

# Barriers to strategic innovation: a network perspective

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## ***Abstract***

*Ford et al. (1998) argue that strategy development in one company cannot be undertaken in today's highly competitive business markets in isolation of others. Given the characteristics of business markets such as heterogeneity, co-evolution and interdependencies, (marketing)strategies will always require adaptations to and co-ordination with other companies: 'a company's strategy necessarily becomes a collective strategy [...]'* (pp. 106-107). *Applying such a perspective, we study an industry displaying traits of 'maturity' (Baden-Fuller & Stopford, 1994). This allows observing strategic innovation and efforts to perform 'strategic innovation' (Markides, 1997). Barriers to strategic innovation are observed as well as different strategies deployed. The role of network relations and the impact on network interactions are discussed while studying the process of strategic innovation.*

**Keywords:** *strategic innovation, business networks, value creation for customers, organizational and cognitive barriers to innovation, case study research*

## **Introduction**

This empirically grounded study discusses barriers to strategic innovation in relation to value creating strategies using a network perspective. The setting for our research is the Dutch electrotechnical installation industry. The problem statement of this paper is based on the strategy as well as on the business-to-business marketing literature. Extant literature on competitive strategy stresses the importance of 'strategic innovation' as a crucial means to create competitive advantage (for instance, Baden-Fuller & Pitt, 1996; Baden-Fuller & Stopford, 1994) and superior customer value (Gale, 1994) and/or to beat the commodity magnet (Rangan & Bowman, 1995). Strategic innovation refers to a situation in which companies succeed dramatically in attacking an established industry leader (Markides, 1997; 1998), thus creating competitive advantage. It leads to the creation of a new market space (Kim & Mauborgne, 1999) 'not because companies try to play the game better than the competition but because they change the rules of the game' (Markides, 1997: 10). Authors such as Baden-Fuller & Stopford (1994) have argued that many industries pose the 'challenge of maturity' in which established and unquestioned mindsets of managers lead to more or less fatalistic attitudes. The competitive game is driven by firms following well-defined traditional approaches to the market. In such industries, above average performance will only

be possible for innovators, breaking out of the widely accepted business logic. In other words, strategic innovators are able to overcome conventional logic by developing a new 'theory of the business' (Drucker, 1994) that creates a new market space (Kim & Mauborgne, 1999).<sup>1</sup>

Next, the strategy as well as the business-to-business marketing as literature discuss the fact that strategies of firms are 'embedded' in the surrounding network (Dyer & Singh, 1998; Ford et al. 1998, Madhavan et al. 1998; Nohria & Eccles, 1992; Ritter, 1999). In order to understand the nature and the dynamics of competitive advantage, a network perspective is needed (Madhavan et al. 1998). It is said that the structure of an industry network plays an important role both in firm performance and in industry evolution. A business network as a collection of external relationships provides access to key resources, such as information, raw materials, technology and markets. Ford (1997) and Gemünden et al. (1997) among others describe companies as interdependent units engaged in different relationships, which are characterized by activity links, resources ties and actor bonds. Managers are thus stimulated to expand their views on products and markets by adopting a network perspective. According to this literature, each company is enmeshed in complex webs of relationships (both direct and indirect). Such networks have their own dynamics. As emphasized by Ford (1997), the 'state of the network and the direction of its evolution is the result of the actions and motivations of many different companies, some acting alone and some together' (p. XIV).

Although the interaction/network approach has become an important research perspective (see for instance, Möller & Halinen, 1999), additional research needs to be undertaken. Turnbull et al. (1996) argue that: 'our continuing work is to try to understand *the patterns of meanings and the beliefs* which guide managers in their interactions with others in the increasingly complex networks in which they operate' (p. 59; emphasis added). Further, although theoretical contributions state that no firm can afford to be a self-contained island anymore and that learning through relationships is crucial in the competitive battle for customers (Möller & Halinen, 1999), the question remains how companies can actually implement the suggestions advanced in literature.

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<sup>1</sup> The essence of strategic innovation is the creation of new superior customer value. This can be done with or without new technologies or recombinations of existing technology. In order to study the essence of strategic innovation, we opt for a research context where innovation based on new technology breakthrough is practically non-existent (see also section "the research context").

Given the fact that companies are embedded in networks, strategic innovation and thus the continuous creation of competitive advantage require that companies must change their views on the relationships with other parties in the supply chain and on the management of these relationships. This paper elaborates on the relation between strategic innovation (referring to the creation of competitive advantage) and managerial cognition of the ties within a given industry. In order to do so, the following outline is used. In the next section, we further develop our problem statement and derive research questions. Next, the industry under study is described. Thirdly, we elaborate on the applied research methodology. Fourthly, the results of our empirical study are presented. And finally, managerial conclusions are drawn and an agenda for further research is proposed.

### **Problem Statement and Research Questions**

The aim of this paper is to contribute to the above-mentioned literature by investigating (1) how companies can strategically innovate and (2) the impact of this on business relationships. We research how companies try to build competitive advantage while changing their views on traditional ties within a supply chain. To do this, we depart from the antithesis: how does it come that in the industry under study companies have difficulties to strategically innovate?

