European Business Review

Transforming SNCF's business model through the evolution of participative innovation routine

Carine Deslée Oussama Ammar

Transforming SNCF's business model through the evolution of participative innovation routine

Carine Deslée
LEM UMR 9221 CNRS, Univ. Lille, F-59000 Lille, France, and
Oussama Ammar
Strategy and Entrepreneurship Department, SKEMA Business School, Raleigh, North Carolina, USA

Received 17 March 2015
Revised 30 November 2015
23 December 2015
2 February 2016
5 February 2016
Accepted 6 February 2016

Abstract

Purpose – Many barriers prevent firms from changing their business models. Inertia, as it accumulates over time, transforms into organizational routines that doom change; however, it can also be a source of organizational flexibility. How does a business model evolve in interaction with organizational routines? This paper aims to study the interactions between forms of participative innovation (PI) and existing business models.

Design/methodology/approach – The exploratory approach includes interviews, participant and non-participant observations and archive analysis. It adapts an existing framework, based on the notion of scripts, to the evolutionary dynamic of organizational routines at the French railway company SNCF. The analysis of a set of contextual elements clarifies events over time and interactions between PI and the company's business model.

Findings – The empirical insights indicate how existing routines can help reinvent business models. Business model components evolve along the transformation phases of PI. The case reveals co-evolutionary dynamics: evolution of the organizational routine from bureaucratic suggestion, to structured innovation, to PI leads to the transformation of the business model from functionalist, to customer-centric, to open business model.

Practical implications – Firm managers can think more proactively about how to reinvent established business models by innovating their existing routines, according to the position and role of routines, shifting from sources of rigidity and inertia to levers for innovation and change.

Originality/value – The business model concept serves as a prism of analysis for organizational routines. Organizational routines are sources of flexibility, strategic renewal and business model reinvention.

Keywords Business model, French public railways company, Organizational routine, Participative innovation

Paper type Research paper

Introduction

Topics related to business model reinvention or innovation represent crucial and strategic issues for established firms (Chesbrough, 2007; Sosna *et al.*, 2010), yet many barriers prevent these firms from changing or innovating business models. Inertia, which may arise from conflicts between existing assets and the core logic for value creation, represents an especially important barrier (Chesbrough, 2010), as it accumulates over time and gets transformed into organizational routines that seemingly

European Business Review
Vol. 28 No. 4, 2016
pp. 467-485

0955-534X
DOI 10.1108/EBR-03-2015-0024

doom all attempts at change. According to Huff *et al.* (1992), cumulative resistance to strategic change and business evolution stems primarily from gradually accumulating resource commitments and institutional routines.

Prior literature indicates that organizational routines are stable over time (Autissier and Wacheux, 2000; Cohen *et al.*, 1996; March and Simon, 1958; Nelson and Winter, 1982). Yet Feldman (2000) asserts that potential changes to organizational routines have not been sufficiently explored, and Pentland and Ruetler (1994) and Rerup and Feldman (2011) argue that routines can be sources of organizational flexibility. In this sense, despite their ubiquity, the contributions of organizational routines have been underappreciated, especially with regard to how interactions between ostensive and performative aspects of routines might drive organizational change (Rerup and Feldman, 2011). Therefore, this research proposes that the forces of inertia produced by organizational routines, instead of binding the established firm to one business model over time (Huff *et al.*, 1992), participate actively and progressively in the change and reinvention of established business models. Changes in business models occur when specific contingencies require an adaptation of the strategy (Amit and Zott, 2012). According to Sosna *et al.* (2010), business model changes are among the most sustainable forms of innovation; they represent the ways firms reconfigure theirs business models to create new values for stakeholders. Although several scholars (Sosna *et al.*, 2010) have recognized business model evolution, the concept lacks both theoretical grounding in established literature and managerial guidance with regard to paths to follow for business model change. Existing literature focuses more on drivers or antecedents of business model change (e.g. economic pressures, technological factors, new innovations, regulations) than on the underlying mechanisms of its evolution. Using the case of the French public railway company (SNCF), this article addresses these research gaps by answering a key question: how does the business model evolve in interaction with organizational routines? The main purpose of our research is to study the interactions between forms of participative innovation (PI) and an existing business model.

Our in-depth analysis reveals that components of SNCF's business model have evolved in accordance with the phases of transformation of the PI routine. To present these findings, we begin by defining routine as a concept and also scrutinizing the conditions for routine development and change. We use Feldman and Pentland's (2003, p. 388) definition of routine as "a repetitive, recognizable pattern of interdependent actions carried out by multiple actors". Next, we introduce the concept of PI and examine, for SNCF, the conditions that allowed it to become an organizational routine. Finally, we underline the relevance of the concept of the business model as a prism to analyze the phases of evolution of the PI routine at SNCF by building on Demil and Lecocq's (2010) framework, which describes business models as configurations of resources, competences, organizations and value propositions (RCOV).

To explain our research design, we detail our adopted methodology and present the case of SNCF through the major changes in its business model. Our contribution reveals how SNCF's business model evolved along with the evolution of the PI routine. In terms of the managerial relevance of these findings, we note how PI and innovation in general can help firms evolve from a functionalist to a customer-centric and then to an open business model. These findings offer theoretical insights for reconceptualizing organizational routines; rather than causes of inertia, they are levers for business model change.

