

A search for valuable resources in the construction industry; a Dutch empirical study on the performance of contactors

How to stay away from low bid customers and non-valuable dyadic relations

Work in progress paper

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Introduction

The construction industry, as a whole, is under a lot of pressure: unsatisfied clients, building frauds, costs of failure, etc. This is also the case in The Netherlands. Improving the value adding performance is the challenge (Van Rees, 2006). Van Rees argues that an important weakness of the construction industry is the limited collaboration between the demand side and the supply side to get the demand sorted out correctly. Next to that, co-operation between project partners is weak. The dominant form of business in the construction industry is still the transactional exchange (Dubois & Gadde, 2000; Thompson et al, 1998), with a reliance on tendering procedures. Relationships based solely on market forces are often distrustful, if not antagonistic, and rooted in the fear that the other party might engage in opportunistic behaviour (Johnston & Lawrence, 1998). There is a growing demand for more collaboration between partners in the value chain to lower the failure costs in the industry. In table 1 results for a Dutch (non-scientific) questionnaire of Bouwkennis (a Dutch organization specialized in information gathering and spreading) are shown for the statement: "further collaboration in the construction industry will lower the cost of failure". Slightly surprisingly only 47% of all respondents agree on the statement.

	Very agree	Agee	Neutral	Disagree	Very disagree	Don't know / no opinion
Architects	2	50	12	29	0	7
Building contractor	5	38	23	26	2	7
Handymans	2	45	18	25	1	9
Building completion companies	1	43	31	13	5	8
Provider of technical services	5	46	17	22	1	9
Total	3	44	22	21	2	8

Table 1: response on statement: "further collaboration in the construction industry will lower the cost of failure
Source: Bouwkennis, december 2006

Dubois & Gadde (2000) propose a shift in the construction industry from a coordination of projects to coordination among firms (or networks). Studies of customer-supplier collaboration in general have shown that major benefits may be achieved when firms make adaptations to one another (Hines, 1994; Spekman et al., 1999). Three main types of adaptation may be distinguished (Gadde and Hakansson, 1994): technical adaptations connect the production operations of supplier and customer; administrative routines and knowledge-based adaptations.

Black et al (2000) finds that involved parties in the UK construction industry see many benefits from the use of partnering. In particular a less adversarial environment, increased end-client satisfaction and an improved understanding of the difficulties faced by other parties. Also for the UK construction industry, Beach et al (2005) argue that the tendency to use fewer subcontractors will continue; 77% of their respondents indicated that they had reduced the number of suppliers they used while 57% had plans to reduce the total number of subcontractors and favour 'partnered' subcontractors in the future. Beach et al. also argue that the concept of "best value" is also of importance. Best value can be drawn out of a project by utilising the specialist knowledge and expertise of suppliers. Doing so can prevent problems, reduce programme complexity, durations and costs, and improve the overall quality of the project (Beach et al, 2005).

In this paper we describe our research on the Dutch construction industry in the context of the above. Our research is focused on using the Resource-based View to identify valuable resources between parties in the construction industry. We look specifically for resources that add value to both the customer and the supplier (win-win). We thus take a dyadic perspective, instead of the antagonistic view of a lot of players in the industry.

The structure of this work-in-progress-paper is as follows. We first describe the research topic of this paper and the methodology used. Secondly we briefly some characteristics of the Dutch construction industry. We then describe the basics of the Resource-based View. We conclude with the research-questions of our coming research (which is the result of this paper) and description of our coming research on this matter.

Research topic and methodology used

Our aim for the study described in this paper is to come up with qualitative research questions for our research, based on the application of the resource base view in the (Dutch) construction industry. The research is about the addressability of resources in the construction industry, especially in dyadic relationships. That is the relation between a supplier in the construction chain and the construction firm itself, knowing that this dyadic relationship is only a small part of the real (complex) network construction firms operate in.