We believe that by studying strategic innovation efforts in one industry (the Dutch electrotechnical industry) starting from one key level in this supply chain (the electrotechnical installation companies), we offer additional insights in the meanings behind and perceptions of changing network and interaction approaches. We thus investigate and identify *barriers* that prevent companies (1) to innovate strategically and (2) to change their views and mental perceptions of supply chain relationships. Also, we investigate how companies can overcome these barriers. The following research questions are put forward.

1. Which barriers withhold managers from adapting their competitive strategy so as to improve their overall market position?
2. What are strategies to overcome these barriers and what is the impact of these strategies on the management of relationships?
3. How can a network perspective enable managers to overcome barriers to strategic innovation?

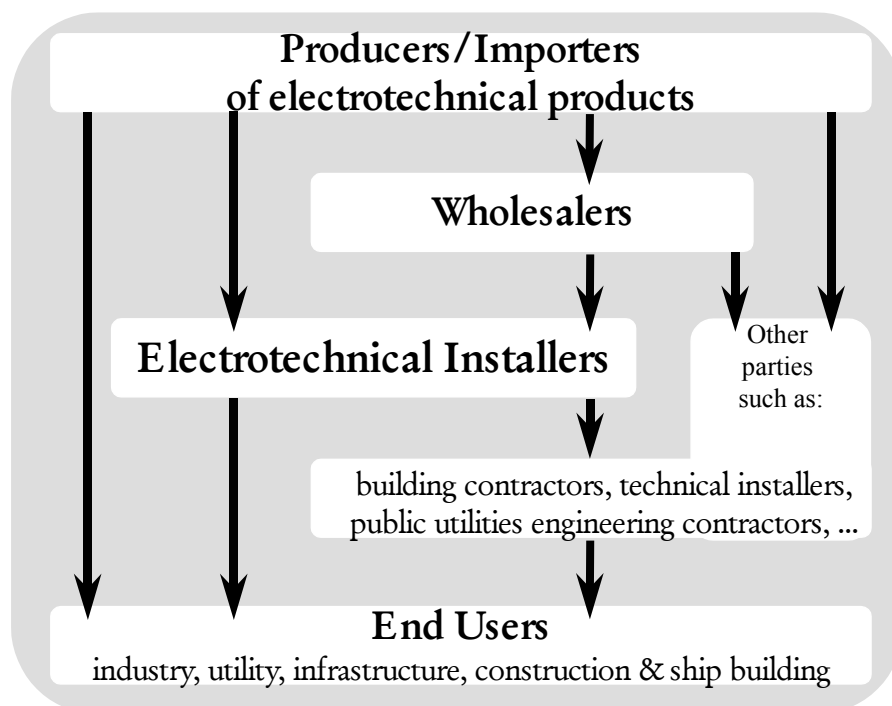
By addressing these research questions, this paper aims at (1) further bridging the gap between the strategy literature and the business-to-business marketing literature and (2)

applying and further elaborating a methodology which allows to build a multilevel theory by integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environment and strategy (Klein et al. 1999).

### The Research Context

The research context of this study is the Dutch Electrotechnical industry. This industry consists of a supply chain of companies that are linked to each other by logistical flows of physical products and immaterial flows of support services and information. Participants include producers of electrotechnical products (such as, Philips, ABB, GE, Alcatel), wholesalers (such as, Hagemeyer Holland, Technische Unie), installation companies (such as Stork Technical Services, GTI, Croon, IMTech) and end users (industrial applications, government, institutional markets, construction industry). It is a highly competitive market with many contenders at all levels in the chain (see Figure 1). Matthyssens et al. (1998) illustrate that this industry fits the description of Ford et al. (1998) of business networks and interconnected relationships.

**Figure 1: The Electrotechnical Industry**



We focus on the level of the electrotechnical installation companies. In the Netherlands about 3000 installation companies offer employment to 55000 people and have joint sales revenues of about 4.5 billion Euros. Installers use a wide array of electrotechnical installation materials

and components (more than 80.000 articles) from high tech and complex products to low tech commodities.

The sector is highly fragmented and the variety of the companies is great, ranging from very small family owned shops (76% of the companies has less than 10 employees) to very professional ‘cluster’ companies combining and integrating many smaller companies. Other facts fueling market fragmentation are: (1) a highly diversified market demand which implies an one-to-one approach with customers, (2) broad technical reach (these companies install among others, light and power installations, security installation, data networks, ICT-applications, industrial automation), (3) the importance of local contacts and networks<sup>2</sup> and (4) low overall entry barriers. Further, this industry also displays the typical characteristics of service markets, such as intangible nature of the offering, high degree of customization, interaction with customers ‘on the spot’ (see for instance Parasuraman et al. 1986; Zeithaml et al. 1996). Finally, our empirical evidence shows that companies have a hard time to differentiate their product offerings from one another, since they tend to offer more a ‘capacity’ (the capacity to solve electrotechnical problems) than a delineated product.