Theoretical background

Routine as a source of change

There is no unified vision of the concept of routine. Authors propose very different definitions, depending on whether their focus is the individual or organizational level, or whether they consider it a learning ability. March and Simon (1958) introduce the concept of routine as a means to coordinate behaviors in complex organizations. Overall, most scholars recognize polysemic and ambivalent aspects. According to Cohen and Bacdayan (1994), routines are models of organizational action. We refer to organizational routines as sequences of learned behavior involving multiple actors linked together by relations of communication and/or authority that exist only from the time the individuals involved in the cooperation have interpreted them and act according to the rules of action (routines) that they have built.

Evolutionary theory also grants a special position to routines. Nelson and Winter (1982) define them as "regular and predictable behavioral patterns" similar to genetic material in living creatures. That is, just like DNA, routines represent building blocks for organizations that are both tacit and stable (Autissier and Wacheux, 2000). Cohen *et al.* (1996, p. 683) associate routines with action partners who engage in repeated performance, learned by the organization in response to certain pressures, such that the "ability to perform an action repeatedly in a context that has been learned by an organization […] is defined as a pressure towards the selection". When an organization cannot meet its aspired goals, it classifies the event as a problem and selects a routine to solve it. If the routine does not solve the problem, the organization revises or replaces it by selecting and trying a new one. The process continues until a new routine yields a solution (Baum and Ingram, 1998; Miner *et al.*, 2001). Feldman (2000, p. 105) adds a time dimension, noting "routines are temporal structures, which are often used as a way to perform organizational work". Feldman (2000) emphasizes the ostensive aspect of a routine as a standard, norm or representation of this routine (e.g. a hiring routine) and distinguishes it from its performative aspect, or the way it is implemented. Feldman and Pentland (2003) suggest four operational criteria for classifying a routine: repetition, a recognizable pattern of actions, interdependence among actions and multiple actors.

Because organizational routines tend to be presented as stable (Gersick and Hackman, 1990; Hannan and Freeman, 1984), their transformations rarely have been studied. Nor has the potential for change in organizational routines been adequately explored (Feldman, 2000; Zollo and Winter, 2002), despite Pentland and Ruetler's (1994) argument that routines can be a source of organizational flexibility and offer support for potential change. Cyert and March (1963) similarly refer to adaptation, and Nelson and Winter (1982) evoke the possibility of mutations in routines. Even models of capability development suggest that organizations build capabilities from existing routines or enhance them by replacing obsolete routines (Nelson and Winter, 1982; Teece *et al.*, 1997). Thus, routines may constitute the primary building blocks of capabilities (Feldman and Pentland, 2003). To analyze the dynamic evolution of routines, we build on the concept of the business model as a prism of analysis.

Using business models as a prism of analysis

In this paper, we propose the use of the business model concept as a prism through which to study the interactions among various forms[1] of PI routine and the configuration of a company's resources and activities. The concept of the business

model has been the focus of substantial attention from both academics and practitioners (Zott *et al.*, 2010), especially with the expansion of the internet, as a means to explain firms' value creation, performance and competitive advantages. More generally, a business model provides a framework for describing an economic activity (Teece, 2010). According to Osterwalder (2004), it entails five possible roles and usages: understanding and sharing, analyzing, managing, prospecting and patenting. Baden-Fuller and Morgan (2010) suggest using business models to analyze or classify business phenomena and the development of ideal types.

From an empirical perspective, business models help firms operationalize their strategic choices (Shafer *et al.*, 2005) by explaining how activities work together to execute a strategy (Richardson, 2008) and reflecting the firm's realized strategy (Casadesus-Masanell and Ricart, 2010). This understanding aligns with Baden-Fuller and Morgan's (2010) assertion that the business model functions as a mediator, enabling users to figure out how their world works in a practical context. In their RCOV framework, Demil and Lecocq (2010) include these multiple and mediating roles to highlight the usefulness of business models as integrative visions of the various functions of the firm. Thus, business models offer a complementary device for strategic analyses that can benefit new ventures and established firms (Lecocq *et al.*, 2006), allowing managers to think proactively of new sources of revenue. This ability is important for companies, though it requires them to adjust and transform their business models continuously (Chesbrough, 2007; Johnson *et al.*, 2008; Sosna *et al.*, 2010; Voelpel *et al.*, 2004).

The RCOV framework (Demil and Lecocq, 2010) supports a configurational approach to the business model concept and suggests a mean to track the various stages of change in a firm's business model. It describes business models as configurations of resources, competences, organizations and value propositions. According to Plé *et al.* (2010, p. 229), the basic assumption of the RCOV model is that a firm builds its business model by making various choices to generate revenues in a broad sense: "These choices encompass resources and competences to value, the value proposition from the firm to its customers, and the internal and external organization of the business". These three basic elements determine the structure and the volume of costs and revenues of a business and therefore its profit margin. Specifically, resources and competences are valued according to the supply of products or services on markets (Plé *et al.*, 2010). The resources represent the assets of the firm, which may come from external markets or be developed internally; competences refer to the abilities and skills that managers develop individually or collectively. Both are needed to deliver the customer value proposition (Johnson *et al.*, 2008). In combination, resources and competences refer to the firm's strategic capabilities (Bowman and Collier, 2006). Organization refers to the company's choice of operations and the relations it establishes with other organizations. Therefore, an organizational structure encompasses the organization's activities and relations with other organizations or stakeholders, which it uses to exploit its given resources (Demil and Lecocq, 2010). It embodies the design of activities of the firm, including its value chain and value network (suppliers, customers, competitors and regulators). Finally, the value proposition portrays the promise that the firm delivers to its customers, including its specific offer of products and services, its target customers and how the offering fulfills their needs, such that the firm generates revenues. Johnson *et al.* (2008) refer to this profit formula as a blueprint that defines how the company creates value for itself

while providing value for costumers (Pitelis, 2009). It also specifies the volume and structure of revenues, the volume and structure of costs and the expected margin or desired profit. This framework reflects Penrose's (1959) view of the firm, such that business models use bundles of key resources to create and deliver value to customers. Thus, it can clarify how resources get concurrently exploited, created and captured. Resources and competences represent the primary elements of a business model that may constitute the direct recipients of the impacts of changes of an organizational routine. In line with these assertions, we use the business model and its components as a prism of analysis to study the forms of evolution of the PI routine, as an organizational routine, in the case of SNCF.

