Artto, Karlos; Martinsuo, Miia; Dietrich, Perttu; Kujala, Jaakko

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Project strategy – strategy types and their contents in innovation projects

Prof. Karlos Artto (corresponding author)
Helsinki University of Technology
Industrial Management
P.O. BOX 5500, FI-02015 HUT, Finland
Tel: + 358 9 451 4751
Email: karlos.artto@hut.fi

Dr. Miia Martinsuo
Helsinki University of Technology
Industrial Management
P.O. BOX 5500, FI-02015 HUT, Finland
Tel: + 358 50 4302 723
Email: miia.martinsuo@hut.fi

Perttu Dietrich, M.Sc.
Helsinki University of Technology
BIT Research Centre
P.O. BOX 5500, FI-02015 HUT, Finland
Tel: + 358 50 3853 490
Email: perttu.dietrich@hut.fi

Dr. Jaakko Kujala
Helsinki University of Technology
BIT Research Centre
P.O. BOX 5500, FI-02015 HUT, Finland
Tel: + 358 40 4839 1717
Email: jaakko.kujala@hut.fi

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ABSTRACT

Purpose of paper: Previous literature on project strategy has adopted the narrow view that a project is to be conducted under the governance of a single strong sponsor or parent organization. This study provides a critical analysis on prior project management literature addressing different context-specific strategies of single projects.

Design/methodology/approach: Literature analysis

Findings: There are two important determinants in the project's context that affect the strategy of a single project: a project's autonomy in its environment and the complexity of project's stakeholder environment. Based on these two determinants, we characterize four types of alternative positions that projects can have in their context: parent's a) subordinate and b) autonomous projects that occur in a stakeholder environment that is not complex, and projects with c) weak and d) autonomous positions in a complex stakeholder environment. The developed project strategy framework is applied in the context of innovation projects. The analysis results include strategy contents for different types of innovation projects in terms of the project's direction and success.

Research implications: This study contributes to project management research by broadening the focus from mere tactical-level projects towards projects as strategic entities, and by suggesting the management of projects differently in different contexts. Further theoretical and empirical research is proposed on both testing the suggested framework and elaborating it for different project types.

Originality/Value of the paper: The paper opens up avenues towards the development of new and context-specific project management bodies of knowledge.

Type of paper: General review

Keywords: project strategy, autonomy, complexity, stakeholders, innovation projects

INTRODUCTION

In project management literature, a strategy of a single project is treated as a mere image of its parent organization's or a sponsor organization's strategy (Cleland 1990, 2004, Wheelwright & Clark 1992, Turner 1999, Anderson & Merna 2003, 2005, Morris & Jamieson 2004, Jamieson & Morris 2004, Shenhar et al. 2005, Patanakul et al. 2006, Milosevic & Srivannaboon 2006). In such literature, a typical perspective is that a project's strategy is formulated by translating it directly from a parent organization's business strategy. The project is perceived as an implementation vehicle of higher level strategies, rather than an independent temporary organization in its environment.

Research on the strategic management of multiple projects emphasizes similar aspects: for example, literature on program management (Lycett et al. 2004, Vereecke et al. 2004, Thiry 2002, Pellegrinelli 1997, Martinsuo & Lehtonen 2007a), project portfolio management (Cooper et al. 1997a, 1997b, 2004, Archer & Ghasemzadeh 1999, McDonough & Spital 2003, Aalto et al. 2003, Martinsuo & Lehtonen 2007b), and project offices (Kerzner 2003) tends to emphasize deriving projects' strategies from parent's business strategy through a top-down process. The parent organization ensures that the project implements its strategies by dictating its assignments to projects through for example a portfolio management process. Again, the projects become vehicles of implementing their parent organization's strategy.

The interpretation in the above-mentioned literature is that a project strategy is a static and explicit plan to be formulated in the beginning of the project. But can all projects rely on the momentary, deliberate intentions of a single parent or sponsor? Some projects need freedom to shape their parent organizations, even in ways that are contradictory to their parent's strategies. Some other projects specifically pursue radical changes in their stakeholder environment, thereby not conforming to any single stakeholders' interests. Such strategies may emerge in a process of negotiations throughout the duration of the project. These viewpoints are rarely considered, although they clearly have an impact on project strategy.

In conclusion, the current literature on project strategy does not specifically assume that a project can have a strategy that may – or, by definition, must – differ from the strategy of its parent organization. In fact, a parent organization is just one stakeholder in a project environment to consider when a project strategy is formulated. The literature tends to neglect

the possibility of negotiating project strategy in a broader network of stakeholders. Indeed, due to these narrowing assumptions in the existing literature, the concept of project strategy has not yet allowed for an understanding of the different kinds of strategies that may be used in different contexts. In addition, empirical studies do not report observations on such context-specific project strategies that would respond to their environment in a dynamic manner, irrespective of the parent organization's business strategy.

For the purposes of this study, we define project strategy as a "*direction* in a project that contributes to the *success* of the project in its environment" (Artto et al., 2008). In the definition, *direction* can be interpreted as one or several of the following: goals, plans, guidelines, means, methods, tools, or governance systems and mechanisms including reward or penalty schemes, measurement, and other controlling devices. We assume that all these elements include the capability to directly or indirectly affect the project's course. The elements of the direction may change on a continuous basis in a project, which suggests that project strategy is dynamic. *Success* refers to how well the project is able to accomplish its goals. Project success can be evaluated differently by the project's stakeholders: the stakeholders may each have different or conflicting criteria for a project's degree of success.