Further, as in other business-to-business industries, electrotechnical installation companies are confronted with market changes. Most prominent are (1) technological innovations (e.g., the use of new materials), (2) the growing digitization and ICT complexity (e.g., smart buildings: more knowledge in products than in the installation of electrotechnical products), (3) initiatives to co-ordinate purchasing through the supply chain (e.g., electronic buying) and (4) the further professionalization of the customer (e.g., outsourcing of non-core activities, centralized buying, price-sensitiveness, cost-of-ownership approaches).

At the time of our research (November 1997- February 1999), this industry displayed traits of maturity for more than a decade. This is mirrored by fierce price competition, low service/product-differentiation and a common approach to the market. Moreover, incumbent installation companies are facing increasing competition of firms from adjacent industries, such as pure industrial automation companies and ICT-software firms. These characteristics and tendencies provoke growing unrest in the market. Installation companies are searching ways to achieve above average profit (at present the profit margin after tax is hardly 2.5 %).

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<sup>2</sup> This refers to the importance of ‘regionality’ and is empirically grounded in the observation that almost all companies that participate in the Dutch electrotechnical industry are located in the Netherlands.

Diverse and scattered initiatives are undertaken to stimulate co-operation by different parties within the electrotechnical industry. Some selected examples are illustrative:

- a producer of wire suspension systems regularly holds problem detection and relationship strategy meetings with the biggest wholesalers;
- a number of installation companies are building a common platform for electronic ordering and product information connecting three levels of the supply chain: producers of the materials and components, wholesalers and installers;
- a wholesaler tries to develop partnerships with installers by offering them loyalty plans (with consumer-like bonus schemes when buying specific components and materials), extra services, etc.;
- an installer tries to establish a long-term link with its customers and a producer in order to monitor a production process over a long period of time.

These initiatives are exceptions to the general behavior in the industry. The recommendations advanced in the strategy as well as the business-to-business marketing literature are mostly not implemented in this industry. We want to further investigate the reasons why the behavior of these installation companies is not in line, and often at odds, with recommendations of the different strands of literature on competitive advantage and the creation of value adding bonds. We mentioned already recent developments in the strategy literature (for instance, Kim & Mauborgne, 1998) and business marketing literature (for instance, Ford et al. 1998). But even older contributions, such as Porter's recommendations for strategies to cope with fragmented industries (Porter, 1980) are not implemented.

## **Methodology**

This paper is based on a research project that aims to build a mid-range theory of the process of strategic innovation. A qualitative research methodology – case study research - was chosen as logic of discovery. This choice was based on the following considerations. Firstly, the purpose of the research is to explore the complex concept of strategic innovation in its natural setting. Referring to our concise literature review and to the overview of the industry under study, it is difficult for us to rely on the typical way of researching (extant theories, formulation of hypotheses, data collection and analysis, testing of hypotheses). We need to better understand the specific nature of different concepts and constructs (such as strategic innovation). Some authors state explicitly that in this case, the problem statement is still in a context of discovery (Hunt, 1991) and that case study research is appropriate (Yin, 1994).

Secondly, our research project is based on the epistemological premises that organizations and their environments are socially constructed and thus that managers enact their environments (Starbuck, 1982; Weick, 1979). We thus need a methodology that enables us to study managerial cognitions and changes in these cognitions (Hodgkinson, 1997). Hence, our research design must provide information on how preferences and cognitions are formed (Vaughan, 1998). Again, this refers to the fact that concepts/ constructs are embedded in their natural context and should be studied as such.

The research design, data collection and analysis process are structured following the recommendations of Eisenhardt (1989) and Yin (1994) in order to secure methodological rigor (specification of research issues, sampling, measurement of constructs, multiple data sources and triangulation). Especially, addressing theory development in the field of dyads within business networks, Anderson et al. (1994) have referred to qualitative field research such as field-depth interviews and case studies as playing an essential part in refining the constructs definitions and elaborating the content domains of each construct. They argue for detailed case studies. The use of case study research provides us with contextualized data and descriptions of a complex reality, which is needed to understand existing theoretical concepts in context.

