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Investment project as an internal corporate venture

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Keywords: Investment project, project strategy, corporate strategy, corporate venturing, venture

Highlights

- We study capital investment projects as internal corporate ventures
- Project-parent relationship is analyzed with dimensions of relatedness and autonomy
- The parent should grant a project autonomy based on the relatedness of the project
- Autonomy enables the formation of an individual strategy in a project
- An investment project can renew the strategy of the parent organization

Investment project as an internal corporate venture

Abstract

A capital investment project exhibits both deliberate and emergent strategic elements. The emergent strategic elements have been conceptualized as a project strategy, which is formed in a project to attain business-oriented results and to cope with organizational and market environments. We use corporate venturing literature to explain the formation of the strategy of an individual project. In the project studies that consider the deliberate strategic elements with projects, a project has been explained to solely implement the strategy of its parent organization: This paper addresses the relationship between a project and its parent and explains how the dimensions of the parent-project relationship affect the formation of a project's strategy which may diverge from the intended strategy of the parent. The empirical study is a case study on four investments projects in the Neste Oil, a firm operating in the oil refining industry. The projects have a degree of autonomy in relation to the parent, depending on their relatedness to the existing capabilities of the parent.

Keywords: Investment project, venture, internal venturing, project strategy, corporate strategy

1. Introduction

Companies organize in projects in order to adapt to a dynamic environment. The dynamism is caused, among others things, by rapid technological development and changes in the market (Morris, 1994; Brown and Eisenhardt, 1997). Project form of organizing increases organizational flexibility, decentralization of management responsibility, provides opportunities for development and allows organizations to adapt to the environment in an evolutionary way (Lindkvist, 2008). Projects may be used to exploit established resources and capabilities to deliver certain business outcomes (Cova et al., 1994), to explore new ways of developing competitiveness or renewing business (Loch, 2000) by venturing into new markets or exploring new technologies (Frederiksen and Davies, 2008). Projects are undertaken to meet current customer needs as base projects, whereas base-moving projects are novel initiatives to search, discover and asses new market

opportunities, consider new technologies (Frederiksen and Davies, 2008; Brady and Davies, 2004), or invest in identified market opportunities (Söderlund and Tell, 2011). Organizations carry out capital investment projects as internal development projects to assemble the facilities that allow them to meet and/or even renew their strategic objectives (Bower, 1986; Bower and Gilbert, 2005) and develop their products and processes (Hayes et al., 1988).

The inherent flexibility and adaptation in the project business suggest that projects are not only used for implementing deliberate strategic plans, but are also emergent strategies that arise from adaptation to the environment are present (Schwab and Miner, 2011; Lampel, 2011). However the project management literature has emphasized the rational aspects of strategy making considering projects as tools for implementing strategy of the parent, guided by parent organization's plans and operating within pre-established constraints of time, cost, and specification (Shenhar, 2004; Morris and Jamieson, 2005). Existing literature on project strategy typically assumes that the project is subordinate to a single parent firm (Morris and Jamieson, 2004; Shenhar et al., 2005). This perspective emphasizes project selection, and therefore the managerial focus of the organizations has shifted towards multi-project management and the effective linking of this set of projects to the ultimate business purpose (Arto and Dietrich, 2004). Accordingly, project strategy is then a part of a strategy of the parent without emergent elements. Increasingly, the role of project management in shaping the front end and in linking with the parents' strategies is being recognized (Morris, 1994, 2009).

Emergent elements of strategy in project the context have been discussed for example in the field of strategy process (Mintzberg and McHugh, 1985) and venturing (Burgelman, 1983, 1985). Mintzberg (1978) separates intended and realized strategies, where realized strategies contain both deliberate and emergent elements. Already Ansoff (1987) explains that the more complex and distributed the actions of a company are, the more the realized results will diverge from the planned outcome. In a complex environment with multiple stakeholders, the project strategy of an autonomous project may, to some extent, be established by the project itself, as a function of how the project defines its success criteria, and how the project perceives its context (Arto et al., 2008). In the field of product and process development (Wheelwright and Clark, 1992) projects are discussed as ventures (Burgelman, 1983; Abetti, 1997; Maine, 2008). In this paper we discuss capital investment projects and their relationship to the parent organization in a similar setting as

new product and process development projects have been discussed, acknowledging both the top-down rational strategy implementation by parent and bottom-up emerging strategy in projects and the venture-like nature of an investment projects. We analyze the relationship between a capital investment project and its parent organization to find out the dimensions of that relationship that have an effect on the formation of an individual strategy of the investment project. The research questions are:

RQ 1: What are the dimensions of the relationship between a capital investment project and its parent?

RQ 2: What are the elements of the strategy of a capital investment project?

We use the literatures of project strategy and internal corporate venturing to address the venture-like content and strategy of an investment project, and the relationship between the project and its parent. In the empirical study, we examine a parent organization and four different capital investment projects of the parent, which each had different strategic emphases and therefore various effects on the parent, despite the fact that their strategic goals are aligned with the strategy of the parent organization.

2. Literature analysis

2.1 Relationship between a project and its parent

The relationship between a project and its parent organization(s) is described in terms of autonomy (Artto et al., 2008; Martinsuo and Lehtonen, 2009; Gemünden et al., 2005; Lampel and Jha, 2004; Graham, 1988). The degree of autonomy is defined as the extent to which the evolution of the project is tied to constant reporting and taking input from the parent organization (Lampel and Jha, 2004). Project autonomy consists of four components: Goal definition autonomy, structural autonomy, resource autonomy and social autonomy (Gemünden et al., 2005). The degree of autonomy that a project requires to be successful depends on the nature of the project: Innovative projects, complex projects or projects dealing with new technology require more autonomy than do commonplace projects (Gemünden et al., 2005; Hobday, 2000; Shenhar, 2001).