Our project strategy definition allows even an interpretation that a project can be considered successful by meeting its self-established goals, some of which may be counter the interest of most or even all major stakeholders. Self-established goals for a project may be necessary in contexts where many powerful stakeholders have conflicting expectations from the project. In such contexts, project's internal capabilities of importance may include, for example: capabilities of creating a unique view of perceiving the world and establishing purposeful goals and objectives for the project, capabilities of organizing the project from inside out and using specific stakeholders as resources, and capabilities of changing stakeholder salience and stakeholders' power to influence the project.

RESEARCH TASK AND QUESTIONS

In line with general strategy literature concerning organizations' strategies, we assume that a project's context affects the project's strategy. The purpose of the study is to analyze different project contexts and to characterize what kinds of meaningful, alternative positions projects can take in their context. In particular, innovation projects are used as examples to

characterize alternative project strategies. Our intent is to develop and raise ideas for empirical research on project strategy, better grounded in the diversity of project contexts. The study is guided by two major research questions:

RQ1: How does a project's position in its context affect project strategy?
RQ2: What are the contents of project strategies of different types of innovation projects?

This article reviews literature on project strategy and related fields to identify possible determinants to context-specific project strategies. We then introduce a framework for alternative contextual positions that projects may take in their context and explain its main determinants. In the main part of the article, we analyze innovation management literature to develop content for the strategies of innovation projects in different contexts. Finally, we draw conclusions concerning the main contributions of this research and suggest avenues for further research.

PROJECT STRATEGY OF PROJECTS IN DIFFERENT CONTEXTS

Project management literature that uses the term 'project strategy' explicitly is scarce, rather recent and diverse in the use of the term project strategy (Cleland 1990, 2004, Wheelwright & Clark 1992, Turner 1999, Anderson & Merna 2003, 2005, Morris & Jamieson 2004, Jamieson & Morris 2004, Shenhar et al. 2005, Patanakul et al. 2006, Milosevic & Srivannaboon 2006). Only one of these sources (Shenhar et al. 2005) introduces an explicit definition for the term. An another source by mostly same authors (Patanakul et al. 2006), uses this definition in their empirical study. In general, this literature assumes a narrow view of the concept of project strategy: projects take a tactical role as a non-strategic and a non-self-directed vehicle in a one-parent firm context. With such an assumption, the mere strategy of a single project remains in order to conform to the parent organization's ways of operating. A project appears to have a low degree of autonomy with regards to its parent: the project is not to set its own goals or its boundaries with other organizations, and the project is not to evolve without constant reports and input from the parent organization. Strategy is formulated in a rather straightforward manner through aligning the project's strategy with that of its parent. The complexity of the project's stakeholder environment with one dominant parent organization is assumed to be rather low.

Another stream of project management studies suggests that projects can be autonomous organizations and they can have strategies of their own (Bryson & Delbecq 1979, McGrath 1996, Loch 2000, McGrath & MacMillan 2000, Milosevic 2002, Pitsis et al. 2003, Arnaboldi et al. 2004, Lam et al. 2004, Dzeng & Wen 2005). These studies do not always use the term project strategy explicitly, but they often describe how a project develops its manager-specific strategies. Autonomous projects can set their goals and plans in a self-directed manner, without major interference from their parent organization. Depending on their degree of autonomy, projects also can use their own methods and systems rather than those of their parent organizations. The autonomy of a project in terms of its method of execution can be contained in a concept of project execution strategy (see e.g. Lam et al. 2004, Arnaboldi et al. 2004). There are studies that consider a project's strategy to be a project's internal choices of approach, management method, product concept or scope from alternative strategic options in contingent situations. Such choices may relate, for example, to planning strategies (Bryson & Delbecq 1979), to culturally responsive strategies in project management (Milosevic 2002), to contract strategy (Chan & Yu 2005), or to teaming strategies in a construction project (Dzeng & Wen 2005).

The case of several strong stakeholders in a single project would change radically the assumption that there is a single parent organization to serve. Management in a broader stakeholder network introduces dynamics and increased complexity to a project's external environment, which may call for a project strategy that diverges from service to one parent organization. Some studies have recognized the existence of a self-contained business or a self-established project strategy directly in connection with the project's dynamic environment that is different from that of the project's parent organization (e.g. Loch 2000, McGrath 1996, McGrath & MacMillan 2000, Pitsis et al. 2003).

Empirical and empirically based conceptual studies on large projects in project management research acknowledge project autonomy, a dynamic character of projects, and complexity in a project's stakeholder environment (Morris 1982, Kharbanda & Stallworthy 1983, Slevin & Pinto 1987, Morris & Hough 1987, Milosevic 1989, Kharbanda & Pinto 1996, Miller & Lessard 2001a, 2001b, Williams 2002, Flyvbjerg et al. 2003, Samset 2003, Pitsis et al. 2003, Kolltveit et al. 2004, Grün 2004). These studies do not often use the term project strategy but rather terms such as 'strategic project management'. However, based on its focus, we consider that this literature contributes significantly to the discussion on the strategy of a

single project. This literature views the project as an entity that is positioned in a complex organizational environment with several powerful stakeholders, and not just as a single powerful parent organization. Project strategy of such projects relates to the project's adaptation to its complex environment. This literature assumes that project strategy is self-originated and it is related to the project's own governance structure; the project includes within its boundaries all management levels of any successful and independent enterprise. Finally, the track record of these projects is fundamentally poor, and the large project studies analyze issues that are related to risk and success. These studies often take a departure of understanding project *success* and how successful outcomes are achieved from the project.