Application of the conceptual framework: Participative innovation at SNCF

Durieux (2000) defines PI as a proposed innovation by actors of the company, separate from their assigned duties. It is closely related to employee-driven innovation and requires the active participation of the innovator throughout the development process. PI involves employees, and it can prompt organizational resistance if employees' ideas disturb the established order (Alter, 2000). Yet active innovation networks appear throughout the world; they include the French "Innov'Acteurs" association, created in 2002 with the purpose of promoting PI. It merges various entities to develop suggestions, initiatives and quality clusters. According to SNCF's CEO, "Ideas in the company are one of its resources; all the ideas without exception". These ideas help determine the evolutionary trajectory of an innovation routine. Related changes affect its organizational structure and value proposition simultaneously.

The French public railway was one of the first French companies to develop and manage forms and processes of PI. It began in 1938, with the merger of five private companies and two public networks, coming under the control of the state (51 per cent), with 49 per cent of shares belonging to shareholders of financial companies. By assessing PI in the case of SNCF, according to the four operational criteria established by Feldman and Pentland (2003), we define the concept as set of repetitive, recognized, multiple and interdependent actions. This definition is sufficiently descriptive to apply to the case of PI at SNCF; it has all the characteristics of an organizational routine so defined and can therefore be considered as such. Having evolved through various forms and names (suggestions, innovation and continuous improvement), PI at SNCF has been formalized for several decades.

The concept of PI has three aspects. First, it is repetitive; since the company's creation in 1938, hundreds or even thousands of innovations have been addressed. Although about 100,000 ideas have been formally registered in SNCF PI databases since the 1990s, PI in SNCF has existed since the company was established. According to railworkers who provide maintenance services, "PI has always been part of SNCF's culture to improve the way things work".

Second, PI includes a clearly identified model of action through the submission of the ideas to reporting lines and technical experts. If the outcome of a case is favorable, the implementation of the idea and a possible reward for the innovator are considered. Actions are closely related: if a line manager does not validate an idea proposed by an employee, there is no favorable outcome, and the process stops.

Third, PI is driven by several actors: the innovator, line managers, innovation leaders and technical experts. According to Feldman and Pentland (2003, p. 96), PI in SNCF meets all aspects of an organizational routine: "It is repetitive, features a recognizable pattern of actions, relies on interdependent actions, and involves multiple actors". The repetitive nature of a routine leads us to wonder if a routine can spell change.

Therefore, we make the following assumptions:

- the business model evolves along with the dynamic evolution of routine; and
- the nature and forms of change of business models depend on the forms of the developed organizational routine.

Method

Methodological approach and data collection

To analyze PI in the case of SNCF, we use the framework developed by Barley and Tolbert (1997) to guide our analysis of the phases of PI evolution for SNCF. We rely on a simplified sequential model of institutionalization (Barley and Tolbert, 1997) and thereby highlight the different scripts related to PI routine at SNCF. According to Gioia and Poole (1984, p. 34), scripts are "the cognitive dynamics underlying many organizational behaviors and actions", which are generally regarded as relatively stable. Barley and Tolbert's framework is based on this notion of script, which helps researchers better understand the evolutionary milestones in routines. These scripts can be identified empirically, regardless of the type of actor or level in which the researcher is interested. They are observable as recurrent activities and patterns of interactions characterizing a particular context. In the scripts, the reality of the action corresponds to what actually occurs at that level of actions. Thus, a sequential model offers an interesting description of institutional realities and transformations of a routine. By institutional reality, we refer to structures that get taken for granted (DiMaggio and Powell, 1983; Scott, 1995). From these everyday interactions in institutions, it is possible to define scripts (Barley, 1986). Institutions also can be conveyed in different ways (culture, structures and routines) and intervene at different levels. For Scott (1995), an institution comprises cognitive, normative and regulative structures that offer stability and give meaning to social behavior. Barley and Tolbert (1997) further define the institution through shared rules and typologies that reveal categories of social actors and their activities or relationships. In this sense, SNCF is an institution.

The uniqueness of SNCF's case makes it a particularly relevant illustration of our research question (Eisenhardt, 1989) that offers an idiosyncratic understanding of our approach and provides more generalized lessons. This case offers an opportunity to draw more general theoretical conclusions (Yin, 1994) by identifying how PI has interacted with SNCF's business model during and beyond the investigation period. Our approach is interpretative and inductive. We analyze a set of contextual elements to understand events over time and comprehend the realities of the interactions between an organizational routine (PI) and the firm's business model.

