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COOPERATION IN THE FORM OF CONSORTIA – EVALUATION OF RISKS, OPPORTUNITIES AND CRITERIA FOR THE SELECTION OF BUSINESS PARTNERS

Summary. To cope with large-scale construction projects consortia are widely used. Yet they entail opportunities and risks. In order to evaluate the motivation and hindering factors to found a consortium, which are mentioned in literature, a survey of German construction companies was carried out. The result is that motivational factors are higher rated than the hindering ones. Another influence on a successful consortium, respectively the opportunities and risks, is the choice of partners. This influence was also surveyed and evaluated. None of the given criteria was assessed as unimportant. The conclusion can be drawn that the success of a consortium is highly dependent on the right choice of partners, which can increase the opportunities and decrease the risks.

Keywords: construction industry, consortium, risk analysis.

KOOPERACJA W FORMIE KONSORCJÓW – OCENA RYZYKA, OKAZJI I KRYTERIÓW WYBORU PARTNERÓW W INTERESACH

Streszczenie. Przy realizacji projektów budowlanych na dużą skalę bardzo często wykorzystuje się konsorcja. Aby oceniać motywację i czynniki utrudniające funkcjonowanie konsorcjum, o których wspomina się w literaturze, przeprowadzono badania niemieckich przedsiębiorstw budowlanych. Z badań wynika, że motywacyjne czynniki są najważniejsze. Inny wpływ na udane konsorcjum mają odpowiednio okazje i analiza ryzyka. Żadne z danych kryteriów nie zostało ocenione jak mało ważne. Z badań wynika, że sukces konsorcjum jest bardzo zależny od trafnego wyboru partnerów.

Słowa kluczowe: przemysł budowlany, konsorcjum, analiza ryzyka.

1. Introduction

The budget and complexity of construction projects has been constantly increasing over the last decades.¹ Public authorities as well as private enterprises tender a rising number of large-scale projects, which have to be accomplished. The required resources are hard to provide by small and medium-sized enterprises (SME) due to their limited personnel and technical capacities.² In order to realize these large projects and hence to hold their own position on the market, co-operations have to be set up. In Germany this is facilitated by consortia.

A consortium is defined as the integration of separate independent building companies into a new unit, formed for the purpose of executing exactly one construction contract.³ The consortium is based on a contract. Particular model contracts are provided by the *Zentralverband des Deutschen Baugewerbes* (Central Association of the German Construction Industry) and the *Hauptverband der Deutschen Bauindustrie* (Central Federation of the German Construction Industry).

In theory, various opportunities and risks are associated with the formation of consortia. Until now, however, there is no evaluation of those. Of special interest is the way how construction companies assess the value of different criteria, and furthermore, how those criteria affect the motivation to form a consortium. Also relevant are criteria, which influence the choice of a suitable consortium partner and therefore encourage or obstruct co-operation. On that account this article is about the empirical investigation of the matters mentioned above. The aim is to identify important characteristics for German building companies. In addition, further research projects planned in co-operation with the Silesian University of Technology (STU), Poland and Tomas Bata University in Zlín, Czech Republic, will compare the results regarding possible similarities and differences as well as the impact of country-specific regulations.

First, the German consortium and its existing types are introduced. Second, a theoretical approach for the opportunities, risks as well as criteria for the choice of co-operation is developed. The presentation of the empirical investigation and analysis of the survey results are shown in chapter three. Finally, there is a summary and outlook.

¹ Hemberger (2013), p. 27; Oltmanns (2012), p. 1.

² The German building industry labels the participation of many small and medium enterprises in the market. The number of large concerns has significantly diminished over the last few years. Ellermann (2014), p. 5; unknown author (2014).

³ Wolff (2012), Rn. 40.

