

Research

Open Innovation's Obstacles in Creating Idea's Explosion: A Conceptual Framework

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Abstract

Open innovation has been developing in the digital revolution era. Many research and references refer to how open innovation can influence the work process, productivity and other factors. The study focuses on generating the model of open innovation obstacles to create idea's explosion in the innovation process. In detail, the research intends to investigate open innovation barriers from two factors comprise of Inside-in Factors and Inside-out factors. The study applied the desk research method to provide conceptual and meta-analysis focusing on integration and proposing new relationships open innovation obstacles comprise inside-in factor and inside-out factor. The conceptual and meta-analysis result provides two critical factors of open innovation obstacles: inside-in and inside-out factors. Inside-in factor refers to obstacles that come up by internal factors in the organization or firm itself. On the other hand, the inside-out factor refers to obstacles that come from external organizations or firms. The managerial implication of the research can be applied in organizations or firms which use open innovation processes in their workflow or model business. Previous research has already identified three levels of analysis of obstacles to open innovation. The first level is the internal level of firms, the second level is the innovation system of policies, and the third level is innovations funding and cultural level. Hence, the novelty of the research intent to investigate open innovation obstacles from two factors comprise of inside-in factors and inside-out factors.

Keywords: *Open innovation obstacles, inside-in factor, inside-out factor.*



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INTRODUCTION

There are obstacles of innovation that have been discussed and summarized, such as un-professionals business people, the state of mind of local people toward innovation, politics and legislative issues, bureaucracy and organization issues, ecological issues and natural protection, the lack of willingness to cooperate, bleak business arrangement, and excessively complex venture application strategies (Krithika et al., 2016; Sabine and Vanhaverbeke, 2015). Particularly innovation in the tourism context, some issues come up with insufficient value-creation and a lack of knowledge of managerial or business administration in the tourism SMEs in the Alpine Tyrol

region were deemed the two significant obstacles to innovation (Krithika et al., 2016; Sabine and Vanhaverbeke, 2015, Saebi and Foss, 2015).

The lack of innovations development itself drives the idea of open innovation. Henceforth, that idea recommends that firms enhance their innovative performance by acquiring internal or external knowledge (Chesbrough, 2013). The emergence of open innovation is divided into three processes. The first process of open innovations is called open inbound innovation (Chesbrough, 2006; 2017), in which suppliers and customers as external knowledge sources are involved as an integrative source of ideas. The second process is the inside-out process or Outbound Open Innovation (Chesbrough et al., 2016) implies profit is earned by conveying ideas to the outside environment as of outside party can elaborate ideas, concepts, technology and others. The third process is called coupled process, which combines out-bond open innovations and inbound open innovations. Those three open innovation processes drive an advantage financially and the opportunity to adopt new technologies that improve current business models towards high business competitiveness (Chesbrough, 2017; Saebi and Foss, 2015).

In practice, open innovation facing some barriers to be implemented. Some research has already identified three levels of analysis of barriers in open innovation, first level is the internal level of firms, the second level is the innovation system of policies, and the third level is innovations funding and cultural level (Striukova and Rayna, 2015; Mortara et al., 2015; Gassmann and Chesbrough, 2010). Hence, this book chapter intends to investigate open innovation barriers from two factors: Inside-in Factors and Inside-out factors.

METHODOLOGY

The research was conducted by desk research method using literature review from books, journals and other resources. Theoretical papers do not need to mention the data because their emphasis is on joining and proposing new connections among developments.

DISCUSSION/ ANALYSIS

Inside-In Factors

Some research discussed internal circumstances of open innovation, such as R&D intensity and availability of surplus technologies (Krithika et al., 2016; Katz and Allen, 1992). In this section, the author will specify all factors of open innovation barrier which come up by internal factors in the organization or firms itself and it will explain as follow:

a. Contextual Obstacles

The practice of open innovation within the firms demonstrates that diverse divisions have a distinct need for open innovation strategy, concept, and way to deal with it to succeed. Golightly et al. (2012) had investigated the significant divisions infirm with markers as an open innovation company. They found out that different divisions have different needs of innovation, for instance, traditional cultures or requirements for secrecy or strong IP regimes, thus based on division characteristics, companies may be more or less likely to adopt an open innovation practice. Golightly et al. (2012) discovered five trends that influence contextual obstacles:

1. The sector innovation that evolves is depend on the relative impact of the technology. For example, open innovation in the service industry, particularly in customer relationship

management, is commonly increasing with the development of artificially intelligent technology. It happens in other paths in the fixed-line phone industry when open innovation will stop because of the stagnation of fixed-line phone technology improvement.