For this single case study, we used all available documentation: archival records, internal memos, references, notes, transcripts of official speeches and informal exchanges in meetings. We maintained a presence in the company from 2003 to 2007. After an initial investigation during 2003 and 2004, we legitimized our presence by entering into a research agreement, signed in 2005. After that point, we obtained full

access to a database extracted from SNCF's intranet (in place since 1994), which documented many innovations produced through the PI routine. These data address different manifestations of the studied routine (i.e. suggestions, innovation, continuous improvement and PI). We also engaged in participant and non-participant observations and conducted 70 interviews: 35 with operational railworkers, 15 with experts and 20 with innovators (see Tables I and II, where we list the data in chronological order). We used a structured interview grid (see Appendix) to explore not only the innovation strategies and practices at SNCF but also the barriers to innovation. The same questions were asked in all interviews.

These interviews enabled us to follow the steps of the evolution of SNCF's business model.

These various sources of information on PI and SNCF's business model helped us comprehend the context and environment of innovation at SNCF and the interactions among SNCF's strategy, business model and PI routine.

Analysis procedure

Using these types of data, we began by determining the scope of our study. We followed an iterative approach that aimed to continue the process of data collection until we reached a deep level understanding of the PI routine and business model of SNCF. The following steps describe our methodological approach.

First, we identified social groups that had been involved in PI since the creation of SNCF in 1938. As Barley and Tolbert (1997) point out, their methodology can be applied at various observation levels; given the size of SNCF, we chose to study the PI routine

Profiles	No. of interviews
National facilitators of innovation network in SNCF	3
Regional leaders and local facilitators	4
Person in charge of piloting the Industrial Project	1
Regular meetings with the person in charge of PI within the direction of Innovation and Research	1
Director of communication of the SNCF	1
Experts depending from the direction of Innovation and Research and from other departments	5
PI innovators in five different sites in the SNCF	20

Table I. Profiles of actors (experts and innovators) met and interviewed in SNCF

Data type	Period covered	Component of SNCF's business model explored
Archives: rules and procedures	1938-2007	Organizational aspects of SNCF and its value proposition
Computer databases of recorded innovations	1994-2004	Resources and competences and organizational aspects
Retrospective accounts	1994	Resources and competences
Participant and non-participant observations	2003-2007	Resources and competences
Interviews	2003-2007	Resources and competences, organizational aspects and value proposition

Table II. Sources of collected data and periods of investigation

mainly at the macro level. In addition, we carefully chose a focal observation site, because SNCF's PI routine is centrally controlled. We further recognized that the constitution and evolution of these social groups, as part of SNCF's business model – particularly its resources and competences – helped identify the portfolio of resources engaged in the implementation and the evolution of the PI routine in SNCF.

Second, for the construction and validation of the identified scripts, we collected and structured vast data. We constructed a database relevant to the PI routine. Between 2003 and 2007, while actively present on site, we compiled specific comments, though this approach could not provide information about all previous periods. Therefore, we used archival sources (references, notes, memos, minutes of meetings and transcripts of official speeches) and retrospective accounts whenever possible. Because we had access to the whole database extracted from the intranet of the company since 1994, we also gathered documented evidence of innovations produced through the PI routine. This extended archival work is associated with different denominations of the routines (suggestions, innovation, continuous improvement and PI). The evolution of these forms of routines followed the transformation of the SNCF's value proposition over time.

Third, we structured the data to formulate and analyze the emerging scripts (Barley and Tolbert, 1997). The aim was to understand change over time. Therefore, we used the explored rules and procedures to distinguish groups of actors and classified observations by identifying different types of structures and behaviors that occur over time. Thus, we could approach the organizational level of SNCF's business model. We were able to highlight the main periods of stability in the PI routine, which constituted the scripts that we analyzed. This step was important for tracking the transformation of the PI routine, along with change of SNCF's organization and structure.

Fourth, we highlighted the different periods of routine stability to distinguish the scripts. In this step, we examined changes in the PI routine that might indicate new scripts. (It was important to discern major changes from minor modifications to the PI routine.) We then connected the identified scripts with all available sources of data citing changes in the PI routine. These new scripts indicated new forms of PI routine. The changes were associated with the changes occurring in SNCF's business model and the various dimensions within it, as outlined in the RCOV framework (Demil and Lecocq, 2010).

These steps helped us understand and analyze the phases of evolution of the PI routine at SNCF by following the transformation of its business model (Figure 1).

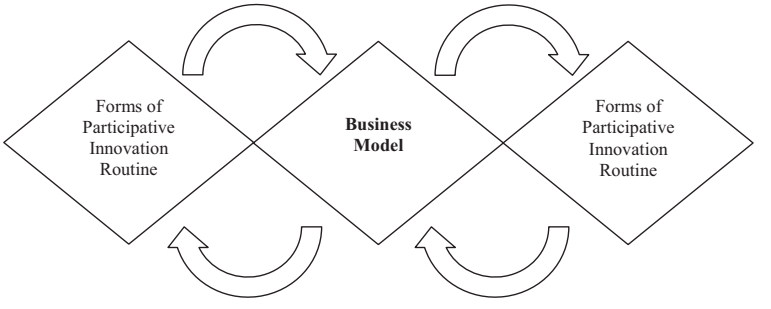

Figure 1.
Business model as a prism of analysis of the evolution of the forms of PI routine at SNCF

Analysis and results

In this section, we present milestones in the evolution of the PI routine during SNCF's history (Deslée, 2012, 2013) and study and discuss the evolution of SNCF's business model in interaction with the development of new forms of PI routine. We identify the major events and milestones in the history of SNCF and the main forms of its PI routine in Table III.