2. Consortia in Germany

2.1. Legal background

The consortium is a company constituted under civil law (German: *Gesellschaft bürgerlichen Rechts*, abbreviated: *GbR*). The requirement is a daily proprietary relationship between two or more persons.⁴ Hereby a mutual purpose is gained⁵, which justifies the consortium as a *GbR* (§§ 705 ff. German Civil Code, abbr. *BGB*). Therefore the consortium, consisting of natural persons and/or corporate entities (building companies), is a repository of rights and duties. The goal to jointly fulfill a construction contract represents the conjoint purpose.⁶ This type of civil law partnership (*GbR*) is a temporary partnership acting as a contract partner to a third party (buyer). The partnership possesses *Gesamthandsvermögen* (joint total assets)⁷. The consortium acts as a contractor to the buyer.⁸ It is important that the partners in the consortium are jointly and severally liable to the buyer for the fulfillment of the construction contract. The buyer has the right to demand all or parts of the contractually agreed services from any partner of the consortium.⁹

In 2001, the consortium acquired legal capacity and has since been of great value for professional practice in Germany. The consortium may take action, sue and be sued in its own name. The consortium can be treated as an independent legal entity in all contract deals, the companies behind it do not need to be examined separately for this purpose.¹⁰

The *GbR* does not need to be listed in the commercial register. Non-commercial companies, i.e. *GbR*, are not obliged to follow commercial accounting standards.¹¹

2.2. Types

In Germany, there are many types of consortia. The bidding consortium, which is an early form of the consortium, is the beginning of the typical development of a consortium and possesses the defined properties mentioned above. When placing the order, the following types of consortia are distinguished: *Leistungs-Arbeitsgemeinschaft* (standard consortium),

⁴ Ring; Grziwotz (2011), *BGB Einl.* § 705 ff., Rn. 51.

⁵ Wolff (2012), Rn. 61.

⁶ Thierau; Messerschmidt (2007), p. 129.

⁷ All legal and economic assets that are assigned to associates.
Schücking (2014), Rn. 10 und 31.

⁸ Burchardt (2008), *BGB Einl.* § 705 ff., Rn. 64.

⁹ Thierau; Messerschmidt (2013), Rn. 154., Messerschmidt (2012), Rn. 42.

¹⁰ Thierau ; Messerschmidt (2013), Rn. 125.

¹¹ Nevertheless the consortium has to abide by the commitments of §§ 140 ff AO. Therefore the consortium must keep accounts, because it is likely that the turnover reaches more than 500.000 €per (§ 141 Abs. 1 S. 1 AO) respectively a profit in excess of 50.000 €per financial year (§ 141 Abs. 1 S. 4 AO).

Dach-Arbeitsgemeinschaft (umbrella consortium), *Beihilfegemeinschaft* (support consortium) and *Dauer-Arbeitsgemeinschaft* (continuous consortium).

The conventional consortium¹² is also called **standard consortium**. The terminology of standard consortium originates with the duty of partners to provide the ARGE with money, guaranties, devices, material and/or personnel¹³. The execution of construction work is carried out mutually by the partners.

Another type is the **umbrella consortium**¹⁴ which has been widely used for large construction projects. In the same way as the standard consortium, the umbrella consortium takes on the total order. The difference is that it splits the order into trades, which are then allocated to the consortium partners. At this point it is important that every partner executes its assigned part of the construction contract. The goal is not to provide material and personnel as it is the case by a standard consortium, but to fulfill the assigned trades. Every partner works independently to complete the construction works of his trade. He has the choice to work on the trade alone or to found a new consortium with another partner. In the case of an umbrella consortium the partners are its subcontractors.¹⁵

The **support consortium** is another type, acting as an artificial consortium. It is called an artificial consortium because in this case it is a silent partnership. In their internal relationship new partners are incorporated, but they do not officially act as a contract party to the buyer. The support consortium does not own joint total assets and does not possess legal capacity.¹⁶

The basic feature of a consortium is the collaboration for exactly one construction project, as mentioned in chapter one. This is not the case for a **continuous consortium**. Here, the collaboration takes place for two or more construction projects with the same constellation of partners. From the juridical view this type of consortium is a *Offene Handelsgesellschaft* (general partnership).¹⁷

3. Opportunities and risks

3.1. Motivation for forming a consortium

Besides the easy handling of a *GbR*, there are further reasons that encourage the formation of a consortium, which are often found in the literature. In order to provide a structured

¹² According to consortium-contract of 2005 (revised reprint 2007).

¹³ Hauptverband der deutschen Bauindustrie e.V. (2007): ARGE-Vertrag, § 4.1.

¹⁴ According to Umbrella-consortium-contract of 2005 (revised reprint 2007).

¹⁵ Baldringer (2012), Rn. 42.

¹⁶ Ulmer; Schäfer (2013), Rn. 43; Baldringer (2012), Rn. 39.

