1988) (Cameron, Quinn 2006), the Organizational Culture Profile (OCP) by O'Reilly et al. (1991), the model on cultural traits by Denison and Mishra (1995), the dynamic model of Schein (1984) and the concept of cultural dimensions by Hofstede (1989).

For the present study, the approach of Hofstede (1989) has been chosen, as it has been developed based on an European case study and should hence be recognizable in German organizations (Hofstede et al. 2010). Moreover, this model is part of a larger culture complex, including other levels of culture, such as the regional or industrial level. Consequently, taking this definition, corporate culture is clearly distinguishable from other cultural levels (Hofstede et al. 2010) and thereby raises the comparability with and integration into other studies. In his definition, corporate culture consists of six different dimensions, namely process versus results oriented, employee versus job oriented, parochial versus professional, open versus closed system, loose versus tight control and normative versus pragmatic. While employees of a process-oriented organization are rather risk avoiding, those in a results-oriented environment feel comfortable in challenging situations. In an employee-oriented organization, the focus is on the person, while in a job-orientated organization the fulfilment of the job is at the top of the agenda. With the third dimension of a parochial versus professional environment the degree to which employees derive their identity from the organization (parochial) or their job (professional) is described. The dimension of open versus closed system is closely connected to the communication style of an organization, while the dimension of loose versus tight control describes how tightly employees are educated due to money and time. Finally, the dimension of normative versus pragmatic refers to the severity of rules and whether it is more important to follow them (normative) or meet the customers' wishes (pragmatic) (Hofstede et al. 2010).

Empirical investigations, using the Hofstede concept for distance in corporate culture in a composite indicator, do not provide conclusive outcomes: Results reach from no significant effect of cultural differences on relationship performance (neither direct nor indirect) (Beugelsdijk et al. 2009) to a positive direct and indirect effect of cultural similarities (Ozorhon et al. 2008). Pothukuchi et al. (2002) investigate the six dimensions of corporate culture separately, finding for four of them a negative effect on the satisfaction with the relationship, while the distance for the other two (parochial versus professional and loose versus tight control) displayed no significant effects. Studies, investigating single traits, that are similar to the Hofstede dimensions find all negative effects of differences between partners on collaboration performance (Wilkof et al. 1995; Werker et al. 2016; Ghauri, Rosendo-Rios 2016; Plewa 2009).

2.3 Interaction of Distances and Collaboration Success

Studies defining corporate culture less specifically, find especially an indirect positive effect of proximity in corporate culture on indicators of collaboration performance. Compatibility in corporate culture positively influences project and strategic performance via trust, commitment and communication (Sarkar et al. 2001; Plewa, Quester 2007). Rosendo-Rios et al. (2016) defines compatibility in corporate culture as part of organizational compatibility and finds an indirect positive effect on performance indicators via integration and commitment. At the same time, similarities in corporate culture are expected to effect the collaboration structure and through this as well its performance (Ozorhon et al. 2008). Besides the direct effect, proximity or distance in corporate culture is hence especially interesting as a moderating factor. This is in line with Boschma (2005), proposing a strong connection of cultural proximity (as part of institutional proximity) with the other proximities.

Between geographically distant partners, the main factors hindering successful collaborations is the restricted unintended and more difficult knowledge flow. This is especially true for rather specific and not easily codified knowledge (Maggioni, Uberti 2009; Cunningham, Werker 2012; Paier, Scherngell 2011; Hinzmann et al. 2019). Moreover, face-to-face interaction is named as a facilitator of knowledge exchange, which is easier if partners are co-located as otherwise travel costs may rise. Finally, not being able to see the partner frequently, requires a greater amount of trust (Breschi, Lissoni 2001). In this case, proximity in corporate culture can act as a compensator as first of all a similarity in behaviour motivates all involved parties to put more efforts in making the collaboration succeed. Moreover, the difficulty of adequate communication over geographic distance can be eased, if partners have a similar communication style (similarity in the dimension open versus closed system) (Ozorhon et al. 2008; Pothukuchi et al. 2002). Additionally, cultural proximity is connected to a higher amount of trust, preventing failure (Brown et al. 1989; Ozorhon et al. 2008). Finally, having the same structures of control and severity (dimension of loose versus tight control and dimension of normative versus pragmatic) prevents disappointments (Pothukuchi et al. 2002; Ghauri, Rosendo-Rios 2016; Plewa 2009).

H1 Low distance in corporate culture renders the effect of geographic distance on the likelihood to have a successful collaboration more positive.

In socially distant collaborations the feeling of loyalty as well as the motivation to communicate are missing. This renders the knowledge exchange more complicated (Boschma 2005). Additionally, without prior ties, rules of communication and coordination have to be settled for the first time which delays the start of the exchange process (Uzzi 1997; Bercovitz, Feldman 2011). Proximity in corporate culture is expected to work as a compensator. Especially, the three dimensions of system-openness (similar communication strategies), control and

pragmatism (similar requirements on structure and rule-adherence) are decisive. If internal structures are similar, the negotiation on joint rules might be less time-intensive and similar communication habits help to prevent misunderstandings (Hofstede et al. 2010; Bercovitz, Feldman 2011; Ozorhon et al. 2008). Moreover, having the feeling of cultural fit, the development of trust is easier, even without prior collaboration and the motivation to commit to the relationship is higher (Ozorhon et al. 2008).

H2 Low distance in corporate culture renders the effect of social distance on the likelihood to have a successful collaboration more positive.

If partners with different organizational backgrounds collaborate, the collaborations have a higher likelihood to be successful. Nevertheless, the differences of two entities with different motivations and ambitions as well as internal structures that have to be bridged (e.g. Werker et al. 2019; Ozorhon et al. 2008). From a theoretical point of view, organizational distance is connected to a higher risk of opportunism and more uncertainty (Boschma 2005). Empirical studies postulate that the differences in the willingness to share knowledge (Broekel, Boschma 2012) and the different absorptive capacities between the organizational forms, might lead to the fear that the partner profits more from the collaboration (Cunningham, Werker 2012). Proximity in corporate culture can ease these possible drawbacks by providing some kind of mutual understanding and hence reduce the fear to be betrayed (Ozorhon et al. 2008). Looking at the single dimensions, especially proximity in the dimension of process versus results oriented is important, as it covers as well the way organizations cope with unknown situations (Hofstede et al. 2010). Moreover, again a similar communication attitude might be helpful (dimension open versus closed system) to prevent misunderstandings which can hamper successful collaboration (Pothukuchi et al. 2002). Finally, having similar demands on control mechanisms (similarity in the dimension loose versus tight control) and being alike due to how strict rules are (normative versus pragmatic dimension) might help to settle control distribution of the collaboration more quickly and get the collaboration work started (Ozorhon et al. 2008).

