Controlled Opening in pro-active SME Innovation - A Case Study on an 'Open Innovation Audit' in the Digital Economy

[1]Joachim Hafkesbrink, [1]Anna Stark, [2]Markus Schmucker

[1] innowise GmbH, Bürgerstrasse 15, 47057 Duisburg
{jh, as}@innowise.eu

[2] mr.mcs GmbH, Lise-Meitner-Strasse 4, 24941 Flensburg
markus.schmucker@mrmcs.de

Abstract. In this paper, we will present results from an Open Innovation Audit case study in the mobile business solution area conducted within the framework of KOPIWA – a pre-competitive joint research project on "Competences Monitoring for Open Innovation in the Digital Economy" in Germany. The Open Innovation 'Quick Check' Audit Tool was developed to measure organizational antecedents and competences towards more innovation openness in SMEs of the Digital Economy.
The results indicate that even a quick-check audit may give reasonable insights into organizational requirements of Open Innovation. By substantiating organizational competences via more tangible indicators the audit provides discussion points for the innovation actors to find set-screws in the sense of parameters to improve the innovation process.

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

1   INTRODUCTION

mr.mcs (the "focal innovator"), a small Digital Economy company specialising in mobile business solutions, is active in the implementation of applications and services for mobile devices, most of which are web-enabled customer portals and customer management solutions.

The background of the Open Innovation case study presented in this paper is the observation that mobile internet sites are still rather static, containing mostly text and hardly multimedia. Editors regularly have to manually adjust the size, position and format of the content in several systems before they publish an article online and on their mobile site. Given this background, the aim of mr.mcs GmbH is to develop

extensions for mobile devices for enterprise Content-Management-Systems (CMS) such as Joomla, Typo3, Wordpress, Drupal, OpenCMS and other current online publishing CMS that automatically adjust the size of the pictures or multimedia content for mobile channeling. Since knowledge about this endeavour is expected to be distributed amongst several communities of developers and other actors in the Digital Economy, **mr.mcs** decided to participate in an Open Innovation project

The technical details of the project "MeCMS– Mobile extensions for Content-Management-Systems" are described in [1]. In this paper we will focus on an Open Innovation Audit that was conducted to analyze the organizational predispositions for the Open Innovation project.

2   Open Innovation in KOPIWA

mr.mcs GmbH was established in 2004 as a competence and transfer centre for mobile technologies in Schleswig Holstein with 12 public and private investors. Since 2007 the public investors have withdrawn leaving **mr.mcs** now completely privately owned. The transition from a "public-private-partnership" (PPP) company to a market-driven service provider based on a sustainable business model, was a necessary step following the relocation of the large and nearby Motorola production sites. **mr.msc** now plays a major role in the mr.net family of 6 SMEs in a network covering comprehensive digital services, from infrastructure triple play solutions, via billing customer services, carrier services, accounting and collection services towards tailor-made mobile business solutions.

Parallel to the changeover in 2007, **mr.mcs** via its membership in the Digital Economy professional association BVDW became actively involved in the KOPIWA[1] project, in which Open Innovation was the key research question to be framed in different case studies.

KOPIWA was **mr.mcs'** first innovative research project**,** and provided an opportunity for it to experiment in market-oriented development. With KOPIWA, **mr.mcs** accomplished the "first controlled opening" taking Open Innovation beyond outside-in Open Source involvement. At that time, co-design and co-development with clients within projects was an already practiced method, but there was no co-development within an open source community. Since **mr.mcs** had no previous focus on research, participating in KOPIWA thus enabled it to give leverage to pro-active innovation activities aimed at an active and intensive use of open source development.

The empirical findings presented in this paper are to be regarded as a snapshot in a longitudinal case study approach representing the starting condition of **mr.mcs**' endeavour to step into Open Innovation. Thus the results will hint at measures to be undertaken with the aim of improving effective Open Innovation processes. A before-after comparison finally will shed light on KOPIWA'S development results.

