Old Wine in New Bottles? A Case Study on Organizational Antecedents for Open Innovation Management

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Abstract. In this paper, experiences with organizational antecedents for Open Innovation are presented, based on an in-depth case study conducted within the framework of KOPIWA[1] – a pre-competitive joint research project on "Competences Monitoring for Open Innovation in the Digital Economy" in Germany. The empirical findings on organizational competences within this case study are based on hypotheses and research questions that have been tackled in more detail in [4]. The results indicate that the focal open innovator's organizational and management routines evolved organically from closed to open innovation over the last years, as a result of the overall market, network and technology dynamics in the Digital Economy innovation system. The findings also reveal that, especially in the Digital Economy, 'Innovation 2.0' (also known as 'Open Innovation') is not entirely new, but rather a more natural and logical continuation of "new internet based innovation processes and business models" that have been developed in the past decade, noteably with 'Open Source'.

Keywords: Open Innovation; Open Source Innovation; Open Content Innovation; Outside-in Management; Inside-Out Management; Organizational Competences; Individual Competences; New Business Development

1 Introduction

The recent debate on organizational competence management for Open Innovation circles around different aspects, which have been clustered in the following three main dimensions [4]:

[1] KOPIWA = Kompetenzentwicklung und Prozessunterstützung in Open-Innovation Netzwerken der IT-Branche durch Wissensmodellierung und Analyse, funded by the German Ministry for Education and Research (BMBF) and EU, Förderkennzeichen 01FM0770

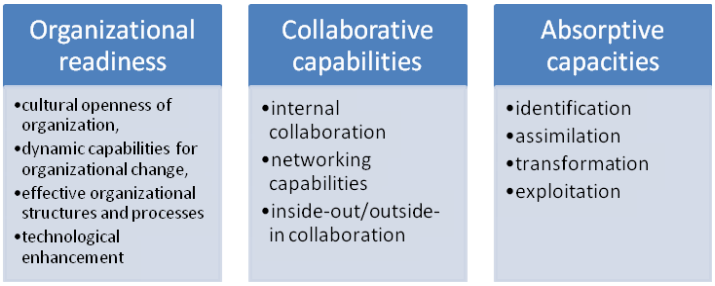

Figure 1: Organizational Competences for Open Innovation

This paper is organized as follows: first we will give a short overview on product related issues of the Open Innovation project underlying this case study report. Then we will sketch the specific case study methodology. Some historical background information is given to better understand the innovation system of the Digital Economy in which the focal innovator is acting. Following Figure 1, organizational antecedents for Open Innovation are discussed as they appear empirically in the focal innovator's organization. With this background we will demonstrate the focal innovator's organizational trajectory towards open innovation and, finally, discuss the lessons learned.

2 Product related issues

The Open Innovation project is conducted by Pixelpark, one of the leading German full digital service agencies (hereinafter the "**focal innovator**") with the aim of developing a platform for "serious gaming" in 3-D environments. The objective is to provide a framework based on OpenSimulator[2] to create virtual environments, accessible through a variety of clients, on multiple protocols. Since OpenSimulator is released under the BSD License[3], it is both open source and commercially friendly, thus allowing it to be embedded in a variety of products and services. The latter is the medium- to long-term goal of the Open Innovation project: by embedding scripts in 3-D worlds, innovative open content products (e.g. serious games) will be developed on the basis of a combination of user generated and professionally designed content.

The activities in this project are focused on an "Open Content Innovation". It is characterized predominantly as a "top-down" approach, since the content development follows a strategic business approach to establish a portfolio of scripts and repositories that enable the development of 3-D worlds for different applications (games, virtually enhanced 3-D information representation etc.). The Open Innovation project intends to make use of the OpenSimulator Community, which is an already established developer community around the OpenSimulator platform.

[2] See http://opensimulator.org/wiki/Main_Page
[3] See http://en.wikipedia.org/wiki/BSD_licenses

3 Case Study Methodology

Since empirical insights in SME's Open Innovation processes are still lacking in the literature [4], a case study methodology was chosen to gain a holistic, in-depth view into prerequisites, challenges, mechanisms and pitfalls of SME Open Innovation. The case study methodology has an exploratory design [10], since the objective was to investigate substantial research questions in a more or less heuristical way in order to "find the explanatory variables" and to develop a theoretical framework.

