Managing Open Innovation— Trade-off or Simultaneous Solve?

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Abstract: Open innovation refers to the integration of external and internal ideas as well as market paths in traditional innovation processes. In the past years, open innovation has gained significant attention and currently represents a spotlight topic both in research and practice. The paper at hand adds to the discussion of how to manage open innovation by examining two contrary managerial approaches along various management dimensions in a case study of a large multinational. Our results suggest that the most suitable management approach does not necessarily require trade-off decisions but that companies can also employ an ambidextrous approach, a so called "simultaneous solve", by concurrently combining apparently opposing management concepts. Having investigated the management dimensions organization, strategy, governance, intellectual property and motivation, we were able to identify simultaneous solves being applied in the organization and governance dimensions as well as in the management of intellectual property. This underpins the relevance of the simultaneous solve concept for open innovation management theory and practice.

1 Introduction

Open innovation is defined as an organization and governance model for innovation management, where—as opposed to closed innovation—firms "can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology" [Ch03, p. xxiv]. In closed innovation, usually not only the boundary of the firm, but rather the boundary of the internal R&D unit is the limit for collaboration in innovation processes. We therefore make a more distinct definition of open innovation, which is that open innovation includes both the collaboration with internal organizational units outside the R&D unit ("internal open innovation") and also the collaboration with external partners ("external open innovation") such as customers, other companies, and research institutes.

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In the past decade, open innovation has become a trend which has received growing attention and also acceptance among many companies across various industries. This trend has been supported by a number of developments: Social and economic changes in working patterns, work-sharing in globalized economies, new institutes and business models for trading ideas, and the advance in collaborative technologies such as the Internet [DG10, Hu11]. In parallel, open innovation has become a major research topic in academia and numbers scholars have already made initial attempts to systematically analyze the basic themes of open innovation studies [DG10, Hu11, Li11].

Within the open innovation research field, this study examines the basic question of how to manage open innovation from a company perspective. Compared to managing closed innovation (e.g., nuclear and military development projects [Ga06]) managing open innovation requires significantly different structures and capabilities [Li11]. Specific managerial practices and organizational capabilities are required to establish a successful open innovation environment and to transform the company's business model into an open business model [Ch07]. We aim at contributing with new insights into the management of open innovation. Despite the increased attention of open innovation in academia, the topic still requires further theoretical groundwork as well as empirical observations from implementations in practice [Ga06, FEO08, CCF11].

The framing of our study is related with the concept of ambidexterity which has been studied quite extensively in organizational research (e.g., [TO96, BV97, Ra09]). We introduce this concept to the field of open innovation management by investigating into the following question: How do successful innovators manage their open innovation initiatives? More specifically, do such companies adopt trade-off or ambidextrous approaches for managing their open innovation initiatives?

This paper is structured as follows: In section 2 we provide a set of basic definitions and clarify the focus of our study in the context of prior literature. In section 3 we develop the theoretical framework as basis for our case study, and in section 4 we explain the research methodology. The findings from our case study are explained and interpreted in section 5. We conclude in section 6 with a discussion and outlook to future research.

2 Study Background and Context

Ever since the development of seminal innovation theories by scholars like Schumpeter in the early 20th century, innovation has been recognized as a fundamental driver for sustaining competitive advantages and growth in any free market economy. While early research studies examined innovations and new inventions mainly from the inside-perspective of the company within the boundaries of its R&D unit, more recent work has put more focus on the interplay of companies with external players in the value chain. Especially the term "open innovation" has obtained a growing attention in the last decade: Initially introduced by Henry Chesbrough [Ch03] and a small number of innovation practitioners, the open innovation community has expanded significantly in the past years [GEC10] and has offered a wide range of studies on various subjects within the context of open innovation [Hu11].