2. The complexity and length of the innovation cycle in the sectors and it would be problematic if there were some regulatory requirements.
3. The approach of intellectual property.
4. The preferred source of innovation (from the existing supply chain or new sources). Chesbrough (2003) divided three processes of open innovation; outbound open innovation, open inbound innovation and coupled approach. Those three kinds of approaches have different sources of innovation that can implement in the firms.
5. The overall disruption (extent of change) and turbulence (pace of change) in the environment.

b. Culture Obstacles

The innovation process has significant challenges, especially in organizational culture issues (Golightly et al., 2012; Mortara et al., 2009). The innovation process starts with something new or even break the existing pattern in the organization. It will be a kind of contradiction and require a change in the deepest level of culture, i.e. the basic underlying assumptions, which proved to be very challenging (Mortara et al., 2009). Basic underlying assumption refers to a group's shared values are the goals and ideals that shape the group's sense of what it ought to be and do, forming a social glue that binds the organization. When innovation is starting, will bring new pattern and ideas into an organization to solve the problem and might break up the old assumption within organizations.

The innovation process has significant difficulties, particularly in hierarchical culture issues (Golightly et al., 2012; Mortara et al., 2009). The innovation process begins with something new or even break the current example in an organization. It will be somewhat logical inconsistency and require a change in the most profound level of culture, i.e. the basic underlying assumption, which turned out to be exceptionally challenging (Mortara et al., 2009). Basic underlying assumption refers to a group's shared values are the goals and ideals that shape the group's sense of what it ought to be and do, forming a social glue that binds the organization. When innovation is starting, will bring new pattern and ideas into an organization to solve the problem and might break up the old assumption within organizations.

A few sub-cultures in a big organization respond altogether different to the open innovation concept (Golightly et al., 2012; Mortara et al., 2009). Another open innovation obstacle associated with the organizational culture is the "Not invented here" syndrome (Katz & Allen 1989). That phenomenon explains the condition when a firm or company only looks at their internally derived ideas and technologies. Explanations for the negative attitude range from previous "bad" experiences, personal and second-hand, to employment insecurity when the acquisition of external input is perceived to reduce the need of internal staff. It could also be a reason for imbalanced incentive systems risk adversity (Liechtenhaler 2009).

c. Trust-related obstacles

The open innovation process will start with managers or more strategic positions in the company or organization through critical decisions. They should prepare how to answer the

question from their team, including why this ought to happen? with what reason and in what way it ought to complete? when? how? and what's more, numerous others question, for example, do we course of action to use and get hold of the outside-in process of knowledge and technology? (Chesbrough & Crowther, 2006). Those decisions made by managers or another strategic position in the organization will against trust issues that can be a barrier or conversely which support and make a leap forward plausibility or create the breakthrough possibility of innovation creation. In addition, the research found that trust in people, such as the social network, has an important role in encouraging more open innovation condition creation to enrich trust in technologies. The researcher pointed out that trust in information technology particularly plays a significant role in the running of modern organizations and likewise an enable of social action. Another obstacle firmly identified with trust issue in the interaction between large institutions, the network, smaller businesses, suppliers, government, universities and even individual contributors will be explained more in the next section.

d. Motivational Obstacles

Golightly et al. (2012) declared that the open innovation process is a people-driven process instead of an organizational force. Some obstruction will be found in the open innovation process within the organization when motivation and incentive systems did not run inappropriately (Chesbrough & Crowther 2006). In terms of change management, the negative effect will emerge when people should change the structures, power distribution, and changing of revenue stream. Basically, people are often reluctant to change their condition (Linner et al., 2012).

