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**Open Innovation Models in Public Utilities as an Option to React on Reform Processes:
The Case of the Postal Sector**

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Abstract

Since the past decades, public utilities are undergoing profound reform (liberalization). The major motivation for such reform processes was and still is the belief that liberalization and deregulation stimulates, among others, product and process innovations, both of which are important vehicles for productivity and economic growth. The ability of any public utility to create and sustain competitive advantages nowadays depends on how well the firm deals with changes and manages to exhibit innovative behavior.

Against the background of such reform, public utilities search for new innovation models so as to increase their performance and to ensure their profitability and growth. A possibility to adapt the innovation management of such companies are so-called 'open innovation models': ideas are no longer exploited just from inside the company but also from outside of it, as it is assumed that such purposive in- and outflow of knowledge and resources result in better innovation performance. In this article we illustrate - based on the case of the postal sector in Switzerland - the impact of reform on public utilities' innovation management and analyze why and how open innovation models are a reasonable option for public utilities to react on reform.

Keywords

Public Utilities, Reform, Postal Sector, Innovation Management, Open Innovation

1. Introduction

Over the past decades, public utilities are undergoing profound reform (liberalization). The major motivation for such reform was and still is the belief that competition stimulates, among others, process and product innovation, both of which are important vehicles for economic and productivity growth. An example of a public utility going through liberalization processes is the postal sector. To be competitive in liberalized markets and to ensure profitability and growth in the changed environment, postal operators have to become and stay flexible and innovative. Hence, the systematic facilitation of innovation in a purposive innovation management is a strategic factor for success and economic independence.

Until recently, innovation management in most companies has mainly focused on internal innovation processes. The view behind the “old” closed innovation models is that successful innovation requires control (e.g. Schumpeter 1935) and it supposes that enterprises must generate, develop, market, and distribute ideas on their own (Chesbrough 2003, p. 24). But new models of so called ‘Open Innovation’ make companies rethink their innovation management: ideas are no longer exploited just from inside the company but also from outside of the firm’s boundaries, as it is assumed, that such purposive in- and outflows of knowledge and resources will result in better innovation performance (De Jong et al. 2008, p. 15-16). Many companies in different industries are currently transforming their innovation strategies from closed innovation management to open innovation models. Therefore, their innovation management changes from centralized R&D to open innovation models.

This change is also noticeable in the postal sector (e.g. Swiss Post), where liberalization processes along with other influencing factors lead to the necessity for postal operators to become more innovative. As a consequence of the reform, postal operators revise their innovation strategies and processes and search for new innovation models. In this article we illustrate - based on the case of the postal sector in Switzerland - the impact of reform on public utilities’ innovation management. Moreover, we analyze why and how open innovation models are a reasonable option for public utilities to react on reform, to increase their innovativeness, and to gain competitive advantage in liberalized markets.

2. Reform in Public Utilities: The Example of the Postal Sector

2.1. Reform in Public Utilities

A public utility or network industry provides a public or basic service by operating a large infrastructure system whose main characteristics are strongly increasing returns of scale, high levels of capital intensity, deployment of long-lasting industrial assets, and their vital importance to the economy. Examples of public utilities are telecommunications, energy, transportation systems, water distribution, postal services, and broadcasting. They were mainly organized through regulated franchisees and state enterprises. In return for such privileged position with no or low levels of competition, those utilities were subjected to some form of direct or indirect government control: subject to economic regulation (e.g. prices/profit controls, entry & exit conditions) and social regulation like universal service obligation, or more radical, integrated into the government administration (Hulsink & Wubben 2003, p. I).

Most of these public utilities were until recently a ‘natural monopoly’. During the last decades, public utilities have been subject to a process of progressive liberalization in many countries. It was believed that the opening of the network industries markets to competition would bring significant consumer benefit and enhances the competitiveness of the companies (Geradin 2006, p. 5).

Liberalization refers to the process of opening up state-controlled monopolies and transforming them into (more) open markets. Public services that were originally provided by a government entity or an exclusive franchisee are now contracted out to private firms (i.e. competition for the market). Access to previously sheltered markets is now partly or completely open for domestic and international private sector participation, and facilities-based and/or service competition has emerged (i.e. competition on the market). The final goal of the liberalization process is that increased competition would lead to improved levels of service and quality, as well as to lower price levels for final consumers and enterprises (Hulsink & Wubben 2003, p. 2).

This liberalization process has comprised deregulation processes. *Deregulation* usually meaning the elimination of regulation no longer necessary and its substitution by new regulations in areas where regulation is unavoidable, usually allowing new entrants to the markets. In other words, it entails the process of reducing state control over an industry or activity so as to make it structurally more responsive to market forces. The reasons for initiating deregulation programs can be found in complaints from industry experts about administrative burden and intrusive red tape imposed by government, sunk costs and inefficiencies, and allegations of regulatory capture (Hulsink & Wubben 2003, p. 1).