In conclusion, in this study we adopt the assumption that a project is a temporary organization as a starting point for our research (e.g. Lundin 1995, Lundin & Söderholm 1995). The strategy of a project should relate to the project's aspirations to achieve a desired position in its competitive stakeholder environment. In order to understand project strategy, we need to understand the project's position in its external environment and the possible pursuit to alter such a position. Existing literature on project strategy assumes that the parent organization's business environment as such is also the external operating context of a project. However, when viewing projects as temporary organizations that have their own strategies, studies of project strategy should interpret also the parent organization's internal environment as an external environment to the project (and not internal).

DIFFERENT CONTEXTS AND DETERMINANTS FOR PROJECT STRATEGY

The above analysis of project management literature addressing project strategy shows that a project's autonomy and the complexity of project's stakeholder environment are central contextual variables for understanding and defining content for project strategy. Figure 1 illustrates a framework of four positions that projects may take in different contexts.

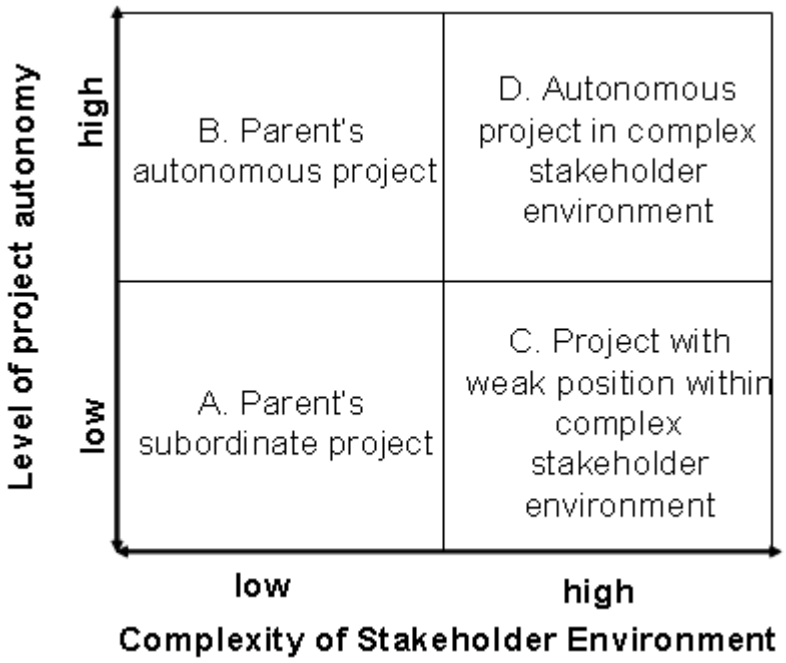

Figure 1. The framework of four project positions in their context.

The first contextual positioning (A) refers to projects that operate in a stakeholder environment low on complexity and with a low level of decision-making autonomy. These types of projects are called parent's subordinate projects. Accordingly, the logic of operation in these contexts is based on aligning and obeying the strategy and guidelines put in place by the parent organization.

Second, the projects that operate in a stakeholder environment low in complexity but have high decision-making autonomy (B) can be called parent's autonomous projects. In these types of projects, the adopted strategy differs from the ones utilized in a parent's subordinate projects. Due to its autonomy, the project can decide its goals, direction, and method of operating independently from the will of the parent organization.

The third type of project (C) operates in a highly complex stakeholder environment characterized by high number of different stakeholders and interdependencies between them. The projects hold a low level of autonomy with respect to the different stakeholders. The projects in this contextual position require a flexible mode of operating that allows a project to negotiate and reach its goals in the network of multiple stakeholders with divergent requirements.

The fourth type of project (D) is characterized by highly complex stakeholder environment and a high degree of autonomy with respect to different stakeholders. Projects in such a context emerge and shape their strategy through the co-evolution of different stakeholders' interests and shape – rather than being shaped by - their context.

As Figure 1 shows, earlier studies suggest that two distinct variables affect project strategy: how autonomous a position the project possesses in relation to its parent or other stakeholder organizations, and how complex the project's stakeholder environment is.

Project autonomy

According to Lampel & Jha (2004), project autonomy refers to the degree to which the project is allowed to evolve without constantly reporting to and receiving input from the parent organization. The autonomy of a project organization as a social system can be defined as authority to set its own goals, its social identity and boundaries with other social systems, its resources to complete its task and the freedom to organize the behavior of its members (Gemünden et al. 2005). It is argued that a project team's autonomy increases with the team's ability to make more decisions that are relevant to its task. Such decisions are related to setting technical and business specifications, determining product and process design content, scheduling and budgeting, obtaining resources, coordinating with stakeholders, and monitoring the progress and evaluating performance (Gerwin & Moffat 1997a). Literature on project autonomy primarily studies the autonomy of a project within one strong parent organization, and it implicitly makes the assumption that a project's external environment includes only one strong parent organization.