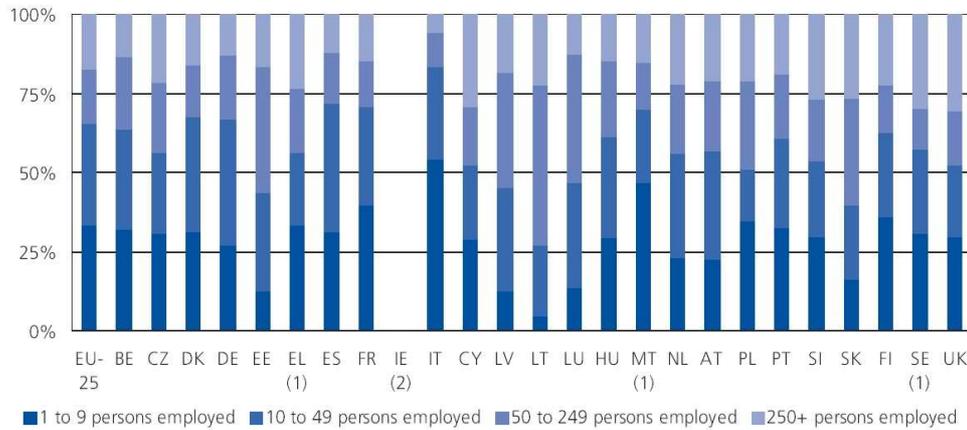
We used only literature to come up with the qualitative research questions of our research. Of course this is going to be completed by field interviews and other research sources. For now we only wanted to know what has been written on this subject in literature up to now.

Therefore we first describe the setting of the Dutch construction industry, after which we continue with the Resource Based View.

The Dutch construction industry (very briefly)

The market size of the construction industry in The Netherlands is an estimated € 65 bln (source CBS, 2004). The market is fragmented compared to other industries, although may be not as fragmented compared to the construction industry in other countries. Figure 1 displays the added value per group of construction firms according to size. In the Netherlands, 1900 architect agencies, 7300 contractors and 8400 suppliers participate in building projects (Voordijk et al, 2000). The parties are comparable in size and no single-party dominates the entire supply chain. Architects, assisted by specialized engineers are mainly responsible for design. Contractors take care of the site operations; some work is subcontracted to specialized firms and (multiple) suppliers provide the materials required.

Figure 1: construction industry by size per country
Share of value added by enterprise size class, 2003 (%)



(1) 2002.
 (2) Not available.
 Source: Eurostat (SBS)

The number of employees active in the industry is an estimated 463.000, or 6% of the total workforce in The Netherlands in 2005. Figure 2 displays the percentage of persons employed in

construction as a proportion of those employed in the non-financial business economy for

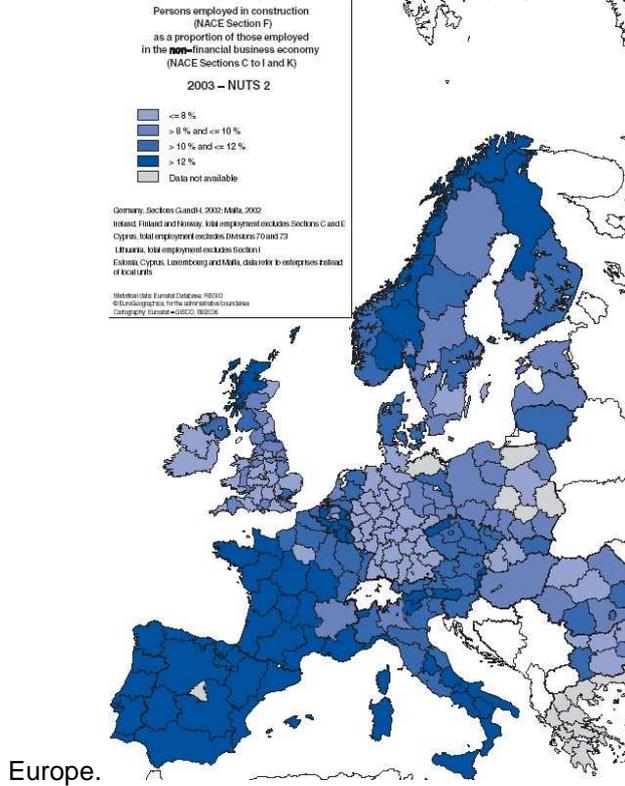


Figure 2; source Eurostat (2006)

The labour productivity in The Netherlands is one of the highest in Europe, as well as the average personnel costs (see table 2; source Eurostat 2006).