2.2. Reform in the Postal Sector in Switzerland

An example of a public utility undergoing profound liberalization and deregulation processes over the past decades is the postal sector. The reform in this sector is largely brought about by growing competition, changing customer demands, and the more widespread use of new information and communication technologies. Furthermore, governments are expecting higher returns and increased productivity, whilst often demanding Universal Services (Sund 2008, p. 3). The liberalization of the postal sector is by no means unique to Switzerland; it is being debated in postal and legislative circles in industrialized countries around the world (PriceWaterhouseCoopers AG 2006, p. 1). It consists of reducing the extent of the monopoly protection while preserving the Universal Service Obligation (USO)¹ (Finger 2009, p. 10).

The reform in the postal sector in Switzerland was triggered and still is strongly influenced by the liberalization process in the European Union. In 1991, the European Community laid down guidelines for the reform of the postal sector in its so-called Green Paper², in which a European postal policy was outlined and the logic of postal market liberalization was spelled out. Furthermore, the philosophy of USO was defined (Finger 2006, p. 1). The non-binding definition

¹ Definition of Universal Service Obligation as retained by the Postal Directive 1997/67/EC: Universal Postal Service as a right of access to postal services encompassing a certain range of services of a certain specified quality to be provided throughout the territory of a Member State at an affordable price. More precisely, the Universal Postal Service is defined by the services involved as well as criteria such as accessibility, frequency, quality of service, and price (Finger 2006, p. 1).

² see: Green Paper on the development of the single market for postal services (communication from the commission) COM(91) 476, June 1991.

of the USO differentiates between reserved services (reserved to the incumbent, services still under monopoly), non-reserved services (incumbent has to provide the services because of the USO, competitors are allowed to provide), and free services that are in a competitive environment (Finger 2009, p. 11). Since 1997, the Council and the European Parliament have adopted three European Postal Directives:

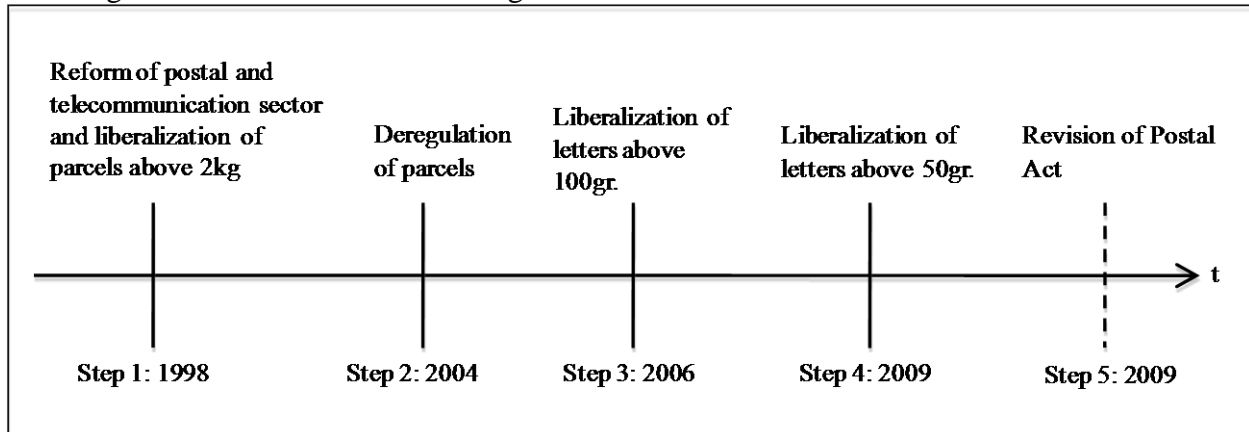
- Directive 1997/67/EC: first substantive Directive; definition of minimal Universal Service, tariff principles, quality targets, national regulators, principle of licenses for non-reserved services, and of a timetable for the liberalization process (Finger 2009, p. 12).
- Directive 2002/39/EC: purely technical; amending the Postal Directive of 1997 and speeding up the liberalization process; 2009 as first possible date of full market opening (Finger 2009, p. 14).
- Directive 2008/06/EC: defines full market opening for 2011 (for some countries in 2013), possibilities for countries to protect USO, and the preservation of regulators (Finger 2009, p. 16).

Until today, there were four major milestones in the liberalization and deregulation processes in the postal sector in Switzerland:

- *Reform of the postal and telecommunication sector and liberalization of parcels above 2kg in 1998*: A first step in the deregulation process of the postal market in Switzerland was the reform of the postal and telecommunication sector in 1998 (i.e. separation of PTT into Swiss Post and Swisscom). The Postal Act differentiated the postal market in two segments: the universal services and the free services. Furthermore, outbound mail and parcels above 2kg were liberalized; these services are now free services (Riechmann et al. 2007, p. 29).
- *Deregulation of parcels*: In January 2004 the postal ordinance was completely revised, following the ideas of the European Postal Directive, by introducing deregulation to the parcel market. The ordinance also formalized the framework for the national regulatory authority and determined its responsibilities (licensing, compensation fund, prevention of illegal cross-subsidization, monitoring, policy advice) (PriceWaterhouseCoopers AG 2006, p. 8).
- *Liberalization of letters above 100gr*: The market for letters above 100gr was liberalized in April 2006 (Riechmann et al. 2007, p. 30).
- *Liberalization of letters above 50gr*: The market for letters above 50gr was liberalized in July 2009. Hence, the letters above 50gr are nowadays non-reserved services.