H3 Low distance in corporate culture renders the effect of organizational distance on the likelihood to have a successful collaboration more positive.

Even though corporate culture cannot influence the given knowledge bases, it can, however, influence the behaviour and reaction of partners in situations with cognitive distance. If cognitive distance is too big, it hinders the exchange of knowledge in the first step and the absorption and use of the offered knowledge in the second step (Cohen, Levinthal 1990). Low distance in corporate culture can compensate arising difficulties with similarities in communication (dimension open versus closed system) and a certain being-alike due to how to cope with challenging situations (dimension process versus results oriented). Finally, a

feeling of trust caused by general proximity in corporate culture can lead to a greater motivation to make the collaboration work and overcome distances (Ozorhon et al. 2008).

H4 Low distance in corporate culture renders the effect of cognitive distance on the likelihood to have a successful collaboration more positive.

3 Data and Methodology

3.1 Survey

To generate data that gives the possibility to test the above developed hypotheses, a survey of German organizations was conducted between May and September 2020. In a first step, the members of the 453 German industrial clusters² were invited via mail to participate in the online survey, followed by inviting the members of German economic development agencies (409), trade associations (20) and all 97 chambers of industry and commerce. This way, a totality of 44,598 organizations were contacted directly. Moreover, the managers and responsible persons of the different networks were called and asked to further distribute the survey. In the end, the dataset consisted of 686 complete questionnaires, of which 366 questionnaires had to be deleted as they either did not collaborate or had missing data in one of the proximity variables or the dependent variable. The remaining 320 questionnaires (hence organizations) described their relationships with on average two partners³, leading to 638 relationships as basis for the analysis.

The survey consisted of 30 questions, out of which the questions about partners were only visible for organizations engaged in collaborations. Pretests were run in economy and academia. The questions covered five thematical complexes: basic information on the organization, demographics of the employees, corporate working practices, information on collaborations and partners and a classification of corporate culture. The questions for corporate culture were developed by Hofstede et al. (1990).

² The website 'Clusterplattform' (www.clusterplattform.de) offers a list of German industrial cluster. The website is maintained by the Federal Ministry for Economic Affairs and Energy and the Federal Ministry of Education and Research.

³ The questionnaire offered the possibility to describe relationships with up to a maximum of three partners.

3.2 Variables and Descriptives

Dependent Variable

The dependent variable is the dummy for collaboration success, derived from the question on whether the described collaboration has been successful.⁴ The questionnaire offered five different answering options ('yes', 'partly', 'no', 'I do not know' and 'no answer'). For the analysis, a dummy was built, taking 'no and 'partly' as a hint for the lack of success (see Figure 1). Some respondents explained with the comment function, why the collaboration was not seen as a successful one. They named a high number of staff turnover, problems

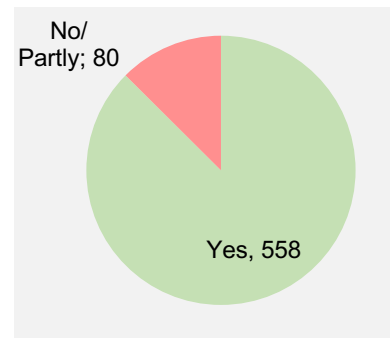


Figure 1 Would you call the beforehand described collaboration as successful (until now)? (Source: Own Questionnaire).

in communication and coordination, deviant working attitudes, data protection issues, misunderstandings, problems due to the actual health crisis and professional as well as personal incompatibilities as reasons for not meeting the set goals.

Independent Variables

For the present analysis, there are five different explanatory variables: geographic distance, social distance, organizational distance, cognitive distance and distance in corporate culture. For geographic distance, the organizations of the respondents and their partners were allocated to the corresponding German Bundesländer⁵. Then, the distances in km were calculated between the centres of the federal states ("Bundesländer"), having a range between 0 (same Land) and 637 km (between Baden-Württemberg and Schleswig-Holstein). The then calculated dummy subdivides the dataset in collaboration with no geographic distance (0 km) and the rest.

Social distance is based on the question, asking how often the organizations had collaborated before (see Figure 2), following a well-established approach for proxying social distance (e.g. Hong, Su 2013). A dummy has been created, separating collaborations with no social distance (worked together more than once) and those with social distance (the rest).

The variable of organizational distance refers to the different sectors the respondents classified themselves into: economy, science, political institution or network or other. Being in the same sector hence signifies organizational proximity. This can be seen as an extension of the

⁴ The respondents were provided with the following definition: A project can be described as 'successful', if it meets the set goals. Accordingly, the measured success is technical success.

⁵ Only very few international partners were named, distorting the variable excessively, as to why they had to be excluded from the analysis.

approach of earlier research, distinguishing just between profit and non-profit organizations (e.g. Broekel, Boschma 2012).

For cognitive distance the chosen industry⁶ of the respondents has been taken as a basis. This signifies that there is no distance if partners belong to the same industry and are hence expected to have to some degree similar knowledge bases (Nooteboom 1999) and a mutual absorptive capacity (Cohen, Levinthal 1990).

Cultural distance was first defined in the questionnaire, based on the definition from Hofstede (1989). Then the respondent was asked to classify his or her own organization in the different dimensions to get familiar with the cultural concept. Finally, the respondent was asked, whether the corporate culture of the respective partner was similar or not (see Figure 2). To maximize meaningfulness, the answers were combined in a dummy, where zero signifies no distance (combining the answers for 'strongly agree' and 'agree').