The requirement of autonomy of is reliant on the relatedness of the project. In order to escape corporate inertia and bureaucracy a project needs the more autonomy the less it is related to the existing capabilities of its parent company (Thornhill and Amit, 2000). The degree of relatedness of a project describes the extent to which a project is linked to the capabilities of a company (Dougherty, 1995), and is thus similar to the concept of economic fit (Thornhill and Amit, 2000). A project has a related strategy when it shares production facilities and exploits the capabilities of its parent (Sorrentino and Williams, 1995). The relationship between a project and the parent is dynamic, and evolves over time: projects go through a series of stages as they mature and their autonomy may increase over time (Thornhill and Amit, 2000; Parhankangas and Arenius, 2003).

Resource autonomy reflects the dependence on resources outside the project organization, the availability of these resources for the project, and the power the project has over resourcing (Martinsuo et al., 2009). The most important benefit for a project to have a related strategy is the synergies that are gained from sharing resources, and thus the project can capitalize on the capabilities and resources of the company (Sorrentino and Williams, 1995; Thornhill and Amit, 2000). For a company it is easier to put up and manage related projects than unrelated projects (Parhankangas and Arenius, 2003). For a corporation, an important strategic aspect is connecting projects to existing capabilities and capability development (Dougherty, 1995). Another challenge is managing personnel transfer between projects and corporations (Burgelman, 1985). The degree of relatedness varies from a new product extension, which is totally aligned with the company's other product lines, to an independent enterprise. It is not especially informative to study as ventures cases in which there is a total alignment between the new project and the parent company. (Thornhill and Amit, 2000)

Project teams are often not able to define their own goals (Gemünden et al., 2005). However autonomy can be taken or given (Martinsuo et al., 2009). A heavyweight project team may take more autonomy and become an autonomous 'tiger' team, defining its own goals and ways to achieve them if the project definition was vague in the beginning (Wheelwright and Clark, 1992). A project can be also shrouded from management, as skunkworks or boolegging, and they may be in areas where organizational sponsors see no promising venture possibilities (Abetti, 1997; Augsdorfer, 2005). New ventures in large, established firms may emerge in an unplanned way as operational-level managers search for new business concepts (Burgelman, 1988).

Structural autonomy relates to the authority of a project manager in an organizational structure: Autonomy is low when the venture operates under for example a matrix structure (Gemünden et al., 2005). Escaping the parent firm's organizational structure is especially important in organizations with a strong functional orientation (Wheelwright and Clark, 1992). Social autonomy allows a project organization to operate in same physical location (Gemünden et al., 2005). A project should be allowed to have different performance criteria, information systems, locations, and be allowed to "shed the burden of past" so that they can create their own culture (Kanter, 1994). Managing projects is a balancing act between autonomy and control, since strategically important projects achieve more attention, and they should neither be overly constrained or undermanaged (Kanter, 1994). Parent organization has to define structural context and strategic context for new venture activities. Structural context includes for example a measurement and reward system. Strategic context deals for example with resource and capability management. (Burgelman, 1985) Projects including significantly high uncertainty concerning their technology and markets want independent control over resources (Kanter, 1994).

The autonomy given to a project by the parent organization is dependent on the goals set for the project and its significance for the parent organization. Corporate venturing literature uses the terms external and internal venture (Maine, 2008), which define a venture's position in regard to its parent corporation. External venturing, such as corporate venture capital, alliances, joint venture and acquisition (Huang, 2008), are used to lower the risk of venture based on radical innovations and to gain growth (Maine, 2008). Compared to external, internal corporate venturing is seen as more risky, and the rewards are also bigger when realized (Maine, 2008). Internal corporate venturing is described as "internally staffed new business development projects" (Keil et al., 2009). If a company decides to carry by the risks of undertaking a radical innovation venture itself, it can create a venture that is wholly owned by parent firm, but has own goals, organizational processes and corporate culture (Maine, 2008).

Venture-like projects may change a company's business, strategy or competitive profile (Narayanan et al., 2009; Ireland et al., 2001; Burgelman, 1983). Projects may be outside of current strategy, so called newstreams, and they may be important for future strategies (Burgelman 1985; Kanter, 1994). Newstreams seek new sources or revenues and explore opportunities, and may also improve or transfer mainstream (Kanter, 1994). Corporate venturing is considered to be practiced

in order to gain new growth business, to exploit existing capabilities, to diversify, and to apply unused technologies (Keil et al., 2009; Huang, 2008; Keil et al., 2009). Internal corporate venturing can increase autonomous strategic behavior in a firm (Burgelman, 1985), which can promote strategic renewal (Backholm, 1999). Venturing may bring other benefits that are less direct than growth, like learning and capacity building (Keil et al., 2009; McGrath, 1995). Assessing the success of a venture in the initiation phase is difficult because return on investment, return on equity and profitability, are not known (McGrath, 1995). The perception of the world is very different for a venture-like project and its parent organization. This makes the relationship between them complex, but on the other hand allows for complementary roles (Backholm, 1999).