Thus, the focal research questions behind this paper are as follows:

(1) what are the empirical characteristics of "organizational competences for Open Innovation" within a typical SME in the Digital Economy,?
(2) how are external innovation drivers anticipated and reflected? and
(3) in which way does this lead to organizational change ?

The theoretical background, including major related work in this field leading to the dimensions and the catalogue of "organizational competences for open innovation" (see Figure 1) has been developed on the basis of an extensive literature analysis (see for details [4]) We used this catalogue in the empirical phase of the project in the form of a questionnaire in a series of in-depth interviews within the focal innovator's organization. A triangulation approach was chosen which combined interviews with the analysis of business reports and other company related data. The interviews used a questionnaire to capture the most interesting statements of the interviewees, and were recorded.

Besides being of substantial research interest, the methodological objectives behind this case study were, first, to verify the accuracy of fit of different organizational competences; second, to refine the catalogue of competences in view of practical convertibility; and third, ,to work out an understandable "Open Innovation Audit" embracing insights into organizational prerequisites of Open Innovation for SME.[4].

4 Organizational Readiness

Background information

The starting point for the focal innovator was marked by an ongoing shift from predominantly demand oriented product development (which usually happens without any time-offset in direct communication with clients) towards industrial applied development in pre-competitive joint R&D projects, where usually more "space" for technological competences development exists,: in later stages, this may be exploited in different business areas, products and services. After initial experiments with pre-

[4] A similar procedure was used in Hafkesbrink, Stark, and Schmucker [2010]: Controlled Opening in pro-active SME Innovation – a Case Study Report on an Open Innovation Audit in the Digital Economy, in this book. There the Open Innovation Audit is applied in a more formal way with matured templates etc.

competitive joint research projects some years ago, a positive evaluation within the company's strategy group about "lessons learned" turned the balance towards a more systematic engagement in such "innovation projects". Though the implementation and exploitation of publicly funded R&D projects was more or less perceived as a kind of "cultural shock" in terms of "time-to-solution" (as opposed to direct market oriented development), the benefits of collaborative research and technology transfer outweighed the project costs by far. Initial networks to R&D institutions, universities, and research providers evolved; These opened up additional opportunities to participate in further R&D projects at the national and European levels resulted in synergetic effects as far as new and upcoming 'hot topics' and technology transfer were concerned. Thus the network effects of this engagement were entirely positive.

The focal innovator established a new position, Director of Research, who was responsible for, amongst other things, calls for tender in the European research landscape. The involvement of employees at different levels in the company contributed to a broad organizational learning about this new type of projects. This lead to a certain professionalization in handling research institutions, in interaction with competitors participating in such projects, in defining "what is still pre-competitive", etc. After an initial learning period, these projects were no longer considered as a distraction, but rather a natural ingredient of the innovation portfolio. The first steps towards open innovation had already been achieved.

Work on the KOPIWA project then started, and put increasing pressure on the company to recruite and develop well trained employees in open innovation processes, and to undertake ongoing technological change in the company's business environment. A decision was taken to turn an ongoing strategic business development project ("Web3D-applications") within a completely new technological area (at least through the company's eyes), into an "on-the-fly" open innovation project with the aim to learn about new mechanisms and access routes in the innovation process. This was to be achieved by releasing organizational borders, opening-up communication with other companies in this area, involving end-user and developer communities, and by making more intensified use of Open Source development.

Innovation Drivers

To highlight the initial condition of the focal innovator in the open innovation process, we first need to look at the historical development of the full service agency before the turn of the millennium. Prior to the burst of the dotcom bubble around the year 2000, the company experienced tremendous growth, which was characterized by all the characteristics of the "New Economy" at that time, such as 24/7 services in web design, pioneering exciting new ecommerce services, etc. At this time, the company employed more than 1.000 young, innovative and creative personnel, and it was over-confidentially ignoring conventional business models. When the dotcom bubble burst, and much of the hype died down, the company returned to earth with a hard fall, and restructured with less than 100 employees. Since then it has experienced years of solid and sustainable growth, and now has some 450 employees.