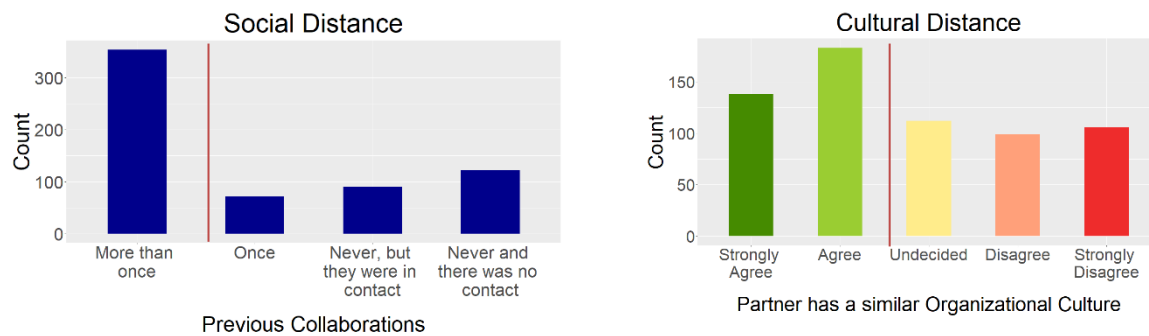


Figure 2 Distribution of Social and Cultural Distance Variables (N=638).

Control Variables

Another five variables supposed to influence the success of collaborations were included in the model as control variables⁷. First of all, the type of the collaboration reflects the motivation of organizations to be engaged in a collaboration and lead it to success (Becker, Dietz 2004; Hinzmann et al. 2019) (see Figure 3). A dummy variable was included, controlling for whether the collaboration was publicly funded. Funding has proven to positively effect collaborations outcomes (Czarnitzki, Fier 2003) (see Figure 3). The number of the involved organizations has been included as a categorial variable. There is empirical evidence that a high number of partners positively influences collaboration success, as more resources are available. This

⁶ The questionnaire had the subsequent answering options, following the German classification of industries (Klassifikation der Wirtschaftszweige; Statistisches Bundesamt 2007): agriculture, construction, education, energy, entertainment, finance and insurance, health, IT, manufacturing, public administration, R&D and consulting, real estate, tourism, trade, traffic, waste disposal and other.

⁷ Unfortunately, respondents were reluctant on sharing the size of the partners, as to why this variable could not be included (287 missing values).

leads, for example, to a higher innovativeness though coordination costs might increase (Okamuro 2007; Becker, Dietz 2004) (see Figure 3). With a rising number of team members, the knowledge pool becomes bigger and more diverse and the access to external networks is wider. These factors are said to positively influence the quality of collaborative activities and the number of involved persons is hence added to the model as a categorical variable (see Figure 3) (Singh 2008). Finally, as the questionnaire was partly distributed among members of networks and industrial clusters, a dummy was added, considering whether both organizations are members in an industrial cluster/network.

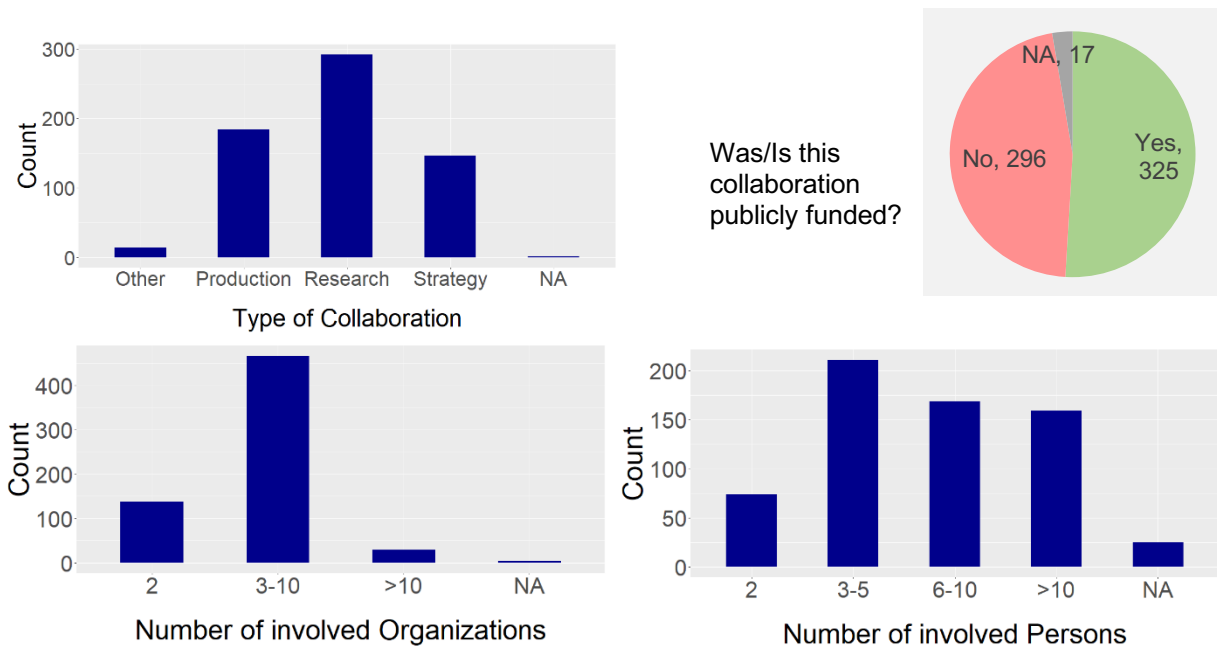


Figure 3 Distribution of the type of the collaboration, whether a collaboration was funded, the number of the in the collaboration involved organizations and persons (N=638).

Table 1 Explanation of and Basic Information on Variables (N=638). Count in parenthesis. For Collaboration Type, Number of involved Organizations and Number of involved Persons see Figure 3.