2.2. Strategy of a venture-like project

The more autonomous a project is, the more likely it is to create its own strategy with its own business goals and methods to attain them (Artto et al., 2008; Martinsuo et al., 2008; Wheelwright and Clark, 1992). Artto et al. (2008) define project strategy as a “direction in a project that contributes to the success of the project in its environment”. By this definition, direction describes the explicit elements of project strategy, like goals, plans, guidelines, methods, governance systems etc. Those goals are not necessarily set by any project stakeholder, like the parent company, but may be self-established within the project facing the environment (Artto et al., 2008), and thus induce emergent strategic behavior in the organization.

It has been suggested that a project as a strategic entity has similar strategic components to a company (e.g. Shenhar, 2004). However a project as a temporary organization (Lundin and Söderholm, 1995) differs from a company, as it does not have the status quo that a like a company has (Anderson and Merna, 2003), even though it may be an independent organizational entity within a parent firm’s governance (Engwall, 2003; Lindkvist, 2004). Also the environment of a project often differs from one that has a totally independent business entity. Thus the strategy of a project may emphasize different elements other than strategy of the parent

Challenges for a venture-like project transform over time. In the beginning of the project, internal issues play a bigger role than in the latter phase, once the project has gained momentum, and its challengers come from outside environment (MacMillan and George, 1985). A project faces an internal environment inside the boundaries of the parent organization, but outside of the project

organization (Miller and Camp, 1985; Backholm, 1999). In the internal environment the factors that affect project strategy are the role of top management, parent support, parent culture, organizational structure and processes, use of rewards, controls and planning, parent strategy profile and timing, and entrepreneurship (Narayanan et al., 2009; Miller and Camp, 1985; Tsai et al., 2001; Abetti, 1997). Organizational success is measured on how attractive a project is found to be internally (McGrath, 1995).

In an external environment, a venture-like project copes with market forces (Miller and Camp, 1985; McGrath, 1995) such as technology-related factors and demand conditions (Narayanan et al., 2009), and its external success is measured as market success (McGrath, 1995). Before entry, the external environment can be assessed by two variables: attractiveness of the environment and market opportunity, and the fierceness of competition (Tsai et al., 2001; Abetti, 1997). At this stage project strategy also formalizes itself into elements that are market-related (MacMillan and George, 1985).

We interpret the strategic goals of a project as consisting of direct project end results, organizational success and market success. Direct project end results are measured with a time, scale and scope. Direct project end results translate partly to organizational performance, which contains first-order performance in terms of profit, and second-order performance measured with the development of technology, learning, capacity building, innovation, capability building and strategic success (Backholm, 1999). Market performance is also divided into the first order, which is the growth of business, and the second order, the ability to sustain performance, criteria (Backholm, 1999).

Figure 1. Illustration of the relationship between project and parent with relatedness and autonomy as two distinctive dimensions of the relationship.

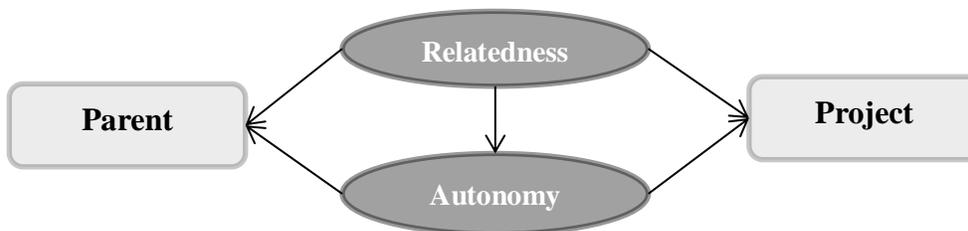


Figure 1 presents the central dimensions defining the relationship between a project and its parent organization. The relationship between an investment project and its parent organization is defined using two dimensions: Relatedness and autonomy. The relatedness of a project to the existing capabilities in a parent organization defines the need for autonomy, as the need for autonomy is stronger the farther a project is from existing capabilities. The autonomy may be given or taken, and the organizational environment contributes to the degree of autonomy the project eventually gains. Relatedness is a static dimension, since it takes a stand on the existing capabilities in the initiation of the project, and does not count the capabilities developed during the project in the organizational capability base until the project is over and its resources are released back to the organization. Autonomy is a dynamic dimension which may develop during the project and thus alter the relationship.

A project forms a strategy that allows it to succeed and survive in an organizational and market environment. Depending on the degree of autonomy, a project strategy may simply reflect the goals set by the parent strategy or contain emergent elements arising as a response to the external environment.

3. Method

The empirical data was collected with a single embedded-unit case study (Yin, 2003). The case unit, i.e. the parent organization and the projects, was chosen based on the presence of three elements:

- 1) Investment projects, which tie up a significant amount of the parent organization's financial and human resources.
- 2) Several projects that have the same parent in order to reduce the variation of industry-specific and firm-specific factors on the results.
- 3) Access to informants who can provide relevant information about the projects and the parent.

The case unit, Neste Oil and its four investment projects, matched these three selection criteria. The investment projects Porvoo 1 and Porvoo 2 were each worth of 100 million Euros, the

Singapore project was worth 550 million Euros and Rotterdam project worth 670 million Euros. Neste Oil viewed these projects as capital investment projects. The Singapore project was to date, the largest sum that Neste Oil ever dedicated in a single investment decision. The projects were implemented to build production units for a novel fuel component, and they were significant investments both in terms of financing and resourcing. Following Yin (2003) and Stake (2000), we consider the case to be a typical case according to how it represents the phenomenon, the relationship between a capital investment project and its parent. In empirical section, we refer to each unit and the project that creates it, with the name of location of the unit. For Neste Oil and its closely-knit engineering subsidiary Neste Jacobs we use term parent organization.