¹⁷ Wolff (2012), Rn. 43; Baldringer (2012), Rn. 44, Thierau; Messerschmidt (2013), Rn. 123.

overview of reasons, the separation into subjective and objective causes is used¹⁸, as shown in the table below.

An **objective reason** is the even and optimal capacity utilization. When building companies continuously participate in consortia, they reach an even capacity utilization. In contrast, a single entrepreneur executing the contract would not be able to do so. Thus, ups and downs of capacity utilization can be avoided during the execution of construction.¹⁹ This advantage also leads to a stable employment, by which additional personnel costs for the entrepreneur are saved. Furthermore the financial situation of the company improves, because no big purchases have to be carried out in the initial phase of the construction project. A lack of equipment is balanced by supply from other partners. As a consequence, the flexibility of the involved companies increases, which in turn enables them to enter into new and changing markets. Apart from liquidity, the risk of a construction project is of great importance. The construction contractor, in the case of a single entrepreneur, accepts responsibility of a hundred per cent. For example, when the company applies new technologies or materials. However, if the company acts as member of a consortium, the risk will be limited by their share of the holding.²⁰

Subjective reasons, especially company specific ones, partly correspond to the objective reasons mentioned before.²¹ The objective reason, that an even capacity utilization affects a stable employment is crucial to retain expert staff in the company. So, the required practical knowledge and experience for further acquisitions stays within the company.²² SMEs can gain experience in the field of major projects by their participation in consortia. They can enhance their references for future competitive tendering procedures. They are not only subcontractors but act as equal partners.²³ SMEs get access to large scale, major prestige and technically challenging construction projects. Another advantage is the advanced interexchange of information and know-how between partners. On the one hand, technically highly specialized companies gain better access to large construction projects. On the other hand, a transfer of technical know-how is facilitated by the joint construction execution in a consortium. As a consequence, the competitiveness of partners, especially those with special know-how (e.g., specialist foundation engineering companies) increases.²⁴

Another reason is the buyer's preference to allocate the construction project to a consortium instead of several separate construction companies. The formation of a consortium consists of multiple productive construction companies. Furthermore the occurrence of interface-risks

¹⁸ Baldringer (2012), Rn. 9.

¹⁹ Baldringer (2012), Rn. 10, Burchardt (2008), § 11, Rn. 122.

²⁰ Wolff (2012), Rn. 60, Mrosek (2011), Rn. 27, Burchardt (2008), Rn. 122.

²¹ Baldringer (2012), Rn. 11.

²² Pohl; Keil et al. (1991), p. 115.

²³ VK Südbayern, Beschluss vom 13.09.2002 – 37-08/02.

²⁴ Burchardt (2008), Rn. 122.

like warranty and liability questions is less likely than for the placing of several separate orders.²⁵

Table 1

Promoting criteria for a consortium (chances)

Source: own illustration.

Subjective reasons	Objektive reasons
Retaining expert staff	Even capacity utilization
Lack of competence	Improvement of financial situation
Access to information and know-how	Obtain more flexibility
Stronger competitive position	Access to new markets
	Lack of equipment
	Risk sharing

3.2. Hindering factors to form a consortium

As a counterpart to the motivation there are also hindering factors, which lead to less or even no participation at all. Below, a structured view of the different reasons is given. As in the description of the motivation for formation, a separation into subjective and objective reasons is carried out and shown in table two.

An **objective** reason for a lack of motivation to form a consortium could be the joint liability. All partners are jointly liable for all debts and cases of liability which occur in the consortium. For international endeavors, the reasons include language barriers, regulatory barriers, political risks and economical risks like higher transaction costs. In addition, legal problems resulting from the bankruptcy of a partner and his possible withdrawal from the consortium during one of the three consortium phases – offer-, execution- and warranty-phase could be hindering.

Subjective reasons are negative experiences with co-operations and the risk of misbehavior of the partners. This causes a lack of confidence in the partners. The partners are partially dependent on each other due to the joint construction execution and joint liability. Another point is the potential loss, financial damage as well as loss of know-how, because it is passed on to the partners.²⁶ This would cause an improvement of the partners' competitiveness and hence could nurture a possible competitor on a national or international level in the future. A final hindering factor is the necessity to share the profit at the end of the project.

²⁵ Thierau; Messerschmidt (2007), p. 129.

²⁶ Gluch (1980), p. 72.

Table 2

Hindering factors for formation (risks)
Source: own illustration.