Bureaucratic suggestions, 1938-1989

The French public railway began in 1938, with the merger of five private companies and two public networks. It fell under the complete control of the state. The PI mostly entailed bureaucratic suggestions, "looking for all the savings in the exploitation" (Agenda n°7, signed by CEO A. Besneray, May 25, 1938). The suggestions were controlled by experts, who prioritized savings.

This focus remained unchanged during the Second World War. In 1942, thousands of suggestions were proposed (Janssoone, 2003). With the reconstruction of the rail network after the war, this number increased. With an internal procedure change, signed September 10, 1954, by Louis Armand (then president of SNCF), the rules and procedures gained precision and were actively deployed throughout the company.

The 1980s were characterized by huge deficits, prompting SNCF to change. For example, in 1983, SNCF became a Commercial and Industrial Public Institution known as "EPIC", as the result of the regulatory project on inland transport (LOTI), passed December 30, 1982. Its social body (Bouyer *et al.*, 2003) defended its social contract (i.e. status, retirement), but massive strikes in 1986-1987 questioned this status; as one railworker explained, "We went on strike for great causes when the very foundations of the social contract was being challenged". After these strikes, various audits highlighted that railworkers needed to feel recognized, and their status was very important to them. In the early 1990s, French companies, such as EDF-GDF, La Poste and SNCF, underwent significant organizational changes to achieve the necessary flexibility to deal with private competition and adapt to new EU directives. Yet after long periods of social conflicts, the main objective was to regain social peace, such that PI transformed to become a means for railworkers to contribute their innovative ideas.

In this initial period, during which PI was expressed through bureaucratic suggestions, SNCF presented a basic business model, with an overall view of the core logic of the firm (Prahalad and Bettis, 1986). There were no specific competences, beyond those needed for railway carriage and train maintenance.

Key periods	Major events in SNCF	Forms of PI	Outcomes of PI
1938-1989	Merger of five French railway companies; recovery from strikes	Bureaucratic suggestions	Savings Social peace
1990-2002	Experimentation with the Industrial Project	Animation network	Managerial renovation
From 2003 onward	Implementation and management of the Industrial Project	Structured innovation	Innovation and strategic development

Table III. Timeline of PI evolution at SNCF

The value proposition was fundamentally reduced to the main delivered usage. It was utility oriented: SNCF was dealing with passengers and persons in general regarding their quality of use, rather than customers.

This perspective could explain the absence of any specific customer interface or relationships. The main functions were maintenance activity and administration direction, as specified in the Crozier audit in 1986.

Animation network, 1990-2002

The European Directive of July 29, 1991, required the financial separation of infrastructure and operations and thus the creation of Réseau Ferré de France (RFF). This French rail network owns and maintains national railways. The trains are operated by SNCF, the national railway company; the European Union Directive n°91/440 required France's government to separate train operations from railway infrastructure. Furthermore, SNCF retained ownership of stations.

In 1995, the European Conference of Transport Ministers held an international seminar to discuss rail transport in Europe (CEMT, 1995). By discussing development opportunities, the railways signaled they had entered a crucial period that required them to define which services to develop and which to halt (Plassard, 1995).

In 1996, the development of the "Industrial Project", as a new strategic plan for SNCF, imposed a new strategic orientation for the company. A resulting pact of modernization, signed by SNCF's main stakeholders, aligned with the foundations of the Industrial Project and allowed the company's debt to be taken on by the state, such that it avoided a potential bankruptcy.

At the same time, top management affirmed its desire to "promote initiatives and staff's innovation" and took three steps. First, it created a network of PI champions at regional and local levels, driven by the human resources department and a "Management Institute" with the mission of promoting PI. Second, to ensure technical support for innovation, the research department established a steering committee to ensure coordination with human resources. Various working groups formed in response, and a guide for encouraging innovation was published. Third, the process was supported by a 2001 management charter that highlighted two main practices: "the implementation of continuous improvement" and "the development of employees". Such practices aimed to improve managerial skills and encourage different initiatives. In this context, proximity managers were added to most of SNCF's units. Thus, a managerial transformation was taking place in SNCF.

During this second period, PI became the expression of an animation network. Beginning in 1990, there was a declared objective to increase the quality of service and develop a customer preoccupation in SNCF's business model. This new orientation was supported by the formulation of the Industrial Project, following the appointment of Louis Gallois to the SNCF board of directors. The project had been initiated by Gallois's predecessor, Loïk Le Floch-Prigent, who, after his arrival in December 1995, launched the test of the first Industrial Project to restore order and ensure social peace; it was followed by the opening of SNCF's online travel agency, which is now the highest volume electronic commerce website in France, selling one-quarter of French SNCF tickets.

In 2002, SNCF invested more resources by establishing proximity managers as innovation facilitators. The company also developed new expertise by training local, regional and national innovation leaders and coordinators. The aim was to strengthen

animation skills at SNCF. The organization witnessed the first experimentation phases of the industrial project, involving various decisions, such as structuring SNCF according to three major activities (freight, passengers and infrastructures). Following decree n°97-135 of February 13, 1997, SNCF's core business evolved when it decided to separate rail infrastructure from exploitation and open the market to independently operating train companies. Additional measures were taken at SNCF to enhance innovation networks and improve expertise through the allocation of new resources from research and technology and the Management Institute. Moreover, SNCF created an innovation toolkit for implementing a strategy of continuous innovation.

Structured innovation, 2003-2010

In late 2003 and early 2004, SNCF reorganized into four branches: freight, VFE (travels in France and Europe), infrastructure and public transportation. In 2005, SNCF also chose a new corporate slogan: "Ideas in advance". This initiative aimed to increase the competitiveness of the company; simultaneously, PI grew more structured, with guidelines for enhancing innovation and strategic development purposes.