Variable	Dummy = 0	Dummy = 1	NA
Collaboration Success	Not Successful/Only Partly Successful (80)	Successful (558)	-
Geographic Distance	No Distance (423)	Distance (215)	-
Social Distance	Worked together more than once (354)	Worked together once, only contact, nothing (284)	-
Organizational Distance	Same Sector (426)	Different Sectors (212)	-
Cognitive Distance	Same Branche (331)	Different Branches (307)	-
Cultural Distance	Similar in Corporate Cultures (321)	Very Different in Corporate Culture (317)	-
Cooperation Funding	No (296)	Yes (325)	17
Both Organizations in any Cluster/Network	No (395)	Yes (104)	139

Table 1 Explanation of and Basic Information on Variables (N=638). Count in parenthesis. For Collaboration Type, Number of involved Organizations and Number of involved Persons see Figure 3.

provides some descriptive statistical and explanatory information on the variables described before. In Appendix 1 the correlation table is depicted, revealing that none of the distances correlate significantly more than 0.31 with each other and that especially geographic distance is not correlated with any distance. This is in line with scholars, challenging the importance attached to geographic distance for knowledge exchange (e.g. Boschma 2005; Balland et al. 2022). The fact that geographic distance and distance in corporate culture are not correlated, underlines moreover that corporate culture is not a space-bound phenomenon.

3.3 Model Specification

As the dependent variable of collaboration success is a binary variable, a multiple logistic regression model has been chosen to test the presented hypotheses. In total, four regression models have been calculated, of which the odds ratios are displayed in Table 2. Model 1 includes only the control variables, while Model 2 includes only the explanatory variables. Model 3 combines control and explanatory variables. The final model (Model 4) includes all control variables, the explanatory variables as well as the interactions of geographic, social, organizational and cognitive distances with distance in corporate culture. The test statistics display a good Pseudo R² (McFadden) for Model 4, the Hosmer and Lemeshow test assigns goodness of fit to all models and the AIC indicates that Model 4 has the best fit.

4 Results and Discussion

Table 2 presents the odds ratios of the effects of the above presented variables on the likelihood to have a successful collaboration for all four models. Starting with the control variables, funding of collaborations has a significant negative effect on the likelihood to have a successful collaboration (Model 4). This result is surprising, as funding was expected to be positively related to the success of a collaboration (Czarnitzki, Fier 2003). Reasons for the negative effect could be caused by the nature of the collaboration types in the current dataset. Studies finding a positive effect of funding of collaboration on the output, mostly measure the success with patent applications and R&D intensity (e.g. Czarnitzki, Fier 2003). In the present dataset, R&D is only one form of the collaborations included and funding might not be as important for, *inter alia*, strategic collaborations. Moreover, subsidies are normally linked to several conditions (Broekel et al. 2015). This might induce organizations to choose partners they would not have chosen without the funding or make organizations promise too much. Both factors can lead to the failure of the joint project. The control variable of team size has as well a significant but positive coefficient for the category for a team size of two people. Accordingly, having a very small number of team members (more than ten was the reference category) fosters having a successful collaboration, which is not as expected. A possible explanation could be that an adequately managed and structured collaboration contributes to a successful joint project (Perkmann et al. 2011) and that with growing team size coordination gets more challenging and more expensive (Okamuro 2007). The third significant control variable is the one of membership in an industrial cluster/network. Both partners being part of a cluster has a significant and positive effect on collaboration success. This can be explained by the fact that the environment of a cluster/region not only provides a pool of potential partners but can serve as well as a platform with a certain reputation, helping to win excellent partners from other regions (Molina-Morales, Martínez-Fernández 2004; Wu et al. 2010).

Model 3 (see Table 2) displays the direct effects of the distances on the likelihood to have a successful collaboration, considering controls. Cognitive distance and distance in corporate culture have a significant negative effect. Due to the nature of the variable for cognitive distance (dummy variable) it was not possible to test for the inverted u-shape postulated in former research (e.g. Nootboom et al. 2007). Still, there are empirical works displaying as well a negative linear effect of cognitive distance (Broekel, Boschma 2012), which fits the present empirical evidence. Taking a closer look at the construction of the variable, it becomes obvious that the categories of industries cover rather broad fields, for example, combining R&D and consulting into one class (Statistisches Bundesamt 2007). It can hence be assumed that organizations of the same class (accordingly having been assigned no (zero) cognitive distance in the dataset) do, however, have at least some cognitive distance. At the same time, partners from different classes really have a high cognitive distance (value of one). Taking this

into consideration the results might only reflect the right (and hence negative) side of the inverted u-shape slope. Keeping this in mind, the empirical evidence, hence, reflects that too much cognitive distance has a negative effect on the likelihood to have a successful collaboration, due to too diverse knowledge bases (Cunningham, Werker 2012). The significant and negative direct effect of distance in corporate culture is straightforward. Low distance in corporate culture signifies similarity due to risk taking, the communication habits, control mechanisms, whether people or the job is central and whether they are market oriented or not. Such cultural proximity prevents misunderstandings and increases satisfaction on both sides as working together is made more harmonic and easier (Ozorhon et al. 2008; Pothukuchi et al. 2002).

The full model (Model 4) displays a significant and positive effect for the interaction of distance in corporate culture with social distance and a significant and negative interaction effect of distance in corporate culture with cognitive distance. At the same time, the interactions of distance in corporate culture with geographic distance and organizational distance are not significant.

Table 2 Logistic estimation results (Odds ratios). Annotations: Standard errors in parentheses. Pseudo R² (McFadden): 0.277 (Model 1), 0.015 (Model 2), 0.299 (Model 3), 0.320 (Model 4).