Subjektive reasons	Objektive reasons
Negative co-operation experience	Legal barriers
Lack of full trust	Language barriers
Risk of creating new cross-border competitors	Joint liability
Necessity to share profits	Political risks
Risk of misconduct of the partners	Regulatory barriers
Know-how loss	Political risks
Dependency on the partner	Economic risks

4. Evaluation

As described in chapter two, many risks and opportunities relating to the formation of a consortium are specified in the literature. This chapter will evaluate the identified motivations and barriers. In addition, the criteria to choose a partner for a consortium will also be analyzed, because the right choice of a partner can increase opportunities and decrease risks.

4.1. Implementation of the survey

The survey was conducted in the summer of 2014 in form of an online-survey. The link was sent either per e-mail directly to the construction companies or transferred with the help of two construction associations, which informed the members about the survey. 748 construction companies were contacted and 52 companies participated. This corresponds to a return rate of 7%. For the evaluation in this article, 43 answers are relevant and will be used as a basis for this research.

The questions about the motivations, barriers and criteria for the selection of partners were assembled in form of a pattern. The respondents should rank the given options: by the question about the motivation the companies should say in which frequency the given motivations have an influence of forming a consortium. The alternatives were never, rarely, sometimes, often, very often. By the question about the barriers the companies should rank the given barriers related to the value – no barrier, small barrier, partial barrier, big barrier, very big barrier. Accordingly, these two questions have an ordinal scale level. Therefore the median will be used for the rating.

The question about the criteria for the selection of partners were formulated differently. Ten levels were given, at which one was defined as unimportant and ten as very important. Hence this variable has an interval scale level. For the analysis the arithmetic average will be used.

4.2. Structure characteristics of the participants

The 43 companies, which were relevant for this research, are divided into three size categories (see table three). Micro-enterprises were not interviewed.

Table 3

Size of companies
Source: own research; definition of the size categories see EU-recommendation
2003/361/EG 1.

	Size of companies	Number of answered companies
Small-sized companies	10 - 49	6
Medium-sized companies	50 - 249	23
Big companies	> 250	14

67,4% of the surveyed companies are SMEs and 32,6% big companies. The area of operation is shown in afterimage. Most of the companies work in the sector public civil engineering followed by economic civil engineering.

In the following, there is not a differentiation respective to the size of the companies or the center of activity because the opportunities, risks and criteria for selection the partners should find out for the total quantity of the companies.

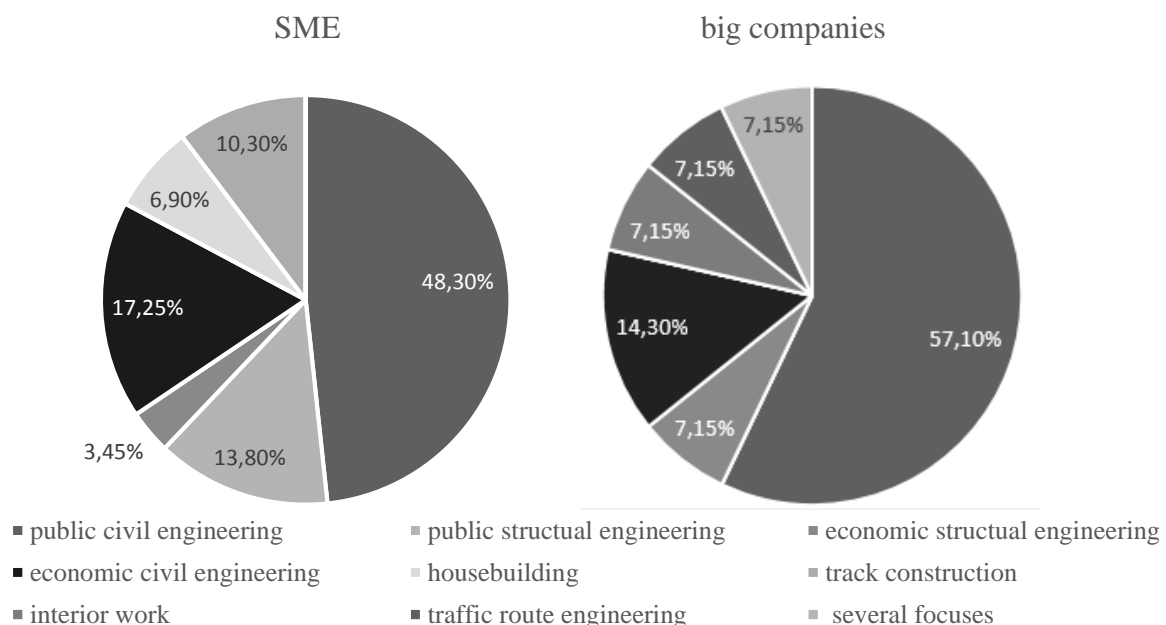


Fig. 1. Center of activity
Rys. 1. Rodzaje aktywności
Source: own research.

