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INSIDE SERVICE-INTENSIVE PROJECTS: ANALYZING INBUILT TENSIONS

Abstract

The purpose of this research is to identify typical professional and occupational groups in service-intensive projects, and illustrate the inbuilt tensions among them through the lens of institutional theory. The cases used for the study are a wind turbine business and a content management system project business. Our findings suggest that there are two professional groups (problem solvers, technology developers) and two occupational groups (lead generators, relationship developers) involved in these businesses. More importantly, their intergroup tensions are related to different institutionalized logics toward the conception of time (project temporality) and prioritization of different aspects of business (primarily commercial or technical issues) that become manifested in stereotypes, perceptions of trust, internal politics and lack of cooperation. Together, we call these institutional logics the project ethos of each group. Our findings contribute to the research on project management by illustrating the organizational challenges of service-intensive projects.

Keywords: *buyer-seller interaction, trust, temporary organizations, project marketing, project management, service-intensive projects*

Research highlights

* Focuses on intergroup behavior in service-intensive projects

* Applies institutional theory to a conceptual research framework

* Identifies typical professional and occupational groups and illustrates the inbuilt tensions among them.

* Conducts a comparative case study between wind turbine and a content management system project business.

* Finds that the inbuilt tensions are related to different institutionalized logics toward the conception of time and prioritization of different aspects of business.

1. INTRODUCTION

The mushrooming of services in the project business (Artto et al., 2008; Davies et al., 2007; Kujala et al., 2013) is changing the dynamics of many fields within this sector. Today, economic exchange rarely dissolves after project handover and many project-based companies actually earn more revenues from project-related services than from the core project delivery (Gebauer et al., 2010; Salonen, 2011). The projects we have studied empirically can be described as *service-intensive* as they offer a wide variety of services from basic maintenance to more sophisticated development and consulting.

While post-project services enable project continuity, they cause many kinds of challenges related to two inherent problems of projects (Söderlund, 2011a), *cooperation* and *coordination.* Cooperation involves the conflicting goals project buyers and sellers might have, and coordination involves the need to communicate and synchronize activities. Even if the buyer and seller share mutual goals, and hence a service exchange continues, this could prove problematic to coordinating the transition. Thus, when the project team is dissolved and members are assigned to other tasks, project history and other critical knowledge are at risk of being detached (Defillippi and Arthur, 1998; Prencipe and Tell, 2001). In this research, the terms “post-project” (Engwall, 2003) and “project afterlife” (Söderlund, 2011a) both refer to the point following project handover (Skaates et al., 2002) at which the customer begins to operate the supplied system.

Until recently, project management research has been keen to describe project management tasks during project planning and implementation (Engwall, 2003; Söderlund, 2004) while project marketing research has been focused mainly on the project sales phase (Cova and Holstius, 1993; Cova et al., 1994; Söderlund, 2011b). Only recently has the post-project stage

appeared in the limelight, as the concepts of *project afterlife* (Söderlund, 2011a) and project endings (Havila and Salmi, 2009) gained in popularity. However, we do not know exactly how the appearance of project services influences the internal dynamics of projects. There are studies on the interpersonal conflicts within projects (e.g., Thamhain and Wilemon, 1975; Vaaland and Håkansson, 2003), but they tend to focus on the perspective of the project manager. We argue that an extended view on projects requires understanding the interactions among professional and occupational groups typically involved in projects.

We seek to unravel the underlying, inbuilt tension between various professional and occupational groups. In the absence of a consensus on the definition of professions and occupations, we rely on Abbott's (1988) notion that an occupation must possess a body of somewhat abstract knowledge on which the right to control certain areas of work can be based to be a profession. Despite the triumphant march of business schools, these institutions have failed to fulfill their mission of professionalizing management (Khurana, 2007). Indeed, business schools never developed into professional schools that guaranteed their graduates an exclusive license to practice management, such as dentist schools do for their graduates, for instance. Similar endeavors towards achieving legitimacy through professionalism have been undertaken by many institutions associated with project management (e.g., IPMA, PMI and APM) with equally speculative results (Hodgson and Muzio, 2011). Thus, managerial positions in project business are oftentimes occupational, with the exception of 'expert' managers that rely on their professional education and highly specified expertise such as in architecture or civil engineering (Barker, 2010; Mintzberg, 2004).

In this paper, we ask the following: 1) what the typical professional and occupational groups are in a service-intensive project, and 2) what are the main tensions among these professional

and occupational groups throughout the timeline of such a project? We seek to unravel these questions by constructing a conceptual research framework to identify the inbuilt tension between typical professional and occupational groups involved in projects via institutional theory (e.g., Bresnen & Marshall, 2011; DiMaggio and Powell, 1983; Scott, 2008). We use this conceptual framework to analyze two service-intensive project businesses via a comparative qualitative case study. The findings contribute to project management theory by identifying and explaining the reasons behind adversarial relationship between professional and occupational groups via institutional theory. We identify several intergroup tensions that restrain interaction and propose ways to overcome such tensions.

2. INQUIRING INTO INTERGROUP TENSION USING INSTITUTIONAL THEORY

2.1 Tension from co-existing institutional 'logics'

In project-based organizations (Whitley, 2006), several professions and occupations work together for a limited time to solve project-related problems. These groups reflect the requirements of the specific project business (Alajoutsijärvi et al., 2012) and its context or 'ecology' (Grabher and Ibert, 2011) and can include professionals such as architects, engineers, surveyors, and builders for construction projects (Bresnen and Marshall, 2011) or scientists and clinicians for the biomedical projects (Newell et al., 2008). Professions and occupations tend to be associated with different rules, norms and values, which influence the behaviors of individuals belonging to these groups (DiMaggio and Powell, 1983; Suddaby and Viale, 2011). A prominent stream of institutional theory researchers (e.g., Hwang and Powell, 2005, pp. 201–232; Leicht and Fennell, 2008, pp. 431–438; Meyer and Jepperson, 2000) consider professions and occupations major institutional forces, and as Scott (2008:

223) puts it, “professionals are not the only, but are — I believe — the most influential, contemporary crafters of institutions.”

Given the temporary nature of projects (Defillippi and Arthur 1998; Lundin and Söderholm, 1995; Packendorff, 1995; Turner and Müller, 2003) and their high turnover for specialized, organizationally distributed professions and occupations (Bresnen and Marshall, 2011; Hobday, 2000), establishing resilient social structures within a project is challenging (e.g., Sydow et al., 2004). Indeed, project-based organizations tend to suffer from ‘organizational amnesia’ (Grabher, 2004) or minor ‘organizational memory’ (DeFillippi and Arthur, 1998), which refers to the one-off, non-recurring nature of project activities. According to Bresnen and Marshall (2011: 170) project-based organizations are “particularly prone to the coexistence and co-mingling of institutional logics associated with changing management practices”. The authors argue that the preferred ‘institutional logic’ (Friedland and Alford, 1991; Lounsbury, 2007), the broader cultural beliefs and rules influencing decision-making, for the various groups associated with projects will affect how a project is managed.

Furthermore, Winch (1998) noted that tensions between two well-established professional organizations, the institution of Civil Engineers (ICE) and Royal Institute of British Architects’ (RIBA), involved with a UK construction project considerably slowed innovation. He explained that architects, quantity surveyors and chartered builders all compete to be the construction team leader. The competing ‘institutional logics’ these various groups employ during a project appear to be an excessive source of tension because project participants seek to gain legitimacy and promote their own management ‘best practices’. This tendency relates to the classic question on the precedence of structure or agency in shaping human behavior (Battilan et al., 2009; DiMaggio, 1983; Weik, 2011).