	<i>Dependent variable:</i>			
	Coop_Success_Dummy2			
	(1)	(2)	(3)	(4)
Cult_Dis_Dum21:Geo_Dis_Land_Far1				1.422 (0.880)
Geo_Dis_Land_Far1		1.134 (0.294)	0.788 (0.238)	0.616 (0.301)
Cult_Dis_Dum21:Soc_Dis_Dum1				4.535** (2.798)
Soc_Dis_Dum1		0.853 (0.211)	0.785 (0.241)	0.305** (0.149)
Cult_Dis_Dum21:Org_Dis1				0.681 (0.476)
Org_Dis1		1.136 (0.302)	1.194 (0.399)	1.675 (0.980)
Cog_Dis1:Cult_Dis_Dum21				0.227** (0.154)
Cog_Dis1		0.844 (0.218)	0.559* (0.174)	1.282 (0.633)
Cult_Dis_Dum21		0.579** (0.151)	0.595* (0.181)	0.592 (0.350)
Coop_TypeProduction	0.00000 (0.0002)		0.00000 (0.0003)	0.00000 (0.0003)
Coop_TypeResearch	0.00000 (0.0005)		0.00000 (0.001)	0.00000 (0.001)
Coop_TypeStrategy	0.00000 (0.0002)		0.00000 (0.0002)	0.00000 (0.0002)
Coop_Funding 1	0.386*** (0.132)		0.442** (0.160)	0.436** (0.159)
Coop_Number_OrgasNEUtwo	0.418 (0.471)		0.405 (0.464)	0.341 (0.400)
Coop_Number_OrgasNEUthree_to_ten	0.201 (0.213)		0.203 (0.217)	0.179 (0.197)
Coop_Pers_Cattwo	2.078 (1.144)		2.609* (1.471)	3.101** (1.775)
Coop_Pers_Catthree_to_five	1.016 (0.368)		1.153 (0.427)	1.209 (0.453)
Coop_Pers_Catsix_to_ten	1.144 (0.432)		1.382 (0.541)	1.405 (0.557)
Both_Cluster 1	1.985* (0.758)		1.800 (0.716)	2.004* (0.816)
Constant	100,752,296.000 (87,156,191,228.000)	10.186*** (2.434)	135,974,485.000 (119,533,571,935.000)	184,733,771.000 (149,196,502,292.000)
Observations	465	638	465	465
Log Likelihood	-174.240	-237.254	-168.923	-163.701
Akaike Inf. Crit.	370.479	486.507	369.847	367.402

Note:

* p<0.1; ** p<0.05; *** p<0.01

The interaction term of **geographic distance** with distance in corporate culture is not significant (Model 4). Accordingly, there is no support for H1, which postulates that low distance in corporate culture renders the effect of geographic distance more positive. One reason might be that low geographic distance is especially important as a factor for getting engaged in

exchange/collaboration (e.g. Cassi et al. 2015). Once established, the spatial location of the single partners might not be as relevant any more. Moreover, the data of the present study only includes relationships between German organizations with a maximum travel distance between collaboration partners of around 637 km. This might not be far enough for geographic distance to have a significant effect.

In the full model (Model 4), the coefficient for interaction of **social distance** with distance in corporate culture is positive and highly significant. This signifies that H2 has to be rejected, suggesting that low distance in corporate culture renders the effect of social distance more positive. Low distance in corporate culture hence does not compensate for the lack of benefits normally derived from low social distance (for example, having a relationship characterized by friendship and trust (Boschma 2005; Maskell, Malmberg 1999)). Rather, a growing cultural distance renders the effect of social distance more positive. Accordingly, being distant due to corporate culture is not always to be negatively associated, but sometimes rather acts as a benefit (Beugelsdijk et al. 2009). As a composite indicator has been applied for distance in corporate culture, the data does not reveal, which dimensions of corporate culture exactly contribute to this result. However, for distance in the dimension of process versus results oriented, the effect of distance could work the following way: While one partner is very risk averse and anxious, the other one is very open for new ideas and motivated to take risks. In a collaboration they might then balance each other's extreme views, learning from each other and with this grow together as a team. To overcome social distance, it might moreover be helpful to have on one side a partner who is very open to new partners, while the other one is very cautious, normally avoiding risks (dimension open versus closed system). Accordingly, creating a trustful relationship is not fostered on similarity in corporate culture but on reciprocal complementation. The direct effect of social distance on the likelihood to have a successful collaboration is not significant (Model 3).

The interaction term of the third explanatory variable of **organizational distance** with distance in corporate culture is insignificant (Model 4). Likewise, the direct effect of organizational distance on the likelihood to have a successful collaboration is not significant (Model 3). This leads to the assumption that organizational distance has no effect on the likelihood to have a successful collaboration, which consequently cannot be moderated by (low) distance in corporate culture. Earlier research came to the same result (Cunningham, Werker 2012) as far as the direct effect is concerned. Reasons might be that differences in organizational structures refer to the difference in the likelihood to exchange knowledge with other organizations. This leads to an influence on the likelihood to engage in a collaboration. Once entered a collaboration, however, a certain willingness to exchange knowledge is given by all organizations and the differences between the different organizational types are consequently smaller and do not matter so much anymore (Broekel, Boschma 2012).

Finally, the interaction effect between distance in corporate culture and **cognitive distance** is negative and highly significant. This implies that low distance in corporate culture renders the effect of cognitive distance more positive, as proposed in H4. Though not being directly visible from the data, looking at the characteristics of the dimensions of corporate culture, especially proximity in two dimensions might contribute to this effect (open versus closed system and process versus result oriented), as proposed in theory. Proximity in the openness of the system refers to similarity of communication styles, being the basis for any collaboration. At the same time, proximity in the dimension of process versus result orientation indicates a similar risk attitude. However, the data does not give insights into whether similarity in corporate culture in, for instance, the dimension open versus closed system signifies that both are closed and secretive or that both are open and communicate freely or something in between. Accordingly, for the dimension of open versus closed system it can be beneficial if both are very open-minded and hence open for new ideas, even if this implies working with very different knowledge bases. Moreover, it can help if both are neither too open nor too closed, signifying being open to new ideas, however, never being too careless. Finally, it can ease the challenges connected to high cognitive distance by working together with great care and sharing knowledge only step by step to minimize the danger of failure (both being very closed). For the dimension of process versus results orientation, there are again three forms of proximity in corporate culture (though of course the concept is continuous and any other point between process- and results-orientation can occur as well): One possibility would be, if both are very risk-averse, prefer taking the safe way and hence being successful through small but secure steps. If both partners feel to a certain degree comfortable in unknown situations, there is room for creativity and the testing of new ideas which in the end can lead to the success of the collaboration. Finally, both partners being extremely motivated to engage into the collaboration, helps to bridge knowledge distance by embracing the opportunity of combining very different knowledge bases and by this creating something truly new.

In sum, though not meeting all the expectation, the empirical evidence reveals that distance due to corporate culture should not be generally seen as a negative factor. While distance in corporate culture has a direct negative effect on the likelihood to have a successful collaboration, it can have a positive effect as a moderator of cognitive distance.