In the past decade however, the internet as the key driver and enabling technology for the Digital Economy have evolved with increasing speed, power and diversity. The result has been the provision of more and more opportunities to innovate, to set-up new businesses, to collaborate (virtually) across borders, etc. The enabling potential arising from technology and media convergence, challenges to develop tailored and individualized solutions for more diverse B2B and B2C clienteles, the formation and pulsation of entirely new actor configurations in the innovation system as the result of disappearing borders, etc., seems to be infinite and is driving the Digital Economy to change the rules of the game almost every year.

Cultural Openness of the Organization

During those years of recovery, and while facing the increasing impacts of external drivers, a culture of **open and flexible organizational borderlines** evolved that took over selected, but nonetheless important, fragments of the pre-dotcom-bubble culture, such as creativeness and open mindedness, flat hierarchies, informal structures, and participative leadership. These changes offered a great degree of choice about self-identity, authenticity, self-determination and, therefore, intrinsically motivated employees. On the other hand, and concerning P2P – "The path to profit" -- project management routines were developed that combined 'good old' economies with proven methodologies.

Since the mainstream innovation paths stem from demand/client driven requirements and functionalities for products and services, the primary way to innovation was based on elaborated proprietary knowledge, reputation based renowned performance, time-to-market, and the creative use of new technology. The steady growth of business over time was shadowed by the introduction of a variety of organizational routines, such as quality assurance, project management and project review methodologies, a matrix organization to improve client orientation etc. At the same time, most of the informal structures, grapevine conversations, etc. were kept to maintain flexibility and adaptability in the organization. As a result of professionalism and quality assurance the "culture" of project management became more narrow, with a more conscious structure and clear rules. This had its advantages, but obviously impeded cross-lateral thinking. On the other hand, the **"culture of communication"** was still undamped, free and open in every direction at least in the internal arena contributing to a great amount of institutional-, but informal-, based trust. Corporate external communication was often restricted by NDAs (non-disclosure agreements) imposed by the company's customers. Individual external communication was established using the new media (twitter, blogs etc.). The focal innovator presently needs to develop at the very minimum some new basic, external communication standards since the free inside-out flow of almost every thought may have unforeseen consequences as potential customers trace blogs and twitter news for evaluation purposes. As a result, a code of conduct has been developed to define what may be externally communicated, and in which ways.

To enhance both the self-identification [2] of employees and at the same time strengthen the corporate networks, the focal innovator organizes different cultural

events that greatly facilitate social and interorganizational coherence., to which employees' friends and relatives are always invited and welcomed.

As work in the Digital Economy is almost always knowledge-based, the existence of **knowledge-friendly organization structures** is an important asset and success factor for the focal innovator. In this respect, the corporate state-of-the-art can be described as well-established and organically evolved. It is a well disseminated and guiding idea within the organization to use knowledge and information to create a competitive advantage which is critical to the company's success. Within this context, employees are used to sharing their knowledge and feel comfortable in doing so because of a long-established system of identification based trust. There is no consciousness that knowledge is the source of individual power, which – in a case where it is to be shared – may contribute to a destabilization of an individual's position. Knowledge management is also supported by technology: there is an internal WIKI where knowledge is documented, shared, and updated regularly; there is an official corporate blog to communicate externally; and there are numerous enabling spaces where knowledge is transferred interpersonally. All of these reinforce the notion that "Smokers have the best information", since, while taking a smoking break they talk about their problems and solutions. An important non-tacit asset of knowledge management is the "knowledge of whom to ask to gain knowledge", which at the same time seems to be an important social cohesion driver.

A very well established feature of the organization's culture may be described as the mandatory "**participative innovation process**". This refers to a personal obligation for everyone involved to identify (incremental) improvements in customer-driven innovation projects. At a first glance, this may be called 'sales-orientation', but in fact it is a more basic entrepreneurial attitude which is fostered by widespread participative structures within the organization. To prevent a climate of fear of failures, this participation obligation is absorbed and balanced by a well developed system of **fault tolerance** within the organization: while an employee may be rewarded for advancing a good idea, (s) he is expected to have checked if there were good reasons why the idea was not accepted in the past.