The empirical data consists of 31 interviews with 27 key actors: managers involved in the implementation of the strategy including senior managers in the parent company Neste Oil, senior managers in parent's engineering subsidiary Neste Jacobs, representatives of the main contractor in two of the projects, Technip, and project directors and project managers involved in the development projects. Interviews were carried out by two to four interviewers from the research group. They were tape recorded and transcribed. Interviews were semi-structured involving questions about personal background, project lifecycle, internal and external project organization and environment, project interrelations, knowledge sharing, and replication. In addition to open-ended questions, interviewers asked more detailed questions when needed. Documents, such as project descriptions and organizational charts as well as the company's website, are used as complementary material.

We use the case study to analyze the relationship of an investment project and the parent through the concepts of relatedness, autonomy, and project strategy. Since Porvoo 1 and Porvoo 2 have similar elements in terms of scope and location, and Singapore and Rotterdam in terms of scope and self-standing nature, we discuss the projects in pairs.

4. Results

4.1. Recognizing the opportunity and need for investment projects

In 2001 Neste Oil made a decision to research biofuels to be able to develop a gasoline and a diesel product with a biofuel component. This strategic move was initiated by the information on

a forthcoming EU directive, which was to designate certain quota of fuels as renewable. The directive was due to be enforced by 2005. Initially Neste Oil wanted to ensure that they had their own biofuel gasoline and diesel pools to be able to conform to the directive. Therefore there was a need for product development in the biofuel area. There had been earlier developments towards biofuels, but nobody believed in them, and the oil industry was not prone to change. Neste Oil thought that biofuels could be the business opportunity they had been looking for. At that time, the opportunity seemed to be even more lucrative, as feedstock was cheaper and several countries offered tax relief on diesel. Aside from the information on future directives, general concern about CO2 emissions had risen and it seemed that renewable fuels were worth investing in.

The technology used is called NExBTL, and it was actually created at the beginning of 90s, but no oil companies at that time saw any potential for renewable fuels and so investing in renewable fuel was deemed to be too risky. NExBTL renewable diesel burns cleanly and does not produce as many harmful emissions as its competitors, and is superior compared to other renewable fuels on the market. The possession of such a technology during the lead up to the EU directive on bio fuels was seen as a golden opportunity for Neste Oil. Neste Oil aimed at timing the market entry with the new fuel component so that it coincided with the enforcement of the new directive. A series of investments was seen as a way to implement the strategy of the parent, which was to build high quality, renewable diesel.

4.2. Porvoo 1 and Porvoo 2

In 2005 the investment decision for the first unit to produce NExBTL, Porvoo 1, was made. The investment decision for Porvoo 2 was made in 2006. Porvoo 1 and Porvoo 2 are integrated units. That means they were built on a site with an existing refinery.

4.2.1 Relatedness

Porvoo 1 was the first unit implementing a NExBTL process. A common procedure for designing the process takes 5-7 years. It is an incremental scale up: modeling in lab-scale, bench-scale and small pilot -scale, and if the results are positive, proceed to basic engineering. Neste Oil squeezed the technology development into two years. This was possible because of the simulation capability that had been developed in Neste Oil for ten years, and an iso-octane plant had been

previously built based on simulations. Simulations were used to replace the pilot-phase and go right from the laboratory to basic design the Porvoo refineries. The problem with simulations is that they do not provide enough information on process performance in the long run, and they are thus not a very good basis for investment calculations.

NExBTL was complementary to other Neste Oil products, being a part of the development of clean, high-quality fuels. However it was in response to an emerging market need, and thus differed from existing product lines in terms of potential markets. Also the feedstock used for NExBTL production was different from existing product lines. Neste Oil and its engineering subsidiary, Neste Jacobs, had capability to design and engineer the NExBTL and units. Due to the newness of the technology, project teams also developed new capabilities, specific to the NExBTL technology. Building units based on technology developed in-house was new for team members, and it was common practice to license technology with an external licensor.

The parent organization perceived Porvoo 2 to be a slightly modified copy from Porvoo 1 in terms of design. Considering that Porvoo 2 was built for the same product as Porvoo 1 and it answered the same market need and used same feedstock that assessment was largely correct. However the design was modified for Porvoo 2, partly based on the lessons learned from Porvoo 1. Also the construction site affected the design, and these reasons caused significant re-design and re-engineering. The design changes made in Porvoo 2 partly reflected also to Porvoo 1 as design changes.

Table 1. summarizes the findings on the relatedness of Porvoo 1 and Porvoo 2 projects.

Table 1. The relatedness of Porvoo 1 and Porvoo 2 projects to the parent organization.

Relatedness	Porvoo 1	Porvoo 2
Technology	Weak	Moderate
Market	Quite weak	Quite weak
Organization	Weak	Less than moderate
Feedstock	Weak	Moderate
Location	Strong	Strong

4.2.2 Autonomy

Goal definition autonomy: A common procedure at Neste Oil is that the project director provides a project proposal at the beginning of the project, but in Porvoo 1 and Porvoo 2 the project proposal was made at the business unit level and project directors were nominated afterwards. As a result, the project team had less goal definition autonomy than usual. Goal scope was given by the business unit, but actually the project team defined the budget and schedule internally, and stuck with them. For Porvoo 2 goal definition was affected by the idea that it was to be a copy of Porvoo1. Project team doubted the feasibility of the idea, but could not change the goal. During the run of the project, practical challenges to copy the design led to a modification of the plan, but still the basic scope remained.