5 Concluding Remarks

The present study investigates whether distance in corporate culture can be seen as a serious direct and indirect factor for the performance of collaborations. It thereby aims especially at highlighting, whether low distance in corporate culture can moderate and especially reduce negative effects of geographic, social, organizational and cognitive distances on the likelihood

to have a successful collaboration. Starting from the proximity concept of Boschma (2005) and defining corporate culture following Hofstede (1989), the paper can be categorized at the interception between organization and innovation theory.

The empirical evidence indicates that besides a direct negative effect on the likelihood to have a successful collaboration, distance in corporate culture has moderating effects with social and cognitive distance. The analysis provides evidence that similarity in corporate culture renders the effect of cognitive distance on the likelihood to have a successful collaboration more positive. At the same time, being different in corporate culture, renders the effect of social distance more positive. Accordingly, it should not be generalized that proximity in corporate culture is most helpful, as sometimes different attitudes (distance in corporate culture) can be an advantage (partners complementing each other).

With these results the study contributes to existing literature in several ways. First of all, the empirical studies of corporate culture based on the definition of Hofstede (1989) are limited and hence need further empirical investigations and verification. Second, the present study hints that corporate culture is not regionally bound and hence not the same as regional culture, as there is no significant correlation between distance in corporate culture and geographic distance (Hofstede et al. 2010; Chatman, Jehn 1994). Thirdly, highlighting that not only proximity but distance in corporate culture can render effects of other distances more positive, supports the notion of cultural fit or complementarity (Weber et al. 1996; Sarkar et al. 2001). Finally, disentangling direct and indirect effects of distance in corporate culture represents one possibility to unravel contradicting evidence in the literature.

Besides these new insights, the study comes along with some shortcomings. Corporate culture has been measured as a composite indicator as there was no data available on the single dimensions of the collaborating partners. The calculated average of corporate culture might cause some of the insignificant coefficients, as first studies investigating the dimensions separately find that distances in the different dimensions do not always have the same effect (Pothukuchi et al. 2002). Moreover, the variable for cognitive distance did not allow to test for the inverted u-shape effect, though it can be argued that the present dataset rather reliably reflects the decreasing slope of the inverted u-shape effect. These presented limitations reveal starting points for further investigations.

Despite the named limitations, the study has some policy implications not to be neglected. Corporate culture mainly consists of practices (as opposed to the deeper rooted values in, for example, regional culture (Hofstede et al. 2010)). Accordingly, associated attitudes are, on the one hand, learnable and, on the other hand, changeable (Brown et al. 1989; Cameron, Quinn 2006). This renders them especially attractive for policy makers, as they can be directly addressed and influenced. Moreover, including corporate culture in policies does not

compulsorily signify a mayor rise in costs as already rising the awareness for corporate culture might have an effect.

Publication bibliography

- Aguilera, A., Lethiais, V., Rallet, A. (2012) Spatial and Non-spatial Proximities in Inter-firm Relations: An Empirical Analysis. *Industry and Innovation*, 19 (3), pp. 187–202.
- Anzola-Román, P., Bayona-Sáez, C., García-Marco, T. (2019) Profiting from collaborative innovation practices. Identifying organizational success factors along the process. *Journal of Management & Organization*, 25 (02), pp. 239–262.
- Balland, P.-A. (2012) Proximity and the Evolution of Collaboration Networks. Evidence from Research and Development Projects within the Global Navigation Satellite System (GNSS) Industry. *Regional Studies*, 46 (6), pp. 741–756.
- Balland, P.-A., Boschma, R. A., Frenken, K. (2022) Proximity, Innovation and Networks: A Concise Review and Some Next Steps. In: Torre, A., Gallaud, D. (Eds.): *The Handbook of Proximity Relations*: Edwar Elgar Publishing, Inc.
- Barnes, T., Pashby, I., Gibbons, A. (2002) Effective University - Industry Interaction: A Multi-case Evaluation of Collaborative R&D Projects. *European Management Journal*, 20 (3), pp. 272–285.
- Barney, J. B. (1986) Organizational Culture: Can It Be a Source of Sustained Competitive Advantage? *The Academy of Management Review*, 11 (3), pp. 656–665.
- Bayona, C., García-Marco, T., Huerta, E. (2001) Firms' motivations for cooperative R&D: an empirical analysis of Spanish firms. *Research Policy*, 30 (8), pp. 1289–1307.
- Becker, W., Dietz, J. (2004) R&D cooperation and innovation activities of firms—evidence for the German manufacturing industry. *Research Policy*, 33 (2), pp. 209–223.
- Bercovitz, J., Feldman, M. P. (2011) The mechanisms of collaboration in inventive teams. Composition, social networks, and geography. *Research Policy*, 40 (1), pp. 81–93.
- Beugelsdijk, S., Koen, C., Noorderhaven, N. (2009) A dyadic approach to the impact of differences in organizational culture on relationship performance. *Industrial Marketing Management*, 38 (3), pp. 312–323.
- Beugelsdijk, S., Koen, C. I., Noorderhaven, N. G. (2006) Organizational Culture and Relationship Skills. *Organization Studies*, 27 (6), pp. 833–854.
- Bizan, O. (2003) The determinants of success of R&D projects. Evidence from American–Israeli research alliances. *Research Policy*, 32 (9), pp. 1619–1640.
- Boschma, R. A. (2005) Proximity and Innovation. A Critical Assessment. *Regional Studies*, 39 (1), pp. 61–74.