4.3. Results of the survey

4.3.1. Motivation for forming a consortium

Overall, 13 potential motivations were researched, which could have an influence on forming a consortium. In addition to the ones described in chapter three from the literature five more motivating reasons²⁷ were included in the survey to identify a possible new inclination.

To identify the importance of the different motivations, the companies were asked: “how often is the co-operation in form of a consortium motivated by”.

In figure two is clearly shown that the variable **stronger competitive position** has the highest deviations at often and very often. It can be a leadoff sign for the importance of this opportunity. In contrast, the variable **timely payment of financial commitment** has the most votes at never and rarely. The most demanded motivations have the most votes in the central zone. To determine an exact result on the importance of the variables and to infer possible explanatory notes, the medians were assigned to the evaluated motivations.

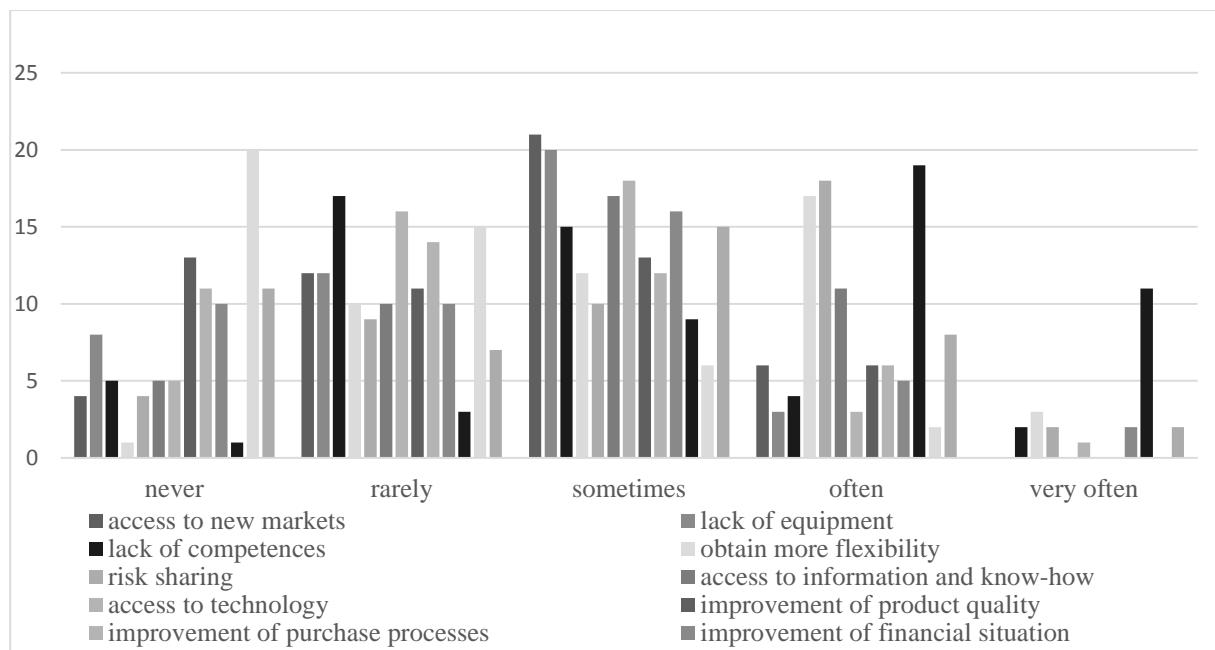


Fig. 2. Motivation for forming a consortium
Rys. 2. Motywacje do stworzenia konsorcjum
Source: own research

²⁷ These are access to technology, improvement of purchase processes, improvement of product quality, informal contacts between managers, timely payment of financial commitment.

Table 4

Median of motivation
Source: own research.