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Despite the growing attention of open innovation in academic research and the increasing penetration of open innovation concepts in practice, open innovation is still not a widely established concept and applied management practice across companies and industries [Hu11]. Many companies have difficulties in defining and implementing open innovation initiatives in line with their established R&D activities [Li11]. Thus, there is still a significant need to develop concepts for managing open innovation. Building on a systematic review of open innovation literature, this is also confirmed by Dahlander and Gann who note that "if firms are to develop viable strategies for innovation management, more precision is needed in conceptualizing open innovation" [DG10, p. 705] and that "we lack substantive evidence about how firms can combine different ways of managing openness" [DG10, p. 707]. In particular, there seems to be no integrated *management framework* specifically designed for open innovation, although we find many studies addressing one or more management aspects [GEC10].

The lack of research on open innovation management is probably related to the complexity of the topic, resulting from the heterogeneity of companies and industries with regards to their size, organizational setup, business models and value chain characteristics. For instance, large established companies and small start-ups seem to manage open innovation differently [COK05] including different motives and challenges [Vr09]. Also companies operating in the software development industry face entirely different dynamics and product life-cycles than companies in the automotive and pharmaceutical industries.

The heterogeneity of companies and industries makes it difficult to define a one-size-fits-all approach. We do not intend to develop such a one-size-fits-all approach for open innovation management within this present study, but we aim at contributing to the still quite narrow research field of open innovation management. Our theoretical framework is based on conclusions drawn from a previous study of open innovation management [FEO08] which concludes that open innovation increases the complexity of the innovation process because of the larger number of involved actors and the fact that internal managers have less control over external partners.

Whereas the traditional approach would have been to "separate the parts that have to do with the outside […] from the standardized routine processes in the organization" [FEO08, p. 49], another approach would be *ambidexterity*, which in this context means to be able to handle both (internal and external innovation processes) at once. We are especially interested in the utilization of ambidexterity with regards to open innovation management because "although there has been large support for the necessity of ambidexterity […], few have been able to describe how it is actually done" [FEO08, p. 49]. Subsequently, we therefore use the concept of ambidexterity as theoretical lens for our study.

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3 Theoretical Framework

3.1 The Simultaneous Solve

In a competitive free market economy, change is often the only constant. Companies are faced with the constant challenge of how to preserve their competitive position against newcomers and rising stars, while at the same time prepare for a changing future, develop or adopt new technologies, and tackle the next biggest companies in order to increase market shares and revenues.

In strategic and organization management research, the concept of *ambidexterity* has already been introduced decades ago as a way to handle the constant challenge of change. Managers are required to deal with relative stability and incremental innovation, whilst *simultaneously* preparing for more revolutionary change and destroying present structures in order to prepare for the next wave of competition or technology [TO96]. Ambidexterity in this context means that companies can deal with this challenge by "hosting multiple contradictory structures, processes, and cultures within the same firm" [TO96, p. 24]. The opposite of ambidexterity is a trade-off decision where the company selects a single concept from a range of possible concepts (see Figure 1)

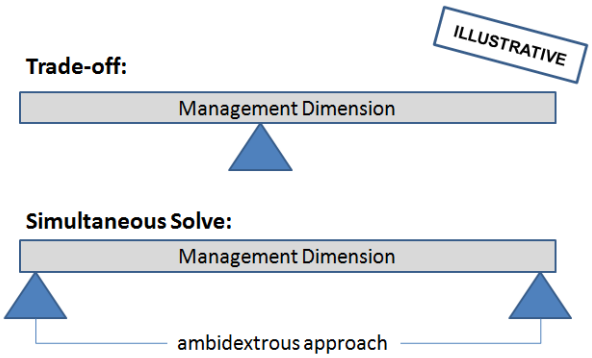

Figure 1: Trade-off vs. Simultaneous solve

Academics in support of the ambidexterity theory postulate that companies which are successful in nowadays' volatile business environment are able to implement mechanisms that allow them handle apparently conflicting aspects simultaneously [BV97]. We call this approach a "*simultaneous solve*", i.e. the concept of managing apparently opposing ends of a concept simultaneously, instead of making trade-off decisions.

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In innovation theory, a frequently used example of ambidexterity is the capability to be both explorative (explore new possibilities and manage change) and exploitative (exploit old certainties and retain stability) in parallel [Ma91]. In our study, we transfer the concept of ambidexterity (or simultaneous solve) to the context of *open innovation*. By investigating whether successful innovators use a simultaneous solve with regard to various management dimensions we aim to contribute with new knowledge on the management of open innovation initiatives.