- Breschi, S., Lissoni, F. (2001) Knowledge Spillovers and Local Innovation System: A Critical Survey. *Industrial and Corporate Change*, 10 (4), pp. 975–1005.
- Broekel, T. (2015) The Co-evolution of Proximities – A Network Level Study. *Regional Studies*, 49 (6), pp. 921–935.
- Broekel, T., Boschma, R. A. (2012) Knowledge networks in the Dutch aviation industry. The proximity paradox. *Journal of Economic Geography*, 12 (2), pp. 409–433.
- Broekel, T., Fornahl, D., Morrison, A. (2015) Another cluster premium: Innovation subsidies and R&D collaboration networks. *Research Policy*, 44 (8), pp. 1431–1444.
- Brown, L. T., Rugman, A. M., Verbeke, A. (1989) Japanese Joint Ventures With Western Multinationals: Synthesising the Economic and Cultural Explanations of Failure. *Asia Pacific Journal of Management*, 6 (2), pp. 225–242.
- Brunetta, F., Marchegiani, L., Peruffo, E. (2020) When birds of a feather don't flock together: Diversity and innovation outcomes in international R&D collaborations. *Journal of Business Research*, 114, pp. 436–445.
- Cameron, K. S., Quinn, R. E. (2006) Diagnosing and Changing Organizational Culture. Based on the Competing Values Framework. Revised Edition. San Francisco: John Wiley & Sons, Inc. (The Jossey-Bass Business & Management Series).
- Capaldo, A., Messeni Petruzzelli, A. (2015) Origins of knowledge and innovation in R&D alliances. A contingency approach. *Technology Analysis & Strategic Management*, 27 (4), pp. 461–483.
- Cassi, L., Morrison, A., Rabellotti, R. (2015) Proximity and Scientific Collaboration. Evidence from the Global Wine Industry. *Tijdschrift voor economische en sociale geografie*, 106 (2), pp. 205–219.
- Chatman, J. A., Jehn, K. A. (1994) Assessing the Relationship between Industry Characteristics and Organizational Culture: How Different Can You Be? *The Academy of Management Journal*, 37 (3), pp. 522–553.
- Cohen, W. M., Levinthal, D. A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35 (1), pp. 128–152.
- Combs, J. G., Ketchen, D. J. (1999) Explaining interfirm cooperation and performance: toward a reconciliation of predictions from the resource-based view and organizational economics. *Strategic Management Journal*, 20 (9), pp. 867–888.
- Crémer, J. (1993) Corporate Culture and Shared Knowledge. *Industrial and Corporate Change*, 2 (3), pp. 351–386.

- Crescenzi, R., Filippetti, A., Iammarino, S. (2017) Academic inventors: collaboration and proximity with industry. *The Journal of Technology Transfer*, 42 (4), pp. 730–762.
- Cunningham, S. W., Werker, C. (2012) Proximity and collaboration in European nanotechnology. *Papers in Regional Science*, 91 (4), pp. 723–742.
- Czarnitzki, D., Fier, A. (2003) Publicly Funded R&D Collaborations and Patent Outcome in Germany. *ZEW Discussion Papers*, 03 (24).
- Denison, D. R. (1996) What is the Difference between Organizational Culture and Organizational Climate? A Native's Point of View on a Decade of Paradigm Wars. *The Academy of Management Review*, 21 (3), pp. 619–654.
- Denison, D. R., Mishra, A. K. (1995) Toward a Theory of Organizational Culture and Effectiveness. *Organization Science*, 6 (2), pp. 204–223.
- Dyer, J. H., Singh, H. (1998) The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. *The Academy of Management Review*, 23 (4), pp. 660–679.
- e.g. /.
- Fink, G., Mayrhofer, W. (2009) Cross-cultural competence and management - setting the stage. *European Journal of Cross-Cultural Competence and Management*, 1 (1), pp. 42–65.
- Ghuri, P. N., Rosendo-Rios, V. (2016) Organizational cross-cultural differences in the context of innovation-oriented partnerships. *Cross Cultural & Strategic Management*, 23 (1), pp. 128–157.
- Heringa, P. W., Horlings, E., van der Zouwen, M., van den Besselaar, P., van Vierssen, W. (2014) How do dimensions of proximity relate to the outcomes of collaboration? A survey of knowledge-intensive networks in the Dutch water sector. *Economics of Innovation and New Technology*, 23 (7), pp. 689–716.
- Hinzmann, S., Cantner, U., Graf, H. (2019) The role of geographical proximity for project performance. Evidence from the German Leading-Edge Cluster Competition. *The Journal of Technology Transfer*, 44 (6), pp. 1744–1783.
- Hofstede, G. (1989) Organising for Cultural Diversity. *European Management Journal*, 7 (4), 390-397.
- Hofstede, G., Hofstede, G. J., Minkov, M. (2010) *Cultures and Organizations: Software of the mind: Intercultural Cooperation and Its Importance for Survival*. New York [among others]: McGraw-Hill.

- Hofstede, G., Neuijen, B., Daval Ohayv, D., Sanders, G. (1990) Measuring Organizational Cultures: A Qualitative and Quantitative Study Across Twenty Cases. *Administrative Science Quarterly*, 35 (2), pp. 286–316.
- Hong, W., Su, Y.-S. (2013) The effect of institutional proximity in non-local university–industry collaborations: An analysis based on Chinese patent data. *Research Policy*, 42 (2), pp. 454–464.
- Jung, T., Scott, T., Davies, H. T., Bower, P., Whalley, D., McNally, R., Mannion, R. (2009) Instruments for Exploring Organizational Culture: A Review of the Literature. *Public Administration Review*, 69, pp. 1087–1096.
- Maggioni, M. A., Uberti, T. E. (2009) Knowledge networks across Europe: which distance matters? *The Annals of Regional Science*, 43 (3), pp. 691–720.
- Maskell, P., Malmberg, A. (1999) The Competitiveness of Firms and Regions. 'Ubiquitification' and the Importance of localized learning. *European Urban and Regional Studies*, 6 (1), pp. 9–25.
- Miotti, L., Sachwald, F. (2003) Co-operative R&D. Why and with whom? *Research Policy*, 32 (8), pp. 1481–1499.
- Mohr, J., Spekman, R. (1994) Characteristics of Partnership Success: Partnership Attributes, Communication Behavior, and Conflict Resolution Techniques. *Strategic Management Journal*, 15 (2), pp. 135–152.
- Molina-Morales, F., Martínez-Fernández, M. (2004) How much difference is there between industrial district firms? A net value creation approach. *Research Policy*, 33 (3), pp. 473–486.
- Mora-Valentin, E. M., Montoro-Sanchez, A., Guerras-Martin, L. A. (2004) Determining factors in the success of R&D cooperative agreements between firms and research organizations. *Research Policy*, 33 (1), pp. 17–40.
- Nooteboom, B. (1999) Innovation and inter-firm linkages: new implications for policy. *Research Policy*, 28 (8), pp. 793–805.
- Nooteboom, B., van Haverbeke, W., Duysters, G., Gilsing, V., van den Oord, A. (2007) Optimal cognitive distance and absorptive capacity. *Research Policy*, 36 (7), pp. 1016–1034.
- North, D. C. (1991) Institutions. *Journal of Economic Perspectives*, 5 (1).
- Okamuro, H. (2007) Determinants of successful R&D cooperation in Japanese small businesses. The impact of organizational and contractual characteristics. *Research Policy*, 36 (10), pp. 1529–1544.