Criterion	Median	Criterion	Median	Criterion	Median
Access to new markets	sometimes	Access to information and know-how	sometimes	Improvement of financial situation	sometimes
Lack of equipment	sometimes	Access to technology	sometimes	Stronger competitive position	often
Lack of competences	rarely	Improvement of product quality	rarely	Timely payment of financial commitment	rarely
Obtain more flexibility	sometimes	Improvement of purchase processes	rarely	Informal contracts between managers	sometimes
Risk sharing	sometimes				

After the analysis of the medians in table four the major motivation is a **stronger competitive position** with the median at “often”. No other motivation has such a high median. This is due to the fact that the companies can use their capacity steadily and they can get reputation to successfully compete. If construction companies form a consortium, they can work on bigger and over their capacity ranging projects and successfully bid against big companies.²⁸

The variables **lack of competences**, **improvement of product quality**, **improvement of purchase processes** and **timely payment of financial commitment** were considered to be of subordinate relevance. For the first three variables, this is due to the fact that German construction companies have a good standard of knowledge.²⁹ Thus it is of less importance to cooperate for increasing the state of knowledge, for improving the product quality and purchase processes. The timely payment of financial commitment depends on the buyer rather than on the construction companies. Therefore, this variable has the median “rarely”, too.

4.3.2. Barriers for forming a consortium

In the question about the barriers for forming a consortium were 12 given barriers, which were identified in chapter three. The question to identify the important barrier was “How do you estimate the following barriers?” The companies weight the barriers as follows:

²⁸ Baldringer (2012), Rn. 10.

²⁹ Pwc.

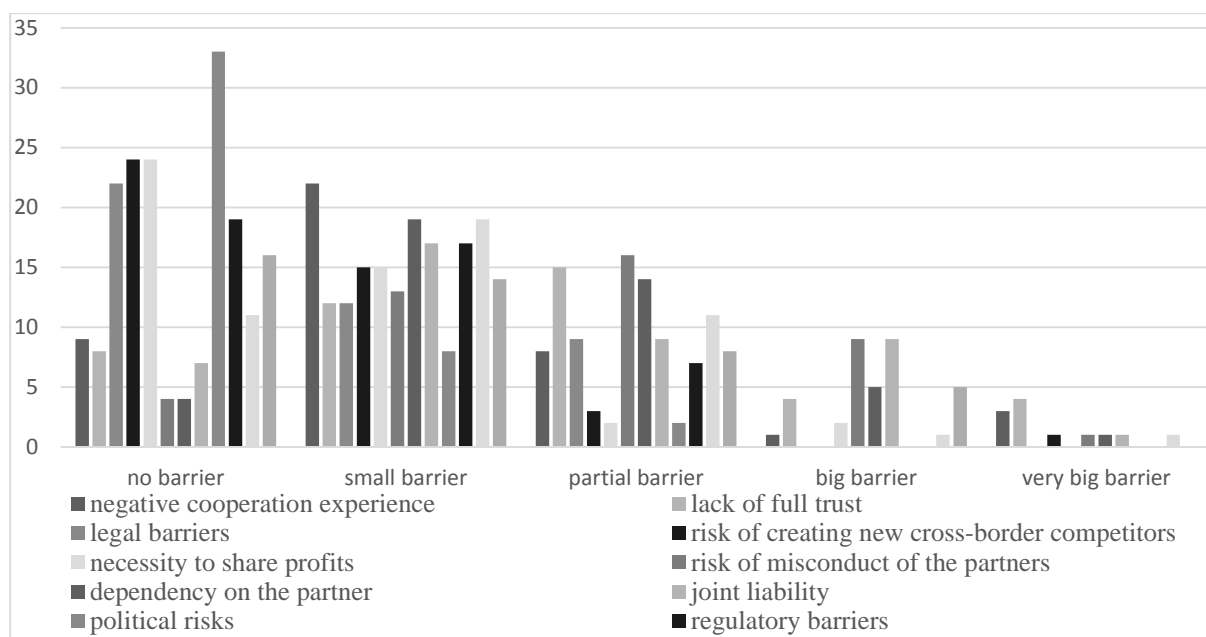


Fig. 3. Barrier for forming a consortium

Rys. 3. Bariery w procesie tworzenia konsorcjum

Source: own research.