Construction (NACE Division 45)

Cost, productivity and profitability indicators, ranking of the top 5 Member States compared to EU-25 averages, 2003

Rank	Investment in tangible goods relative to total operating costs (%) (1)	Purchases of goods and services as a share of total operating costs (%) (2)	Personnel costs as a share of total operating costs (%) (2)	Apparent labour productivity (EUR thousand) (3)	Average personnel costs (EUR thousand) (3)	Wage adjusted labour productivity (%) (3)	Gross operating rate (%) (3)
EU-25	3.5	74.7	25.3	33.5	27.0	123.9	11.9
1	Latvia (6.2)	Hungary (88.6)	Cyprus (44.5)	Ireland (97.9)	Ireland (46.7)	Latvia (254.7)	Ireland (21.3)
2	Portugal (6.1)	Latvia (88.1)	Germany (35.4)	United Kingdom (57.5)	Netherlands (44.0)	Ireland (209.5)	Malta (18.1)
3	Denmark (5.4)	Czech Republic (86.9)	Luxembourg (35.0)	Netherlands (48.6)	Sweden (38.2)	United Kingdom (165.0)	United Kingdom (16.5)
4	Belgium (5.3)	Estonia (86.5)	Austria (34.3)	Austria (47.0)	Denmark (37.9)	Estonia (154.2)	Cyprus (16.4)
5	Lithuania (5.0)	Poland (84.8)	France (31.3)	Finland (44.8)	Austria (34.9)	Lithuania (153.3)	Latvia (16.2)

(1) Malta and Sweden, 2002; Greece and Ireland, not available; EU-25 is an EU average based on available data for 2002 and 2003.

(2) Malta and Sweden, 2002; Greece, not available; EU-25 is an EU average based on available data for 2002 and 2003.

(3) Malta and Sweden, 2002; Greece, not available.

Source: Eurostat (SBS)

Table 2: some lead indicators; (source Eurostat, 2006)

The sector has been topic of intense political discussion in 2002. At that time several investigations by parliament, cabinet, justice and antitrust authorities showed a widespread use of cartels and structural bid rigging within the Dutch construction industry. Dorée (2004)

describes as one of the reasons for the collusion practices in the industry that auction systems, such as tendering and lowest cost selection, create a risk for the bidders as cost estimates are imprecise and uncertain. The more costs a bidder overlooks, the higher the probability that they get the job. As a check to see whether a contractor has grossly underestimated the costs of a project, a contractor can seek verification by comparing its figures with the other bids. The effect of the political discussion has been tougher public procurement. Since 2002 the consensus is that competition needs to be enhanced between constructors. Dorée argues that a one-dimensional, price-oriented competition only provides a static, project-based efficiency. This is in line with Kashiwagi (2005).

A number of construction firms have made a change in their strategy towards customers. Contractors attempt to create more value based on services offering and a more extended view of the customer project upstream and downstream: design & build (D&B), design-build-maintenance-operation, design-build-finance-operate (DBFO), turnkey projects. This approach allows these contractors to interact early with their customers. However, these new approaches often still remain based on a short-term perspective focused on each project and using a call for tender procedure. With this, the risk of price-competition and tendering for the lowest bid (and low value) remains present.

The Resource-based View

In the early 1980s, the work of Porter (1980, 1985) focused attention on the role of industry in determining firm level profitability. Porter argued that some industries were more profitable than others due to their characteristics and that firms should select these “structurally attractive” industries or manipulate the forces driving competition in their favour through the selection of generic competitive strategies (Porter, 1980). With this in mind, it would be realistic to benchmark the attractiveness of the construction industry to other industries. However, research showed differences in performance between firms in the same industry and even firms in the same strategic group (Cool & Schendel, 1988; Wernerfelt & Montgomery, 1988; Rumelt, 1991). This means that a construction firm (in the “difficult construction industry”) can outperform a firm in a “good” industry. Building on the work of evolutionary economics and the work of Penrose (1959) the resource-based approach has re-established the importance of an individual firm, as opposed to an industry as the critical unit of analysis. The resource-based view of the firm sees the firm as a bundle of resources (Barney, 1991; Wernerfelt, 1984). These resources explain the (occurred) success of the firm. The RBV states that only some of these resources can lead to sustained competitive advantage. A key aspect here is that superior resources remain limited in supply. Barney (1991) proposes that advantage creating resources must meet four criteria: value, rareness, inimitability and non-substitutability.