3.2 Management Dimensions

The question of whether companies apply the simultaneous solve cannot be answered generally but must be examined for distinct *management dimensions*. Based on a number of studies in the innovation management context (e.g., [AS04, GSS06, Gr07, SP00, He06]), we were able to find first indications that companies do apply a simultaneous solve. In the following, the findings of these studies are briefly summarized and structured along five *management dimensions* for open innovation. These dimensions also form the theoretical framework for our case analysis.

1. Regarding the **organizational setup** of innovation activities, Argyres and Silverman argue that companies do not only use either a centralized or a decentralized structure, but also implement hybrid structures with both *central* and *decentral* elements, combining the advantages of both structural approaches [AS04].
2. The **innovation strategy** is often distinguished into being either *explorative vs. exploitative* [Ma91]. While exploration and exploitation within the same subsystem are generally mutually exclusive, in the context of a more complex organization (e.g., a company) both approaches can be applied in parallel [GSS06, Gr07].
3. With regard to **governance** principles, closed innovation is usually based on *hierarchical governance* characterized by top-down decision structures, whereas open innovation is characterized by collaborative processes that heavily rely on creativity, diversity and agility, supported by flat governance structures and more autonomy in decision making [PV08]. However, in order to avoid instability and chaos in open innovation settings, a formal coordination system with changing boundaries and adaptive rules are needed [SP00].
4. In the classical approach, companies would *protect their* **intellectual property** from the use by others in order to gain advantages over their competitors. In an open innovation context instead, the involved parties are frequently freely sharing their knowledge and, thus, *revealing their IP* as contribution to the collaborative endeavor. In the example of commercial firms' active participation in open-source software development projects, these firms adopt a hybrid strategy embracing both extremes of purely open and purely proprietary development, and selectively reveal and protect specific pieces of their innovations [We03, DM05, BR06, He06].

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5. **Motivation** is another relevant aspect which is frequently discussed in the context of open innovation, especially with regards to collaborative communities [HK06, BL09]. Motivation can usually be defined as being either *intrinsic* (based on desires) or *extrinsic* (based on monetary incentives).

To the best of our knowledge, there is no comprehensive and integrated framework combining various dimensions of open innovation management. We therefore decided to use the management dimensions examined by the above mentioned studies for structuring our case interviews and analyses (see Figure 2). Even though we are aware that it is very likely that additional management dimensions for open innovation exist (illustrated by "[…]" in Figure 2), we believe that the introduced dimensions still represent a useful starting point.

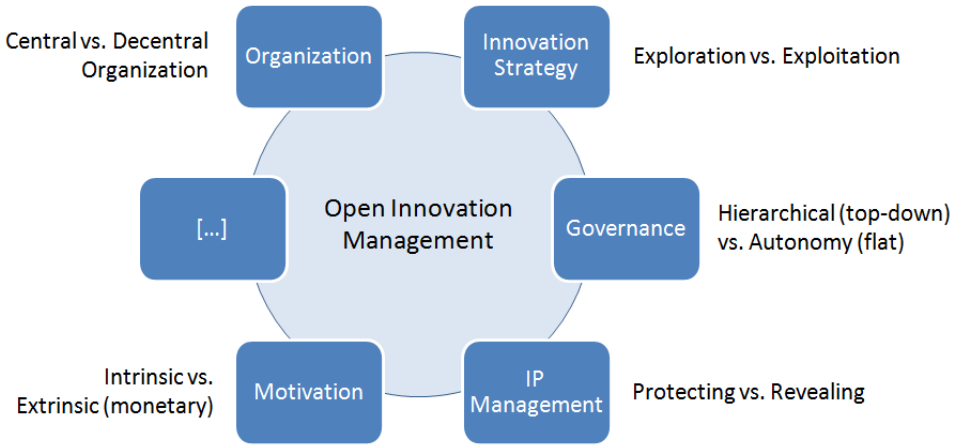

Figure 2: Open innovation management dimensions

4 Research Methodology

To answer the question of whether and, if yes, how companies apply a simultaneous solve in defining and managing their open innovation activities, we carried out a single case study with a large multinational (referred to as "InnoChamp" in the following) that is currently in the process of establishing an open innovation environment. With more than 30,000 R&D employees worldwide, InnoChamp spends meaningful efforts in innovation management every year, and is ranked within the world's top-50 most innovative companies by the Business Week magazine. Apart from their traditional innovation processes, InnoChamp has set up a central open innovation team which coordinates various internal and external open innovation activities within and across InnoChamp's organizational units.