Earlier empirical research on innovation projects provides strong support to consider project autonomy as a determinant for defining context-specific project strategies. Prior research has tackled, for example, the associations between autonomy and different measures of success (Hoegl & Pargboteeah 2006, Gemünden et al. 2005), favorable conditions for the successful implementation of autonomy (Gerwin & Moffat 1997a, b, Tatikonda & Rosenthal 2000, Wheelwright & Clark 1992), the role of organizational structure in creating sufficient autonomy (Larson & Gobeli 1988, Hobday 2000), and the role of technical novelty and complexity in connection with autonomy (Shenhar et al. 2001, Griffin & Page 1997, Larson & Gobeli 1988, Hobday 2000, Garcia & Calantone 2002, Bailyn 1985, Varma 1999,

Gemünden et al. 2005). Earlier research has strongly emphasized the communication between product development teams and their environments, but it has simultaneously noticed the need to isolate the project, guard its boundaries through for example, gatekeepers, and at the same time ensure sufficient information and resources flow between the project and its environment (Reid & de Brentani 2004). In this sense, product development literature has attempted to ensure a balance between independence and support, autonomy and control. A project can and should consider its level of autonomy in its strategy selection irrespective of its position within one parent organization, or amongst a multitude of stakeholders.

Complexity of the stakeholder environment

The complexity of a system follows from many independent agents in the system interacting in many ways (Waldrop 1992). The environment of a project is often complex and the complexity itself emanates from multiple stakeholders with divergent and often conflicting needs, from emergent inputs for the management process, and from a high level of ambiguity (Thiry 2004). In line with the perspectives taken in stakeholder theory (Freeman 1984, Donaldson & Preston 1995), studies of large projects also recognize that a large project is not executed under the governance of a single parent organization, but that there are several organizations that participate in and have influence over the project (Kharbanda & Stallworthy 1983, Morris & Hough 1987, Kharbanda & Pinto 1996, Miller & Lessard 2001a, 2001b, Williams 2002, Flyvbjerg et al. 2003, Grün 2004). Such studies recognize that there may be several business or non-business stakeholders that serve in various owner, customer, user and sponsor roles, each with their own strong and even conflicting interests concerning the ultimate outcomes of the project.

Earlier research on complex stakeholder networks clearly calls for taking the diversity of stakeholders' expectations into account when considering the context-specific project strategies. Prior research has looked into for example, challenges with the complexity generated by external cooperation (Eisenhardt & Tabrizi 1995, Von Corswant & Tunälv 2002, Littler et al. 1998, Cohen & Regan 1996, Kim & Wilemon 2003), the need to identify and prioritize relevant stakeholders (Mitchell et al. 1997), techniques for stakeholder mapping (Johnson and Scholes 1999, Winch & Bonke 2004, Olander & Landin 2005, Boonstra 2006), stakeholders' different strategies (Rowley & Moldoveanu 2003), needs for trade-offs and strategies when managing different stakeholders' needs (Winch & Bonke

2004, Olander & Landin 2005, Oliver 1991, Rowley 1997, Eloranta et al. 2007), and even stakeholders alliance formation in an attempt to increase network salience (Neville & Mengus 2006). Earlier research has clearly emphasized the importance of different participating actors on the management and success of the project. The ends and means of projects are constantly redefined based on the interaction of participating organizations (Hellgren & Stjernberg 1995), and the number of participating organizations add to the complexity of the project's environment in terms of political, social and technical factors (Cova et al. 2002). A project should consider its stakeholder network complexity in its strategy selection, both when highly autonomous from and when subordinate to the stakeholders' interests.

PROJECT STRATEGY IN INNOVATION PROJECTS WITH DIFFERENT CONTEXTS

We use existing innovation management literature to analyze strategies that projects use in their different contextual positions (Figure 1). By innovation projects we mean such projects that attempt to create a new product or service or modify an existing one. Innovation projects were chosen as an example to delimit the focus to a fairly coherent body of literature, to make the analysis manageable, and to avoid confusion in the framework stemming from project-type specific differences.

We analyze practical project examples from innovation management literature to position innovation projects in the framework of four contextual positions (characterized by project's autonomy and complexity of project's stakeholder environment). We also analyze the strategy contents in differently positioned innovation projects in terms of direction and success.

A. Parent's subordinate project

Innovation management research on traditional product development projects and incremental innovations has generally considered projects as implementation vehicles to business strategies. Any concurrent engineering and process models of innovation seem to suggest that project strategy is closely linked to its parent organization (e.g. Wheelwright & Clark 1992, Cooper 2001, Gerwin & Moffat 1997). Projects assemble resources from the parent organization temporarily in the pursuit of new products, derivative products, and

product enhancements. In such literature, each project may have a business case of its own which, however, is always either derived from higher-level business strategies or submitted to higher levels of the organization for approval (Wheelwright & Clark 1992, Griffin & Page 1996, Cooper 2001).

In parent's subordinate projects, each project creates its own project strategy and plan that obeys to and takes its *direction* from the development strategy of the firm (Wheelwright & Clark 1992). In this way, the project follows an intended strategy and strives to implement it. An aggregate project plan steers project selection based on development strategy, and its goals and objectives set the stage for executing individual projects. Individual projects build on prior planning by starting with their own planning phase. According to Wheelwright & Clark (1992), the project strategy includes project context (knowledge base, company views and procedures), project focus (scope and context, complexity), and pre-project plans (phases and objectives, performance measures, incentives). Wheelwright and Clark strongly link the concept of project strategy to the degree of planning at the beginning of individual projects, by suggesting a process that links the project to the broader strategy.