There is a lot of literature on the concepts of rareness, inimitability and non-substitutability. Santema & Van de Rijt (2002) argue that there has been, in contrast, little resource-based literature on the concept of value. In industrial network theory (including the IMP tradition) the focus is on competitive advantage in a supply chain context: where supply chains compete instead of individual firms. Sethuraman et al (1988) define this advantage as “strategic benefits gained over competing dyads that enable the dyad to compete more effectively in the

marketplace". This is not the traditional focus of RBV or competence-based literature, where the focus is on one specific firm, instead of on a dyad. It has been argued by Edum-Fotwe et al. (1999) that this is also true for competition within the construction industry: in the next decade or two will be between supply chains, and not among individual companies.

The lack of a dyadic perspective in resource-based theory explains the difficulty in the operationalization of the Resource-based concept of "value" (Santema & Van de Rijt; 2002). They use the dyadic perspective from industrial network theory to help understand (from a monocentric perspective of the focal firm!) the value of its resources.

Valuing resources implicates estimating what the value of the resource in the perspective of the purchasing organization (the customer) is. Anderson et al (1993) define value (from a customer perspective) as "the perceived worth in monetary units of the set of economic, technical, service and social benefits received by the customer firm in exchange for the price paid for a product offering, taking into consideration the available suppliers' offerings and prices." A more common definition of value found in the marketing literature is the trade-off between what is received and what is given, with price included as one component of what is given. This is a small but important distinction. For Anderson and Narus, value is entirely separate from price, whereas for many other authors (e.g. Zeithaml, 1988) price is one of the elements of value.

Peteraf & Bergen (2003), analogue to Levitt (1960), argue that it is not the resource *type* that matters but the resource *functionality* for the customer.

To illustrate the concepts we take firm X as our focal firm. Construction firm X has a supplier (e.g. in raw materials) and a customer (buyer Y).

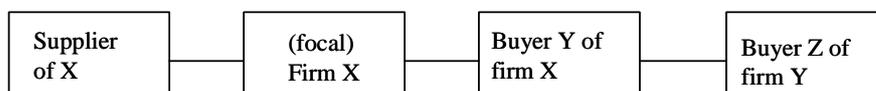


Figure 3: a value chain; construction firm X as the focal firm

Santema & Van de Rijt (2002) use the Kraljic matrix (Kraljic, 1983) to indicate which resources are valued from a customer perspective (see figure 4). The value of the resource is determined by the value of the resource as perceived by the customer. Value of the resource of focal firm X is mirrored by the value of the resource for customer Y in its operation. For example, firms that sell routine products (in the eyes of the customers) should build resources that help the customer in making it easier to order. Resources (of the focal firm, in this case the supplier of firm Y) should be aimed at smoothing the ordering process of its customer(s).

In each quadrant of the Kraljic matrix the customer values other resources (from its supplier). This means that firm X (the focal firm) should carefully select which resource-base to enhance.

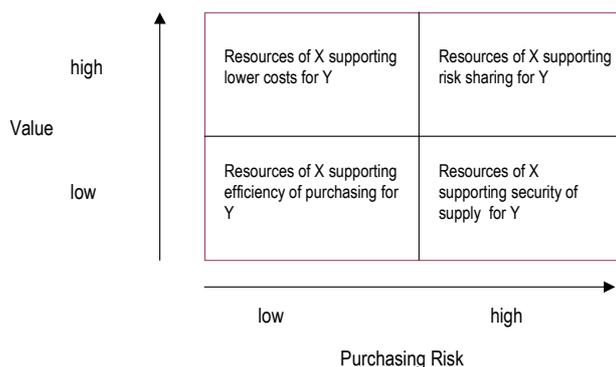


Figure 4: winning resources" of a supplier (focal firm X) from a customer's perspective, firm Y (Santema & Van de Rijt; 2005; adapted)

The Kraljic matrix helps organizations to identify valuable resources and helps identifying transaction costs. The transaction cost consists of the cost of specifying the details of procurement contracts, the cost of discovering what prices should be, the cost of negotiating the procurement contract, and the cost of monitoring the fulfilment of the contract (Arrow, 1959). Santema (2006) argues that firms can gain tremendously by deleting certain, non-value-adding, activities. The supplier and customer who have an eye for these costs can gain enormously.