### *Research Design*

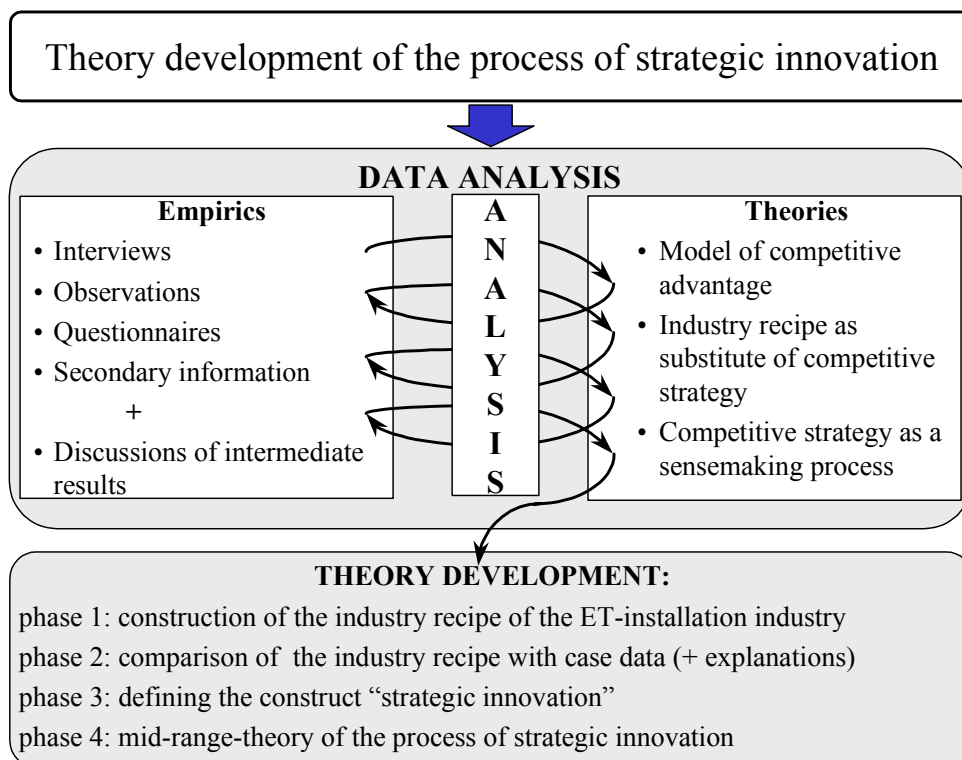
Studying aspects of strategic innovation requires an adapted research design. The reasons are at least twofold. Firstly, we must reveal how the companies under study, the case studies, actually behave in the industry. Merely reporting *intended strategies* (and strategic intents) is not enough; we must also reveal the *dominant logic* of those companies (see for instance, Prahalad & Bettis, 1986; Spender, 1989). Secondly, studying both strategy and dominant logics implies that we must have access to multiple respondents. Both concepts have an important collective dimension.

Given the above considerations, the applied research design displays the following characteristics. Firstly, the overall methodological design is based on the comparative multiple case study research as advanced by Eisenhardt (1989) and Yin (1994). In total nine case studies (electrotechnical installation companies) were included in the research project. These companies were selected using theoretical sampling (Yin, 1994). Secondly, since we are interested in extracting the actual perceptions of managers with respect to strategic innovation, unobtrusive measures (Webb & Weick, 1979) were important means of



organizational inquiry. For example, we use the competitive strategy to describe the sensemaking processes within the case studies. Thirdly, our data collection and analysis processes are highly iterative in nature. Theory building is the result of inductive as well as deductive analysis. In this way, the mid-range theory is not developed from scratch (as in grounded theory) but from combining data with existing theories (see Figure 2). Orton (1997) refers to this methodological position as *iterative-grounded theory*. It is also worthwhile to notice that we used qualitative (in-depth interviews) as well as quantitative data (questionnaires filled out by the members of the management team per case study) as data sources. In sum, our multiple-case study method aimed at the construction of cognitive maps of how organizations make sense of what is happening and thus mirror the dominant logic of these companies. These cognitive maps are used to address the above mentioned research questions. Figure 2 exhibits the research design. As mentioned before, the problem statement of this paper only focuses on one aspect of strategic innovation, namely, *the identification of barriers to strategic innovation and its impact on business networks*.

**Figure 2: Methodology and Research Design**



#### *Data collection and data analysis*

As can be read from Table 1, nine ET-installers contributed to our empirical database. In all nine cases, we used the same data collection protocol. Eventually, we constructed detailed case stories from eight of the original nine selected companies. The obtained empirical data

of one company (case Ioto) were not ‘restructured’ in a case story, since data triangulation was not possible. For each case study, the primary data sources were (1) semi structured in-depth interviews, (2) questionnaires and (3) discussions of intermediate results (Table 1). Other data sources, such as field observation and secondary information (expert reports, company financial data, industry studies, ...) were only used for triangulation purposes.

**Table 1: Description of the cases and data sources**

Company	Size (n° of people employed)	Number of Regional Offices (affiliates)	Number of in-depth interviews	Number of questionnaires	Discussions of intermediate results
Alpha	> 600	Many and national coverage	4	11	3
Beta	> 600	Many and national coverage	5	9	2
Gamma	> 600	Many and national coverage	5	18	3
Delta	> 100, < 600	One	5	12	3
Epsilon	> 100, < 600	One	4	5	2
Zeta	> 100, < 600	One	5	4	2
Eta	< 100	One	4	3	2
Theta	< 100	One	5	4	2
Ioto	< 100	One	3 (only with the CEO)	1	-