For the future, there is another important step planned in postal legislation: the Postal Act will be revised to establish a basis for the fully liberalized postal market in Switzerland. While the European Union has determined 2011/2013 as the year of full market opening in the postal sector, the date of this last step of liberalization is not yet defined in Switzerland, since this will be a decision process of the Swiss Federal Council, the Swiss Federal Parliament, and the public (through a facultative referendum). Concluding these explanations, we map the liberalization and deregulation processes in the postal market in Switzerland as follows:

Figure 1: Liberalization and Deregulation Process in the Postal Market in Switzerland



Within the context of such liberalization and deregulation processes, postal operators are stretched to the limit of their technological, organizational, and management capabilities. In order to grow and build sustainable competitive advantages in such a context, these organizations need to innovate (Sund 2008, p. 3). The ability of any operator to create and sustain competitive advantages over the long term will depend largely on how well the firm deals with changes in its environment and manages to exhibit innovative behavior. In a changing environment, innovation is a key to adapting to change, overcoming organizational weaknesses, and adding value to the organization's products and services (Sund 2008, p. 6). This is not only true for postal operators but for all public utilities undergoing reform processes.

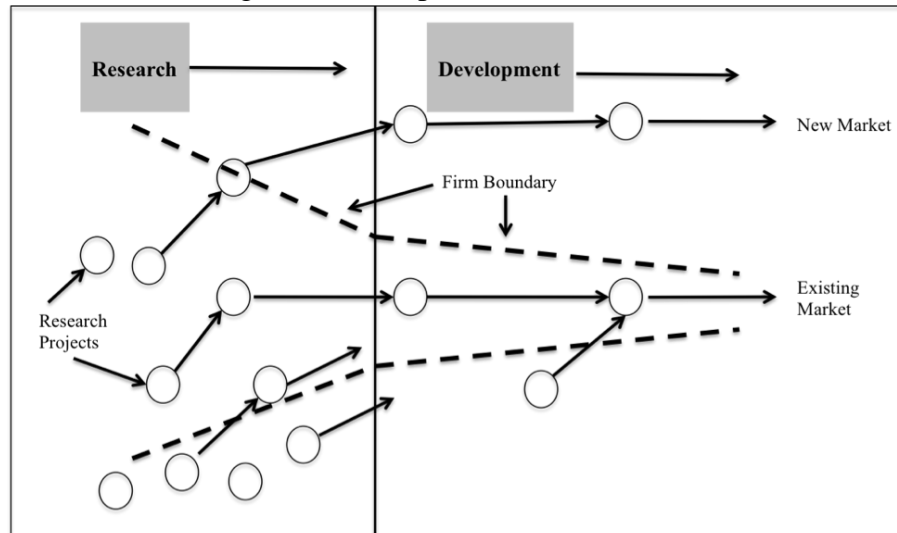
3. Open Innovation: Innovation Model, Core Processes, and Influencing Factors

3.1. Open Innovation Models

A possibility to adapt public utilities' innovation management to changed environmental conditions is the implementation and diffusion of open innovation models. Open innovation models assume that enterprises can and should use both external and internal ideas and paths to the market, when enterprises look to discover and realize innovative opportunities and to generate value. Internal ideas can also be taken to markets through external channels, outside the current businesses of the enterprise, to generate additional value (Chesbrough 2003, p. 24). Although the term was coined and popularized by Chesbrough, the open innovation approach originated from experiences from open source software (OSS) development (e.g. Gruber & Henkel 2006; West & Gallagher 2006) and was shaped over long time by different developments in the innovation economy like the lead user approach (user based innovation), toolkits for user innovation and design, or community based innovation (e.g. Piller 2008, von Hippel 2006, West 2006). Therefore, open innovation models are not a single technique to improve some aspects of the firm's innovation process, since they describe the overall strategy and innovation model that these methods require.