3   The 'Open Innovation Audit' Tool

The Conceptual Approach

The 'Open Innovation Audit' tool comprises different "organizational competences criteria" [2] that play a decisive role in the ability to open up organizational boundaries and make use of necessary inside-out and outside-in knowledge flows in Open Innovation projects. The different criteria are depicted in the following chart, exemplified, with the help of a spidernet diagram [2], by additional evaluation criteria for the indicator "cultural openness":
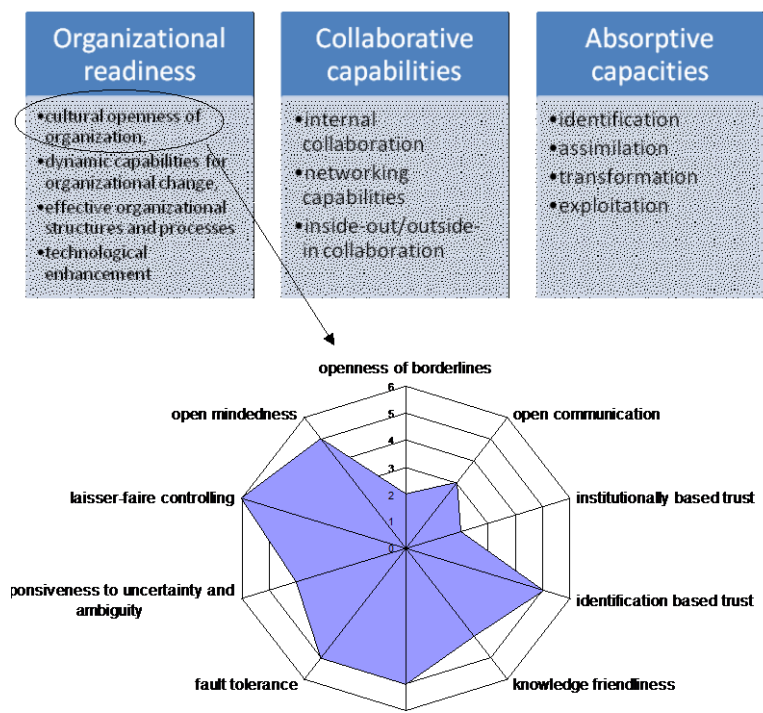

Fig 1: The three pillars of the Open Innovation Audit

The Open Innovation Audit is based on the assumption that the innovation actor is in need of a particular internal '**Organizational Readiness**'; of certain '**Collaborative Capabilities**', especially with the outside world; and of essential

'**Absorptive Capacities**', needed to combine different competences or technological capabilities whether they are inside or outside the firm and to apply them successfully to commercial ends [3, 4]

The assessment along the different indicators was conducted in an interview with the **mr.mcs** project management team. Designed as a 'quick-check' tool, the Open Innovation Audit lasted about 3 hours.

Methodological Considerations

We choose an in-depth case study approach to test the Open Innovation Audit tool, and to refine the competences criteria catalogue as well as the inquiry templates.[2] The methodological objective was to work out organizational competences criteria which are communicable and field-(beta)tested. The criteria catalogue is aimed at encouraging innovation actors to rethink their organizational status and readiness towards Open Innovation, and to initiate internal discussions about organizational change and need identification for individual competences development.

Thus, the empirical findings from the application of the Open Innovation Audit tool are expected to be two-fold: firstly, an evaluation of 'instrumental effectiveness'; and secondly gaining substantial insights into a single SME's management approach towards Open Innovation that may serve as a heuristic input into more research in this field.

A further methodological consideration may be set out so as to understand the underlying theoretical framework and related hypotheses on the leverage effects of organizational competence criteria towards their superior variables: The criteria catalogue outlined below is based on an extensive literature analysis of recent theoretical and empirical work [2]. Thus, in order to avoid redundancy we will not reproduce the entire justification of each of the criteria with respect to their importance. It may be noted that with respect to measurement, the Open Innovation Audit is organized as a quick-check scanning, the obvious and most important prerequisites of Open Innovation Readiness,[2]. We are aware of the fact that, in order to generalize the findings, a larger sample of Open Innovation Audits must be undertaken.