Given our problem statement and our epistemological premises (social construction of reality), we opt for semi structured in-depth interviews as one of the main data sources. The advantage of this type of data collection is that the researcher has direct access to facts, perceptions, judgments, ideas and the language of the participants (Coopey et al. 1998; Silverman, 1993). Further, given the context of discovery of our research, it was needed that the respondents could discuss concepts in addition to the topics of our interview guides. In order to construct a comparable empirical database for all cases, several interview rounds were held. The interview system was as follows: a next interview round in one company only started when the previous interview round was finished in all participating companies. Such a protocol permits that additional topics were added to the interview guides, thus improving internal validity and construct validity. The respondents of the first two interview rounds were the CEO’s of the participating companies. The next interview rounds were held with people of the management team, project managers and office managers. All interviews were taped and transcribed. Interviews lasted between 1 and 3 hours. To minimize interview biases, consecutive interviews with the same respondents started with a discussion of the

main conclusion of the previous interview. Triangulation was further realized by studying press releases, published interviews, sector studies, annual reports and so on. As multiple respondents were needed in order to detect the actual competitive behavior of the companies involved (see Hodgkinson, 1997), questionnaires were filled out by the members of the management team. Combining the data contained in the interviews with the results of the questionnaires, we could construct cognitive maps per case study. Besides written materials, three wholesalers and two producers were interviewed to gain further insight from relevant network players.

The iterative nature of our research design (see Figure 2) makes it difficult to uncouple data collection from data analysis. This means that there were numerous iterations between data gathering and extant theories in order to come to insights with respect to the process of strategic innovation. In other words, the result of the analysis from the first round of data collection was the input for the second round of data collection. As can be seen from Figure 2, data collection and data analysis were structured and grounded in (1) a model of competitive advantage<sup>3</sup>, (2) Spender's (1989) concept of industry recipes as potential substitutes of competitive strategy and (3) Weick's concepts of social construction of reality (1979, 1995). This iterative process yielded a four-phase theory development process. Firstly, we constructed the industry recipe of the electrotechnical installation industry; secondly, this revealed industry recipe was compared with the empirical database of each case study. We studied similarities and differences. Thirdly, we defined the construct of strategic innovation. Finally, we integrated the previous phases in a mid-range theory of the process of strategic innovation (see Figure 2).

## **Findings**

For the purpose of this paper, we focus on the relationship between (barriers to) strategic innovation and business networks. Firstly, we discuss strategic innovation efforts and derive barriers that withhold companies from realizing the intended strategic innovation. Secondly, we advance a strategy typology based on customer value within this industry as a tool to overcome identified barriers. Next, we relate this typology to the management of relationships within the supply chain. Finally, we discuss how a network perspective can help managers to overcome the identified barriers to strategic innovation.

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<sup>3</sup> The model of competitive advantage used (Matthyssens & Vandenbempt, 1998) reflects the insights of extant competitive strategy literature (e.g. Foss, 1996) that brings together both outside-in views of strategy (e.g. Porter, 1980) and inside-out views of strategy (e.g. Wernerfelt, 1984).

*Strategic innovation efforts and related barriers*

We discussed already that most companies in the electrotechnical installation industry are initiating efforts to improve their market positioning. The main problem we noticed using the constructed empirical case study data is the *lack of consistency* within these strategic innovation efforts. We could identify this consistency problem by confronting the strategic intent of the eight companies with their actual competitive behavior and value creation approach. The latter two concepts refer to the dominant logic of each of the case studies. As an example, Table 2 exhibits the situation of case study Alpha, Beta & Zeta (see Table 1 for a description of the case studies).

**Table 2: Strategic innovation efforts in Alpha, Beta & Zeta**

<b>Construct</b>	<b>Findings</b>
STRATEGIC INTENT	These three installers intend to offer an integral/total solution to the customer. Offering ‘customer value’ in the form of a knowledge-based problem solution and a proactive market approach are frequently mentioned intentions. They define more clearly either the specialized fields or sub markets where they want to realize the above. They also refer to the intent to be involved from project conception to the factual realization of the project. Extended co-operation with other companies is seen as an adequate way to upgrade ones own expertise and potential to deliver customer value.
DOMINANT LOGIC (actual value creating approaches)	The dominant logic of these companies consists of a reactive, project-based approach and a dominance of technical problem solving for all customer problems. Consequently, they are only paid to build/construct ‘what others have designed’. Also, the realized strategy focuses too much on existing customers and lacks a conceptual way of thinking.
IDENTIFIED BARRIERS	Overall, the following barriers are responsible for the identified gaps between strategic intent and the dominant logic: traditional working culture in the industry and companies (reactive, technical dominance, price-dominated marketing) and local rationality by the (many) regional offices and project managers.

It can be read from the table that these three companies understand that ‘something has to change’ and even have an idea of the ‘right’ approach (see strategic intent). ‘Right’ should be interpreted as an approach that creates customer value. However, the dominant logic of these case studies is not in line with the strategic intent, which causes inconsistency in efforts to strategically innovate. We identify the main reasons for this inconsistency as *barriers to strategic innovation* (see, Table 2). A following observation is that these barriers have a cognitive as well as structural dimension. The cognitive dimension refers to the ingrained mental models of managers (see for instance, Kim & Mauborgne, 1999); an outdated perception of cause and effect relationships hinders strategic innovation (Baden-Fuller &

Stopford, 1994). The structural dimension implies that the cognitive barriers are embedded in the structure and the routines of the companies involved (see also, Henderson & Clark 1990). A similar view, though with different accents, was constructed from the other case studies and consequently our general observation is reflected in Table 2.