Project strategy has also been used firm-level concept that refers to the firm's choice of newness dimensions in its projects (Griffin & Page 1996). For example, the objectives and success criteria for a new product for a new, unknown market will differ from those of a project that extends an existing product line on familiar markets. Appropriate measures of a product development program's overall success depend on the firm's innovation strategy. For example, a firm that values being first to market will measure success in different terms from those used by a firm that focuses on maintaining a secure market niche. Griffin & Page (1996) used six project strategy scenarios, all representing subordination to a parent organization's innovation strategy.

Individual projects have a strong linkage with the parent organization through idea screening sessions, a strict phase-review process with milestones, an in-depth understanding of customer's needs, and the integration of these factors as guidelines to direct product development. Such factors have also been identified as success factors contributing to financial performance of the projects (e.g. Cooper & Kleinschmidt 1995, Souder et al. 1997, de Brentani 1989). These factors represent governance structures that enforce the parent's control over projects, usually exercised by the product development department, business

units, or a well-specified customer segment. Such structural arrangements, routines and practices favor predictability and low or limited degrees of autonomy in the project team.

Project *success* in new product development is based on four different types of criteria. Firstly, the single projects' financial success has been considered for example in terms of meeting profit or margin goals, return on investment, or break-even time (Cooper 2001, Griffin & Page 1996, Shenhar et al. 2001). Secondly, technical performance is often rated in a variety of criteria such as development cost, productivity, innovativeness, meeting of performance specifications or scope goals, and quality (Griffin & Page 1996, Wheelwright & Clark 1992, Shenhar et al. 2001). Thirdly, customers' perceptions or more general market responses are increasingly included in product development success criteria, in terms of customer acceptance or satisfaction, market share, volumes, or percent of sales coming from new products, (Cooper 2001, Griffin & Page 1996, Wheelwright & Clark 1992, Shenhar et al. 2001). Fourthly, some studies separately acknowledge product development projects' success as benefits to the parent organization's business (Shenhar et al. 2001) either through some of the above criteria or as part of a broader project portfolio in terms of general strategy fulfillment (Cooper et al. 2004).

B. Parent's autonomous project

Innovations that aim at significantly transforming the parent organization or its business imply projects that have a high degree of autonomy related to their own goals, methods and resources. Especially literature on the front end of radical innovations covers this type of projects. For example, skunk works, venturing and new business creation or mergers and acquisitions seem to contain autonomy within a single parent organization's environment (e.g. Single & Spurgeon 1996, Gwynne 1997, McGrath & MacMillan 2000, Day et al. 2001). Even in the context of a one-parent organization, such projects are allowed a high degree of freedom, control over their own resources, independence from the company's methods of operation and unique and even emergent goals. Brady and Davies (2004) introduce project-led learning within a parent organization that is first led by an exploratory "vanguard project" phase that contributes to later phases that are responsible for increasing the parent organization's capabilities to deliver many projects. Vanguard projects have a high degree of freedom and autonomy.

A parent's autonomous project relies on a strategy that may contradict or purposefully attempt to alter the strategy of the surrounding organization. Such projects may be "counter-cultural" to the parent organization (Gwynne 1997). Loch's (2000) study of product development projects of a European technology manufacturer provides an example of how each project carried true business content within the boundaries of the project. Besides traditional product development projects, the company included highly autonomous "pet" projects supported by certain individuals and "under-the-table" projects hidden from top management and therefore outside of their control. Similarly, McGrath (1996) introduces an organizational model for autonomous – or authorized – product development projects (Single & Spurgeon 1996 and Gwynne 1997 use the term skunkworks). In the model, the project team has the authority to develop a specific product. The project team's organizational structure may be functional, and therefore, the project organization is capable of independently carrying end-to-end responsibility for the actual business related to the new product.

The above examples already suggest that the *direction* of a parent's autonomous project is that of intended and emergent renewal. While the project's autonomy suggests the parent's intended attempt to enable renewal, the project itself becomes a platform for the emerging direction. Autonomy, therefore, simultaneously depends on and generates uncertainty; possibly altering the parent. For example, McGrath and MacMillan (2000) introduce discovery-oriented project management approach for product development projects with uncertain outcomes. This approach reflects the autonomy of a single project with a certain kind of internal structure and processes to create its relevant content and outcome in its environment, while simultaneously continuously taking the project forward and developing competencies within the project for enhanced effectiveness. The approach uses a diagnostic technique internal to the project.

Success in autonomous and radical projects may sometimes be estimated with a somewhat similar criteria as a parent's subordinate projects (Loch 2000, Griffin & Page 1996), but studies more explicitly focusing on radical innovations see success as discontinuities and significant renewal (e.g. Garcia & Calantone 2002, McGrath & MacMillan 2000). Particularly in technically uncertain environments, projects will need to assess their success also in terms of preparing the organization and infrastructure for the future. Such measures could include opportunities for further markets and innovations, new skills, and firm's

readiness in the future of the industry (Shenhar et al. 2001). The renewal may take the form of completely re-segmenting the customers and reconfiguring the value chain, the multiplication of current profit expectations, the emergence of a new kind of competitive advantage (McGrath & MacMillan 2000), or the renewal of the entire firm's strategy or business portfolio. Some authors differentiate between technical discontinuities (or breakthroughs) and market discontinuities (or commercial blockbusters) as outcomes due to radical innovation (Garcia & Calantone 2002, Souder 1987), both evident interests in an organization's autonomous projects.