Organizational Readiness Criteria

In terms of 'organizational readiness' for Open Innovation at least four key abilities have to be shaped, each of which may be characterized by the indicators listed below:
  (a)   **Cultural openess**

---

[2] A similar procedure has been applied in Hafkesbrink, Krause and Westermaier, 2010. 'Old Wine in New Bottles? A Case Study on Organizational Antecedents for Open Innovation Management,' in this book.

- openness of borders, communication and mindsets
- level of identification and institutionally based trust
- knowledge friendliness of organization
- existance of participative structures
- level of fault tolerance

(b) **Dynamic change capabilities**
- ability to overcome routines
- philosophy of constant change and autopoietic adjustability
- self-organization ability
- level of continuous learning
- responsiveness to uncertainty and ambiguity

(c) **Effective organizational structures and processes**
- heterarchical and ad-hoc structures
- cross-functional interfaces and coordination
- existance of enabling spaces
- dedicated reward systems
- decentralized decision making

(d) **Supportive technological enhancement**
- techniques to enable adductive thinking
- interactive collaboration tools
- ability to use (collaboration) software for web interaction and knowledge elicitation

Collaborative Capabilities Criteria

Besides specific attributes of the innovation actors **organization,** one of the most important organizational competences for Open Innovation is a particular 'Collaborative Capability'. This is based on 3 sets of criteria:

(e) **Internal collaboration**
- complementary internal networks to acquire external know how
- coordination of knowledge exchange across boundaries
- ability to synergetically integrate creative capacities
- availability of infrastructures and routines for cooperation

(f) **Networking capabilities**
- ability to leverage individual and company network
- ability to balance strong and weak ties
- ability to manage serial, pooled or mutual inter-dependencies
- level of networking reputation, goodwill & trust
- ability to induce synergetic interactions within and across value networks with universities, suppliers and users
- ability of balancing transaction value and costs
- ability to leverage intermediary services for outside-in and inside-out processes

(g) **Outside-in/Inside-out collaboration**
- ability to bridge the cognitive distance between external and internal knowledge

- level of managerial proximity to innovation partners
- gate-keeper / boundary spanning competences
- co-ideation, co-design and co-development capabilities
- active user involvement capability
- IPR securement abilities
- ability to manage contract research, in-licencing, joint development, joint manufacturing, and joint ventures

Absorptive Capacities Criteria

Finally – assuming a distinctive organizational readiness and appropriate collaborative capability - the innovation actor may effectively develop a certain 'Absorptive Capacity" to make use of especially external knowledge in the innovation process. This includes:

(h) **Identification of technological opportunities**
   *the ability to identify sources and gaining access to external and internal knowledge/ technologies

(i) **Elicitation and assimilation**
   * the ability to recognize compatibility of external and internal knowledge/ technologies

(j) **Understanding and transforming**
   * the ability to acquire, adjust and integrate external knowledge/technology into the product / services development

(k) **Sharing, dissemination and exploitation,**
   * the ability to valorize integrated knowledge towards the market

The properties of the several indicators have been evaluated based through an in-depth interview with mr.mcs representatives, using a qualitative-verbal ordinal ranking (e.g. high-medium-low), transformed into a numerical scale (1 = worst to 6 = best).

4   Results: Controlled Opening at mr.mcs

Organizational readiness

(a) **Cultural Openess**

There are still more or less **closed borderlines**: The CEO of **mr.mcs** is in control of the information flows and contacts to the outside world. Internal knowledge has not yet been given to the outside community. The formal internal information and communication flows are based on an intranet, a group newsletter and traditional brochures. Informal open communication is supported via an 'open plan' office. External communication via social media is not yet in use (no blogs, no twitter etc.). Non-disclosure agreements for the external communication due to client project requirements are limiting factors for opening up the organization. The first

experiences of feeding open source communities with Joomla nuggets have been promising. However, open mindedness and open communication are part of the company culture.