It is evident that none of the given barriers are estimated to be essentially important. The focus of the answers is clearly on the left side of the figure three – no and small barriers. Thus, it can be concluded that the formation of a consortium is so important that the potential risks that are related to it, are evaluated weaker.³⁰ But the experience in consortia leads to a more targeted handling of risks and consequently to the reduction of the risks. To nonetheless figure out which are the most significant barriers and which barriers play a subordinate role, the median has been calculated.

Table 5

Median of barriers
Source: own research

Criterion	Median	Criterion	Median	Criterion	Median
Negative co-operation experience	Small barrier	Risk of misconduct of the partners	Partial barrier	Regulatory barriers	Small barrier
Lack of full trust	Partial barrier	Dependency on the partner	Small barrier	Economic risks	Small barrier
Legal barriers	No barrier	Joint liability	Small barrier	Know-how-loss	Small barrier
Risk of creating new competitors	No barrier	Political risks	No barrier	Necessity to share profits	No barrier

³⁰ Baldinger (2012), Rn. 9.

Two barriers have their median at partial barrier and thus it is the highest rating – **lack of full trust** and **risk of misconduct of the partners**. Trust plays an important role in the formation of consortia, because the properties of a consortium and the joint realization of a project require mutual trust as a basis. If the trust between the partners is not given, it should be decided not to form a consortium. In addition, the ability of the partner is important to protect the own company against problems in the construction process. If the partner makes mistakes, each shareholder must share the responsibility to errors in the external relationship due to the joint liability. Only in the internal relationship with appropriate security, the protection of the own company can be provided.

Four barriers get the status of "no barrier", so the construction companies appreciate these variables as insignificant. **Political** and **regulatory barriers** are estimated in the formation of consortia in Germany as unimportant, although there are outstanding issues. The foundation of a consortium is regulated by the German law. There are model contracts which facilitate the handling of consortia and protect companies from risks by missing arrangements. The **risk to get new competition** from forming a consortium is also considered as no barrier, because such co-operation's are usually made for projects that the construction companies could not realize by their own. If a construction project is realized by more than one company, it is a reasonable conclusion that the profits and losses are shared. For this reason, the fourth barrier **distribution of profits** is evaluated as "no barrier".

4.3.3. Criteria to choose a partner for a consortium

The success and failure in the realization of a construction project in form of a consortium depends

a lot on the choice of the partner(s). For example, if the partner company has no expertise, the technical support may not be as high as required.

To identify the criteria for the right partner selection, the companies were presented eight criteria. The companies should assess the given criteria on a scale of one to ten, of which one was defined as unimportant and ten as very important.