The strategic logic of focal firm Construction firm X (for which opportunities Construction firm X wants to create value; customer segment Y) defines (via the management processes) which set of resources the focal firm needs to acquire, access, configure and/or deploy (Sanchez, 2004). This is called the coordination flexibility of managers to identify, configure and deploy the chain of resources (competence mode III, Sanchez, 2004). Given the strategic logic of the firm, specific resource decisions have to be made.

Sanchez's view is consistent with the view of Hansen et al. (2004) who, themselves in line with Penrose (1959), make a distinction between administrative resources and productive resources. A transformation of a firm's productive resources must take place in order for services (products) to be generated. Administrative decisions are critical to this transformation. Administration refers to the role of the managers of the firm in determining how the resources of a firm are to be used. Hansen et al conclude that a firm *does* with its resources is as important as *which* resources it possesses and thus that even homogeneously distributed productive resources can realize competitive advantage. Differences in services stem primarily from differences in administrative decisions concerning the productive resources. The administrative decisions can consist of redirecting or rebundling resources, adding new resources and discarding resources. This is in line with Dyer and Singh (1998) who argue that firms who combine resources in unique ways may be able to outperform firms that are unable to do so. The question is in what way managers in the construction industry deploy and acquire resources to gain a competitive edge.

In the Resource-based View the firm is characterized as an open system of assets stocks and flows (Dierickx & Cool, 1989; Sanchez & Heene, 1997). Sanchez & Heene (1996, 1997) propose an open system model of firms: the firm as a managed open system pursues a set of organizational strategic goals that collectively motivate the strategic actions of the firm by identifying, acquiring and using resources. Firms must constantly replenish their stocks of tangible and intangible assets through interactions with individuals, other firms, financial institutions, governments, communities and other providers of resources (Sanchez & Heene, 1997). The resources of a firm can reside both within the firm and outside the firm. Resources residing within the firm are called *firm-specific resources*. Resources outside the firm are called *firm-addressable resources*. These firm-addressable resources are resources, which a firm does not own or tightly control, but which it can arrange to access and use from time to time (Sanchez, Heene & Thomas; 1996). To result in competitive advantage these resources

logically also must match Barney's criteria: they need to be valuable, rare, inimitable and non-substitutable and thus unique in use for the focal firm (in comparison with competitors of the focal firm). This thus results into a classification of resource types according to figure 5.

Matching with Criteria of Barney (1991)	Yes	Firm- specific resource	Firm- addressable resource
	No	Resources not leading to sustained competitive advantage	
		The focal firm	Supplier of focal firm
		Owner	

Figure 5: classification of resource types

Sanchez (2004) states that some organizations' competences appear to be derived mainly from use of their own firm-specific resources, while the competences of other organizations seem to be derived largely from their ability to access and coordinate resources beyond their own organizational boundaries. There has been relatively little literature in competence-based theory on the concept of firm-addressable resources. Competence-based theory seems not to mind the "place" or origin of the resource: whether it resides within the firm or outside the firm (as long as the resource itself is valuable, rare, inimitable and non-substitutable and thus gives the focal firm a competitive advantage).

Originally, the RBV focused (implicitly) on firm-specific resources: resources owned by the focal firm. Ramsey (2001) argues that purchasing cannot lead to sustained competitive advantage (SCA) because purchasing through open markets cannot lead to SCA. This may be true, mainly because of circular reasoning: buying on open markets with equal access to these markets may not lead to SCA. However, Barney (1986) reasons that some firms are better than others in recognizing sources of potential value in factor markets; in this respect firms can indeed achieve SCA by being more successful on the factor markets.