C. Project with a weak position in a complex stakeholder environment

A part of innovation management literature treats innovation as a shared effort between stakeholders and as diffusion (or copying, imitation) of new products and methods in an institutional context. The project has a weak position, governed by the needs and interests of multiple strong stakeholders. Projects of consortia such as standardization or policy making, and industry networks of learning seem to have a position that is between several strong stakeholder organizations (e.g. Abrahamson 1991, Westphal et al. 1997, Guler et al. 2002, Powell et al. 1996, Powell 1998).

R&D consortia are an example of a complex stakeholder environment for innovation projects. In particular, Sematech, Semiconductor Research Corporation and other forms of pre-competitive industry-university-government cooperation have been studied in earlier literature (Rea et al. 1997, Carayannis & Alexander 1999, 2004, Browning et al. 1995, Aldrich & Sasaki 1995, Spencer & Grindley 1993, Evan & Olk 1990). Also other forms of partnership are possible in complex stakeholder environments.

Projects that have a weak position within a complex stakeholder environment rely on strategies that the surrounding stakeholder network has negotiated. Consortia are typically formed as a response to regulatory and legislature changes, environmental threats, and industry turmoil (Rea et al. 1997, Browning et al. 1995, Spencer & Grindley 1993, Evan & Olk 1990). Even competing companies seek collaboration to supervise their mutual interests, develop long-term technology or manufacturing capabilities, set industry standards, and address some fundamental problems within an industry (Rea et al. 1997, Carayannis & Alexander 1999, Spencer & Grindley 1993). Consortia generate a "supra-corporate"

challenge since they cannot be completely separate from member organizations (Evan & Olk 1990). Where the consortium clearly mediates the interests of multiple stakeholders, seeks wide-reaching long-term impacts, and generates clear boundaries for cross-firm collaboration (Carayannis & Alexander 1999, Spencer & Grindley 1993, Evan & Olk 1990), research and technology development projects in these sorts of collaborations are clearly the consortium's vehicles to achieve certain subordinate goals (Rea et al. 1997).

Direction for a project is derived from the negotiated goals and objectives for the entire consortium or its technology field. This negotiation may occur on two steps: first on the strategy level in terms of technology focus areas and roadmaps and secondly on the project level in terms of funding and resource allocation. Consortium members negotiate technology strategies and roadmaps to guide choices on which areas new projects are sought (Rea et al. 1997). Some authors see that the complexity of the consortium's context call for an emergent, unintended approach to strategy that enables constantly adapting and responding to the changing environment (Browning et al. 1995). At the operative level, member organizations set priorities for their research and technology development investments and thereby steer the direction of projects. For example, universities generate project proposals for the consortium members' review, which will eventually result in portfolio and project selection, and in funding and resource allocation (Carayannis & Alexander 1999). The projects adapt to the results of these higher-order negotiations. Also, consortia have their routines and procedures of proposals, planning, management, and follow-up that all projects should follow (Carayannis & Alexander 1999).

Project *success* in consortia is evidently a secondary and intermediary issue as compared to the expected longer-term impacts in the industry and benefits to member organizations. As primary measures of success, consortia typically seek for example industry-level success as compared to another country's industry in terms of market shares or profits. The member organizations may seek return on their investment for example as a cost savings, improvements in manufacturing yield, new standards, or new technologies (Spencer & Grindley 1993). Any consortium deliverables are susceptible to high degrees of uncertainty for example due to their members' unique interests and fear of compromising their proprietary interest, and difficulty in transferring and exploiting R&D results in member organizations (Evan & Olk 1990). According to Spencer and Grindley (1993) the success of a

consortium is quite difficult to measure, which indicates that estimating success measures at the project level will be even more difficult.

D. Autonomous project in a complex stakeholder environment

Innovation management literature is increasingly concerned with boundaryless or open innovation where, for example, new business incubators generate new firms, software is developed in a network of voluntary developers, or innovation emerges as part of a community of practice. Innovation networks such as those concerning open source software, birth and growth of an entirely new industry, some social movements, interfirm modularity, and international research communities can be seen as autonomous in their complex environment (e.g. von Krogh et al. 2003, Ulhøi 2004, Staudenmayer et al. 2005).

Free and open source software have recently been discussed in innovation management literature operating under a modern, "private-collective" or hybrid model of innovation (von Hippel & von Krogh 2003, von Krogh et al. 2003, Ulhøi 2004, West 2003, Henkel 2006). Ulhøi (2004) and Henkel (2006) summarize earlier case examples with open innovation in other industries for example in steel production.

Autonomous projects within a complex stakeholder environment advocate a strategy that emerges through the active contributions by and in interplay between stakeholders. Open innovation communities, as an example, have risen as a counter-force to proprietary software packages, often through individual stakeholders' personal choice and values (e.g. von Hippel & von Krogh 2003, Ulhøi 2004, West 2003) and the need to pool the power of multiple stakeholders for mutual benefit (von Krogh et al. 2003, Henkel 2006, Pisano 2006). The stakeholders develop software code to solve their own as well as shared technical problems and to freely reveal their innovations without expecting private financial returns from them (von Hippel & von Krogh 2003, Henkel 2006). Open source communities, therefore, seek public as well as stakeholder-specific benefits. When each stakeholder can both contribute to and use the results of projects, the stakeholders' strategies are clearly secondary as compared to the autonomous, evolutionary path that each development project takes within the community. The community and its main project are constantly shaped through the smaller-scale developments emerging from stakeholders' intertwined efforts.