In open innovation models, ideas can still originate inside the enterprise, but some of those ideas may seep out, either in the early and later stages of the innovation process (inside-out). Ideas can also start outside the enterprise and move inside later (outside-in). The basic idea of these open innovation models is illustrated in figure 2:

Figure 2: The Open Innovation Model



(Chesbrough 2003, p. 24)

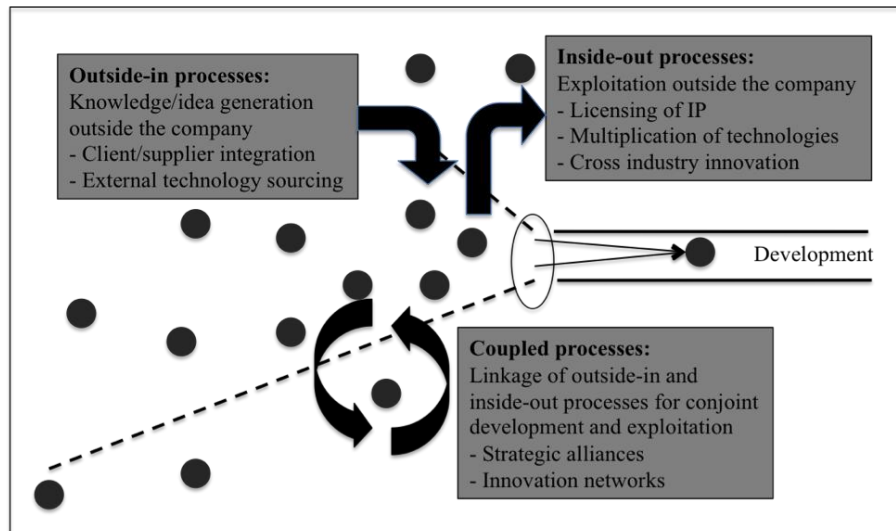
As the figure shows, there are a great many potential ideas outside the enterprise. Although the open model still weeds out false positives (now from external as well as from internal sources), it offers a broader range of alternatives to benefit from innovation, and it also enables to recover false negatives by acquiring them later (Chesbrough 2003, p. 25).

Scholars and practitioners in the field of innovation management constantly stress the importance to accelerate innovation processes while simultaneously reducing costs and increasing quality. But it is not just these factors that force companies to adopt open innovation models. There are other additional factors that make open innovation models a reasonable option for many industries (Herzog 2008, p. 23):

- The increasing availability of well-trained and knowledgeable workers means that more people are able to produce useful knowledge. It also implies that this useful knowledge is widely distributed and located at suppliers, customers, partners, start-ups, consultants, universities, or research institutes (Chesbrough 2003, p. 34ff). Open innovation models aim to access this knowledge through collaborative innovation processes.
- Open innovation models can be defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovations, and expand the markets for external use of innovation” (Chesbrough 2006, p. 1). It is assumed that such exchange of knowledge and resources results in better innovation performance through cost reduction, shared risk, and increased value creation.
- Technology intensity has increased in many industries, so that not a lot of them are able or willing to afford technology development on their own. Thus, interdisciplinary research with or outsourced research tasks to research partners like suppliers are expected to play a central role in the future (Herzog 2008, p. 23).

In their study on different companies using open innovation models, Gassmann & Enkel (2006) identify three core processes within open innovation models (p. 134):

Figure 3: Core Processes in Open Innovation Models



(Gassmann & Enkel 2006, p. 134)

- **Outside-in Processes**

The outside-in process enhances an active transfer of technologies from other companies or universities and combines the knowledge of a company with external knowledge of customers, suppliers, or other partners. The opening of the innovation processes and the integration of external knowledge and resources through co-operations with suppliers and customers can be a core competency of a company. Companies in low-technology industries, in particular, are concentrating on the outside-in process in estimating spillovers from technology-intensive industries (Gassmann & Enkel 2006, p. 134).

- **Inside-out Processes**

The inside-out process encourages the external commercialization. Through licensing, the time-to-market gets shorter and technologies are better multiplied than possible in an internal exploitation. The different inside-out processes can be described as an effective utilization of the internal knowledge through the opening of the company's boundaries. Companies focusing on the inside-out process are strongly engaged in research. These firms, mostly high-technology companies, aim to reduce their fixed costs for research and development as well as to share the risk of innovations with other companies (Gassmann & Enkel 2006, p. 135).