- O'Reilly, C. A. [., Chatman, J. A., Caldwell, D. F. (1991) People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit. *The Academy of Management Journal*, 34 (3), pp. 487–516.
- Ozorhon, B., Arditi, D., Dikmen, I., Birgonul, M. T. (2008) The role of organisational culture in construction company alliances. *International Journal of Human Resources and Management*, 8 (3), pp. 177–191.
- Paier, M., Scherngell, T. (2011) Determinants of Collaboration in European R&D Networks. Empirical Evidence from a Discrete Choice Model. *Industry and Innovation*, 18 (1), pp. 89–104.
- Perkmann, M., Neely, A., Walsh, K. (2011) How should firms evaluate success in university–industry alliances? A performance measurement system. *R&D Management*, 41 (2), pp. 202–216.
- Pettigrew, A. M. (1979) On Studying Organizational Cultures. *Administrative Science Quarterly*, 24 (4), pp. 570–581.
- Plewa, C. (2009) Exploring organizational culture difference in relationship dyads. *Australasian Marketing Journal*, 17 (1), pp. 46–57.
- Plewa, C., Quester, P. (2007) Key drivers of university-industry relationships: the role of organisational compatibility and personal experience. *Journal of Services Marketing*, 21 (5), pp. 370–382.
- Ponds, R., van Oort, F., Frenken, K. (2007) The geographical and institutional proximity of research collaboration. *Papers in Regional Science*, 86 (3), pp. 423–443.
- Pothukuchi, V., Damanpour, F., Choi, J., Chen, C. C., Park, S. H. (2002) National and Organizational Culture Differences and International Joint Venture Performance. *Journal of International Business Studies*, 33 (2), pp. 243–265.
- Quinn, R. E. (1988) *Beyond rational Management*. San Francisco: Jossey-Bass.
- Rosendo-Rios, V., Ghauri, P. N., Zhang, Y. (2016) Empirical analysis of the key factors that can contribute to university–industry cooperational success from a relationship marketing approach. *European Journal of International Management*, 10 (6), pp. 647–677.
- Sarkar, M. B., Echambadi, R., Cavusgil, S. T., Aulakh, P. S. (2001) The Influence of Complementarity, Compatibility, and Relationship Capital on Alliance Performance. *Journal of Academy of Marketing Science*, 29 (4), pp. 358–373.
- Schein, E. H. (1984) Coming to a New Awareness of Organizational Culture. *Sloan Management Review*, 25 (2), pp. 3–16.

- Singh, J. (2008) Distributed R&D, cross-regional knowledge integration and quality of innovative output. *Research Policy*, 37 (1), pp. 77–96.
- Smircich, L. (1983) Concepts of Culture and Organizational Analysis. *Administrative Science Quarterly*, 28 (3), pp. 339–358.
- Statistisches Bundesamt (Ed.) (2007) Klassifikationen. Gliederung der Klassifikation der Wirtschaftszweige, Ausgabe 2008 (WZ 2008). Wiesbaden.
- Tether, B. S. (2002) Who co-operates for innovation, and why. An empirical analysis. *Research Policy*, 31 (6), pp. 947–967.
- Uzzi, B. (1997) Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly*, 42, pp. 35–67.
- Weber, Y., Shenkar, O., Raveh, A. (1996) National and Corporate Cultural Fit in Mergers/Acquisitions: An Exploratory Study. *Management Science*, 42 (8), pp. 1215–1227.
- Werker, C., Korzinov, V., Cunningham, S. W. (2019) Formation and output of collaborations: the role of proximity in German nanotechnology. *Journal of Evolutionary Economics*, 29 (2), pp. 697–719.
- Werker, C., Ooms, W., Caniëls, M. C. J. (2016) Personal and related kinds of proximity driving collaborations. A multi-case study of Dutch nanotechnology researchers. *SpringerPlus*, 5. 1751 (1).
- Wilkof, M. V., Wright Brown, D., Selsky, J. W. (1995) When the Stories are Different: The Influence of Corporate Culture Mismatches on Interorganizational Relations. *Journal of Applied Behavioral Science*, 31 (3), pp. 373–388.
- Wu, X., Geng, S., Li, J., Zhang, W. (2010) Shared Resources and Competitive Advantage in Clustered Firms: The Missing Link. *European Planning Studies*, 18 (9), pp. 1391–1410.

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Declarations

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Data Availability Statement

The dataset analysed during the current study is not publicly available due the fact that it was generated from a survey which has been conducted within the context of the present study. The dataset is available from the author on reasonable request.

Compliance with Ethical Standards

Competing Interests: Financial interests/ Non-financial interests

The author reports there are no competing interests to declare.

Appendix 1: Correlation of Variables

	Coop_Su ccess_Du mmy2	Geo_Dis_ Land_Far	Soc_Dis_ Dum	Org_Dis	Cog_Dis	Cult_Dis_ Dum2	Coop_Fu nding	Both_Clus ter
Coop_Success_Dummy2	1.00							
Geo_Dis_Land_Far	-0.02	1.00						
Soc_Dis_Dum	-0.07	0.06	1.00					
Org_Dis	-0.04	0.04	0.22***	1.00				
Cog_Dis	-0.12**	0.04	0.14**	0.26***	1.00			
Cult_Dis_Dum2	-0.12**	0.08	0.13**	0.20***	0.31***	1.00		
Coop_Funding	-0.11*	0.03	0.23***	0.36***	0.08	0.21***	1.00	
Both_Cluster	0.06	-0.06	-0.11*	0.07	0.01	-0.04	0.14**	1.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

N = 465

The variables Coop_Number_OrgasNEU and Coop_Pers_Cat were excluded due to being string variables.