In this manner, the *direction* for project strategy in open innovation is clearly emergent, evolving over time and independent of stakeholder strategies. The entire context is characterized by temporary efforts: stakeholders may change, projects come and go, and new developments mobilize new needs and people constantly (von Krogh et al. 2003). Instead of planned and predetermined paths, the strategy takes its form through any bottom-up development activities initiated at any location in the community, shared and consequently co-developed among stakeholders. Once a sufficient quality level has been reached, an authorized version of the newly developed code can be made a part of the updated product version. Open innovation is characterized by a "hacker culture" that allows free access to results for all stakeholders, freedom and desire to learn, and co-evolving (von Hippel & von Krogh 2003). Whilst coordination for the main product is ad-hoc and dependent on activeness of the stakeholders as contributors, the entire community learns and matures while working. Open innovation projects, for instance, may develop rules, norms, routines and support systems within the community, to enable efficient community membership, active participation, and results sharing (von Krogh et al. 2003).

Success in open innovation is typically examined on two quite different levels. Firstly, earlier studies have examined the motives, drivers and benefits at an individual level and wondered why innovators choose to work and reveal their results freely in the community without intellectual property protection. The private rewards from an individual's contribution appear in the form of personal benefits, for example problem solving, access to others' development resources, personal learning, enjoyment of programming work, and better performance in one's own job (von Hippel & von Krogh 2003, Ulhøi 2004). According to Ulhøi (2004), success in open innovation is "intrinsic utility comparable to that of a scientific discovery". Secondly, earlier research has emphasized the community-level benefits in terms of "public good" (von Hippel & von Krogh 2003), which may appear in the form of rapid and large-scale technical advances, solutions to specific technical or operational problems, the competitive advantage of a network of stakeholders (over some competitors), reputation, and even community growth.

CONCLUSION ON PROJECT STRATEGIES OF DIFFERENT INNOVATION PROJECTS

Innovation management literature reveals a versatile ground for identifying different project contexts, with different degrees of project autonomy and stakeholder environment complexity. Figure 2 concludes the literature analysis on innovation management literature by positioning examples of different types of innovation projects into the contextual positions framework.

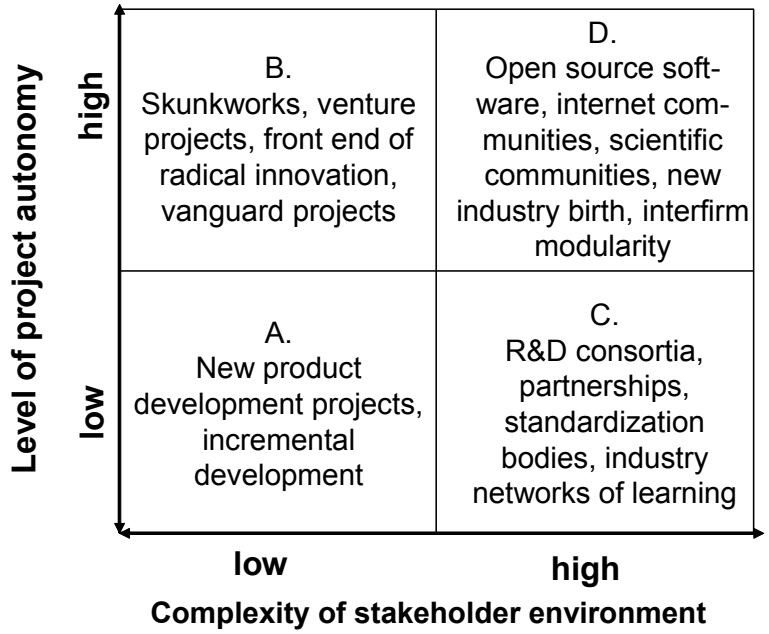

Figure 2. Different innovation project in different contexts.

A project's *direction* and *success* are important elements in a project's strategy, as suggested in the adopted project strategy definition (Artto et al. 2008). Above, we have explored innovation management literature to illustrate direction and success criteria in four different positionings of projects in their contexts. The direction of project strategy cannot solely be determined by subordination to one single organization's business strategies, but it may even emerge from micro-level activities when the project interacts with its multiple stakeholders. We found that different issues are emphasized in the success criteria of projects in different environments. Table 1 summarizes key findings from the review.

Table 1. Summary of project positions in the environment, and project strategy contents in innovation management literature.