*Strategic Innovation: value creating strategies*

Following the perceived lack of consistency in strategic innovation efforts, we face the following question: how can companies overcome the identified barriers? As a first step to answering this question, we focus on generic types of customer value. Based on the constructed empirical database, the discussions between the authors and confrontations with knowledgeable experts, a functional strategy typology is advanced. This typology identifies in generic terms the strategic options and their implications on the organization of electrotechnical installation companies. As will be discussed further, the strategic options within this typology are internally consistent: they are focused at delivering one customer value proposition. Table 3 displays three generic strategies and their main characteristics along the three dimensions that were identified. Next, we further elaborate on the strategy dimensions and the strategic options.

**Table 3: Generic strategies and strategy dimensions**

<b>Generic strategies (strategy options)</b>	<b>Strategy Dimensions</b>		
	<b>Width of technical knowledge</b>	<b>External focus of the installer</b>	<b>Degree of service providing</b>
<b>Capacity installer</b>	Broad (many expertises) or narrow (focused on one technical domain)	<ul style="list-style-type: none"> <li>• Reactive project based</li> </ul>	Limited: mostly the factual realization of technical installation projects ('execution')
<b>The specialist</b>	Very narrow but in-depth knowledge	Can be: <ul style="list-style-type: none"> <li>• Project-based</li> <li>• Segment-based (even the development of concepts)</li> </ul>	Very high: from the conception of technical installation projects to the maintenance activities
<b>Integral service provider (ISP)</b>	Very broad	Can be: <ul style="list-style-type: none"> <li>• Project-based</li> <li>• Segment-based (even the development of concepts for niche markets)</li> </ul>	Very high: from the conception of technical installation projects to the maintenance activities

These three dimensions reflect the three fundamental choices installers face while defining their competitive strategic positioning.

- Choice 1: The width of technical knowledge  
This refers to the number of technical areas the company masters. When the focus is small, the company is active in only one technical field such as safety installations, industrial automation or ICT networks. A broad width implies that a company wants to offer more than one and possibly many technical expertises.
- Choice 2: The degree of service providing  
A limited degree of service providing only focuses on the factual realization of an installation project. A high degree of service providing entails activities from design and conception (the definition of the technical installation project) to maintenance and upgrading of installation projects.
- Choice 3: The external focus  
A customer base can be approached on a one by one project basis. Optimization is sought within one project/customer. The other possibility is that customers are approached using concepts. In that case, product solutions are based on the similar needs of the identified segments, e.g. safety systems for financial institutions, assistance/surveillance systems for care and medical institutions. The former approach is reactive, the latter proactive.

As mentioned in Table 3, the combination of the three dimensions leads to three types of generic strategies. These generic strategies are “internally consistent”; there is a fit between the customer value proposition (strategic intent) and the value drivers (dominant logic or actual customer value creating approaches).

- Type 1: The Capacity Installer  
This installation company focuses in a clear and straightforward way on the execution (‘factual realization’) of installation projects. The work is rather limited in the degree of service providing. Important value drivers for this strategic position to be viable and successful are strict cost containment and competitive pricing, excellent cost calculation and management, fast and flexible execution of projects, a ‘cost leadership’ culture, project management and planning skills, a fair level of technicality on some (narrow CI) or many (broad CI) skill fields.
- Type 2: The Specialist  
A specialist tries to offer superior value in a narrow, often complex field. The specialist offers a complete solution to the customer from (co-)design to execution and often follow-up activities (e.g. installation of a data and telematics network). The specialist

needs the following value drivers: in-depth knowledge in the specialization field, consultative ‘selling approach’, full sensing of customer activity cycle, integration of solution in customer operations, product innovation and upgrading, and expert systems.

- Type 3: The Integral Service Provider (ISP)

The ISP can take two forms depending on its external focus (project/reactive versus concepts/proactive). In any case, ISPs will go for a *system integrator* role, offering the customer a complete, integrated and customized solution. They have defined and developed the solution, take responsibility for the realization (i.e. they will frequently outsource part of this ‘low level’ work) and take care of the follow up. The following value drivers are key: multidisciplinary technical knowledge and skills, knowledge and sensing of customer needs, ability to realize from genesis to nemesis complex projects, knowledge and project database and expert systems, optimal communication among personnel, efficient realization (or skills to outsource in an efficient way), top project management, market sensing and customer linking and advanced learning.

#### *Impact on the management of relationships*

As mentioned above, the perceived lack of consistency of strategic innovation efforts of companies within the industry under study has also effects on the management of their relationships. We noticed already that adaptations of the network structure are rather embryonic and haphazard with diverse initiatives and mixed results. It is clear that a more focused relationship management is a must for the strategic innovation efforts to succeed. Using the generic strategy typology, we can now further define how companies can overcome the identified barriers (see Table 2) and thus improve their market positioning. To do this, we formulate in Table 4 the alleged implications of the three generic strategies for the management of relationships. We distinguish between vertical and horizontal relationships.