Institutionally and identification based trust: There is a strong culture of trust within **mr.mcs,** based on a 5-years time-span of team cohesion in the core group of employees without any major fluctuation. Within the larger mr.net family, annual sailing events, company-facilitated sports activities etc. are reinforce trust-building processes within the group. However, it is still hard to judge if the identification with the group exists, as the process is still under way, with people getting to know each other.

Knowledge friendliness: Employees are intrinsically motivated to learn. Instruments are web-based platforms, such as 'webmine' and 'wikis'. Exchange by email is popular. Information about interesting journal articles is distributed on a regular basis. Visits to fairs are complement the accumulation of knowledge. However, educational training is only offered when needed. Employees give presentations to the Chamber of Commerce, though with decreasing frequency due to integration into the mr.net family.

Participative structures: The operative level is usually involved decisions via discussions with the CEO. Often support by the legal department is necessary. At the group level, for example concerning important projects and investments, the CEO and an advisory body of investors are involved.

Fault tolerance: Usually, if a project has been approved and authorized, reactions to mistakes made by a project team are analyzed. Un-authorized individual efforts that lead to mistakes, are not, however, tolerated.

(b) Organizational dynamic change capabilities

Overcoming routines: The controlling instruments in use usually do not allow for additional innovative projects. The everyday customer projects have highest priority. Experiments are outsourced to students, e.g. by coaching Bachelor or Master theses. However, the majority of customized projects do not allow for the development of strict routines. A flexible reaction and adaption is always important, for example direct communication between customers and developers due to the high complexity of especially large scale projects.

Philosophy of constant change: After the initial PPP phase with public shareholders and a narrow and static service portfolio, the company had to diversify by concentrating on its key skills and to cooperate for technical offers with complementary partners (e.g. Java support of mobile devices). Nowadays **mr.mcs** works closely with partner companies to deliver integrated service experiences to the

customer. The company has the confidence to constantly seek out for new projects as it believes in the competence and the flexibility of its team.

Self-organization ability: Leadership is organized on the basis of management by objectives, providing appropriate degrees of freedom and scope for development. Within those scopes, employees are free to organize their work when agreed-on deadlines are met.

Continuous learning: **mr.mcs** is still a young, learning company. Continuous learning is not institutionally supported, but very much encouraged in its employees' leisure time, and is financially supported.

Responsiveness to uncertainty: The company is trying to eliminate uncertainties regarding risks and costs with analysis instruments, especially in every-day customer-specific projects. A buffer is usually included in customer offers..

(c) Effective organizational structures and processes

Organization structure: Flat hierarchies are prevalent, as **mr.mcs** is a small company. The CEO meads the company, and project managers have changing, project-based responsibilities. Project leaders also change (in a kind of job rotation). Heterarchical structures do not exist. In contrast, ad-hoc organization structures are established depending on the project where it is common that team members have to have complementary skills.

Cross-functional interfaces: Through regular meetings, the CEO and department managers and the CEO manage cross-functional coordination;
.
Organizational **enabling spaces** are not instutionalized. The common enabling space is viewed technically, as applications are usually based on e.g. Java, which is the main enabling technology. The use of other new technologies has to be discussed with the involved parties (the CEO, legal department, and clients).

Reward systems. Engagement is remunerated (e.g. bonus payment). There are, however, no formal reward structures.

Decentralised decision-making: Within **mr.mcs** there are participative structures. Especially regarding technical questions, the CEO supports common, majority-based, democratic decision-making, with the involvement of all relevant parties. Constitutive decisions however are taken at the CEO level.

(d) **Supportive Technological enhancement:** Knowledge management is **supported by technology**: there is an internal WIKI where knowledge is documented, shared, and updated regularly.