Project position in the environment and examples in innovation literature	Direction in project strategy	Project success criteria for project strategy
A. Parent's subordinate project e.g. new product development projects, incremental development	Intended: Aligned with parent's strategy. Outside-in strategy formulation process: from parent to project.	• Reaching financial goals • Reaching technical (or scope) goals • Customer satisfaction and acceptance • Benefits to the parent organization, e.g. fulfillment of strategy
B. Parent's autonomous project e.g. skunkworks, venture projects, front end of radical innovation, vanguard projects	Intended + emergent: Radical renewal of parent organization or strategy. Inside-out strategy formulation process: from project to parent.	• Impact in business, e.g. creation of a new market area • Radical benefits to parent organization, e.g. renewal of strategy • Technical discontinuity • Market discontinuity
C. Project with weak position in a complex stakeholder environment e.g. R&D consortia, partnerships, standardization bodies, industry networks of learning	Intended + emergent: Derived from stakeholders' negotiated strategy, or negotiated based on project proposals. Mediating and compromising among many stakeholders.	• Benefit to stakeholder organizations • Stakeholder satisfaction • Industry impacts, e.g. market share and profit
D. Autonomous project in a complex stakeholder environment e.g. open source software, internet communities, scientific communities, new industry birth, interfirm modularity	Emergent: Based on contributors' ownership and participation in projects. Creation and survival of a community or industry. Organizing the project from inside out by creating a governance umbrella where stakeholders are positioned in purposeful roles.	• Public good • Benefits to involved individuals, such as. solutions to problems, learning, enjoyment • "Intrinsic utility"; any project deliverables as new input to emerging new strategies

The strategies of parent's subordinate projects are mostly formulated by creating an explicit strategy definition at the beginning of the project based on the surrounding organization's strategy. New product development and other forms of incremental development were shown as typical examples of this project type. The strategies of parent's autonomous projects sought significant renewal of the parent firm's processes, markets and strategies and brought novelty and discontinuity to the organization's technologies and products. Skunkworks and radical innovation projects were presented as examples of such autonomous projects. Success of both types of projects within a single parent organization can be predicted based on both

operative goal-achievement and a benefit to the firm. However, autonomous projects set their success measures based on their self-directed strategies, whereas subordinate projects rely on measures given by the parent organization.

The strategies of projects with a weak position within complex stakeholder environment are characterized by mediating and compromising among many stakeholders. For example R&D consortia and other types of industry networks of learning conduct projects of this type. The strategies of autonomous projects in complex stakeholder environments are based on contributors' ownership and participation, and on self-organizing of the project from inside out by creating a governance umbrella where stakeholders are positioned in purposeful roles. Open source software communities and international research communities were shown as examples of this project type. Success of both types of projects can clearly be estimated on industry and stakeholder level as well as even individual level. However, autonomous projects rely on benefits and even the public good emerging from effective and efficient deeds among the stakeholders, whereas projects with a weak position compromise to satisfy stakeholders and consequently generate industry impacts.

CONTRIBUTIONS TO THEORY

We concluded that the degree of project's autonomy and complexity of the stakeholder environment are factors that can be considered important determinants to a project's strategy. We examined these variables, used them to construct a framework of four contextual positions of projects, explored illustrative evidence from innovation management literature by positioning innovation projects into this framework, and analyzed strategy contents in innovation projects of different contextual positions.

This paper contributes to the existing knowledge on project strategy and project management by widening the project strategy concept to allow for different interpretations of the kinds of strategies different projects may use in different environments. Throughout this paper we have extended emerging contingency perspective on projects (Shenhar 2001) to the area of project strategy formulation. Furthermore, our study complements the current research that projects are temporary organizations through opening up the ideology of strategy and success of projects. This organizational perspective expands the traditional discussion of projects (or their parent organizations) as closed systems towards projects as open systems that actively

interact and position themselves to the diverse environments. The results of this paper provide a novel and fruitful basis for further empirical studies.

FUTURE RESEARCH

We suggest five major areas for further research. First, further empirical studies are needed that would follow and verify the framework of this study. Empirical case projects should be positioned in the framework and their strategies should be analyzed in manner that is similar to the literature-based innovation projects that were analyzed above. Such empirical studies would the deepen understanding of: what kinds of strategy contents do single real-life projects have in their specific contexts; how and why projects perceive their environments; and how such perceptions justify or lead to such selected strategy contents.

Second, research is needed on project strategies in other project types. For example, conceptual literature research using a different literature base in a different application area (e.g. organizational change, process development or IT system implementation) should be conducted. Empirical research is needed on specific project types such as equipment delivery projects, capital investments projects, systems integration and IT projects, and construction projects. Also, future research should take a closer look at different types of innovation projects from different industries or application areas.

Third, we suggest that project strategy research should seek support and further avenues through mainstream strategy research. For example, future research should explore connections between projects', parent organizations' and stakeholders' strategies, to better understand the emergence of strategies in temporary organizations. Furthermore, since a project can be considered to represent a single actor in a network of many other actors (or stakeholders), empirical studies would be needed about how conflicting or aligned strategies among the network actors effect each other, potentially a joint strategy between the network parties, or performance of actors and the performance of the whole network. Also, future research should develop a further understanding of both strategy formation and implementation in contextually embedded projects. Exploring how temporary organizing has been treated in mainstream strategy literature could reveal explanations to successes and failures of projects in their broader business context.

Fourth, empirical research should focus on identifying the effects of using different project strategies on the performance of projects from different perspectives, for example goal achievement, customer benefits, learning and innovations, public good, and future benefits, to mention a few. Full-scale theoretical models should be developed to understand and test the linkages between different project positions, strategy types, and their performance outcomes in different contexts.

Fifth, research is proposed as the evolution and dynamics of project strategies. Empirical studies should specifically address factors that determine what kind of positions a project takes in relation to its external environment and how that position changes during the project lifecycle. From this perspective, project strategy can also become a path to change project position, for example to gain more autonomy. Further empirical research should be conducted to identify stimuli that cause the change of project strategy during the project lifecycle. This also raises the question about who are the strategists in projects, also relevant as a topic of future research.

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