Indeed, Sydow et al., (2004: 1476) argued that one recurring dilemma or tension within project-based organizations is "between the autonomy requirements of project participants and their embeddedness within organizational and interorganizational settings". The authors explain that actors in a temporary system tend to draw or 'borrow' rules and practices from other, more permanent systems. Thus, it makes a difference whether the project participants are embedded in certain departments or business units with established structures or whether they are part of a project-based organization supplying all their products and services through temporary projects. In the latter case, the participants are more receptive to institutionalized structures external to the organization and may 'attach' (Sahlin-Anderson and Söderholm, 2002: 19) or 'couple' (Lindkvist, 2004; Orton and Weick, 1990) a project to their background. Thus, the institutionalized rules, norms and values from their profession and/or position are adapted to the project, and the participants become what Scott (2008) calls 'professionals as institutional agents'.

Project businesses require interorganizational interactions that increase the likelihood of co-existing and possibly contradictory institutional logics; even a supplier organized as a genuine 'project-based enterprise' (DeFillippi and Arthur, 1998) will inevitably interact with more functionally structured (e.g., Hobday, 2000) counterparts (customers, suppliers, etc.). Some of these logics may be endogenous, such as rules and customs for a business unit or department (e.g., sales, engineering or R&D departments), whereas others are exogenous, which Scott (2008a) argues are mainly generated through different professions or occupations.

2.2 Tension from the profession versus occupation dichotomy

The relationship between professional and occupational groups is often adversarial (Farrel and Morris, 2003; Noordegraaf, 2011; Waring and Currie, 2009) because the legitimacy of a professional is based on a mix of specialist competencies and abstract knowledge (Abbott, 1988), whereas the latter's power rests in formal authority. This dilemma is described by Hodgson and Muzio (2011:116) who discuss the role of a project manager, one of the most typical occupational roles in a project business, in the following manner: "the extent to which they (project managers) can claim an independent expertise can be considered dubious with much of their knowledge being contextual, situated and embedded in organizationally specific processes, procedures and frameworks". Therefore, the occupational worker depends on the broad array of expertise derived from the professionals. Professionals adapt and translate their knowledge to fit the specific recipients and circumstances of a project. The technical and creative aspects of a project are usually their repertoire, and they collaboratively develop solutions to a project's challenges (e.g., Bresnen and Marshall, 2011; DeFillippi and Arthur, 1998).

In contrast to professionals, an occupational employee in a project business does not possess specific technical knowledge, but applies more or less general managerial principles to problems presented by clients. Project management and other occupations seek to learn from previous solutions and apply that knowledge to the forthcoming problems in a 'bottom-up' fashion (e.g., Hodgson and Muzio, 2011, Suchman, 1995). In other words, their role is to overcome typical problems in a project business so that wheel – in the organization, in the network or in the field – would not be reinvented over and over again (Sydow et al., 2004: 1481). These managers (project managers, sales managers, or account managers) are largely required for the commercial aspects of the projects (Hodgson and Muzio, 2011; DeFillippi and Arthur, 1998). Indeed, there are several professional-looking credentials offered by the

industry, such as PMP (project management professional) or CPM (certified project manager) in project management (for details see Hodgson and Muzio, 2011), and MBA (Master of Business Administration) or EMBA (Executive MBA) in management education.

2.3 Tension from the temporal dimension of projects

Alderman et al. (2005) argue that project and service business logics are genuinely different, which poses severe organizational challenges for project suppliers and their customers. These difficulties stem from the different characteristic products and services (e.g., Brax, 2013; Mathieu, 2001; Wise and Baumgartner, 1999). A conventional, product-centric project business has concrete project milestones (e.g., project sales, implementation or handover) that can be evaluated at a certain point in time using factors such as the time, budget, and performance (e.g., Atkinson, 1999). Service-centric project businesses have no such static project milestones. Rather, exchange is an ongoing process that is dependent on the customer needs that vary greatly over time (Ojansivu et al., 2013). Post-project exchange can include mandatory facilitating services, and optional supporting services, which tend to increase the value of the supplied system (Kujala et al., 2013). Additionally, exchange can develop beyond the augmented service complementing the supplied system, to an intangible core service (Blomquist and Wilson, 2007; Shostack, 1977) that might not be directly linked to the supplied system such as consultation services (Ojansivu et al., 2014). Thus, it is difficult to predict the exchange beyond a minimum service level that is required to keep the system functional.

Indeed, the vice president of Wärtsilä, a global provider of power solutions for the marine and energy markets, explained in a case study by Salonen (2011) that there are fundamental behavioral differences between those accustomed to product-centric and service-centric

project businesses. Considering post-project service exchanges can last decades after a project handover (up to 25 years for modern wind turbines), the views of project temporality professional and occupational groups carry over the lifetime of a project become intriguing.

Typically, managers from various levels will stay involved with a project beyond accomplishing certain activities or project milestone (project sale, implementation or handover) and are thus able to interact and socialize with their counterpart over longer time periods to develop relational trust (see Rousseau, 1998). In contrast, various specialized professionals only work together for a limited time without prior experience as colleagues; however, they must trust each other to accomplish their tasks. Actors in such a situation tend to form swift trust (Meyerson et al., 1996, pp.166–195) and rely more on professional roles and credentials than the individual itself (Grabher, 2002). As Dawes (1994, p. 24) explained: "We trust engineers because we trust engineering and believe that engineers are trained to apply valid principles of engineering, moreover, we have evidence every day that these principles are valid when we observe airplanes flying." Swift trust relates to the concept of nondisclosive intimacy (Eisenberg, 1990), which refers to interaction without close social ties or cognition alignment where the expert best suitable to the task at hand determines the group behavior. However, swift trust or nondisclosive intimacy may be insufficient to prevent intergroup tensions from causing fissures within a team (Weick, 1993). In summary, professional and occupational groups may have different premises for their interactions during a project; the former expecting professional credentials from their counterparts, and the latter committing only after discovering the other party is trustworthy over time. Regardless, individuals representing certain occupations and professions must collaborate, trust each other and commit to the project for it to succeed.

The roles of professions and occupational employees in service-intensive projects can be expected to overlap significantly because managing an individual project and its long-term service exchange are closely linked. Figure 1 combines the characteristics of a service intensive-project, blending two business logics (project business and service business) and two competence requirements (professionals and occupations), into four specific business processes. The origin (Figure 1) marks the project handover, and the blurred color resembles the transitional period between project and service businesses.

Figure 1 Conceptual research framework: service-intensive project characteristics combined into four business processes.

Solution development processes include a broad spectrum of technical and creative professionals whose participation in the project is expected to be temporary. Their task is to solve a problem for the project buyer using the resources given by the project seller. Project *marketing/management* processes facilitate solution development and include various commercially oriented occupations that ensure the project time, budget and performance criteria (see Atkinson, 1999) are met. *Technology/service* development processes cover the post-project services offered to the customer (e.g., support, maintenance, upgrades, customization, development and consultation) and all related technological development. These services are expected to employ senior technical and creative professionals capable of development work, but also maintenance service staff. *Relationship management* processes address the post-project customer relationships and can be expected to include commercially oriented occupations whose task is to manage customer value and satisfaction over longer time periods.

We argue that intergroup tensions in service-intensive projects relate to how these four business processes are intra-organizationally (by the project seller) and inter-organizationally (between the project buyer and seller) organized. More specifically, we claim such tensions relate to 1) how competing institutional logics are resolved, 2) how the dichotomy between professionals and occupational employees is settled, and 3) how the four business processes are temporally organized (transition from project to service business).