Mr.mcs uses 'Mindmanager' for brainstorming and 'Metaplan' for clustering. Whiteboards are used in team meetings.

Interactive collaboration tools: Webmine platform (Wiki, forum discussions, task list) and Intranet, are all used within the established company culture, knowledge is share via this platform. It also has an important back-up function for client-based knowledge.

Collaborative capabilities

(e) **Internal/external collaboration**

Complementary internal networks to acquire external know how: Knowledge about partner companies or people from other companies who can be consulted is widely spread in the organization . Web fora are actively used. A constant information exchange within project groups is assured. **Mr.mcs** is also active in networks like BVDW, Xing, DIWSH.

Integration of creative capacities: Based on positive experiences, a tradition of involving the creative minds of the company in the planning phase of non-routine projects exists.

Infrastructures and routines for collaboration: IPR securement abilities are well established (e.g. product licensing). The company lawyer overviews the licensing processes. Cases of "gift-exchange" occurred and have been managed appropriately.

(f) Networking Capabilities

Ability to leverage individual and company networks: The CEO is an active networker. Therefore, networking is the task of the CEO, and it is not yet planned that employees should be actively involved in it.

Ability to manage serial, pooled and mutual interdependencies: This ability has to be acquired in the course of the Open Innovation KOPIWA project, since, as we have seen , networking has so far been located at the CEO level.

Goodwill and trust as part of the company culture: The company has no online reputation in the net communities due to its small size and young age.

Synergetic interactions within and across value networks: This happens occasionally, but is neither intended nor planned. Rather it takes place as a response to offers and business opportunities.

Balancing transaction value and costs: the company has good experiences in this area. Valuable networks have lead to increasing value at reasonable costs, and their worth outweighs the costs of networking.

Ability to leverage intermediary services for outside-in and inside-out processes: intermediary services for the outside-in and inside-out processes are not in use.

(g) Outside-in/inside-out collaboration

Bridging the knowledge gap: Scanning the emerging technologies is not a regular and well-established process, but rather done so as to "keep an eye on the market". However, gaps between external competences and internal competences are not systematically charted.

Managerial proximity to innovation partners: Most of the communication is done by 'phone, but getting to know each other before a project starts is important. IThe CEO initiated the KOPIWA project, and is briefed about its progress. He leaves its coordination and personal meetings to the project manager.

Gate-keeper functions: At the technical level, this is mostly undertaken by the employees, and at the organizational and networking levels, by the CEO.

Co-ideation: This is done a in relaxed way, such as while drinking beer with colleagues and network partners. To date, there is no co-ideation using open source communities, no inside-out flow of ideas and concepts, and no targeted external knowledge acquisition via inside-out meetings, since dissemination risks cannot be evaluated, incentive mechanisms are unknown and contributions are hardly assessable.

Co-design: In conventional B2B settings, there are regular meetings with clients during the project planning phase. These are, however, not regarded as an innovative procedure, but rather as a necessity in order to fulfill customer requirements.

Co-development: This takes place with partners and on interfaces with clients. So far there has not been any co-development within open source communities.

Active user involvement: When necessary, this is done via conventional field tests.

Absorptive capacities

   (h + i) Identification and assimilation of technological opportunities: This is not done on a regular basis. mr.mcs is constantly trying to develop and reach a common position on upcoming technological challenges. Though the company has found its niche, it still regularly analyses new technical developments regarding their potential use to the company. Analysis typically takes place by one expert researcher who then the findings to the CEO and selected team members.

   (j + k) Transforming external knowledge into services (exploitation): If a technology fits a customer's project, a proposal is made that has to be approved by the CEO and the client. The procedure is, however, mostly reactive, and therefore no instruments for the examination of marketability and valorization are available.