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Open innovation can already be regarded as a well established concept at InnoChamp. It runs co-operations with competitors, integrates suppliers and customers in innovation processes, collaborates with external innovation labs, and also commercializes un-used IP via spin-out projects. The dedicated open innovation unit was founded a couple of years ago, following a systematic analysis of potential open innovation areas. This analysis identified three major gaps in the innovation management portfolio of InnoChamp: (1) idea generation via internal and external innovation communities, (2) collaborations with technology e-brokers like Innocentive and NineSigma in order to find technical solutions, and (3) company-wide knowledge management via open expert networks. The task of the open innovation unit is to fill the identified portfolio gaps. These gaps have in common that they address and engage communities in the innovation processes (in both internal and external open innovation), namely, users, employees, and expert communities.

We have designed and conducted an in-depth case study following the process defined by Eisenhardt [Ei89]. Thus, the selected research approach can be best classified as "*soft positivism*" [MJS00], meaning that the approach was designed to examine preidentified constructs from a positivist view as well as to surface new constructs in an interpretive manner . Figure 2 above shows the initial framework of management dimensions, which was used as starting point and was expected to be extended by findings from our case interviews. The *simultaneous solve* served as *theoretical lens* on our framework.

To prepare the case interviews, we developed a slide deck which we shared with our interview partners. These slides contained an introduction of the research team and project, definitions of key concepts, and our conceptual framework of management dimensions. Before we conducted the interviews, we scanned the Internet to collect all relevant and publicly available information about InnoChamp and its open innovation activities (including press news, innovation contests, and interviews). Apart from several informal talks with company representatives, so far, we conducted three in-depth interviews with the head of the central open innovation unit, one manager from this unit, and a line manager who is currently running an internal open innovation initiative with support of the open innovation unit. The informal talks and formal interviews took place during January and April 2011. The interviews lasted between 60 and 120 minutes.

All interviews were audio-recorded and transcribed. The transcripts comprised more than 50 pages and were systematically coded by one author. The coding results were then discussed by both authors in order to derive an agreed set of concepts from the data as well as to assign the identified concepts to existing or new *open innovation management dimensions* (or categories). Finally, the authors discussed the findings for each management dimension in terms of whether a simultaneous solve was applied or not with regard to this particular dimension.

Further interviews with additional interview partners in other business units are planned and to be scheduled. Thus the results presented in the next section should be seen as interim results of our study and will be enhanced with further insights from additional interviews.

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5 Case Findings

In the following, we present the case findings structured by the management dimensions introduced in our theoretical framework:

Organization: The (central) open innovation unit develops structures and concepts, identifies technical solutions and solution providers, advertises the concepts across the business units, and supervises the open innovation initiatives. By contrast, the individual initiatives are then run as projects by the respective (decentral) business units with guidance and sparring from the central unit.

One of our interview partners from the central unit stated: "open innovation must never be executed [solely] centrally". At the same time he acknowledged that a minimum of central coordination will remain essential even when open innovation will have become a well established concept across decentral units. Hence, InnoChamp's approach for organizing open innovation activities combines *central* and *decentral* elements, and can therefore describe an ambidextrous approach to open innovation management.

Governance: On a rather strategic level, the open innovation initiatives are neither demanded top-down from the management, nor initiated autonomously by the internal or external communities. It is rather the "middle management" that becomes aware of the possibilities and prospects, and then decides that open innovation may help in their business context. There are also no top-down targets set, neither for individual open innovation initiatives nor for the central open innovation unit. Static KPIs are seen as counterproductive due to business heterogeneities across different industries.