The new practice within the organization needs to be supported and encouraged by employees. A lack of incentive systems and a poor implementation plan will decrease their motivation to do it. Another requisition of open innovation practice in the organization is sufficient commitment over time by employees. The sustainability to realize the first benefit of implementing the open innovation idea is needed (Chesbrough & Crowther 2006). Personal career and development objectives need to sharpen and educate a broader range of potential advantages of open innovation over "open innovation experience" to the employees (Golightly et al., 2012). Along these lines, they get the benefit of open innovation for themselves, and after that, they will not act as that they won't go about as conflicting.

For employees as individuals, the missing career path and recognition from HRM division as open innovation pioneers will decrease their motivation (Chesbrough Gassman & Enkel 2010). The employment model in the company may vary and cause to receptiveness level of employees (Mortara et al., 2009). Those phenomena, often being neglected by individuals who are outside of the company. Unfortunately, it will influence severe misunderstanding and missing expectations in collaboration activities.

e. Strategic Obstacles

The companies beyond high-tech industries implemented clear alignment between the need to meet business growth objectives and the desire to look outside for technology and success in managing their inbound open innovation process (Chesbrough & Crowther, 2006). The companies' strategy often struggles to decide whether the focus of openness should be on optimizing incremental development practices, or to create step-change growth options, or both. The research found the adoption of the open innovation concept and perceived immensely urgent

to provide focus and clear direction in a top-down way accompanied by R&D involving in due diligence and integration activities.

The balancing between external and internal ideas is a significant issue to be discussed to discover which is best for the company in certain conditions. The intellectual property strategy is often a disabler of open innovation efforts (Alexy, Criscuolo & Salter 2009). On the other hand, this intellectual property strategy has a negative effect when intellectual property only captures the innovation activities; however, doing overlook what open innovation's objective substantively. The phenomenon of intellectual property strategy to increase the number of innovation in company cause them to patent everything that resides from their R&D activities. These R&D activities result in the enormous cost and huge waste and drive off some other party with whom joint effort or collaboration could be gainful any other party (individual or institution) with whom collaboration could be beneficial. This phenomenon is called the "Intellectual Property Medusa Effect" (Alexy, Criscuolo & Salter 2009). Collaboration efforts amongst an organization or potentially individuals and organizations frequently failed due to the "No Patent, No Discussion" policy if there isn't a recorded patent now.

f. Procedure Obstacles

Open innovation needs internal collaboration to practice (Chesbrough, 2003; Gassman & Enkel, 2006). Collaboration efforts amongst organizations or potentially individuals and organizations frequently failed due to "No Patent, No Discussion" policy. If there isn't now a recorded patent (Mortara & Ford 2012) and terminated by managers who rely upon internal expertise to judge new product and technology prospects (Granstrand 2009). Changes in internal procedures and structures are required in a suitable approach to encourage the innovation process progressively to support internal and external network development (Chesbrough & Crowther 2006; Mortara et al., 2009). Employees will demonstrate less openness if they cannot explore and move within the organization and build the intensity of essential internal networks through cross-functional ties (Chesbrough & Brunsvinkler 2013). Rotation is essential to give thorough comprehension of general business viewpoint to be concerned by employees or managers (Mortara et al., 2009).

Another barrier comes where infrastructure and tools of open innovation are very shortcoming, for example; minimum activation of internal sharing platform and external information receptiveness and activated tools for online idea exploration and management. In practice, the changes from closed innovation to open innovation need more role and availability of technology both in making the transition and sustaining inter-organizational matters.

Tight-fitting procedure and management of open innovation process are worse than "trial& error-based" open innovation on the internal process in the company. The companies have no "right formula" to help managers to deal with various open innovation processes. The formula should answer what stage they should lead when they settle on an important decision and which is the most effective stage of the open innovation stage, with whom they should collaborate and how to select external strategic parties to give the optimum benefit for their company.

g. Performance Measurement Obstacles

The approach of open innovation performance measurement is utilized as an intermediary to enhance different measures (Chesbrough & Crowther 2006; Golightly et al., 2012). Recently, it is

still a major challenge to find focus and reliable measurement of open innovation process independently. Conceptually at the organizational level, there are several alternative ways to use open innovation performance metrics.

h. Skill Obstacles

In addition of organizational advancement requirement, a company require some skills in applying open innovation. A company need to prepare a set of skill both individual, team or organization level to be opened up their innovation process effectively. Even though there is no ideal formula to blend open innovation capability and skills, neglecting to gain the essential ones is turned out to be an issue to its usage (Mortara et.al, 2009). A set of skills and capabilities as necessary for companies to encourage the open innovation process comes by ability to develop, absorptive, multiplicative and relational capability (Enkel & Gassman, 2008).