Resource autonomy: Resourcing was challenging, since Porvoo 1 and Porvoo 2 were being run simultaneously, at least in part. The parent organization allocated the resources for the projects, but project organization had a say in which individuals were appointed to the project teams from Neste Oil and Neste Jacobs. *“We participate in the selection of personnel if it is possible – especially in this kind of first-of-a-kind projects.”* Resource needs were solved in part by new recruitments, and eventually project teams were perceived to have a strong commitment and enthusiasm about the work.

Structural autonomy: The project organization operates under a matrix structure subordinated to the refinery and business unit. Project managers had significant authority on decisions concerning project implementation and project team organization. They used same subcontractors that Neste Oil had used previously. However this decision was not dictated by the parent, but the project chose the vendors which could meet the schedule and quality criteria. *“Before anything, we have free hands to build it our way. Not completely free hands, but the issues we considered important we were allowed to create – we made them in a completely new way, which was never used in Porvoo, and I do not know if anywhere else. But, because of the schedule, and resource scarcity, we saw we had to come up with something new.”*

In Porvoo 1 the project organization was quite small and the roles of the members were fluid, and the responsibilities of refinery, business unit and project team were also a bit undefined. The project team took charge on various things revolving around the NExBTL technology, e.g.

knowledge documentation, public relations, recruiting and training. Porvoo 2 as well was not heavily controlled by a parent. A reason for that was a big diesel plant project running at the same time, and that caused top management interest to be focused away from Porvoo 2, which they considered a simple copy of Porvoo 1. However in Porvoo 2 the organizing was more rigorous and the responsibilities were split for different organizational units, for example technology-related knowledge was collected in organized manner in, and that support function acted as a predecessor for Technology Office. The Technology Office is a virtual organization, whose personnel are also partly involved in operations. The Technology Office acts as a repository for technological knowledge cumulated throughout the projects, modifications and experiences, and it acts as a technology licensor for all units. It is formed to gain synergies from building several plants and to ensure that mistakes are not repeated. The Technology Office supported only NExBTL technology and it was established for that purpose. The Technology Office also coordinated the replication of solutions and practices across units and monitored operating units.

Social autonomy: The task forces in both Porvoo 1 and Porvoo 2 were co-located, and even though they were operating at an existing refinery site, they were social autonomy was permitted in order to enhance team togetherness. *“We had a task force -- it is not in line with the normal procedure of Neste Jacobs -- to have all machinery designers, process designers and purchasing organization, project managers, project directors located in the same place. That was completely new.”*

Table 2 summarizes the findings on the autonomy of Porvoo 1 and Porvoo 2 projects.

Table 2. The autonomy of Porvoo 1 and Porvoo 2 projects from the parent organization.

Autonomy	Porvoo 1	Porvoo 2
Goal definition	Quite weak	Weak
Resource	Moderate	Moderate
Structural	Above moderate	Moderate
Social	Quite strong	Quite strong

4.3 Singapore and Rotterdam

In order to reach the goal of having a production value of one millions tons, a decision was made to increase production, which at the end of 2006 was only measured in the hundreds thousands. Neste Oil was assessing different ways to grow and they thought it would be beneficial to change the concept so that the factory would not need to be an integrated unit. Continuing on the path of smaller-scale sites like Porvoo 1 and Porvoo 2 would have meant either building more units on the same sites, or taking on joint venture partners. At the site of Porvoo 1 and Porvoo 2 Neste Oil has a refinery already, but at any other site it would need a partner with an existing refinery, and building on that kind of site is challenging. Building on the same site would not have realized economies of scale, and would not have been sensible from an integration point of view. Neste Oil's NExBTL production units are not standalone; they need infrastructure like hydrogen production. The infrastructure has in many cases been provided by partners. There was the intention to have joint venture partners, but that plan was abandoned because of a lack of resources to govern them and difficulties in finding partners with suitable locations. Thus Neste Oil decided to go for bigger plants both to increase the volume and to build self-sustaining plants. This is what started the planning of Singapore and Rotterdam, as they were perceived as promising locations. The plants in Singapore and Rotterdam were intended to be larger in volume than the units in Porvoo.

4.3.1 Relatedness

Porvoo 1 was not completed in the beginning of 2007 when the development of Singapore and Rotterdam had started. By decision making time for on Singapore and Rotterdam, the technology still was not mature, and early experiences in Porvoo 1 had shown that the use of vegetable oil in production was not without troubles. However there was strong belief that these problems could be overcome and the learning curve seemed promising since Porvoo 2 was experiencing much fewer operation problems. The Singapore and Rotterdam plants were large-scale greenfield plants, and Neste Oil recognized that it could not carry out the project with Neste Jacobs, as it lacked sufficient resources. Designing plants with larger capacity is not a simplistic scaling up –process, but it requires completely new detailed design and engineering. *“Neste Jacobs was not able to offer us early enough capacity to execute these big projects, and then we actually went to all the*

big engineering companies in the world and asked them to offer us, in a way, a program type of concept that we could use to build several of these NExBTL plants around the world.” Neste Jacobs could do the basic designs, but for detailed design and engineering external resources were needed. The Singapore and Rotterdam plants extended the NExBTL production outside of Finland. That allowed for better potential in answering the need of global markets. New locations also required capabilities in how to operate in foreign environments.

Projects are utilizing the existing resources and capabilities of the parent. The investment projects were partly unrelated in the sense that the parent resources were not solely sufficient to carry them out, but external resources were needed and thus a new partnership was created. Together with Technip, new resources were created during the Singapore and Rotterdam projects.