3. RESEARCH DESIGN AND METHODOLOGY

This research is designed as a comparative case study with qualitative data (Cunningham, 1997). We recognize the importance of case selection and take into account the advice on the topic offered in the literature (Eisenhardt, 1989; Pettigrew, 1989) while following Romano (1989) in thinking that the decision on which particular cases to select is one for the researcher alone. Our cases were selected from among dozens of projects within various industries that we have studied on previous occasions. Our cases were not randomly chosen, but carefully selected from the theoretical perspective allowing us to gain certain insights that other cases would not have been able to provide (Siggelkow, 2007). Two cases were chosen for this research; a wind turbine parts supplier (Case A) and a content management system (CMS) supplier (Case B). Both supplier companies share a similar background; they have grown rapidly from small startups in evolving markets to widely recognized players in a niche market. This niche market is generator and converter solutions for wind turbines for Case A and CMSs for the public sector for Case B. Consequently, their modus operandi is still forming; therefore, it is interesting to compare the interaction and trust between professional groups involved in these projects.

The methodology used follows abductive reasoning (Dubois and Gadde, 2002) in which both theoretically deduced dimensions and empirical material are used. Data for the wind turbine case (A) were collected during the course of two research projects studying buyer-seller communication in wind turbine projects over two time periods, 2009 and 2010. Data for the CMS case (B) were collected in two steps, in 2006 and 2012, during research focusing on longitudinal buyer-seller interaction within CMS projects. Semi-structured interviews (Arksey and Knight, 1999; Kumar *et al.*, 1993) were used to collect data (see table 1).

Table 1 Interview data

The choice of informants was premised on the principle that information is best elicited from people who have knowledge of the phenomenon to be studied. The informants were chosen for their central role in the studied projects. Many of the interviewees were experienced project professionals and held senior positions in their companies, which enabled them to comment authoritatively on intergroup behavior in projects. Although other respondents working in the same firm could have offered additional viewpoints on the subject, we chose to use a key informant from each firm selected for their active involvement in the projects under scrutiny and ability to provide explicit insights into it.

All interviews were taped, transcribed, and then analyzed to thematically group the key topics (see Miles and Huberman, 1984). Secondary data included documents, minutes of meetings, industry reports, and firm visits so data interviews could be triangulated as suggested in the literature (Denzin, 1978). In the following section, the findings are not separated for each customer relationship, but rather treated as Case A and Case B, in order to increase simplicity. Four customer projects for both cases were chosen to increase the clarity of analysis and

validity of findings (Yin, 2009). The challenges highlighted occurred in all four customer projects of Cases A and B, establishing that they were not random, but rather recurrent and noteworthy behavior in these projects. The results are presented in the next section. To maintain confidentiality, the identities of the firms and respondents have been withheld.

4. ANALYZING THE INTERGROUP TENSION IN TWO SERVICE-INTENSIVE PROJECT BUSINESSES

4.1 Case A: A wind turbine parts supplier

The supplier is an international manufacturer of frequency converter and generator solutions for wind turbines. The company offers design, development, training, and maintenance services for its customers, who are predominantly large wind turbine manufacturers. The customers represent a classic business-to-business market as roughly 95% of the global market is dominated by 15 manufacturers. Wind turbine manufacturers typically use several subcontractors, but there are five critical components in a wind turbine that are so complex as to demand partnership-style cooperation among subcontractors. These five parts are likely to account for 90% of failures disabling the turbines. Frequency converters and generators belong in this category; therefore, development projects involving these components are scrutinized intensely by the customer (see e.g., Baroudi et al., 2007).

Each wind farm works to different parameters depending on the local temperature, wind direction, humidity, and other climactic variables. Therefore, a prototype wind turbine must be designed and tested before serial production can begin. The generator and converter combination is responsible for roughly one-third of the complete price of a wind farm. The lifespan of a wind turbine is up to 25 years, requiring a long-term commitment to after-sales

and maintenance. Once the project is delivered to and approved by the customer, the seller takes care of installation, training, provision of spare parts, and on-site metrics. Development activities between customer and seller continue as well, because technologies develop rapidly and competition for more powerful wind turbines is intense. Figure 1 describes the activities and the responsible parties during the stages of a typical customer project for the supplier.

Figure 2 The typical project stages of a generator and converter project and the professionals involved with the different activities during these stages

During *prototype negotiations*, the sales agent of the supplier operating in specific markets follows customer leads to attract prospects' attention and engage them with the supplier. After that, a meeting between a potential customer (purchasing manager or head of purchasing) and the supplier's key account manager (KAM) is arranged, and the sales agent steps aside. If the initial meeting is productive, the KAM and the customer's purchasing manager will work to confirm the required specifications, and finalize a quote and the terms and conditions that will apply to a subsequent agreement. However, the supplier involves a technical manager (TM) at the stage specifying the details of the product to ensure the offer is realistic, which is often a challenging task. On many occasions the communication between the technical and the commercial side of the project supplier is imperfect and insufficient, as the director of electrical machines explains:

> *We don't have the slightest idea about what our sales agent is doing with the clients, that is, information does not flow internally between sales and production.*

The issue in this type of business arrangement is that the sales process of a prototype project might take up to two years, during which time the sales agent transfers the lead to the KAM,

who must work intensively to gain the prospective customer's trust. Doing so will typically involve meeting customer representatives at trade shows, visiting customers on-site, and participating in online meetings. During this process, KAMs often have limited technical information available to them and may need to rely on their gut feelings and sometimes even embellish some details of the service available to keep buyers interested. As the wind turbine supplier's technical account manager puts it:

> *It's a bit like they promise the moon to get the customer hooked up and closing the deal.*

When the contract for the delivery of the prototype has been signed, engineering groups in both companies assume the main responsibility for the project. Communications during this stage occurs through three technical account managers on the supplier side; the lead technical account manager (TAM^{L}) is in charge of the generic technical guidelines and the technical account manager of converters (TAM^{C}) and technical account manager of generators (TAM^{G}) are responsible for the technical details and the project team. KAMs should be informed of all the major developments as they remain responsible for major decisions, as noted by the lead technical account manager:

> *This internal debate will continue forever so that you're responsible for everything, but not allowed to make any decisions on your own.*

The process leads to fairly frequent clashes between the KAMs and leading technical account managers, which can sour the internal atmosphere in the supplier firm. On the customer side, the situation is similar; engineering and commercial professionals tend to be separated and do

not necessarily consult each other. One of the customer's design engineers commented on the beginning of the relationship with the supplier:

> *Two and a half years ago, our sourcing team came to our team and said, 'OK, here we have a new supplier, and from now on we would like to work with them on the generators.*

At that stage, the customer's head of R&D (or another leading engineer) would organize communication on the customer side. At the same time, project team members of the supplier and the customer begin their direct interaction to specify the details of the technical solutions required. It is clear that at this stage, communication mainly involves convincing the customer of the technological credentials of the proposed solution. Anything else is irrelevant as pointed out by head of R&D in the customer organization:

> *I'm here to produce wind turbines, and I wouldn't say that because of the marketing I would go to one company or to another, so it's more the reputation that company has got in the market. I´m not affected by a shiny color or slogans. I skip those things."*

On several occasions, customers complained about the lack of communication with the engineering department of the supplier since the technical account managers tended to inform customers about issues only when facing insurmountable problems, it is an issue one of the customer's design engineers raised.