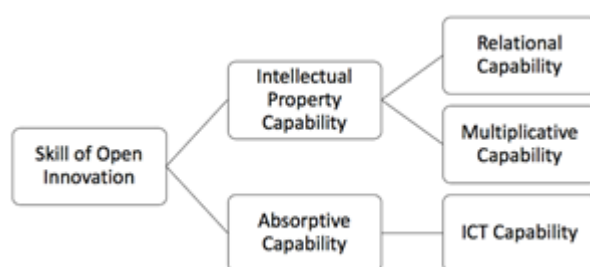


Figure 1. Skillset of Open Innovation (Mortara et.al, 2009, Enkel & Gassman, 2008).

i. Potential Risk Obstacles

The potential risk is perceived as a threat by the companies despite some companies already a success in running some pioneer of the open innovation process. Many other companies are reluctant to excessively opening up their innovation process due to this potential risk (Liechtenhaler & Ernst 2006; Rivette & Klein 2000). Liechtenhaler & Ernst (2006) stated that the most prominent potential risk associated with "the opening up" of the innovation process are:

- 1) The risk of limiting internal development of critical technological knowledge;

There was a research that has been conducted on 107 companies and indicated that the highest perceived potential risk from open up the innovation process related to the loss of proprietary knowledge (48%), loss of control in intellectual property (41%) and higher complexity in the coordination of innovation activities (41%). Cohen & Levinthal (1990) noticed that many companies often neglect their internal technological development competencies because they rely heavily on external partners. This identification of potential risk of named "limiting internal development of critical technological knowledge". This potential risk harms in three viewpoint (Liechtenhaler & Ernst, 2006) :

- a. Poor investment in developing and maintenance of technological core competencies.

- b. In the long run, companies will lose their capability and valuable internal technical knowledge and skill, and this will cause absorptive capacity decreation. It is required to identify and assimilate external inputs.
 - c. Open innovation process might be perceived as a threat by R & D staff, decreasing their motivation.
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- 2) The risk of increasing dependency on external technology providers and the company's internal knowledge-based limitation will bring out maintenance knowledge outside company boundaries and its expanding reliance on external technology providers risk (Liechtenhaler & Ernst 2006).
 - 3) The risk of increased complexity is derived from additional interfaces with external parties. Multitude relationships between the company and other parties, both institution or individual, are not necessarily stable over time. It will cause the potential risk of expanded multifaceted derived from the additional interface with external parties (Liechtenhaler & Ernst 2006).
 - 4) The last risk is said to be the escalating transaction cost. Like any other transaction, a technology transfer has a cost related to it (Mortara & Ford 2012). The technology consists of "implicit knowledge" in sort of documents furthermore as "tacit knowledge" existing within the mind of those who developed it (Granstrand, 2009). Gaining access to understood data without input from concerned people is usually pricey and extremely time overwhelming (Mortara & Ford 2012). External technologies conjointly typically got to be tailored to match a firm's internal wants, and people adaptation necessities appear to be underestimated in many cases (Liechtenhaler & Max Ernst, 2006; Mortara & Ford 2012).

INSIDE-OUT FACTORS

In the early stage of open innovation initiative development, open innovation was initially discussed as well as open innovation within the firm and external parties (mostly another firm). The obstacle of open innovation is found internally within the organization or company itself and when the organization collaborates with other parties. These kinds of barriers come up from "inside" to "out" among the organization. Recently, universities and research institutions have been considered as another main component of the open innovation ecosystem. By those case, Striukova & Rayna (2015) identified some barriers inhibited the idea flow of open innovation process. Connecting among organization with different nature in the open innovation process is very challenging and facing some barriers as follow:

- a) Understanding Needs

In the open innovation process between company and university, understanding need among two organizations or more will face a significant challenge due to their different frame of thinking and distinctive edge of reasoning. There is a key success factor as an alternative solution for its barrier. The first is adopting a proactive attitude. The second is being active to discuss the partner's needs and giving a solution. The third is how it actualizes in the current partner's situation (Striukova & Rayna, 2015).

b) Communication Problem

Different expectations could create an open innovation collaboration barrier between universities and industry among both organizations (Feldman and Desrochers, 2003). Some departments lose their attention to practical problems due to their abandonment of applied work, especially after commercialization. The point when the industry focuses more on commercialization activities might inverse the university's expectation to support curiosity-driven research (Feldman and Desrochers, 2003). In any case, despite not always having to find the same mission, having different expectations should not be a serious problem as long as the partner's aim overlaps in the same point and they do clear communication about it (Striukova & Rayna, 2015). Each organization has long term goals in every project, including open innovation collaboration projects, it involved different organizations, and they ought to be committed to that. The collaboration is a medium to achieve those long term goals, and after all the parties benefit from the collaboration, they can go in separate ways to pursue their long-term goals.

Nevertheless, having diverse expectations in a project, university and industry may have a different timescale. Party from industry background has a more flexible structure confronting regulatory procedures that diverse with college, which is more unbending. Engagement mechanism and adaptability is required when the university intends to build more open innovation collaboration with industry (Striukova & Rayna, 2015).

c) Fair and Sustainable Relationship

More challenges come up in building reasonable and sustainable relationships among organizations that will create collaboration in the open innovation process. Previously, the mutual understanding of both organization's needs is the foundation and very important. According to the research of Striukova & Rayna (2015), they investigated some participants from the different organizations which joined the collaboration in open innovation between industry and university. They obtained that parties from industries were not comprehending the university's open innovation cycle/ ecosystem and its mission. Mainly, they (industries) were only concerned with maximizing their value (often through Intellectual Property). Its research concluded that all parties should define a clear mechanism that enables all parties to get fair and reasonable returns to get a decent share out of the partnership. In the context of mutual collaboration between SMEs and corporations, SMEs are often reluctant to let their intellectual property go. Universities as a centre point or a "hub" can change the situation by encouraging the supportable and sustainable relationships of all parties. The university should be actively involved in building a more collaborative, positive atmosphere (Striukova & Rayna, 2015).

d) Resource Management

Both universities and industries have challenges in limited resources and should have a strategy for managing them (Striukova & Rayna, 2015). The challenges in university constraints refer to insufficiency of academician's time (Striukova & Rayna, 2015). Another additional finding of this research, this challenge was not only discussed about a limited resource, to be sure there were other issue that can be overwhelmed with sufficient administration and management. Time issues was not essentially the problem, but instead an issue of time management (e.g. "academics reinventing the wheel", overly bureaucratic processes) (Striukova & Rayna, 2015).

In particular, small firms or SMEs have obstacles to practice open innovation, and it was a significant and major concern related to open innovation collaboration between SME and university. The gaps between SMEs and universities are created by the numerous cultural differences and society itself. Pre-existing social ties of trust is significant to minimize those gaps. Striukova & Rayna (2015) found that the early phase of collaborations might not always be easy part for SMEs in dealing with universities.

Based on the research in the UK that involved 120 universities as well, that most of the university find out the gaps according to the research they are doing, and the need of university in research-driven should be matching with company's lack of assessment. It can also happen with SMEs, and more difficult for them to understand how the university works with research and how to respond to university's demand, as we know that SMEs only have few resources or almost no staff dedicated to monitor university-company relationships. The study found that universities intend to propose new processes and mechanisms that make SMEs easier (e.g business incubator).

e) Inertia

Study from Striukova & Rayna, 2015 found that the rigidity of administrative processes in certain institutions as the major challenge . Respondents in that research stated that they suggest the administrative structure can be more flexible to respond to the challenges brought by open innovation practices.

LIMITATION AND RECOMMENDATION

The conceptual review of open innovation barriers is based on literature review and desk research and need to enhance by doing empirical research to test the model above. Further research can implement empirical research both quantitative or qualitative to find out the relation between the entity of the variables.

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