Table 3. summarizes the findings on the relatedness of Singapore and Rotterdam projects.

Table 3. The relatedness of Singapore and Rotterdam projects to the parent organization.

Relatedness	Singapore	Rotterdam
Technology	Moderate	Moderate
Market	Quite weak	Quite weak
Organization	Weak	Weak
Feedstock	Moderate	Moderate
Location	Non-existing	Non-existing

4.3.2 *Autonomy*

Goal definition autonomy: Project goals were set by the parent organization to build units with a certain capacity, time, and cost to allow global leadership in renewable fuels. However the schedule was altered due to factors in the external environment. First the intention was to build plants in Singapore and Rotterdam at the same time. However, the Singapore project was approved in January of 2008, whereas Rotterdam was not approved until June 2008. This difference posed a challenge as initially the idea was to gain benefits from planning and procurement costs as the two projects would run simultaneously.

Resource autonomy: When resources were sought for the Singapore and Rotterdam projects, there was resource scarcity in both Neste Oil and Neste Jacobs. Resourcing of projects was done

by the parent, and the project team had power only to announce what kind of positions had to be filled to staff the Owner's team. The Owner's team is the part of the project organization that manages engineering, procurement and construction, and the organization executing those operations is Technip. The Owner's team was staffed with Neste Jacob's people, and after the project the staff was likely to return either to the base organization or to the Technology Office. *"They [Owner's team] have had the best competence regarding the NExBTL-technology so to me it is quite clear that the people [from the Owner's team] will return to a few of our organizations."*

Structural autonomy: The project management practices and methods at Neste Oil for large investment projects like Singapore and Rotterdam are not very formalized. Project managers had rather free hands in terms of how to operate. The use of rewards is in projects related to the final business goal of projects, and thus the reward system in projects is linked with the reward system of the parent. The Rotterdam project demonstrated structural autonomy since it was started before the formal investment decision. The project organization for the Rotterdam plant was quite confident that the Rotterdam plans would be accepted as soon as governmental permission was achieved. So by March 2008, three months before the approval of the plant, Neste Oil Netherlands was established and some operations were initiated in order to prepare for the plant, which was a highly unusual action. Neste Oil Netherlands was allocated money and they had permission to make conditional purchases of items with the longest lead time, which were negotiated at the same time as the Singapore plant. Thus, when the approval came in June, the project was already well underway.

Projects report to their respective steering committees, which monitor project budget. There has been a need to create informal knowledge exchange between projects. Company procedures do not force that kind of strong involvement during a project, but since the Owner's team and the Permanent organization had vested interests in the informal knowledge transfer outside of formal review meetings and reporting. These included bimonthly meetings that are not a standard procedure, but more of a necessity from the point of view of project managers. Sharing knowledge between projects was easy at the beginning since the Owner's team was placed in same location, but got more difficult by the time people moved to different sites and new people were hired. Formal knowledge transfer procedure also involves lessons learned sessions. Information systems used in investment projects Information systems used in investment projects are the same as in all

of the parent’s projects, and basic reporting is necessary for all projects. Reports on other ongoing projects are shared as is a list of perceived exceptions with other projects. People have personal contact with colleagues in similar positions, which enables knowledge sharing

Social autonomy: There are natural reasons why the projects are in different physical locations. Physical separation provides each project with their own opportunity to build culture and methods of operation. However this separation hinders information transfer, since day-to-day meetings with people in similar positions is impossible. A new location allows projects more autonomy and thus possibility to build their own project culture, especially in the case of Rotterdam and Singapore.

Table 4 summarizes the findings on the autonomy of Singapore and Rotterdam projects.

Table 4. The autonomy of Singapore and Rotterdam projects from the parent organization.

Autonomy	Singapore	Rotterdam
Goal definition	Quite weak	Moderate
Resource	Weak	Weak
Structural	Quite strong	Quite strong
Social	Very strong	Very strong

4.4 Strategy of investment projects

During the execution of the renewable fuel plant projects Neste Oil transformed its strategy. *“In 2001 we started to talk for the first time about biofuels and ten years later we actually have four plants running the new technology and with this kind of world scale concept so it is actually for us, as an oil company it’s a big shift in that sense.”*

The implementation of projects was very different from the original conception, evolving from a small-scale joint venture to large-scale wholly owned units. Table 5 brings together the strategic goals of each investment project.

Table 1. Strategic goals for the projects and their contributions to the parent.

	Porvoo 1	Porvoo 2	Singapore	Rotterdam
Strategic goal (Plan)	Build a first ever unit producing NExBTL, test if that product is suitable for large-scale production. Act as a pilot. Allow market entry.	Enlarge capacity. Utilizing learning in Porvoo 1 to make investment profitable.	Build large-scale capacity to make company a significant player in renewable fuels, increase profitability. Build a self-standing unit.	Increase large-scale capacity, increase profitability by utilizing learning in Singapore project. Bring savings in procurement. Extend manufacturing outside Europe.
Contribution for corporate strategy (Realized)	Start production. Act as a test bed for other units, develop competences that were useful for building other units. Market entry.	Enlarge production capacity. Act as test bed and training field for other units. Point out problems of building more integrated units.	Capacity enlargement, elaborated learning about plant design and project management capabilities. Learning used even to enhance Porvoo 1 and Porvoo 2.	Capacity enlargement. Allow investment to become more profitable. Bring savings. Manufacturing outside Europe.