By contrast, on an operational level, we were able to identify simultaneous solves, for instance, with regard to the implementation of idea contests (one of the most popular open innovation initiatives). Here, the decision process of selecting the best ideas uses a combination of bottom-up and top-down mechanisms: Short-listing of ideas is done via the votes of the community (*flat governance and bottom-up decision-taking*), and a jury of managers and experts perform the final selection (*hierarchical governance and top-down decision taking*)

IP Management: Today and in the past, IP management has always been one of the core management areas vital for the success of InnoChamp, and IP protection is a well established practice. But with more than 4,000 new patents each year, not all patents find their way into business. Therefore, the InnoChamp's IP strategy also included to reveal, i.e., to commercialize unused IP. Here, a dedicated subsidiary works with venture capitalists to establish new start-ups that make use of the IP by developing innovative business models. In this process, the subsidiary also makes use of the know-how of the technical experts who often join the start-ups in order to bring in their expertise. The two key benefits for InnoChamp are: (1) additional revenue inflows from unused IP and (2) promising business partnerships with start-up ventures in high technology markets. To summarize, we were able to find both aspects of IP management in our case study: *protecting* the core business and selectively *revealing* for new ventures.

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Motivation: Motivation in open innovation is about incentivizing potential actors to participate and contribute in open innovation initiatives. InnoChamp heavily relies on intrinsic motivation, especially in the internal open innovation contests. Receiving attention and feedback in virtual discussions with other colleagues seems to provide a sufficient motivation for employees to contribute. Here also the prospect of presenting own ideas in front of a management jury may motivate employees to invest significant efforts in open innovation activities. In some cases, a small reward is offered (e.g. an Apple iPad for the winning idea). However, as indicated by our interview partners, such small rewards are understood only as teaser but not as real compensation or remuneration for the participants' time and effort. This means that we did not find a simultaneous solve in the motivation dimension.

Other management dimensions: So far, the case interviews did not provide us with clear insights whether InnoChamp seeks rather explorative or exploitative innovations or both simultaneously (*innovation strategy dimension*). The interviews did also not reveal any additional management dimensions to be included in our theoretical framework. This widely confirms the general applicability of our chosen framework.

6 Discussion

The objective of this study was to better understand how successful innovators manage their open innovation activities. More specifically, we examined whether such firms follow an ambidextrous approach, a so called "simultaneous solve", with regard to key management dimensions. For this purpose, we conducted a single case study with a large multinational.

Our findings support first indications from prior literature that the simultaneous solve is used in open innovation management. Regarding the examined management dimensions, the case interviews suggest that successful innovators do apply a simultaneous solve with regard to the organization (central vs. decentral) [AS04], governance (top-down vs. bottom-up) [SP00], and IP management dimension (protecting vs. revealing) [He06]. However, this finding does not apply to all dimensions. For instance, the attraction and motivation of potential contributors seems to be limited to intrinsic mechanisms.

Managing open innovation thus requires a careful evaluation of setting up the right structures, governance rules, and processes. Managers dealing with open innovation should deliberately consider the options they have to set up and manage their open innovation environment. Even though we have seen that successful innovators, such as our case partner InnoChamp, do apply the simultaneous solve in certain management dimensions, further research is required to get a better understanding of the concept and the underlying variables which enable the application of this concept.

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First, there may be additional relevant management dimensions on top of those that we discussed in our case interviews. The innovation strategy (exploration vs. exploitation) is a dimension where the simultaneous solve has already been identified [GSS06, Gr07], though not explicitly for open innovation. Our case did not provide insights regarding this dimension, but it could be worth following up this analysis with other companies who run open innovation initiatives. Also, additional management dimensions may be identified in other case studies, given that the framework for our case study should be seen as preliminary.

Second, a more detailed investigation into the management dimensions that did apply a simultaneous solve in our case study could provide meaningful insights for researchers and practitioners. For example with regard to IP management it is important to better understand how companies decide which IP they protect and which they reveal, which measures they take in order to benefit from revealing IP, and which channels and governance structures they use for the revealing process.

Third, relating the simultaneous solve to open innovation performance would be helpful in order to make a sound comparison between the simultaneous solve and the converse trade-off approach. Here, a multi-site case study of successful open innovators might provide further insights.

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