To monitor both individual project progress and the recognition of corporate activities in the outside world, a system of sensors has been established **to respond effectively to uncertainty and ambiguity**. Different advisory boards are monitoring individual projects, strategy formulation and overall implementation measures. These are organizational routines, not much different from those in other sectors of the economy, using, for example, simple 'traffic signals' methods to classify work in progress. These are tailored to the different types of projects, whether they be routine '9-5 projects', 'large scale individualized projects', or whatever, and wherever possible rely on so called 'agile development' to avoid oversteering.

Dynamic Capabilities for organizational change

Organizational routines are often seen as an appropriate means to uncertainty, to reduce complexity and to improve effectiveness, but they may also lead to inertness when it comes to innovation. In that sense the focal innovator disposes of well

established **abilities to overcome routines** that produced lock-ins in the past and which are now considered as "no longer applicable" within certain contexts. In that area the focal innovator experiments regularly with new tools (e.g. idea generation techniques) trying to install continuous organizational learning. The sustained scrutinizing of dragged-in routines is an inherent part of the ongoing discussion within the organization. Every time it smacks of "We always did it like this", there is someone claiming "We need to change it". This can be described as a **philosophy of constant change**, which is favored by the management.

Self-organization abilities are seen as the trade-off to fill in dedicated degrees of freedom available in certain project types. In those 9-5 highly routinized projects mentioned above, there is usually no slack that may open up any space for self-organization. However, when addressing long-lasting agile project development, a high degree of freedom for self-organization is devoted to the project team knowing that this it is supposed to solve conflicts apart from institutionalized feedback-loops. In a wider, cross-project sense, self-organization is promoted by the management since this is seen as one of the means to sustain **continuous organizational learning** allowing for creativity spaces to support innovation. Finally, organizational learning has its complementary action in individual training measures which designate the organizational consciousness of knowledge as the key asset in gaining competitive advantages.

Effective organizational structures and processes

The focal innovator's employees are closely meshed in different corporate and personal networks, both within the internal organization and externally. This is one of the proven ways how new knowledge is absorbed by the organization. Employees are members of communities (open source communities, business networks, working groups of professional associations etc.), as well as in personal networks (linkedIn, Xing, facebook) where the borderlines between work and leisure time are getting more and more fuzzy. This network participation can be characterized as **heterarchical** with a multitude of coexisting parallel or overlapping relations of employees.

Knowledge redundancy is preserved more or less systematically within the organization, using templates to develop competence profiles, though the important information on "Who is who and who does what" is transferred via informal communication, grapevines etc. A more systematic approach is desired, this has been substituted so far by simple emails asking "Is there someone in the organization who is able to …?" Another part of the retrievable knowledge database is updated regularly with studies, white papers etc. However, in view of the dynamics of technology development, most of the employees do not use this database since they expect the data to be outdated and easily retrievable via Google. The collective opinion is that the rapid progress in knowledge representation and accessibility makes an extensive internal knowledge management redundant.

If an issue becomes strategically important to the company, **ad-hoc organization structures** are established apart from existing institutionalized routines. Members from all over the organization, complemented by external experts when needed, then

are asked to build up **cross-functional teams** to work on certain substantial issues relevant to new businesses etc. and to facilitate knowledge transfer. This ability to establish ad-hoc organizational structures is proof of an enormous flexibility within the organization, which is also supported by a peripheral pool of freelancers. The flexibility of this is a quantitative but also qualitative resource comprising highly specific skills that are complementary to those of the focal innovator. The pool of suppliers and other know-how bearers is relatively fixed, with some newcomers joining it, while others leave it, with the net result that the pool is growing constantly.

Technological Enhancement
Though being a technology based service provider, the application of technologies to enhance innovation processes is not executed on a regular, continuous and sustainable basis. Special training workshops have been implemented to discuss new tools for ideation (IDEA), agile project management (SCRUM[5]) and virtual collaboration.

5 Collaborative Capabilities

Internal Collaborations
Infrastructures and routines for cooperation are well established. Quality standards, versioning systems, project and legal templates etc. are available throughout the organization, and everybody makes use of them when needed. Process-based trust as a result of positive experience in working together is the strongest argument to sustain collaboration in new projects. In case of doubt, those partners are preferred who proved to be reliable in the past against those who offer a reduced price. A relatively new issue is a strong belief in the feasibility of virtual collaborative project development with outside suppliers that are not known personally to the company. For this purpose, some well established organizational routines have to be unfrozen in future, process-based trust as one of the pre-requisites to work collaboratively has to be established by other virtual communication means.