The strategy of the project for Porvoo 1 includes testing the manufacture of the renewable oil product on a small-scale. Therefore, Porvoo 1 is a domestic small-scale facility that is embedded within Neste Oil’s existing plant infrastructure. The project for Porvoo 2 further developed the small-scale plant technology, and being a partial parallel project for the project for Porvoo 1, the projects for Porvoo 1 and Porvoo 2 offer a platform for horizontal/lateral mechanisms and a peer-review type collaboration within the projects.

The Singapore and Rotterdam projects used a similar kind of parallelism strategy for horizontal/lateral exploration and learning as had occurred with Porvoo 1 and Porvoo 2. *“We already have lots of synergy in Rotterdam, that, because the Singapore plant is six months ahead,*

so you basically copy everything.” However, the horizontal mechanisms and related enforcement of the emergent strategy was not limited only to the timely parallelism, but the projects shared resources effectively: this resource sharing occurred through the use of the same main contractor for Singapore and Rotterdam, and the co-location of design offices. The strategy of using the same resources for both projects had been used for the small-scale Porvoo 1 and Porvoo 2 (a smaller contractor was responsible for the design and implementation). However Singapore and Rotterdam required a large main contractor that had the resources to manage large-scale projects in international arenas. There were also some parallelisms between the design phases of the large-scale plants and the small-scale plants, which enabled information exchange and feedback loops between the plants. In this respect, a flexible type of contracts with main contractors was an important mechanism that allowed the Neste Oil to apply the learning and adaptation strategy during the execution of the projects, and to pursue effective and innovative solutions, rather than being constrained by the contract conditions with the contractors.

Singapore and Rotterdam created enough capacity to make Neste Oil a significant producer of renewable fuels, and during these projects plant design capabilities, project management practices and culture also evolved. Learning and innovation were still in place in large-scale projects for Singapore and Rotterdam, although the focus on technology development content in their strategies was different in nature from Porvoo 1 and Porvoo 2. The set-up of Singapore and Rotterdam however included different business challenges than in the small-case units: Singapore and Rotterdam were greenfield plants, which was appropriate for a full-scale optimized production facility, where the efficiency of the operation is not constrained by any existing site or other existing plants and their inherent solutions. The greenfield nature of the Singapore and Rotterdam also implied that the strategies of the related investment projects had different strategy elements: the selection of the site included many strategic issues where the local site could be analyzed as the selection of a local business context where there are many enablers and impediments that serve as significant resources for both project execution and the using of the unit over its long-term life cycle.

The tight timetable for projects emerges from the need to gain a return on investment. To implement strategy of the parent, projects had to create production units that serve the market with sufficient capacity once the market opens. Since production plants are huge investments, one

question is how you can save money during the construction phase, or otherwise reduce costs, and still gain a return on investment. Thus time, scale and cost are relevant issues also in terms of achieving the business objectives of a project. Project managers see the goals for them are schedule, cost and safety. However they recognize that the most important goal is to have, by the end of the project, a unit that reaches the business goals that were set. A common perspective of success was that it was *“measured and defined in terms of output of NExBTL during a certain period of time.”* The success of a project cannot be judged even after a in a year of operation, if legislation or the external environment causes the demand for the product to be below the expected level, the project may eventually be considered a failure. However, time, scope and cost requirements for projects are directly related to the goals that a parent organization sets for projects, and thus the strategy of the parent is implemented through projects.

Since it was strategically important for NExBTL to be on the market in time when the EU directive, creates the market, it was less important to conform to Neste Oils project management practices, organizational control and optimization, and some were ignored if they prevented the project from being completed on time. The goals that Neste Oil set for projects are basically expectations to deliver the monetary results that are promised by a project. At Neste Oil, the steering manager has the authority to run a project very independently. That independence provides the opportunity for to rapid decision-making. As long as managers are not breaching laws or company rules, the delivery of project are in his/her hands. The steering manager has to decide how much he/she informs top management on his/her decisions. Keeping too much information in dark may cause clashes with top management. In terms of project management and the information systems used, projects had a lot of autonomy in deciding their strategies.

Originally, Rotterdam was to have been mechanically completed by the end of 2010. The completion date was shifted to the 28th of February 2011. The shift was made because the economic downturn was supposed to have lowered the price of materials and contracting, for example nickel and copper, and project viability could be increased if construction costs were be lower, and thus many contracts were under budget. However, success is more importantly measured in production: could they produce the allocated 800 000 tons of biodiesel per year. Another test is how the commercial side develops: deals on the sale and procurement of feedstock. This emphasizes how market performance criteria drive investment projects.

5. Discussion

This study analyzes the relationship between the investment project and its parent. We used the literatures of project strategy and internal corporate venturing, and derived from the literature two distinctive dimensions of the parent-project relationship: Autonomy and relatedness. These dimensions allow us to explain the formation of emergent strategic elements that are present in capital investment projects. We analyzed empirically one parent firm and its four investment projects. The empirical analysis addressed the relatedness between each project and the parent, autonomy of each project, and the strategies that the projects formed. In the following, we discuss the findings concerning the relatedness of projects, characterized by the following factors: the technology of the end product of a project (a plant), the market the plant serves, the feedstock the plant uses, the organization of a project, and the location of the plant. Furthermore, the following discussion explains how the relatedness characterized by these distinctive factors led to the autonomy of the projects. The autonomy is defined to include three types of autonomy: goal definition autonomy, resource autonomy, structural autonomy and social autonomy. Thirdly, we discuss how the autonomy affected on the formation of an independent strategy of an investment project.