> *I heard that they were doing internal testing and asked about the results. It turned out that they had already finished one week earlier, and the results were very good. So, they never called me and set up a meeting or sent an e-mail. They should really be more proactive about sharing information with the customer.*

Delivery of a prototype project takes two to four years from the first contact. This is the decisive moment for the supplier as the field test and surveys indicate whether or not the promised operation rates have been met. One of the supplier's technical account managers clarified:

> *At that point you'll see whether or not the sales promises are fulfilled for the customer. However, when the turbine begins to spin, and if our machines work flawlessly, then the [level of] communication subsides.*

If initialization goes well, the supplier's project team members and the technical account managers in charge of it (TAM^C and TAM^G) are assigned to other projects and the technical engineer of services (TE^S) handles support activities and coordinates the after-sales services through a third-party network on the customer side. Meanwhile, the KAM and purchasing manager begin negotiating the terms of a *trial series*, which usually demands ten flawless prototypes. Some customers found it strange that the after-sales services were arranged by third-party network members, not by the supplier itself. This created tensions between the companies as the supplier tried to avoid responsibility and blamed other suppliers that were responsible for other mechanical parts of the turbine besides the generator and converter. One customer stopped buying from the supplier for two years. The customer's head of purchasing was irate.

> *Well, they have two conflicting sides; they boost sales and support this type of expertise. Practice in customer relationships has been, however, the opposite as after-sales communication is riddled with problems.*

These problems in after-sales were reflected internally as well; engineering blamed sales for making unrealistic promises, and sales blamed engineering for not implementing the project as planned. Solving these tensions internally and with the customer was critical to maintaining a working relationship with the customer. One of the KAMs highlighted the importance of each firm keeping its side of the bargain:

> *If you promise something and don't hold to it, well that's it. It does not make a difference how much you communicate, if you don't live up to your words the trust will deteriorate. And if you lose the trust completely, then the communications take a different form and are on a different level.*

If communication over the trial series proceeds, then the production manager (Pm) and the sourcing manager of the supplier step in as well, while the support and after-sales services continue as before. When the parties reach an agreement over quality standards and delivery schedules, serial production begins and production is moved to a larger facility. On some occasions, problems with the generators and converters surface during serial production and the supplier needs to work intensively with its local after-sales provider to find solutions. One of the supplier's technical account managers elaborates:

> *We had already supplied them with hundreds of systems when the technical difficulties emerged and caused a really tricky situation. It required efficient methods, especially from our after-sales provider, to solve these problems.*

If the project is successful, the parties usually begin to discuss further development of the technology and larger generators and converter options, which offers opportunities for R&D as well as consultation services. These discussions typically originate between the KAM and the purchasing manager, but the engineering department and a technical manager (TM) is closely involved as well. A technical account manager for the supplier comments:

> *These machines are seldom ready out of the box. Usually, a customer wishes to develop the product, modify certain parts of it, or go for a bigger turbine size, which is the current trend in wind power. Customers often begin with a small turbine, but then go after the next size as the market forces them to do so.*

4.2 Case B: A content management system supplier

The supplier develops web-technology based systems and digital user interface designs. Its main product is a CMS available to customers under license; with the seller retaining intellectual property rights (see e.g., Downs et al., 2003). CMS projects often require half the content to be bespoke, making them rather complicated. Furthermore, CMS is typically integrated with other information management systems of the customer's such as electronic booking, healthcare, social welfare, information security, and electronic services, which makes the customer highly dependent on the supplier and the switching costs for alternative systems high (Grabher and Ibert, 2011; Lohtia and Krapfel, 1994).

The lifespan of a CMS system is five to seven years, but can be considerably lengthened by updates, upgrades, and active development of the system with the supplier. The supplier is a typical example of a firm operating in the service-intensive project business and provides a variety of services ranging from basic maintenance to sophisticated development, education, and consultation services. It is typical for customers to be intensively involved with system development since options emerge after the system has been in use for some time. Indeed, there is a learning curve for a CMS and it takes time to educate the staff of larger organizations so they can fully benefit from the system. Many of the ideas to improve the CMS are generated while it is being used, and the maintenance as well the development activities that follow stabilize otherwise unstable project revenue streams for the supplier. Figure 2 describes the activities and the responsible persons during the stages of a typical project for the supplier.

Figure 3 The typical project stages of a CMS project and the professionals involved with the different activities during these stages

First, contract negotiations begin between the supplier's sales manager and the buyer's chief information officer (CIO). Other key decision makers on the buyer side vary, but will often include a communications manager (CM), a marketing manager and a data administration specialist (DAS). At times, the first contact between the parties is initiated by a third-party such as a marketing or advertising agency. Occasionally, suppliers' prior references attract customers. The sales process for a CMS system is quite long and may take a few years from the first contact to the invitation to bid, with another six months for the buyer to decide between supplier candidates. The sales manager is responsible for closing the deal, but a

technical expert such as a leading application designer (AD^L) or a supplier's project manager (PM^S) or a leading project manager (PM^L) is consulted to ensure the offer is feasible. Leading application designers play a central role, as they are experienced engineers who understand both the opportunities provided by a CMS and the inherent limitations. Their presence in meetings assures that the timetable and budget for the project are realistic and that broader technology directions are discussed. This can be very important, as confirmed by a customer's development manager:

> *The supplier readily promises everything, like yes, yes, sure, but then they are forced to come back to the negotiating table with their tail between their legs and bring more technical know-how with them.*

Once the relevant parties have signed a contract, they will convene an initial meeting between the various commercial and technical representatives of both sides. The buyer will need to appoint a project manager (PM^C) and a set up project team. During the initial meeting, customer responsibility is switched to the supplier's project manager, who is in charge of the project team, involving an art director, several application designers (AD), a content production assistant, and an application designer responsible for support services (AD^S). The application designers of the buyer and seller will take decisions on technical details and keep the project manager apprised of them. It may be difficult for the supplier's project managers to deliver the sales manager's visualizations, as pointed out by the supplier's leading project manager.

> *On one occasion, the sales person had been visioning stunning and extremely expensive ideas and was thus able to acquire the customer. After this, it was the*

> *project manager's responsibility to deliver the unrealistic and overhyped promises from the sales person as best he could with his technical know-how.*

The buyer's advertising agency is often involved in the project as the visual brand elements must be discussed. When the visible sides of the CMS (e.g., Internet webpages) are released to the public and the buyer's main CMS users have been trained, there are no tasks remaining for the project team members and both teams are dissolved. After the customer begins to operate the system, they often quickly realize the challenges and opportunities associated with the CMS. Many of the ideas for further development are generated while using the system and solving practical problems. The customer's web designer commented:

> *After the CMS had been implemented, the next thing was, of course, to correct all the mistakes, but the development work was also closely connected. I mean, there are so many ideas that one comes across by doing something new. There are so many options, it's like, could there be a function like this and could we change that.*

These discussions occur between project managers, but the buyer's main CMS users and the supplier's support person (AD^S) are often involved as well. Once potential difficulties have been fixed, the sales manager begins to negotiate the terms of a maintenance contract, which can prove a challenging and time consuming task. There might be passive periods following the maintenance contract, but CMS projects usually lead on to further development of the system at some point. Development may include major initiatives such as development of an e-commerce function or intra- or extranet platforms, or minor initiatives such as developing

new functions, features, different user optimizations, or new graphic design, termed *facelifts*. The case study shows it can be difficult, however, for the supplier to decide who should actually be in charge of promoting these additional services. One of the supplier's project managers comments:

> *As far as I understand the roles, responsibility for the customer should stay with me after the project. I take care of all the practical things and the sales responsibility stays with the sales person. I don't know how it should be, but I personally feel responsible for the relationship. I can't just disappear after the project has ended. After all, I'm the one the customer is calling after the project.*

Smaller development activities are agreed upon by the project managers, but larger initiatives require a formal contract, broadening the interaction to include the supplier's sales manager and the buyer's executives (such as the CIO and CM). Project managers are aware of the customer's requirements since they are in charge of project implementation; therefore, they are able to suggest improvements. They are however not authorized to negotiate major service deals: that is the responsibility of the sales managers who closed the original project deal. Our case study revealed that the internal relationship between sales and project managers is an ongoing battle. As one project manager states:

> *After all, you feel that the sales division is higher in the company hierarchy than project management, so we are just…we are just ordinary mortals.*

In the case of major development initiatives, a project team is established, often including the same members as those involved in the original project. New system updates, upgrades, and development activities continue for the lifespan of the CMS, but eventually the buyer needs to purchase a new version of the system, generally within five to 10 years, or replace the supplier with a competing one. The supplier's sales manager clarifies:

> *Basically, this industry is starting to resemble the paper machine industry. It's like they produce a paper machine and we deliver a large Internet service. For that we get a lump sum of money and after that comes the support, maintenance, and development services.*

It is apparent that the longer the time from the original project deal, the more challenging the customer relationship can become for the supplier. Project managers tend to accuse sales representatives of greed and sales managers, in turn, criticize project managers for their inability to acquire additional service sales during maintenance. There is an ongoing debate as to whether or not account managers should be added to the buyer-seller interface to fill the space between sales representatives and project managers. The leading project manager made his point very clear:

> *We should get rid of the sales representative and replace him with an account manager who would understand business, technology, and the product.*

It was considered important by the respondent that the same person remains in the relationship from the beginning of the project, so that customer responsibility will not be transferred between people. Therefore, using an account manager only after project implementation might not be wise, because as a project manager for the supplier in case B stated, then customer specific information will be jeopardized.

> *I don't think that using an account manager for all the maintenance customers would solve anything. According to my knowledge, it's best to have one project manager responsible for the customer from the project implementation onwards, so that responsibility is not shifted again to another person.*

5. RESULTS AND DISCUSSION

Both case companies organized the transition from a single project to a continuous service exchange differently; the generator and converter supplier used third-party subcontractors, whereas the CMS supplier organized services in-house. In the wind turbine case, many of the generator supplier's customers were dissatisfied with the after-sales services and had put projects on hold because of that dissatisfaction. It appeared that the company was stuck firmly to the product centric project business mentality. It was challenging for the key account managers (KAMs) to build long-term business relationships because they lacked direct control of the service process and the rest of the company was focused on static project milestones. In contrast, the CMS supplier had explicitly positioned itself toward the service business, but had failed to build an equivalent organization. The company had application designers responsible for continuous service exchange, but they were focused on fixing

technical problems, and not well equipped for building long-term business relationships. Project managers and sales managers handled long-term relationships ad hoc and without a clear guiding principle.

5.1 Typical professional and occupational groups in service-intensive projects

In the Figure 4, we have positioned the participants involved in the two case studies on the four business processes elaborated previously in the theoretical part (Figure 1). We use a dotted line to illustrate the temporal affiliation with the participants along the project timeline. Participants associated with a dotted line contribute both to the project and service business logics and the length of the dotted line illustrates their presence in relation to other participants. The vertical axis describes the hierarchical position of the participants in their professional or occupational group.

Figure 4 Occupational and professional positions of the participants involved in the wind turbine (black) and CMS (red) projects

Employees associated with the *solution development business process* (top left quadrant in the Figure 4) included highly specialized engineers or creative professionals who participated in project teams and who focused on instant solutions to narrow technical and creative problems that emerged during project planning and implementation. In the CMS case study, application designers (AD) and leading project managers (PM^{L}) with engineering background solved the technical problems, whereas in the wind turbine case study, technical engineers (TE) and technical account managers (TAM) in charge of the project teams were responsible for such problems. These professionals were accustomed to an organizing matrix structure based on project operations (Ford and Randolph, 1992; Knight, 1976), as their knowledge was often

loaned to internal and customer projects for specific time periods. The length of their presence varied, but they were associated with project planning and implementation and motivated by project-related success criteria such as time, budget, and project performance (see Atkinson, 1999). Opportunities for developing relational trust primarily concerned other professionals addressing the same engineering or creative challenge; therefore, swift trust (Meyerson et al., 1996, pp. 166–195) was the major modus operandi. These specialized engineers and creative professionals constitute the first group that we refer as the *problem solvers.*

In both case companies the sales representatives began the *project marketing/management business process* (bottom left quadrant in the Figure 4), by identifying customer leads. In the wind turbine case study, the sales agents representing each market area generated leads, whereas in the CMS case, advertising agencies with large account portfolios that included prospective clients for CMS projects created many of the leads. We refer to this occupational group as the *lead generators*. These occupational employees are typically sales professionals whose involvement in a project is limited to the pre-project stage and to the task of finding leads, both of which result in challenges in the formation of relational trust. Interaction with the potential customer remains superficial and formal, as only task-related issues are discussed (see Lindkvist 2004, Thamhain and Wilemon 1975). Behavior is more likely to be calculated and to lead to the emergence of swift trust (Meyerson et al., 1996, pp. 166–195), as employees interact only to find leads and to earn related incentives. The leads are then transferred to other commercially oriented occupations, such as sales managers and project managers in the CMS case, or key account managers (KAM) or in the wind turbine case, who then initiate a customer project.

The *technology/service development business process* (top right quadrant in the Figure 4) was primarily the task of the leading application designers (AD^L) in the CMS case and the technical managers (TM) and leading technical account managers (TAM^L) in the wind turbine case, all of whom had senior positions and authority. We refer to these professionals as the *technology developers* (bottom right quadrant in the Figure 4). Compared with the problem solvers group, these people tend to concentrate on long-term roadmaps of different technologies, which entail their presence throughout several project stages and possibly beyond in some projects. Frequent social exchange allows for informality, the emergence of relational trust, and the gradual transformation of professional relationships into friendships (see Heide and John, 1992; Van de Ven and Walker, 1984). Application designers (AD^S) and technical engineers (TE^S) responsible for maintenance and after-sales services, would be another example of professionals belonging to this group, but with less authority and more perpetuating than developmental role. Similarly, technically oriented sourcing and production managers (Pm) participating in the post-project stage are associated with this professional group.

The *relationship management business process* was primarily the task of the key account managers (KAM) in the wind turbine case. In the CMS case, sales managers were typically oriented toward long-term customer satisfaction; however, they were less technically capable than KAMs in the wind turbine case (who often had a degrees in both business and engineering). We refer to this occupational group as the *relationship developers*. They view projects from the business perspective and focus on the revenue logic of the company, the negotiation of contractual terms, and the achievement of commercial goals. Interaction exceeds immediate tasks to cover personal and confidential company issues, such as core expertise exchange and the discussion of reciprocal collaborations that enable the

development of mutual trust. Relationship developers are motivated by customer satisfaction and company profits rather than by project success criteria. Thus, this orientation is directed toward maintaining continuous business relationships and achieving relational trust (Anderson et al., 1994; Anderson and Weitz, 1989; Morgan and Hunt, 1994). Professionals with this orientation tend to have backgrounds in procurement, business development, or relationship management. Interestingly, in the CMS case the sales manager and project manager roles overlapped considerably. Indeed, the project managers were in charge of the technical and creative professionals, even though they did not posses a technical background. They had typically a degree in social science or arts and their role was to "bridge" the abstract customer needs and the capabilities of the technical and creative professionals. Their blurred role created a legitimacy issue, as they lacked the technical education of the leading project managers, and the hierarchical position of the sales managers. They are included in the relationship developer group as they were able to develop a close relationship with the customers; a social bond (Wilson, 1995; Wilson and Mummalaneni, 1986) that was not easily transferred to the sales managers after project handover.