Networking capabilities
On a corporate level, individual **network links** are used by permission of those individuals for business purposes. Again, here the borderline between work and leisure is becoming more and more fuzzy. Also contacts to universities, R&D providers etc. are predominantly based on personal contacts, but are enhanced towards business relations when needed. To date there is a constant search for new themes on a random rather than on a systematic basis.

Outside-in and Inside-out collaboration
The normal way for the focal innovator to **bridge the distance between external and internal knowledge** is simply to purchase training seminars. This is done on a regular basis, except where the focus is on leading edge technology where no regular training seminars are available. Knowledge transfer is often supported by **managerial proximity to innovation partners**. Social relations, and thus social competences, are

[5] See http://en.wikipedia.org/wiki/Scrum_%28development%29

expected to play a major role in, especially, large-scale and fast-moving projects where a team of employees has to work closely together with external partners.

10% of the employees of the focal innovator are **gate-keepers** serving as technology and innovation 'scouts' for the company. This role cannot be prescribed to a person, but has to evolve on the basis of reputation-based trust. These gate-keepers are continuously disseminating information throughout the company via standard email tools on 'hot topics', hoping that the knowledge may be used elsewhere in ongoing or for future projects.

Co-ideation and **co-design** are already routinized in the innovation process, as the focal innovator has been actively working together with complementary knowledge suppliers for years. In the area of **co-development,** the company's attitude is more conservative, since the latter involves more risks and may lead to massive financial follow-up consequences. Thus development either stays inside the company or is outsourced completely. Also **active user involvement** is more or less a standard procedure, via field-tests etc.

6 Absorptive capacities

To sum up organizational competences with respect to "absorptive capacities" we may conclude as follows:

(1) **"Identification of technological opportunities"** [7]: the focal innovator's sensor system towards external technological developments has been substantially enriched during the past decade, via (i) heterarchical networks with organization members being meshed closely in relevant networks and communities; (ii) links to selected universities and research providers; (iii) a flexible pool of complementary freelancers; (iv) increasing involvement in pre-competitive joint research projects; (v) participation and active collaboration in inter-organizational technology working groups (e.g. trend examination groups); (vi) the personal, intrinsic exploratory attitudes of the vast majority of organization members. All of these point to a deep and sustainable organizational readiness to identify and take up effectively new technological knowledge.

(2) **"Elicitation and assimilation"**: as to the focal innovator's ability to recognize compatibilities of external and internal knowledge and technologies [1, 3, 7, 8, 9], there are clear indications of a keen organizational intuition and sense for "What will be the big – and hot – issues in the future?" This mindset is supported by the innovator's prolific and transmissible formal and informal communication routines. Gate-keepers with specific intrinsic motivation who are excessively technology driven circulate "hot-spot" technologies throughout the organization, impelled by the desire of realizing their "personal mission" to satisfy their curiousness about the question "Does it fit with the company's objectives or not?" A positive, and related, indicator is also the provision of "enabling spaces"

where employees with specific competences experiment with new ideas to improve the product/service portfolio.

(3) **"Understanding / transforming"**: this is the ability to acquire, adjust and integrate external knowledge and technologies into product/services development [5, 7, 9]. One of the most promising supportive measures to strengthen this transformation ability is multidisciplinary training. Almost every employee (designer, developer, creative planner, projectmanager) has to accumulate professional expertise (e.g. Java) and in addition another cross-lateral expertise (e.g. barrier-freeness). This multidisciplinarity is a decisive enabling factor and driver for technology integration and a deep understanding of its challenges.

(4) **"Sharing / disseminating / exploitation"**: this refers to the ability to valorize integrated knowledge towards the market [1]. The successful implementation of entirely new technologies (e.g. IPTV, multi-channeling solutions) in recent years constitutes conclusive evidence on efficient technology take-up. In numerous reference projects these new technologies have been combined successfully with existing in-house technologies and know-how.