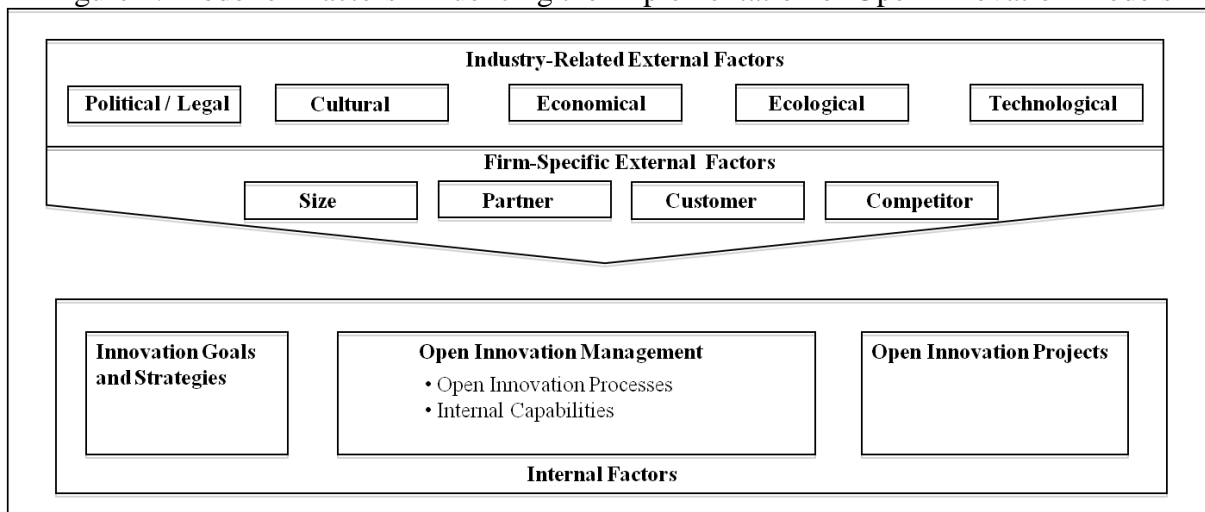
- **Coupled Processes**

The coupled process links the integration and externalization of knowledge for conjoint innovation processes in alliances, joint ventures, and innovation networks. There are two main conditions to be considered for the implementation of cooperative innovation processes in a company. First, companies must be able to adopt external knowledge and integrate it into the own knowledge and technology base. Secondly, they have to externalize internal knowledge to let the partners profit. The success depends on the company's knowledge management and the selection of the right partner for a fruitful cooperation (Gassmann & Enkel 2006, p. 136).

3.2. Implementation of Open Innovation Models

The study of Bloom and Dorgan et al. (2005) points out that the same practices used in one company may lead to somewhat different results in another company. This means that the implementation of new innovation models like open innovation doesn't lend itself to predictable cause-and-effect relationships. It is necessary for each company's management to define the most important elements of implementation by answering the following key question: For our company, at this time, competing against our rivals, which of the many dimensions of execution are most important (Rosenzweig 2007, p. 154)? Therefore, the challenges for companies that are implementing new practices like open innovation models are two-fold. First, they have to analyze the factors that are influencing their decisions in general and their innovation management in particular. Second, an individual adaption of the models according to these influencing factors is essential for every company. Based on different models on influencing factors³, Stucki (2009) identifies a preliminary model on factors influencing the implementation of open innovation models (p. 9):

Figure 4: Model on Factors Influencing the Implementation of Open Innovation Models



(Stucki 2009, p. 9)

Stucki (2009) argues that the implementation of open innovation models varies for each company according to their external and internal factors: the industry-related external factors determine when companies rethink their innovation management, whereas the firm-specific external and the internal factors determine how companies implement open innovation models (p. 18). In the next chapter we analyze the influence of the liberalization and deregulation processes - as political (e.g. opening of markets, elimination of regulation) and economical (e.g. competition) industry-related external factors - on postal operators' innovation management. Moreover, we identify why and how postal operators can react to the processes of reform by using open innovation models according to their firm-specific external as well as their internal factors.

³ e.g. Service Innovation Model (Bransch 2005), Holistic Innovation Management (Schaller, Rackensperger & Reichwald 2004; Reichwald & Schaller 2006), Model on Factors that are Influencing the Implementation and Diffusion of Open Innovation Models (Gassmann & Enkel 2005)

4. Open Innovation as an Option to React on Reform in the Postal Sector

4.1. Impact of Reform on Postal Operators' Innovation Management

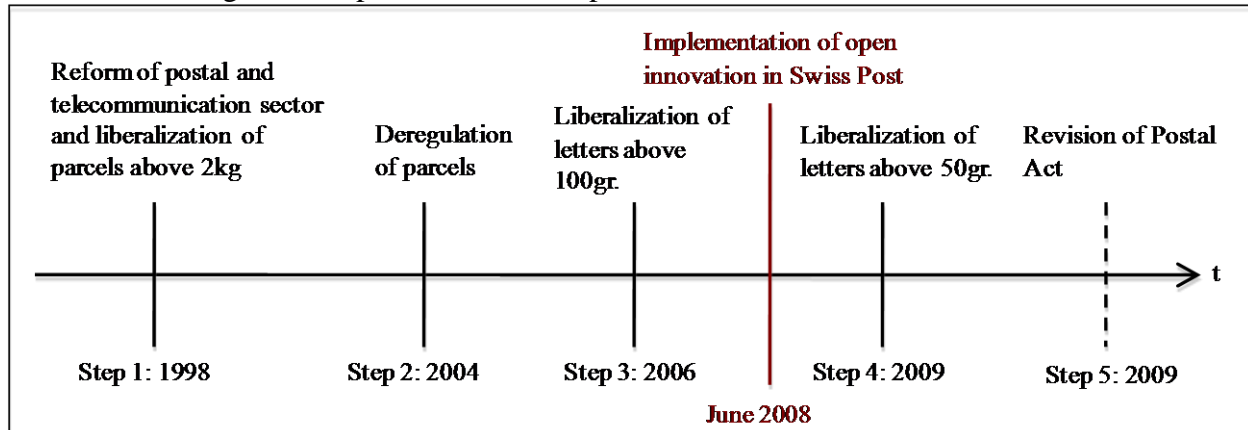
Liberalization processes as *political or legal factors* like institutional and regulatory drivers influence postal operators' innovation management. Industrial economics argue that the increased innovativeness of postal operators is mainly caused by such political factors: the perspective of full market opening allows governments and owners to tighten their request for profitability (Jaag, Maegli, & Schaad 2007, p. 71). The European Commission has initiated the liberalization of the postal market to reduce and ultimately abolish the monopoly protection of the historical postal operators, while at the same time defining Universal Services, which governments in turn impose upon their own historical operators. From this combination – imposed Universal Postal Service and monopoly reduction – comes a significant pressure on the postal operators, which are forced to restructure and become more efficient (Finger, Alyanak & Mollet 2005, p. 3). Moreover, claims for consistent development of relevant technologies and for a new quality of services let postal operators reengineer their business and develop new services (Jaag, Maegli, & Schaad 2007, p. 71).