5.2 Tension among professional and occupational groups in a service-intensive project

The two commercially oriented groups (lead generators and relationship developers) and the two technically/creatively oriented groups (problem solvers and technology/service developers) are analytically separable, but in practice, they become intermingled. To exaggerate the issue discreetly, the occupational employees generally represent "the sales people" for the other project employees, whereas the technically oriented professionals are broadly considered as "the engineers" for the commercially oriented occupations. This dichotomy is often without grounds, as the occupational managers do have technical experience, either through their work experience or education. Similarly, technical and

creative professionals are aware, and capable of acting on the varying customer needs and other commercial matters in projects. We argue that the use of stereotypes is mainly a scheme for the project participants to make sense of the co-existing and sometimes contradictory institutional logics. In table 2, we have presented a typology of the four groups as evident in the two case studies.

Table 2 Typology of the professional and occupational groups in service-intensive projects

We adopt the term 'ethos' to describe the unique orientation that each of the groups has toward the four business processes associated with service-intensive projects (solution development, technology/service development, project marketing/management, relationship management). As evident in the typology, the ethos of each group makes the individuals feel irreplaceable, and at the same time, forbidding for the other groups. We believe that the ethos of these four groups are deeply embedded into specific institutional logics that guide the behavior of the individuals representing these groups.

In theory, there are six possible tensions between the four groups (lead generator, problem solver, technology developer, relationship developer). In practice, however, only a few seem to recur over time. In the wind turbine and CMS businesses, lead generators and problem solvers do not interact with each other directly, dealing only through relationship developers or technology developers. Consequently, tensions between these two groups are absent. However, deceptive leads do create tensions in the interactions between technology developers and relationship developers, as the latter designs the contract that the former must implement alongside the problem solvers. At the same time, if a problem solver fails to inform a technology developer of an issue that is critical for the customer such as falling

behind the project schedule or failure of certain product tests, then the relationship developer takes the blame, as he or she is ultimately responsible for the customer relationship. Most of the direct interactions in the CMS and wind turbine projects occurred between technology developers and relationship developers, making them the two most important groups for the long-term success of a service-intensive project. We encountered several ongoing areas of tension:

- *Stereotypes*. It is typical for relationship developers and technology developers to denigrate each other's contribution using stereotyping such as 'sales representatives do not understand the basics of technology' or 'engineers do not know how to communicate'.
- *Perceptions of trust*. Relationship developers highlight relational trust and interpersonal chemistry between parties, whereas technology developers either trust or mistrust the technology and the chosen solution, rather than the person representing it.
- *Internal politics*. Relationship developers and technology developers cling strongly to their territory. This creates inefficiency and buck-passing as every trivial decision must be approved by the other group.
- *Lack of cooperation*. Relationship developers and technology developers are dependent on each other's competences. Nevertheless, they prefer to interact mainly with their equivalent counterpart (e.g., the seller's engineers interact with the customer's engineers), which can create communications gaps.

According to our findings, the tensions between project professionals are surprisingly similar regardless of the project context (wind turbine or CMS). However, the specific approach to post-project services influences intergroup behavior.

In the CMS case, after-sales services were managed in-house, whereas the generator and converter project supplier in the wind turbine case outsourced maintenance services to a third-party network. In the wind turbine case, there were fewer intra-organizational tensions following project delivery, but the third-party supplier policy created customer dissatisfaction and is therefore not a recommended long-term strategy. The CMS project supplier positioned itself toward service business, but lacked the organizational capabilities to manage the resulting continuous business relationships. This was obvious considering the overlapping roles of the sales manager and the project manager. The sales managers were part of a well-established sales unit, whereas project managers embodied a matrix organization with only temporal power through project teams. Indeed, the legitimacy of project managers was temporary and dependent on their close relationships with customers and their superior understanding of their needs. They were supervised by leading project managers who were in charge of production units. So, project managers were squeezed between the permanent hierarchical positions of sales managers and leading project managers, and left without authority beyond the project teams. Their peculiar role in the CMS case illustrates how the institutional logics of the four professional and occupational groups are at the same time somewhat stable, but at the same time in constant state of flux with organizational structures. Perhaps that is the reason why the project managers in the CMS case were so successful. They were unrestricted from the established logics of the sales and production units, and able to encounter customers without a strict schema.

6. CONCLUSIONS

Our goal in this research has been to determine 1) what are the typical professional and occupational groups in a service-intensive project, and 2) what are the main tensions among

these professional and occupational groups throughout the timeline of such a project? We addressed these questions through devising a conceptual research framework (Figure 1) in which the characteristics of a service intensive-project, blending two types of business logics (project business and service business) and two types of competence requirements (commercial and technical/creative), were combined into four specific business processes. The intergroup tensions were viewed related to the way these four business processes are organized intra-organizationally and inter-organizationally. More specifically, we claimed that the tensions relate to 1) how competing institutional logics are resolved, 2) how the dichotomy between professionals and occupational employees is settled, and 3) how the four business processes are temporally organized (transition from project to service business).

In the results section we proposed two occupational and two professional groups associated with service-intensive projects (Figure 4) and illustrated the specifics of these groups in detail (Table 2). We analyzed the intergroup interaction and found out that most of the tension occurs between technology developers and relationship developers. Stereotyping, perceptions of trust, internal politics and lack of cooperation were the most evident manifestation of the tension. We claim that each of these groups elucidates a distinct institutional logic (Bresnen and Marshall, 2011, p. 170; Friedland and Alford, 1991; Lounsbury, 2007) that is dynamic by nature, referring to a state of concurrent stability and change. The rather repetitive project process creates the stability, where each of the groups has a specific role in contributing to the supplier's project milestones. Change stems from variation in the organizational structures (e.g., hierarchical power and legitimacy, matrix versus functional structures) and from the varying needs of the project business (recruiting certain professionals or occupations) that alters the interaction between professional and occupational groups. It is debatable whether the change is exogenous or endogenous (see Zucker, 1988: 39-40; DiMaggio and Powell,

1983), i.e. whether the professions and occupations create companies, or organizations create the type of professions and occupations they need. Regardless of this debate, we argue that project temporality and the inseparability of temporal versus permanent organizing is at the heart of the dynamism inherent in service-intensive projects.

6.1 The issue of project temporality

In the following we will raise the analysis level from the occupational and professional groups to the characteristics of service-intensive projects as a nexus of temporal and permanent organizations. By doing this we seek to dwell deeper in the reasons behind the tension between the technology developers and the relationship developers.

Service-intensive projects conceal a Pandora's box of paradoxes. First, projects are expected to have a clear beginning and, at least in the traditional sense, a clear end at a certain point in time (Aaltonen and Kujala, 2010; Pinto and Prescott, 1988). In service-intensive projects they do not. More precisely, the post-project stage extends to the end of the usable life of the supplied system (Artto et al., 2008; Kujala et al., 2013). This creates an organizational dilemma: how to combine a project organization (generating leads, planning and implementing projects) with an operational organization (developing long-term post-project business relationships) and secure their cooperation and communication? As we learned in the case study, the CMS supplier tried to achieve this by having something 'in between' the occupational and professional groups – the project managers, not clinging to either side. This was not, however, a stable fix, as the tension spread from being a matter between occupational and professional groups, to being additionally a thorn in the relationship developer's side.

Second, business relationships are expected to be long-term and stable (Alajoutsijärvi et al., 2001; Håkansson and Snehota, 1995, pp. 6–12): a far cry from the inherently dynamic post-project business relationships in service-intensive projects that comprise active and passive stages depending of the content of the service exchange (Ojansivu et al., 2013). How are the commercial occupations able to deal with these kinds of business relationships that do not stand comparison to the sleeping relationships (Hadjikhani, 1996) or to the linearly developing business relationships (e.g., Dwyer et al., 1987; Ford 1980) well-known in the textbooks?