7 Lessons learned

The empirical findings presented here may be considered as "Old wine in new bottles". However, this is not the case, as the focal innovator has obviously implemented Open Innovation projects in the past without knowing it, and without defining them as such. Thus, the prerequisites and organizational antecedents to step into Open Innovation processes are very promising.

Outside-in flows of knowledge are a decisive precondition of survival, since the overall innovation dynamic in the Digital Economy has a high velocity and volatility, with new enabling technologies developing almost quarterly facilitating new functions and services. It is indispensable to scan these developments and continuously check if the product/service portfolio may be improved with these external technologies.

Openness, however, in terms of inside-out knowledge flows, can best be i characterized as "protected openness". As it is far easier to open up in a leading-edge technology sphere than in a core business area, you may say that it makes more sense, and appears less risky, to open up in more pre-competitive stages of technology development where industrial basic research is still necessary and where the market exploitation opportunities are still fuzzy. To take the passing lane and gain competitive advantage may come later. Thus opening up happens occasionally, not continually.

Finally, the issue must be addressed as to how senior management perceives the concept of "Open Innovation". Sometimes upcoming trends that change the patterns of innovation systems are incremental by nature, they don't even touch the recognition threshold of senior management. Such changes are (unconsciously)

accommodated, because what happens is a collective bottom-up shift of individual behavioral attitudes, and thus an organic change in organizational culture. Sometimes buzzwords occur that create the impression of being revolutionary in the sense that almost every approved and reliable business rule from the past is abolished. If we think of some of the (in)famous fashionable concepts that were applied to the old and new economies in the last 15 years, we may sit back and smile about some 'sophisticated' and 'vogue' terms that, in fact, did not change anything substantially.

However 'Open Innovation' – though profound in its impact when implemented consistently - seems to be such a fashionable term that it involves a major challenge to existing and successful business practices. So it may be dangerous to declare something as "Open Innovation" in a company that already embraces well-proven and established business practices, such as publishing "White Papers" to advertise competences in a certain technology, or visiting barcamps. Conservative thinking may ban any consideration of "Open Innovation" from an organization.

One very last consideration is the suspicion that 'Open Innovation" will be abused to simply convey conventional marketing issues to the outside world. For some good reasons, some of the actual so-called "Open Innovation" campaigns are already perceived as suspicious because they are really ill-designed marketing campaigns that leave an unpleasant aftertaste. For Open Innovation practitioners, this is unacceptable, as all the parties involved may well miss the opportunity to shift from "Not invented here" to "Proudly found elsewhere".

8 References

[1] Boscherini, L., Cavaliere, A., Chiaroni A., Chiesa, V., Frattini, F. 2009. The process of organizational change in Open Innovation models: evidence from a sample of high - tech firms, in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[2] Cheng, C. 2009. Does Open Innovation Improve Service Innovation Performance? in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[3] Cohen, W.M., Levinthal, D.A. 1990. Absorptive capacity: a new perspective on learning and innovation - Technology, Organizations, and Innovation, Administrative Science Quarterly, March, 1990.

[4] Hafkesbrink, J., Schroll, M. 2010. Organizational Competences for Open Innovation in Small and Medium Sized Enterprises of the Digital Economy, in this book.

[5] Lazzarotti, V., Manzin, R. 2009. Different modes of open innovation: a theoretical framework and a empirical study in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[6] Lewin, K. 1948. Resolving social conflicts: selected papers on group dynamics ; A publication of the Research Center for Group Dynamics, University of Michigan.

[7] Mortara, L., Shawcross, J., Mills, J., Napp, J.J., Minshall, T. 2009: Skills for Open Innovation in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[8] Schroll, A. 2009. Empirical Evaluation of the Open Innovation Approach: Linking Firm, Market and Leader Characteristics to Open Innovation Adoption in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[9] Shimada, T. 2009. A corporate growth strategy selection in open innovation: What is necessary for expanding corporate collaboration domain? in: Proceedings of The XX ISPIM Conference Huizingh K.R.E., Conn S., Torkkeli M. & Bitran I. (Eds.) Proceedings of The R&D Management Conference 2009 Butler, J. (Ed.) Vienna, Austria, 21-24 June 2009.

[10] Yin, R. (1994). Case study research: Design and methods (2nd ed.). Thousand Oaks, CA: Sage Publishing.