In the summer of 2005, the executive board decided to create several decision centers and establish an extra-budgetary line for PI to experiment with new ideas. The pathway for PI and the dedicated budgets, combined with the creation of decision centers, aimed to speed up responses to any innovative idea, in less than three months. The decision centers were allocated €3,500 for each region, and €50,000 was dedicated to the national decision center. Each proposed idea was evaluated according to strategic business lines, as well as in terms of expert analyses of or experiments to test their feasibility. In 2006, more than 320 decisions centers existed at both local and national levels, accelerating the innovation implementation processes (e.g. tests, prototypes). The decision centers also helped identify, for each innovation, which customers might provide funding to develop it.

The most recent period began in 2003, with a complete managerial renovation and innovation. Railworkers with about 25 to 30 years of experience in the company came to the Institute of Management to introduce the new way of management and foster PI, which was a new strategic orientation for the company. The studied routine took the form of a more structured innovation process. Therefore, this period was characterized by an increasing awareness of the importance of innovation at SNCF, and the SNCF's business model grew more open to the external environment. In 2005, the Research and Technology Department (created in 1991) was renamed Department of Innovation and Research to highlight its innovation efforts. Moreover, the board of directors decided to allocate a significant budget for experimenting with new ideas and developing innovative concepts. This initiative prompted the creation of the new baseline, known as "Ideas in advance", to improve the image of total quality and safety of SNCF. It allowed the company to highlight its expertise in customer safety, high-speed engineering and complex network management. This new identity was supported by a wide institutional communication campaign and called for multiple innovation efforts.

More generally, from 1970 to 2003, the number of SNCF employees dropped from more than 200,000 to 160,000, largely as a result of the emergence of new IT applications and the deployment of innovative concepts. Yet the number of experts employed in different areas increased to 3,000, focusing mainly on information systems. As in the second period, the most strongly affected dimensions in SNCF's business model were at the organization level.

It organized four distinct branches (freight, VFE, infrastructure and public transport), established decision centers related to innovation and linked the human resources department to the Department of Innovation and Research. Thus, in the latest business model, SNCF embedded innovation in its organizational structures and gave it a strong managerial focus. Furthermore, SNCF applied yield management tactics to help slash prices. In 2006, the company replaced the INNOGEST software application with a new software application dedicated to innovation (J'NOV), to improve PI management.

These transformations affected not only the configuration of activities but also SNCF's value network. For example, the company decided to sign, along with its key partners, a charter for sustainable development to improve its reputation as a socially responsible actor.

These different milestones of the evolution of the PI routine at SNCF helped us reveal the interactions among forms of PI routine and the business model. With this analysis, we have sought to identify business model changes in interaction with this evolution, through three main phases as follows: 1970-1989, when the routine was expressed through bureaucratic suggestions, 1990-2002, when the routine took the form of animation networks, and after 2003, when the routine evolved into more structured innovation.

Across these three periods, SNCF's business model evolved with its main components, according to the RCOV framework and in response to the evolution of the PI routine. In line with Winter and Szulanski's (2001, p. 371) assertion, SNCF's business model, "far from being a quantum of information that is revealed in a flash", is instead "a complex set of interdependent routines that is discovered, adjusted, and fine-tuned by doing". In the following table (Table IV), we outline the main changes on SNCF's business model components over time, following the evolution of the PI routine.

Discussion

This study demonstrates that by engaging in innovation, spreading it throughout an organization, and innovating, an existing routine can help firms reinvent their business models, moving from a functionalist view to a customer-oriented approach and finally to an open business model (Figure 2).

Three main periods shaped the forms of PI at SNCF and prompted changes in its business model. This routine affected strategic and organizational choices, as well as the configuration of SNCF's business model. In particular, in the first period, when the PI routine took the form of bureaucratic suggestion, SNCF's business model was an expression of an essentialist or functionalist view (Doganova and Eyquem-Renault, 2009), focused on delivering utility to users and delineating its core value creation logic. For example, as a railworker described it, "The SNCF logic was centered on transport, that's all! The preoccupation of service and considering the users of our trains as customers is fairly recent". Thus, the business model of SNCF was a functionalist business model.

In the second period, the company's PI routine evolved from bureaucratic suggestions to animation networks, marked by a strong customer preoccupation and a will to increase service quality and safety. In addition, the decisions and measures affected both the organizational level, through the creation of the industrial project and the establishment of a department for technology and research, and the strategic level, with the development of new expertise and investments of new resources. These initiatives helped alter SNCF's core logic, by separating the rail infrastructure from operations and distinguishing its main activities and branches. Thus, a pragmatic view of the business model came to prevail, in