Third, the qualities of products and services ad another puzzle; the previously mentioned are tangible and lasting, whereas the latter ones are abstract and perishable (Lovelock and Gummesson, 2004; Spring and Araujo, 2009). This is challenging from the perspective of the post-project technology/service development, as the most talented problem solvers are relocated to other projects after project handover. Furthermore, these technical and commercial professionals involved in the project planning and implementation are more acquainted with instant solutions to narrow technical and creative problems than abstract and varying service requirements of the customer over longer period of time (Alderman et al., 2005). What type of operational organization could develop technology and services (that the customers are interested) along the timeline of the post-project stage in connection to the original solution designed by the problem solvers?

Fourth, in project business buyers are often the active party and the sellers mainly react to the buyers invitations to tender (Cova and Hoskins, 1997), whereas in business relationships both parties are expected to be active (Alajoutsijärvi et al., 2000; Håkansson and Snehota, 1995, p. 8). In post-project business relationships there is not such evident contrast, as the activity of

the buyer and seller seem to vary greatly over time (Ojansivu et al., 2013). This generates expectations regarding the capability of the relationship developers to remain alert to the changing needs of the customer. In principle, relationship developers should be able to envision customer needs along the lifecycle of the supplied system even when the customers do not know their own needs in advance. Being proactive is central if the supplier wishes to develop the service exchange beyond the mandatory facilitating services (Kujala et al., 2013) that keep the system functional.

We argue that an organization capable of handling all these paradoxes does not exist. Not yet. Why? Because, it was only from the late 1990s that post-project services became adopted in project business (Davies et al., 2007). It takes time for the industry to adapt to the changing circumstances, not to mention the amount of time it takes for the academic community to respond to the evolving industry practices.

6.2 Theoretical and managerial implications

According to Jalkala et al. (2010), project suppliers are increasingly integrating marketing and sales functions with project execution and implementation in order to increase the customer orientation of the project. This integration, however, does not include post-project service exchange, which is still more than likely to be managed by a separate service organization (e.g., Salonen, 2011). This is peculiar, as previous studies have shown that companies struggle to transfer customer specific information from one project stage to another (Skaates et al., 2002) and that coordination is needed to bridge transitions between project stages (Lunding and Söderholm, 1995). Based on the findings of this research, companies should broaden the integration between commercial occupations and technical professions in the post-project stage and analyze the institutionalized logics of these groups or the *project ethos*

as proposed in this research. Promoting trust and informal practices between these occupational and professional groups rather than hierarchical decision-making and arms-length relations can reduce the inbuilt tension. This is certainly not a straightforward issue, as several studies have implicated suspicion towards replacing adversarial relationships with more trusting arrangement and cooperation in project business (Bresnen & Marshall, 2011; Kadefors, 2004; Maurer, 2010).

This study contributes to the theory of project management in several ways. First, the conceptual research framework (Fig 1) devised in this study provides an institutional theory perspective (e.g., Bresnen & Marshall, 2011; DiMaggio and Powell, 1983; Scott, 2008a) to the occupational and professional groups in projects (Farrel and Morris, 2003; Hodgson and Muzio, 2011; Noordegraaf, 2011; Waring and Currie, 2009), and thus enables the analyze of intergroup tension inbuilt to four business processes. Second, adopting the perspective of a project employee and interpreting the tension through their eyes (Table 2) allows managers to comprehend how profoundly these institutional logics are rooted in the organization and manifested in stereotypes, perceptions of trust, internal politics and lack of cooperation. Third, we elaborate the 'Pandora's box of paradoxes', which will hopefully generate ideas for forthcoming research in service-intensive projects.

The current research is explorative in nature, as similar case studies of intergroup tensions in projects are few and far between. It provides insights into the service-intensive project business, and especially CMS and wind turbine projects. Accordingly, scholars should generalize the results to other types of projects only with caution. In future, it would be interesting to conduct similar studies in other service-intensive project contexts, examples of

which might include those relating to the elevator/escalator business, or the papermaking machinery sector.

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Figures and tables

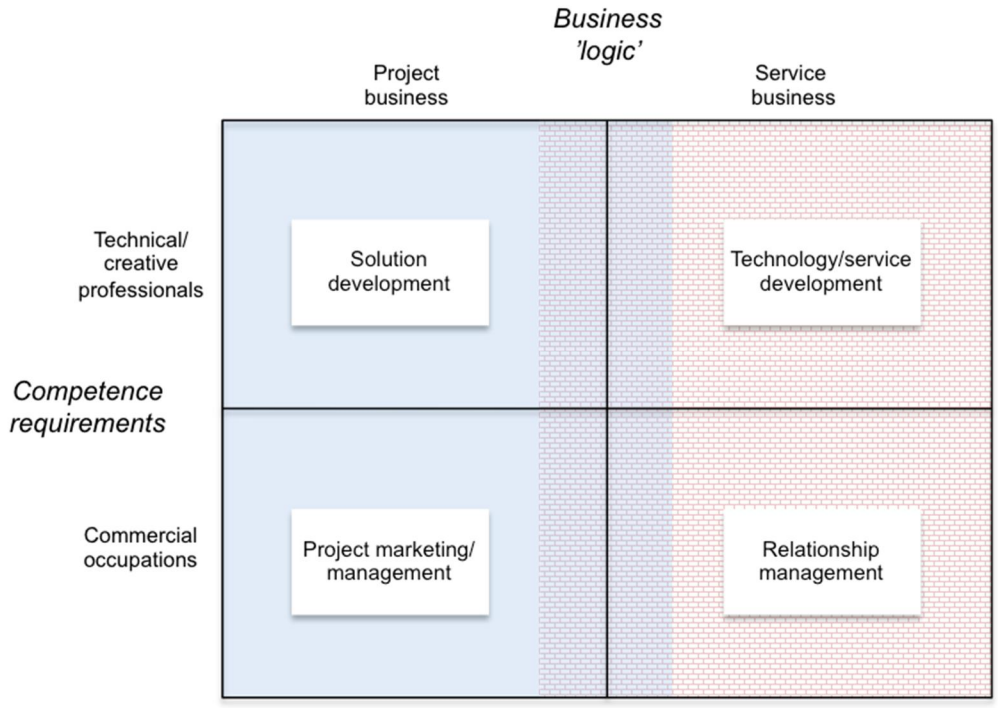

Figure 1 Conceptual research framework: service-intensive project characteristics combined into four business processes.

Table 1 Interview data

Case	Case A		Case B	
Company	Supplier	Customers (4)	Supplier	Customers (4)
Sources of data	Personal interviews, internal company documents	Personal interviews, internal company documents	Personal interviews, internal company documents	Personal interviews, internal company documents
Number of interviews	12 key informants	9 key informants	12 key informants	16 key informants
Positions of key informants	3 Key account Mgr. 3 Tech. account Mgr. Lead Tech. account Mgr. Direct. Elect. machines Production manager Sourcing manager Controller	2 Purchasing managers 3 Head of purchasing 2 Design engineers Project manager Head of R&D	Business unit manager Chief executive Leading project manager 5 Project managers Leading application designer 2 Sales managers Sales assistant	2 Project managers 2 Head of the communications Head of the central admin. 2 Data admin. specialist 2 Data admin. managers Development manager Chief information officer 3 Main users of CMS ICT Coordinator www-designer
Duration of interviews	1–2 hours each	1–2 hours each	1–2 hours each	1–2 hours each
Total	49 interviews			