These political factors along with *economical factors* like diminishing profits in the core business, changed customer behavior, and competition enforce the transformation of the postal sector (Finger, Alyanak & Mollet 2005, p. 3). An important driver for the increasing innovativeness of postal operators is the diminishing profit in the core business through the substitution of traditional products through virtual solutions (i.e. decreasing volume of physical mail). This trend is strongly affected by the emergence of new and ubiquitous available information and communication technologies allowing for the convergence of classic and electronic mail services, leading to the introduction of innovative products (Jaag 2008, p. 151). Furthermore, customer lifestyles and demands have profoundly evolved within the last decades, also in a significant part due to the development of information and communication technologies. Customers today prefer tailored services that take into account their differentiated needs and they ask for ubiquitous, interactive, and flexible services (Sund 2008, p. 8). Competition, encouraged by customers and regulators who want to open up national markets, is currently low in the postal market; but there are signs that with the full market opening in 2011-2013 this scenario will considerably change (Felisberto 2008, p. 18). The literature often suggests that competition fosters innovation as it pressures managers to look for superior alternatives to their current methods. Research shows that the importance of innovation is in general positively associated with environmental uncertainty (Drechsler & Natter 2008, p. 14). Chesbrough (2007) states that the advent of opening up the innovation process is mainly caused by such an uncertain environment and increased economic pressure on firms (p. 21). Drechsler and Natter's study (2008) on antecedents and drivers of open innovation confirms that companies which act in markets with increased competition are forced to use not just one but several external sources in innovation in order to boost their innovation success (p. 22).

Both perspectives; the political as well as the economical; have in common, that they force postal operators to rethink their innovation management. Furthermore, they favor the use of external partners in innovation processes in order to survive in the market. Based on these explanations, we conclude that the industry-related external factors define when postal operators search for new innovation models and make use of collaborative innovation processes. Open innovation processes facilitating such collaborative innovation processes are a reasonable opportunity for

postal operators to adapt their innovation management to the changed environment. Swiss Post, for example, decided in 2008 to adapt their innovation management to open innovation (Swiss Post 2008a, p. 4):

Figure 5: Implementation of Open Innovation Models in Swiss Post



In the next two paragraphs we analyze how the firm-specific external (i.e. size, partner, customer, and competitor) and the internal (i.e. innovation goals and strategies and open innovation management) factors influence the implementation of open innovation models in postal companies. To illustrate the impact of the latter on postal operators' innovation management, we use the example of Swiss Post.

4.2. Impact of Firm-Specific External Factors on Postal Operators' Innovation Management

Because postal operators are often *large and diversified companies* with highly complex services, the integration of external knowledge and collaborative innovation processes with partners is essential. Suppliers, research institutions like universities, competitors, and customers are relevant partners (De Jong et al 2008, p. 18):

According to the study of Sund (2008) on the innovativeness in the postal sector, *suppliers* are recognized as important enablers of product and service innovation (p. 17). Since the technological dependency of postal operators is rapidly growing through the widespread use of information and communication technologies, joint innovations with technology suppliers are getting more and more important. Since suppliers know best the technological possibilities fitting to a company's requirements, their involvement in innovation processes at an early stage and on a high level makes obviously sense (Boutellier & Wagner 2001, p. 49). Only recently, collaborations of postal operators with technology suppliers allow for a centralization of mail processing and network optimization (Jaag 2008, p. 151). Another option to react on the growing technological dependency of postal operators is an intensified cooperation with *research institutions*, where additional knowledge move from outside into the companies. If this transfer of technology and knowledge is effective and efficient, companies will profit from marketable product and process technologies, which enhance their profit and reduce costs. Studies on network collaborations confirm the increased success of product and process innovations in companies cooperating with universities (Walter 2003, p. 2).