We found in the investment projects studied, that the degree of relatedness was significantly affected by the technology of the core process of the project's end product (i.e. the plant), the market for the end product (in this case NExBTL component) of the plant, the feedstock used in production, the organizational responsibilities, and the location of plant. In the four analyzed projects, the technology was a significant factor causing low degree of relatedness, as it was applied the first time in Porvoo 1, and the investment decisions for Porvoo 2, Singapore and Rotterdam were all made before the Porvoo 1 was up and running. Due to the parallel phases of projects, the investments decisions and project plans of the latter three projects could not be based on the existing capabilities developed in the Porvoo 1 project. Porvoo 1 was the most unrelated in the series, but due to design changes, low degree of relatedness to technology played a strong role in all projects. Concerning the market, low degree of relatedness was present in the four projects as the end-product is aiming at a different market than previous products. However, despite the newness of the market, the goal market of NExBTL still to some extent is close to the previous ones, since clean fuels and advanced technology has also been characteristic of existing

product lines. However the need for fast access to the goal market with the project products (i.e. complete production facilities) lead to acceleration through fast-paced project schedules. Organizational roles had to be redefined for the four projects, as there was no external licensor and only in-house technology, NExBTL, was employed. The feedstock that the NExBTL plants uses was completely new for Neste Oil. This caused a need for novel design capabilities. This is a minor part of the design, but together the market needs and the feedstock supplies were reasons for extending the production of NExBTL into Rotterdam and Singapore. At the international locations Neste Oil had no existing production, and thus there was a significantly low degree of relatedness to the existing product lines. Special geographical characteristics, governmental environments, unfamiliar cultures and non-existing supplier relationships in those countries caused the need for developing and acquiring new capabilities for projects.

The low degree of relatedness of projects was obviously related to a high degree of autonomy in the projects. The goal definition autonomy was affected by the new technology, which caused uncertainty in terms of scope, schedule, and budget. New technologies and markets also caused a need for resource autonomy, as it was crucial for projects and their organizations to find and recruit in an autonomous manner suitable individuals for the projects. Novel markets required attention to be paid to the pace and timing of an entry, and that the required goal definition autonomy and structural autonomy allowing as rapid of a market entry as possible. Structural autonomy was needed to organize the project teams in order to carry out projects using an in-house technology without an external licensor. The new location allowed social autonomy, and structural autonomy was needed to organize in a new culture and with new subcontractors. Our findings are in line with scholars (Thornhill & Amit, 2000; Wheelwright & Clark, 1992) who recognize that to be successful, an unrelated project needs autonomy whereas a related one can utilize the parent organizations resources. The parent organization allowed project autonomy since they recognized the low degree of relatedness of the projects and the need for independent development of new capabilities. In Porvoo 2 the degree of technological relatedness was perceived by the parent organization as being at a higher level, due to the immaturity of technology. During the project execution, the scope had to be modified, since the design challenges were understood. Our results support the findings of scholars who recognize the difficulties of parent organizations in successfully managing ventures with low relatedness (Parhankangas & Arenius, 2003).

The autonomy the investment projects allowed the projects and their organizations to form their own strategies in order to cope with organizational and market environments. The four investment projects met the goals set for them by the parent organization, and in addition they built up new capabilities in an area where they were unrelated, and the new capabilities and resources allowed strategic renewal. The projects have affected the organizational structure of the parent, as new business units, Renewable Fuels and Technology Office, were created. Our results suggest that each four projects had a specific purpose in the corporation's business context, and therefore each project had a distinctive strategy that in each project was related to the strategy of the parent in a different manner.

6. Conclusion and future research

A capital investment project exhibits both deliberate and emergent strategic elements. The emergent strategic elements have been conceptualized as an individual project strategy, which may diverge from the intended strategy of project's parent organization. We found that the strategy of an investment project cannot be reduced to conforming to time, cost and scope, as first and foremost they have to deliver business-oriented results and operate both in organizational and market environments. A diverging strategy for an investment project can lead to the development of new capabilities and thus allow strategic renewal of the parent organization.

We explain the formation of the individual strategies of projects through the relationship between an investment project and its parent. Individual strategies are formed in projects that are to some extent autonomous with relation to its parent organization. The need for autonomy is dependent on the degree of relatedness of the investment project: related projects can utilize existing capabilities and resources of a parent organization, and thus they are easier to manage, and they are also more likely to deliver the intended strategy of the parent organization. Investment projects with a low level of relatedness require autonomy, as they cannot rely on existing capabilities and resources, but they have to form new ones to answer to the requirements set by organization and market environment. The parent needs to recognize the degree of relatedness of

an investment project, and grant the project the degree of autonomy it needs to deliver business-oriented end results.

The results of this paper suggest that an investment project and its strategy can be analyzed by regarding a project as a venture. This opens new theoretical avenues in the development of novel approaches for business-focused projects and their management. The novelty is partly in building a link between the practice-oriented discourse of project management and the discourse of internal corporate venturing, and using the extant venturing literature in studying the strategic management of projects. Approaches that would integrate venturing and project management conceptually or through empirical research in for example the investment project context are scarce in the current research. We welcome theoretical and empirical research in the area of analyzing projects and their strategies through venturing discourse. In particular, we see that the creation of the long-term business performance within an individual project's context and the analysis of project as a business actor with an individual strategy to survive in its internal and external business environment are relevant perspectives. We also foresee that the corporate venturing discourse would lead the research towards a broader theoretical field of entrepreneurship, and ultimately towards a more specific theme of considering a project manager an entrepreneur.

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