As can be seen from Table 4, by coupling strategic choices to the management of relationships, the “typically” haphazard view on relationships within the electrotechnical industry is absent. Each strategic option has a consistent view on managing relationships within the supply chain. Consequently, it gives managers a clear idea how they can adapt their relationship structure in order to facilitate strategic innovation.

**Table 4: Impact of generic strategies on the management of relationships**

Generic strategy	Type of relations		
	Upward vertical	Downward vertical	Horizontal
<b>Capacity organization</b>	antagonistic purchasing attitude for standard electrotechnical components joint cost reduction programs with select supplies (many specific, differentiated components)	some traditional relationship management: 'PR' and 'networking style' in the traditional way	occasional outsourcing of work in case of shortage of installing personnel outsourcing relations for non-ET specific work to 'fixed' partners
<b>Specialist</b>	thorough relationship with a few suppliers occasional input in new product development of suppliers possible continuous one-way learning relation (e.g. use of suppliers training and demo facilities)	some but limited co-operation with customer during quick scan and order cycle some maintenance and/or upgrading (i.e. life time relationship management)	good long term relations with more general installers (CI, ISP) required as they might subcontract specialist tasks
<b>Integral Service Provider</b>	co-development with innovative suppliers intense relationship with suppliers of smart and complex subsystems (two way learning) relation with wholesaler for one stop shopping of standard components	intense, long term and open relationship with customers (in house suppliers) joint improvement projects and trust-building services	long term relations with some smaller capacity installers to whom regularly low level tasks are outsourced / subcontracted building of intense partnerships with specialized companies and engineering offices

*A network perspective as a driver to overcome barriers*

From discussing the generic strategies and the implication on the management of relationships within the industry under study, it is evident that this industry offers interesting scenery for observing partnering and networking. However, a caveat should be formulated here. So far, the low profit margins that were described above have mostly suffocated all innovation initiatives. Building strategic partnership and long term strategy development are consequently not the rule in the industry. Lack of consistency, mirrored by antagonistic dyadic buying attitudes and short-term opportunism has prevailed so far. Managers of the installation companies are thus confronted with the following paradox. On the one hand, some managers feel that strategic innovation can only be realized when tough strategic choices (in terms of activities pursued) are made and partnerships are established. On the other hand, the fear of choice and the reaction of others in the industry paralyze. This leads to postponement of choice, scattered initiatives, limited focus and commitment and even less freedom of choice afterwards.



In order to overcome these paralyzing positions, we stress that a network perspective on the electrotechnical supply chain can help managers to overcome the identified barriers. To do so, we advance a ‘remodeled’ supply chain of this industry into a hybrid task structure (see Figure 3). For electrotechnical installation companies (ET-installer in the Figure), this results in four role models with diverse tasks and network positions.

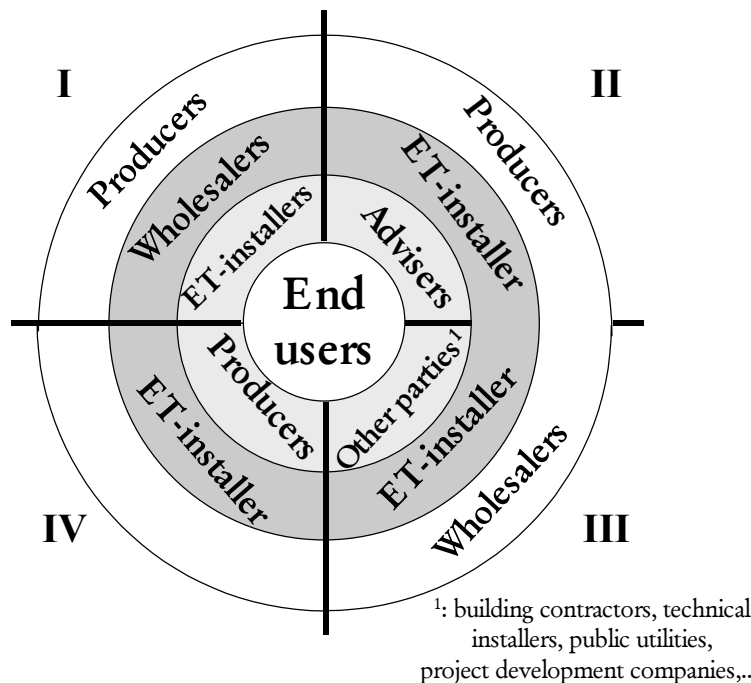
- *Quadrant I*

Given the central position of the electrotechnical installation company in the network (and the close contact with end-users), it has to focus on becoming an integral service provider and developing its partnerships with suppliers and buyers accordingly (see Table 4).

- *Quadrant II*

Advisors and engineering companies act as project managers and pre-specify solutions to customers. As such, installers are confronted with pre-set specifications leading to price competition. Traditional partnerships must be substituted with new relationships with these ‘intelligent intermediaries’. Electrotechnical installers should focus on becoming a capacity installer or a specialist (see Table 4).