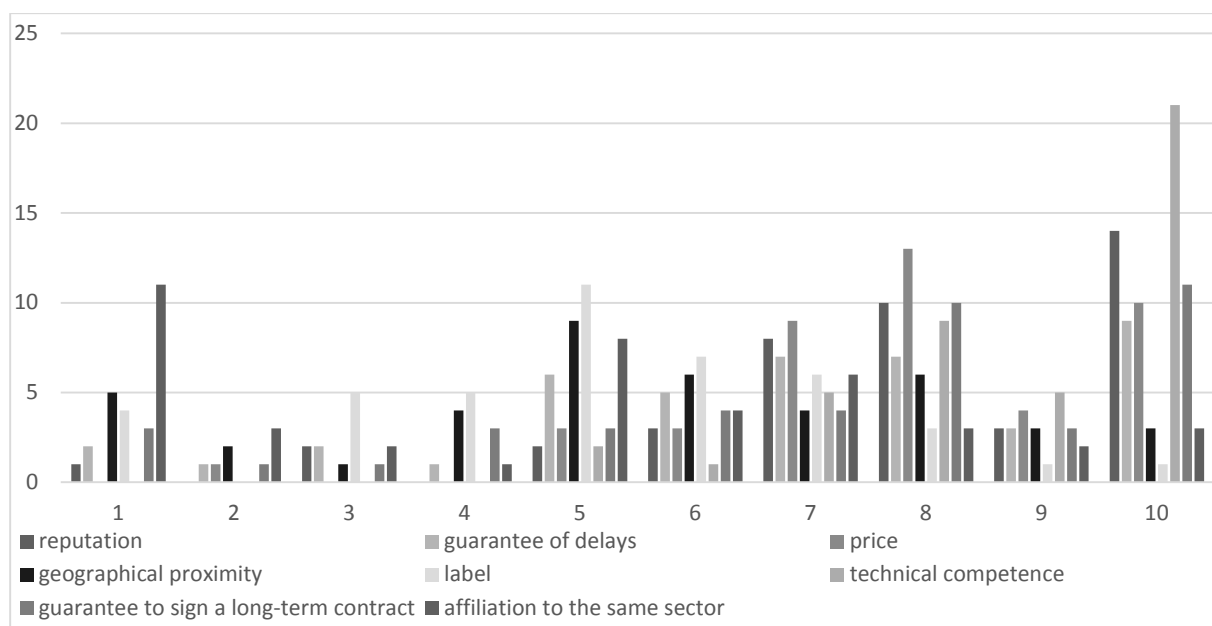


Fig. 4. Criteria for the right choice for a partner in a consortium

Rys. 4. Kryteria w zakresie właściwego doboru partnerów w konsorcjum

Source: own research.

As shown in the figure, most of the criteria are evaluated in the range of five to ten. So it can be deduced that each criterion plays a role in the selection of partners in a consortium. One criterion has its largest scale at one - affiliation to the same sector. Accordingly, this criterion has probably a subordinate role. The calculation of the arithmetic mean should illustrate the real importance of each criterion, which is shown in the following table six.

Table 6

Arithmetic average of criteria for the right choice for a partner in a consortium

Source: own research.

Criterion	Arithmetic mean	Criterion	Arithmetic mean
Reputation	7,42	Label	5,08
Guarantee of delays	6,83	Technical competence	8,92
Price	7,33	Guarantee to sign a long-term contract	7,92
Geographical proximity	5,17	Belonging to the same sector	4,92

After calculating the arithmetic mean, no criterion is evaluated as unimportant. **Belonging to the same division** has the lowest average value. It is only slightly below the value of 5. The reason for this is that for example in umbrella consortia, the co-operation of companies from different sectors to realize a project is regulated. By working on trades, these trades are separated from each other. Consequently, the criterion is rated as partly important. The

geographical proximity and label are only slightly higher than 5, so the criterions have only a mediocre importance.

The most important criterion with an arithmetic mean of 8.92 is **technical competence**. Without this, successful work is compromised, that is why it was evaluated as particularly important. This will prevent possible risks such as the misbehavior of a partner as well as structural defects.

5. Summary

Construction companies should be aware that consortia are subject to risks and opportunities. The fact that these depend significantly on the choice of the right partner(s) is obvious.

The aim of the present work is an empirical inquiry of the importance of opportunities, hindering factors and criteria for selecting a partner relating to consortia. The variables of the online-survey, derived from literature, were weighted by the surveyed companies. After the evaluation, it can be pointed out that the motivational factor of a stronger competitive position is regarded as the most important one. Generally, the risks are rated as a minor factor. The major hindering factor is the lack of full trust and risk of misconduct of the partner. It became apparent that none of the criteria of partner choice is assessed as unimportant. The most important one is technical competence.

This article describes a first-step survey among German construction firms to analyze their perception of risks, opportunities and criteria for the selection of business partners. The collected data should serve as a basis for further research. Particularly is to mention that a comparison of the results between countries provide information regarding the effects of country-specific legal regulations. For example, in Germany the construct “consortium” is regulated in detail and there are standard model contracts for the several forms of a consortium. In Poland, however, there are neither standard contracts such as in Germany. These conditions could affect the assessment of the regulatory and legal barriers which could be researched in a second step.

To increase the data record, the survey should be carried out again with the help of several construction associations to increase the response rate. In addition, the survey should be carried out not only among construction companies, but also among engineers and planning office to include them into the evaluation. Furthermore, the questions about the motivations and barriers should be designed in interval-scaled mode to be able to use the arithmetic means for the statistical analysis.

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Omówienie

Tworząc konsorcjum działające w branży budowlanej, należy być świadomym ryzyka związanego z zarządzaniem tego rodzaju złożonym przedsięwzięciem. Celem niniejszego artykułu jest analiza empiryczna czynników dotyczących utrudnień związanych z poszukiwaniem partnerów do konsorcjum i z samym procesem tworzenia konsorcjów. Dane zostały uzyskane w wyniku przeprowadzenia sondażu internetowego. Do najważniejszych czynników ryzyka zaliczono kwestie związane z niskim zaufaniem pomiędzy partnerami konsorcjum. Natomiast za najważniejszy czynnik decydujący o wyborze partnera uznano kompetencje techniczne.