Furthermore, postal operators can respond to the changed *customer* demands in cooperative innovation processes with customers. The lead-user approach (e.g. von Hippel 2006) is a crucial example of customer integration modes and is often seen as starting point for the opening of innovation processes (Reichwald & Piller 2006, p. 130). Even conjoint innovation processes with *competitors*, which may initially seem counterproductive, are a possibility for postal operators to increase their innovativeness, because such collaborations can open up new markets or suppress new competitors through collective market power (Ritter 2005, p. 629). Although the co-operations of companies like postal operators with competitors are often hampered by the intangibility of services and the missing protection against imitation (Schaller, Rackensperger & Reichwald 2004, p. 54-55), postal operators nowadays exchange their knowledge on technologies and their applications to the different core business.

4.3. Impact of the Internal Factors on Postal Operators' Innovation Management

The challenges for the implementation of open innovation models involve *strategic decisions and goals* as well as sustaining internal commitment over sufficient time to realize benefits from adopting such models. In their survey on early adopters of open innovation models in others than high-technology industries, Chesbrough and Kardon Crowther (2006) identify senior management support and funding at the outset of the initiative as important for the implementation of open innovation models (p. 235). There is a general observation and assumption that though open innovation increases the potential creativity in the innovation process, it also increases the complexity involved in managing the process. An open innovation process demands that managers can handle both the inside and the outside of the organization (Fredberg, Elmquist & Ollila, 2008, p. 39). This corresponds with the results of Sund's survey (2008), where the respondents identify the top-management as the most important stakeholder in encouraging innovation within a postal operator. In fact, studies have shown clearly that leadership and senior management support for innovative ideas and new product development is crucial for the performance of the innovative process. Without this support there is little chance of innovative projects making it (p. 17).

Swiss Post's top management, for instance, defined in June 2008 strategic principles for innovation. The most important strategic principles are (Swiss Post 2008a, p. 3):

- Innovation is a strategic factor for success: Swiss Post has to stay flexible to compensate the disadvantages of a small postal operator in liberalized markets and to ensure existence. Swiss Post understands the systematic facilitation of innovations as a strategic factor for success and economic independence.
- The innovation culture is essential for a sustainable success of Swiss Post: An innovation culture of openness and flexibility is a main factor for success. To establish an innovation culture, intentional and long-term processes are essential. The aim of these processes is to create simple innovation processes, the early involvement of customers and other partners, fast developed and tested prototypes without the demand for perfection and a consistent implementation of ideas. The willingness to make changes, to accept failures and learn from them is part of the innovation culture of Swiss Post.
- There are certain premises needed to increase the potential for innovations: Swiss Post commits itself to the use of open innovation models. Innovations occur with partners (customers, universities, suppliers and other partners). The opening of the innovation

process and the selective linking of internal and external knowledge increase the innovative strength of Swiss Post.

After constituting their open innovation strategies and goal, each company has to adapt the open innovation models to their firm-specific external and internal factors and implement an *open innovation management*. Open innovation champions to manage the process that incorporates the innovations in the business along with revised internal processes, metrics, and incentives are important for the implementation of the strategic goals through the open innovation management (Chesbrough & Kardon Crowther 2006, p. 235). The open innovation management includes the organization of the open innovation processes. Open innovation processes combine internal and external ideas into architectures and systems and utilize business models to define the requirements for these architectures and systems (Chesbrough 2006, p. 1).

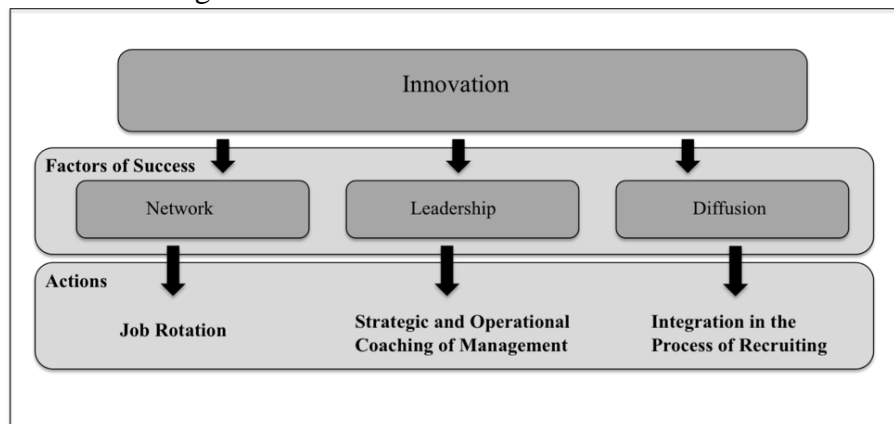
To implement the strategic principles for innovation in the company and adapt the internal processes and capabilities to open innovation, Swiss Post established in 2008 an innovation program. It consists of the three major aspects architecture, culture, and communication. The *architecture* defines the structures, platforms, and processes of Swiss Post's innovation management (Swiss Post 2008b).