Main components of the business model / Forms of PI	Bureaucratic suggestions (1970-1989)	Animation network (1990-2002)	Structured innovation (from 2003 onward)
Resources and competences	More than 200,000 railworkers Technical expertise related to railway carriages and train maintenance	In June 2001, development of proximity managers and infrastructure Training local, regional and national innovation coordinators Strengthening animation skills Use of the Minitel system for sharing innovations Constitution of a PI network with more than 3,000 experts Creation of an innovation toolkit	160,000 railworkers Expertise in customer safety, high-speed engineering and complex network management Allocation of a budget of €3,500 for each structure to enhance innovation and €50,000 for each business unit
Organization: value chain of activities and web of created relations	Maintenance of trains and railways Settlement of 25 regional directions in 1971 Department in charge of human resources In 1938, acquiring of a Commercial and Industrial Public Institution's status (EPIC)	Creation of the research and technology department RFF (1997) requires the separation of rail infrastructure from operations and opens the market to independent train companies Establishment of the Management Institute Restructuring into three branches in 1993: freight, passengers and infrastructure Experimentation with the industrial project Network of local leaders and facilitators created in 1991 In 1997, implementation of INNOGEST as a server for innovation Creation of national innovation database	Four branches: freight, France Europe voyages, infrastructure and public transport Sustainable development charts signed with key partners Yield management tactics support lower prices, often when demand is high Managerial renovation as a new axis in the industrial project Launch of internal and external communication pertaining to themes of ideas in advance Department of research and technology (DRT) became department of innovation and research (DIR) Co-piloting PI by human resources department, DIR and operations Consolidation of the computer system; INNOGEST replaced by the new system J'NOV, dedicated to innovation Implementation of decision centers
Value proposition	Passenger transport and general freight transport Focus on users rather than customers Formal routes to propose innovative ideas	Greater customer orientation, with the goal of improving service quality Formulation, after the arrival of Louis Gallois in July 1996, of the industrial project "Towards a pact for SNCF's modernization" Voyages-sncf.com, owned at 50.1 per cent, founded in June 2000 as the online travel agency of SNCF	30 years of service in transport sector In 2005, a new brand was proposed Steps toward improving image for quality, innovation and safety

Table IV.
Changes in SNCF's business model components at phases of transformation of the PI routine

which the business model offered a market device to enhance the socially situated practices of calculation and decision-making, with a focus on materiality, use and dynamics (Doganova and Eyquem-Renault, 2009). That is, SNCF's business model evolved from a functionalist to a customer-centric business model.

The period from 1989 to 2001 saw a managerial renovation, and the routine took the form of a structured innovation. This period was characterized by increasing awareness and a focus on innovation, such that SNCF highlighted the importance of institutional communication across different layers of the organization. Even more recently, decentralization efforts have led to the creation of local, regional and national decision centers with specific budget lines, emphasizing autonomous actions and encouraging new initiatives. As the firm has sought to advance its technology, it also has engaged in experimentation to enhance its service quality and safety (e.g. high-speed engineering, complex network management). Through structured innovation, SNCF opened its business model to new initiatives and technologies and to more innovative ideas, applications and systems. In this sense, its business model evolved from a customer-oriented view to an open business model that seeks ways to earn revenue through innovation and exploit newly available opportunities (Chesbrough, 2006). Some innovations have led to patents and been commercialized worldwide. For example, SNCF developed a new dry piston compressor technology (to replace screw compressors), because it had trouble maintaining the old compressors, which required at least a day of maintenance and resources to keep them in operation. The new technology allows dry compressors to be inserted in tandem, so they are more manageable and reduce the frequency of breakdowns. The new compressor unit that includes the two small, independent, manageable compressors is able to maintain 75 per cent of the power even if one unit fails.

Moreover, SNCF's new model fits the logic of sustainable development. In this context, PI fosters collaboration with customers and suppliers, to everyone's benefit. This adaptation of the business model goes beyond searching for new technologies to open the firm to external ideas and paths to market and thus improve its competitive positioning (Chesbrough, 2007).

We summarize these periods and the related evolutions in SNCF's business model in Figure 2. As the organizational routine evolves from a bureaucratic suggestion to animation networks and then to structured innovation, the business model moves from an essentialist, functionalist view to a customer-oriented approach and finally to an open business model.

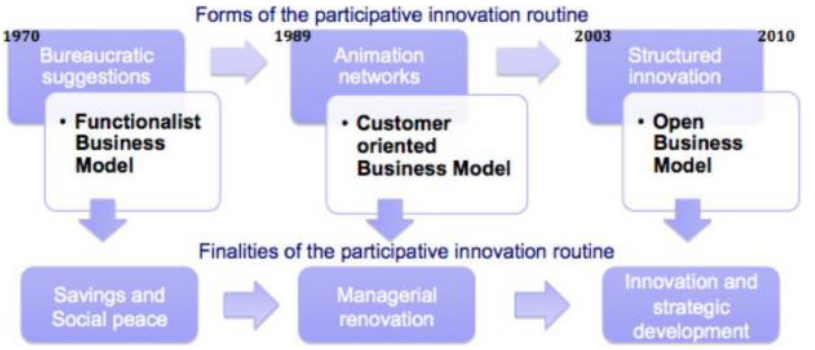

Figure 2.
Interactions of the PI routine and the business model

Conclusion

We pose the question: how does a business model evolve in interaction with an organizational routine? Business model change has been mostly approached as an answer to certain triggers, without exploring the co-evolutionary dynamic of business models and organizational routines. Existing theory has been limited regarding transformation scenarios. To fill this gap, we provide a dynamic view of business model change following the evolution of an organizational routine, that is PI in the case of SNCF. More generally, we aim to contribute to literature on business model change and innovation.