**Figure 3: The hybrid task structure of ET-installers**



- *Quadrant III*

New types of ‘customers’ originate in the industry such as (a) big building contractors and infrastructure companies offering ‘complete’ projects, (b) the installation and maintenance divisions of public utilities which often are forced to offer their services inside as well as

outside of their company in a more competitive mode and (c) even technical installation companies with capacity shortages while ‘managing’ big projects. For the ET-installer the three groups (a)-(c) are new types of customers, which are knowledgeable and critical, thereby emphasizing competitive pricing. Group (c) implies the extra challenge of dealing with the same company as a competitor in quadrant I of Figure 3 and as a customer in quadrant III. An installer in this position should consider becoming a capacity installer or a specialist.

- *Quadrant IV*

Mainly for specialties (e.g. security networks, lighting for offices, telecom networks) and for high tech components, producers might consult, design and install at the end users’ premises. The installer might get some lower-level ‘outsourced’ tasks from these suppliers. Just like group (c) in quadrant III, this situation might lead to tension. For instance, the same company in its role of supplier might be approached in an aggressive mode by the purchasing department in the traditional chain (quadrant I) while at the same time must be dealt with as a customer in quadrant IV. Often, only a innovation towards a capacity installer will pay off.

Using the network perspective exhibited in Figure 3, companies can begin their strategic innovation efforts by determining their actual position in the supply chain: what is the main task they have to carry out in the market? What kind of value do they deliver? Answering these questions is a first step in determining the future strategic direction. Redesigning structure and routines and changing ingrained mental models accordingly can thus be induced by adopting this network perspective. In this way traditional barriers (Table 2) are overcome and strategic innovation efforts will be more successful.

### **Recommendations for managers and areas for future research**

In an industry characterized by commodization and intense rivalry such as the Dutch electrotechnical installation industry, cost and price remain key parameters limiting strategic degrees of freedom and thought. Consequently, companies tend to converge around unquestioned managerial mindsets (Baden-Fuller & Stopford, 1994). Strategic innovation, although widely recognized as being necessary and even urgent, is blocked by ingrained mental models that are embedded in the structure and the routines of companies. Changing partnerships and relationships are confrontational and opportunistic at best. Traditional vertical relations in the supply chain are short term and adversarial (price pressure, tactical

multiple sourcing, parallel and non-transparent channels, etc). Horizontal partnerships are most of the time developed in a haphazard and opportunistic way.

### *Recommendations*

Using data from nine case studies, we have identified barriers that hinder companies to successfully implement strategic innovation efforts. Further in the paper, we constructed a strategy typology aimed at delivering customer value. We have linked this typology and its generic strategies to the management of the network ties in the supply chain under study. From this discussion, as illustrated in Table 4, different generic strategies imply different types of relations. Partnerships play at least four different roles in the process of successfully implement strategic innovation efforts:

1. *To strengthen the necessary value drivers of each value strategy.* For instance, a specialist performs better if backed by few top high tech suppliers that are willing to invest in permanently updating the skill base of the specialist, provide continuously improved electrotechnical products etc. Another example is that of innovative ordering, logistics and cost monitoring systems for a capacity installer to be provided by vertical partners and systems suppliers. For an integral service provider (ISP) on the other hand, co-operation with consultants and providers of expert and knowledge systems is of uttermost interest.
2. *To overcome cognitive barriers to strategic innovation.* For instance, an ISP needs to combine and master so many techniques and technologies that close partnerships with customers and experts are needed. It is widely accepted in the industry that no company can excel in all technical expertise areas.
3. *To use as a change agent.* An example is a partnership on a single project to use as a case example. In that case the message to the industry and the local personnel is that co-operation can yield better results than the dominant antagonistic logic.
4. *To occasionally or regularly compensate for shortcomings in the capacity of the installation company while safeguarding the quality.* As such, a capacity installer might chose for a limited set of certified subcontractors to temporarily assign execution tasks to, rather than via a competing bidding approach each time the problem arises.

### *Avenues for further research*

In order to better understand the concepts of strategic innovation and of barriers to strategic innovation within a specific context, concerns of external validity were traded off against

these opportunities. By focusing on the specific industry context, we could relate managerial preferences and cognitions to strategic innovation and to the management of relationships in supply chains. In this way, our research is in line the methodological position that concepts are always embedded in context and that they can only be studied as such (Pettigrew, 1992; Vaughan, 1998). Within such a perspective, the changing role of relationships and networks in strategic innovation processes need further research attention. This entails studying the relation among managerial cognition and perception on the one hand and organizational changes, competitive strategy (and customer value), supply chain relationships on the other hand.

We argue for more longitudinal and case based research efforts in order to fully grasp the complexity of the phenomenon. Future research must further stress multilevel theory building. It has been argued at length elsewhere (Klein et al. 1999) that multilevel theory building, linking for instance changes in managerial cognition on a micro level to conditions for optimal learning in networks on a macro level of inquiry, is needed in order to advance understanding in theory and practice. The issues raised and discussed in this paper serves as an invitation.

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