Resources in network perspective

In this paragraph we deal (briefly) with some notions of resources in networks (IMP tradition). Not all markets are accessible for all possible participants, and not all buyers of resources exploit them in the same way. Contracts make resources in networks specific. In recent years there has been a good amount of literature on inter-organizational (or networked) relationships and its effects on sustained competitive advantage, which can be used in competence-based theory. Adding to the original programme of markets and hierarchies within the Transaction Cost Economics (Williamson, 1975) alternatives were created. In essence, supply chains represent a middle ground between markets and hierarchies. A supply chain is a network of actors that transform raw materials into distributed products (Handfield & Nichols, 2002). Some of the required functions may occur within one firm whereas others cross firm boundaries. The essential purpose for a supplier and customer firm engaging in a relationship is to work together

in a way that creates value for them (Walter et al, 2001). Ritter et al (2004) argue that role and importance of relationships and networks in business in value creation and delivery is the subject of increasing attention in the marketing and business literature.

Inter-organizational relationships may well lead to SCA. Gulati, Nohria & Zaheer (2000) state that an important source for the creation of inimitable value-generating resources lies in a firm's network of relationships. These resources are also called *network resources*. A firm's networks allow it to access key non-imitable and non-substitutable resources from its environment, such as information, access, capital, goods, services etc. Gulati, Nohria & Zaheer (2000) state that a firm's network can be seen as inimitable resources in itself and as a means by which to access others' inimitable resources and capabilities. Network resources thus can be considered a special subset of firm-addressable resources. In a similar way, Ritter & Gemünden (2003) refer to a company-specific ability to handle, use, and exploit inter-organizational relationships as a "network competence".

Dyer & Singh (1998) as proponents of the relational view of strategy also recognize the ideas that a firm's critical resources may span firm boundaries and be embedded in inter-firm resources and routines. Of course, the work of the Industrial Marketing and Purchasing (IMP) group (e.g. Håkansson & Snehota, 1982) is based on the notion of the value of relationships. Gadde, Huemer & Håkansson (2003) argue that a company's relationships are important resources in themselves and that a significant part of a company's total resource base is located beyond its ownership boundary and is controlled bilaterally with other firms. In deciding which actors are to be included within the key network, the focal firm must consider the ability of each actor to mobilise, access, and mix resources. To create a competitive advantage, the capabilities brought into and developed within the key network should not only be difficult for competitors to replicate but should also complement the existing capabilities of the network (Batt & Sharon; 2004).

The intentions of our research are to identify valuable resources for constructors in their industry networks; in the light of procurement behaviour of their customers. For this we use the Resource-based View. For the results of this study and to answer the main topic in the second paragraph, we now conclude with the research questions we are going to use in our further research.

Research questions

With the previous as the theoretical background of our study we have formulated a number of research questions:

- What are the procurement strategies of the customers in the construction industry (firms Y_1 , Y_2 , Y_3 etc).
- What are the relevant strategic resources from a supplier's perspective (focal firm X), considering the procurement strategies of the customers?
- Is there a performance difference between suppliers (X_1 , X_2 , X_3) and how is that related to their (selected) customer base?

- Do suppliers focussing on low bid customers have a different performance than suppliers focussing on high value customers?
- Is there a correlation in the performance between the supplier and the customer? Is there such a thing as dyadic competition and dyadic performance?
- What is the role of firm-addressable resources in the Dutch construction industry?

The scope we use is the Dutch construction industry. The research methodology involves case studies among different firms in the Dutch construction industry. We will use both quantitative and qualitative data. As the study is still in its early stage, no results can be yet presented.

Summary en further research

In this work-in-progress-paper the context of our future study has been described. We use the Resource-based View to identify relevant valuable resources in the relation between buyers and supplier in the construction industry.

Our aim is to explain performance differences of players in the industry as a result of the (absence of) specific resources. We take both the (supplying) firm as well as the dyadic perspective. Our hypothesis is the a closer interaction between firms (firm X and Y), based on the exchange of resources, will lead to superior performance for both firm X and firm Y. This is contrary to common belief in the construction industry, where antagonistic, transaction based buying behaviour prevails.

In our coming research we will answer the mentioned RQ through extensive field research, including interviewing top managers in the sector. These interviews will have both dyadic and network perspectives. Of course we will continue our extensive literature research.

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