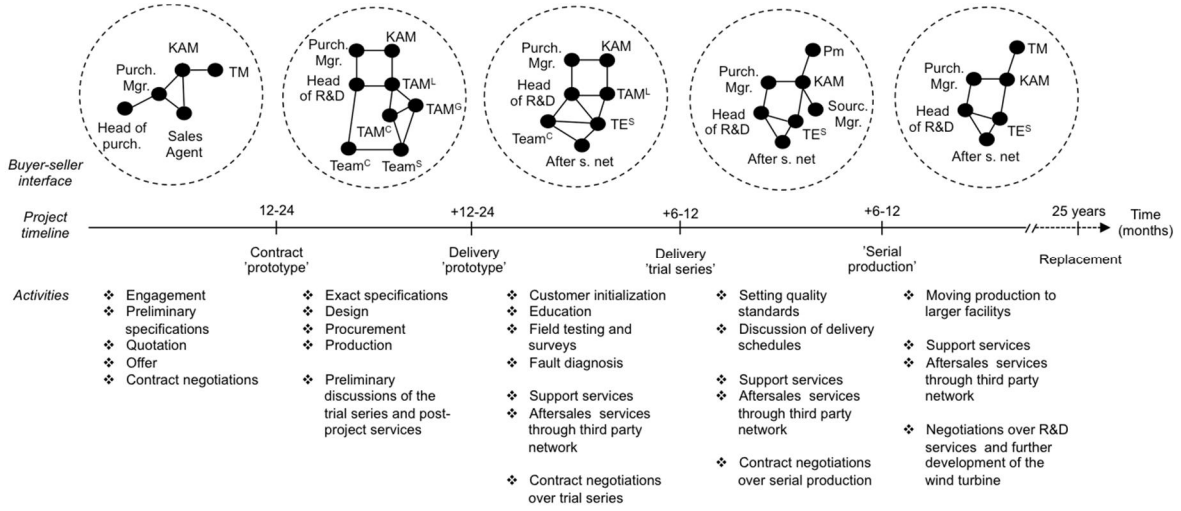

Figure 2 The typical project stages of a generator and converter project and the professionals involved with the different activities during these stages

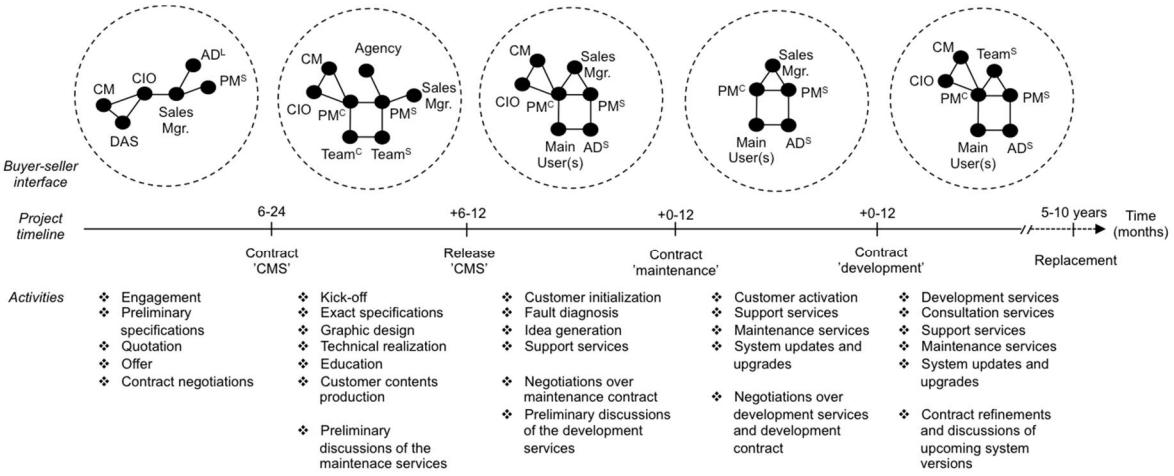

Figure 3 The typical project stages of a CMS project and the professionals involved with the different activities during these stages

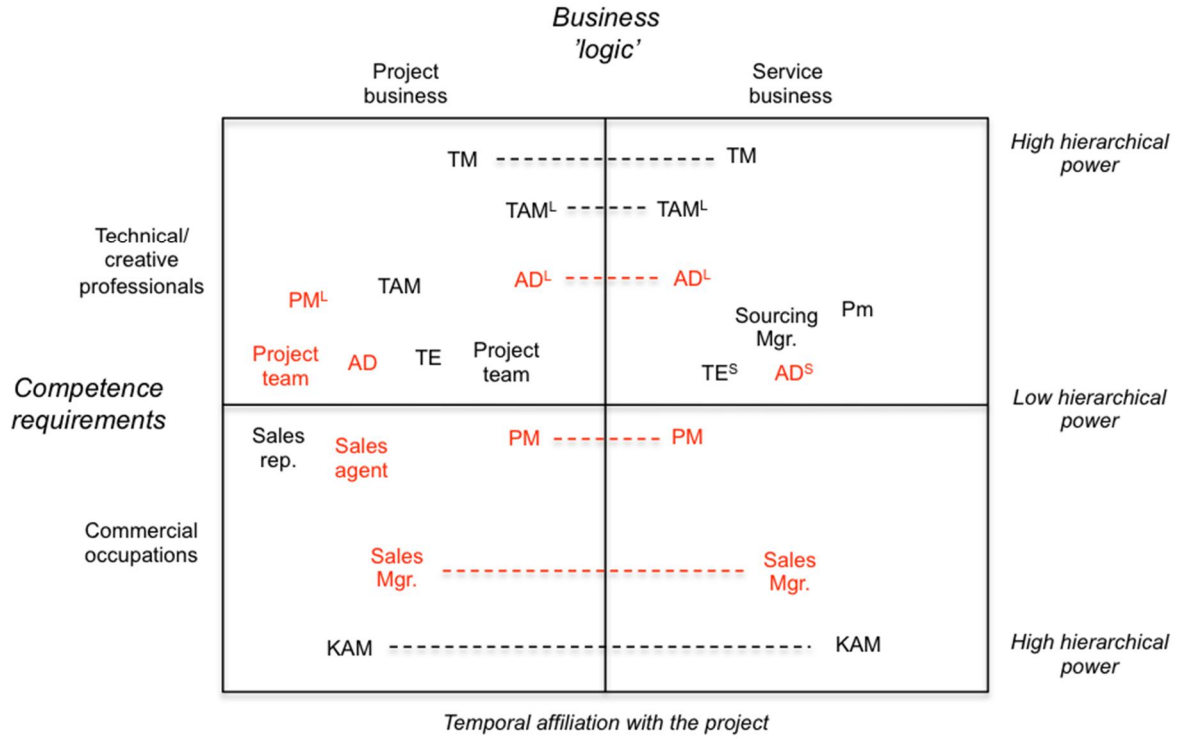

Figure 4 Occupational and professional positions of the participants involved in the wind turbine (black) and CMS (red) projects

Table 2 Typology of the professional and occupational groups in service-intensive projects

Criteria	'Lead generator'	'Problem solver'	'Technology developer'	'Relationship developer'
Ethos	'Find the leads'	'Solve specific technological problems'	'Dedication to certain technology'	'Develop the long-term business with the customer'
What they do?	'Matching customers with suppliers, collect the local information'	'Deliver one piece to the bigger puzzle'	'Develop the technology roadmap, try to convince others of the wisdom of a certain direction'	'Meet customers, try to assure customer satisfaction and profitability'
What strives them?	'Sales commissions'	'Pleasure to solve certain technological problems'	'Competitive advantage of certain technologies'	'Career development through gaining customer volume'
View of project temporality	'What project'	'Aspirations end when the solution is found'	'Customer projects serve to develop certain technology'	'Projects enable customers to develop their competitive advantage and our profitability'
Self perception	'Business starts from us'	'We solve the problems'	'We are backbone of the company's technology development'	'We are backbone of the company'
Critics say	'Overoptimistic sales hype'	'Narrow minded, incapable of communication'	'Nonbusiness minded'	'Do not understand and value certain technologies'