- Through the implementation of open innovation models and because of shorter innovation cycles and dynamically changing customer needs, knowledge management is an essential *structure* for service companies (Kleinaltenkamp & Frauendorf 2006, p. 360) like postal operators. Both external and internal knowledge need to be connected, managed, and implemented into the culture and structures of a company. An open innovation culture and the facilitation of knowledge communities (e.g. communities of practice) are therefore important conditions for an efficient and effective knowledge management (Kleinaltemkamp & Frauendorf 2006, p. 370).
- An example of collaborative innovation *platform* is Swiss Post's PostLab. Established as an incubator in 2008 at EPFL (Ecole Polytechnique Fédéral de Lausanne), the goals of PostLab are to build up strong connections between the scientific and the industrial world and to integrate scientific knowledge. Another innovation platform is Postidea, where employees' innovative ideas are virtually managed.
- Due to the missing technologies and the restricted IP (intellectual property) rights for services, Swiss Post, in contrast to high-technology industries, mainly focus its open innovation *processes* on the integration of external technologies (outside-in processes) and on joint innovation processes (coupled processes) (Stucki 2008, p. 40). The innovation processes at Swiss Post have been improved through the creation of an innovation jury allowing rapid decisions on innovation projects, leading to an increased number of both product and process innovation and shortened development processes.

Another goal of the innovation program is the diffusion of open innovation within the company. Hence, an innovative *culture* within a company is important. Firms with an innovative culture create an atmosphere where entrepreneurship and risk taking are encouraged and rewarded and where individuals or teams are not punished inadvertently when new products or services do not achieve expected results. A climate of openness and informal communication is typical in such firms. Literature on new product development provides ample research-based evidence that a strong innovation culture has a positive impact on expected results (De Brentani & Kleinschmidt

2004, p. 312). Swiss Post (2009) defines the network, leadership, and diffusion as factors of success for the implementation of open innovation models (p. 10):

Figure 6: Culture of Innovation at Swiss Post



(Swiss Post 2009, p. 10)

The innovation culture is influenced by the architecture as well as the communication defined in the open innovation management and the actions are reciprocally affecting each other. To further enhance the innovativeness and make the *communication* of innovative projects simple, Swiss Post implemented a common language (COSTAR) for innovation projects (Swiss Post 2009, p. 7)

Summing up these explanations, we conclude that the firm-specific external factors as well as the internal factors define how postal operators implement and use open innovation models, since these factors strongly influence companies' decisions on what processes they are going to use with what partners and with what strategy.

5. Conclusion

In this paper we address the processes of reform (liberalization) that public utilities in general and the postal sector in particular have been subject to during the last decades. The liberalization and deregulation processes in the postal sector are largely brought about by growing competition, changing customer demands, and the more widespread use of information and communication technologies. These liberalization and deregulation processes as political and economical industry-related external factors influence postal operators' innovation management. Within this context, any postal operator has to exhibit innovative behavior to create and sustain competitive advantage over the long term. Open innovation models are an option for postal operators to react on reform and adapt their innovation management to the changed environmental. By illustrating the impact of such reform on postal operators' innovation management and by analyzing why and how open innovation models are a reasonable option for postal operators to react on reform, we identify three major conclusions:

1. Liberalization and deregulation processes as political and economical industry-related external factors force postal operators to restructure and become more efficient. To stay competitive in liberalized markets, postal operators rethink their innovation management and search for new innovation models. Both the political as well as economical external factors favor the option to use external partners in the innovation processes in order to

boost the innovation success. Thus, industry-related external factors define when companies implement open innovation models.

2. Because of their firm-specific external factors (i.e. size, partner, customer, and competitor), open innovation models are a reasonable opportunity for postal operators: They are often large and diversified companies with highly complex services, therefore the integration of external knowledge and collaborative innovation processes with customers, competitors, and other partners like suppliers or universities are essential.
3. The implementation of open innovation models is influenced by the firm-specific external and the internal factors - they define how such models are adopted - and affects postal operators' innovation strategies and goals and the architectures, culture, and communication of their innovation management.

6. Limitations and Implications for Future Research

This present article has three major limitations. First, we are not yet able to analyze the impact of liberalization processes on public utilities' innovation management varying for different countries, industries, and companies. Second, we assume that there are relations and correlations between the different factors – and between the industry-related external factors in particular - that are not yet clearly identified and analyzed. And third, it has to be defined what specific characteristics of the influencing factors are necessary for the implementation of open innovation models.

In order to clarify how future research can contribute to an overall perspective on how industry-related and firm-specific external factors along with internal factors influence the implementation of open innovation in public utilities, we formulate the following questions:

- How does the influence of liberalization processes on public utilities' innovation management vary over different countries, industries, and companies?
- How are the political and the economical industry-related external factors related?
- What factors (i.e. industry-related external factors, firm-specific external factors, and internal factors) are necessary for the implementation of open innovation models?
- How can public utilities adapt open innovation models in reference to their industry-related, firm-specific, and internal determinants?

The contribution of this type of research will be to complete a framework on factors that are necessary for the implementation of open innovation models in public utilities and to give recommendations to companies in transformation processes on how they could best adapt such models to their specific situation.

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