5   Lessons learned

The cumulative assessment of the different indicators leads to the following diagram:
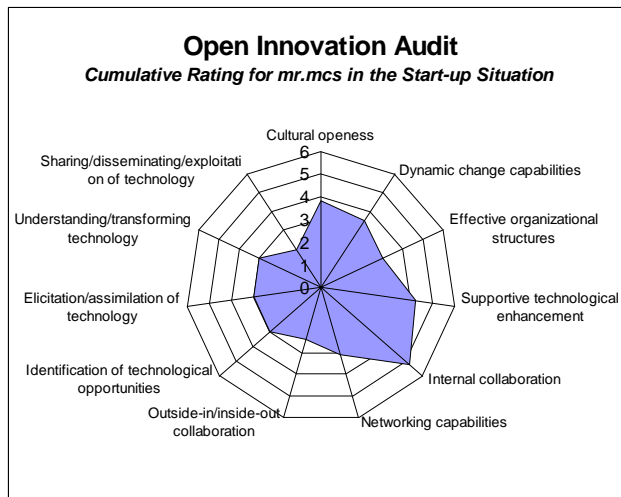

Fig 2: Open Innovation Audit – Cumulative Rating for mr.mcs in the Start-up Situation

The Open Innovation Audit discloses some interesting insights for further research:

Instrumental Effectiveness

(1)   An SME aligned Open Innovation Audit designed as a quick check already helps to explore strenghts and weaknesses in start-up conditions from the perspective of Open Innovation. The quick check turns out to be feasible and appropriate (easy to understand, not time-consuming etc.). Some sophisticated criteria are more in need of explanation than others. In further research, the acceptance of the criteria may be investigated by using a larger sample of companies. One possible way to improve the communicability of the Open Innovation Audit is to introduce qualitative verbal scales to better understand the evaluation stages.

Substantial insights into SME management of Open Innovation

(2)   Superordinate structures as a result re-embedding an SME as an affiliate into a company network may define constraints for Open Innovation, if different cultures exist in the network. To go beyond the existing institutional framework takes time, and calls for certain degrees of freedom.

(3)   'Controlled opening' may be an appropriate strategy for an SME to find its way towards Open Innovation. This means opening up organizational boundaries, which does not happen 'at the push of a button', but in a step-by-step process of loosening borderlines and softening organizational routines. This may involve, for example, participation in pre-competitive joint R&D, increasing communication

permeability, closer attachments to external technology and knowledge sources, intensifying networking at an operational level, etc.

(4)   Within the 'Controlled-Opening-Strategy', inside-out and outside-in management has to develop clear layers of what may be free and restricted knowledge, in- and outflows, in- and out-licensing, in- and outsourcing etc. This is a question of understanding the intellectual property implications of Open Innovation; It is also a matter of balancing and authorizing strategic insights into the company ("understand us") to allow third parties to evaluate the fit to their strategy, and to understand the compatibility of partners' strategies.

(5)   Internal B2B collaboration within the superordinate network is already a standard in innovation. B2C collaboration was not prominently on the agenda up to now, a fact that is supposed to change in the future when immersing deeper into Open Innovation communities. Thus, it is still a big challenge to fully understand incentive systems and the mechanisms of Open Innovation processes and to fully manage them. This is because the innovation process becomes utterly complex and entirely unpredictable given the increasing number of innovation actors with their frequently different interests.

(6)   So again, it is a wise entrepreneural decision to establish an 'enabling space' within the company (via the KOPIWA project), configured with experimental links to existing organization structures and routines, and evaluating project progress *pro-rata-temporis in* terms of the cost-benefit ratio.

6   REFERENCES

[1] Brocco, M., Groh, G., Schmucker, M., Stark, A., and Zeini, S. 2009: 'MeMCS - a Case Study on Open (Source) Innovation, in this book.

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

[3] Lazzarotti, V., and Manzin, R. 2009. 'Different modes of open innovation: a theoretical framework and an 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'.

[4] Vanhaverbeke, W., Cloodt, M., Van de Vrande, V. 2008.' Connecting absortive capacity and 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.