Our longitudinal, in-depth case study sheds light on paths for business model change through the lens of an evolving PI routine. We use the concept of the business model as a prism of analysis to understand these co-evolutionary dynamics. The case of SNCF provides an example in which PI, as an organizational routine, evolves over time through the modification of its forms and changes to its outcomes, which is more in line with Feldman and Pentland's (2003) assertion about the potential for transformation and how routines get implemented in reality. The evolution of the routine takes place progressively – not brutally. At the same time, the process of PI is controlled by top managers; it is initiated as a reaction, rather than a result, of a real strategic reflection (Schreyögg and Kliesch-Eberl, 2007). Over the course of 30 years, the evolution of the forms and outcomes of SNCF's PI routine has induced the progressive transformation of its business model. Our observations of SNCF since 1970 highlight the role of time in organizational change (Gersick, 1991), in particular for established firms. Obviously, the PI routine did not just evolve but also provided support for continuous change to SNCF's business model. By studying the case of SNCF, we have revealed the co-evolutionary dynamics between PI as an organizational routine and the business model of the firm. This single case study addresses the question of how organizational routines help firms engage effectively in business model transformation in its various components, according to the RCOV framework. It demonstrates that the evolution of the organizational routine from bureaucratic suggestion to structured innovation and finally to PI has led to the transformation of the business model. Therefore, rather than being static, the business model, along with the main components of the RCOV framework, is reinvented and transformed at each stage of the transformation of this routine: It moves from a functionalist to a customer-centric and then to an open business model. These findings align with our theoretical assumptions.

Managerial implications and further research

Through our research, we have concluded that the more innovation is structured and ingrained in the organizational process, the more the business model becomes open to the external environment, and the more it benefits from various innovation initiatives. Moreover, the RCOV framework allows us to determine the level of change in the business model by monitoring the change in each component of the framework. On the one hand, a more radical change either occurs at all the different dimensions of the business model (i.e. resources, competences, organization and value proposition) or significantly transforms the firm's offer and thus its organization, resources and competences, which in turn are essential for delivering value. On the other hand, our research helps determine the components needed for change and the desired level of change, according to the form of business model the company aims to adopt.

More practically, our results can help firms and their managers reinvent their established business models by innovating their existing routines. We suggest ways to rethink the position and role of routines in organizations; rather than sources of rigidity and inertia, they should be used as levers for innovation and change. Further investigations should address the question of how firms can transform their organizational routines into drivers of strategic change. We predict this transformation requires organizational routines that balance performative and ostensive aspects, but this claim requires further confirmation. Our case study indicates that obstacles exist, and circumvention can lead to discrepancies between ostensive and performative aspects of the PI routine. These differences will usually lead to deviations without resulting in effective transformation. Further research could investigate whether the interactions between the performative and ostensive aspects of a routine imply its own transformation. This question also could be approached by alternating phases of exploration and phases of exploitation (Sosna *et al.*, 2010).

Finally, we posit that experimentation could have a crucial role, such that it could validate the transformation process of the business model. As an iterative process of trial and error, experimentation with new routines may involve experimentation with new organizational configurations and thus new business models. This possibility suggests the need for routine-based transformation models that apply to established firms as well as new ventures and outline the routes to ongoing strategic renewal. In this case, organizational routines could produce the seeds of business model reinvention.

Note

1. These forms of PI were deduced directly from the scripts, as defined by the methodology adapted from Barley and Tolbert (1997).

References

Alter, N. (2000), *L'innovation Ordinaire*, Presses Universitaires de France.

Amit, R. and Zott, C. (2012), "Creating value through business model innovation", *MIT Sloan Management Review*, Vol. 53 No. 3, pp. 41-48.

Autissier, D. and Wacheux, F. (2000), *Structuration et management des organisations. Gestion de l'action et du changement dans les entreprises, L'Harmattan*, Logiques de l'action.

Baden-Fuller, C. and Morgan, M.S. (2010), "Business models as models", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 156-171.

Barley, S.R. (1986), "Technology as an occasion for structuring: evidence from observations of CT scanners and the social order of radiology departments", *Administrative Science Quarterly*, Vol. 31 No. 1, pp. 78-108.

Barley, S.R. and Tolbert, P.S. (1997), "Institutionalization and structuration: studying the links between action and institution", *Organization Studies*, Vol. 18 No. 1, pp. 93-117.

Baum, J.A.C. and Ingram, P. (1998), "Survival-enhancing learning in the Manhattan hotel industry, 1898-1980", *Management Science*, Vol. 44, pp. 996-1016.

Bouyer, F., Marbot, E., Normand, E. and Thévenet, M. (2003), "SNCF: la culture cheminote", Rapport commandé par la SNCF.

Bowman, C. and Collier, N. (2006), "A contingency approach to resource-creation processes", *International Journal of Management Reviews*, Vol. 8 No. 4, pp. 191-211.

Casadesus-Masanell, R. and Ricart, J.E. (2010), "From strategy to business models and onto tactics", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 195-215.

Conférence Européenne des Ministres des Transports (CEMT) (1995), "Des chemins de fer, pour quoi faire?", Séminaire International, 19-20 January.

Chesbrough, H. (2006), *Open Business Models: How to Thrive in the New Innovation Landscape*, Harvard Business School Press, Boston.

Chesbrough, H. (2007), "Why companies should have open business models", *MIT Sloan Management Review*, Vol. 48 No. 2, pp. 22-28.

Chesbrough, H. (2010), "Business model innovation: opportunities and barriers", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 354-363.

Cohen, M.D. and Bacdayan, P. (1994), "Organizational routines are stored as procedural memory: evidence from a laboratory study", *Organizational Science*, Vol. 5, pp. 554-568.

Cohen, M.D., Burkhart, R., Dosi, G., Egidi, M., Marengo, L., Warglien, M. and Winter, S. (1996), "Routines and other recurring actions patterns of organizations: contemporary research issues", *Industrial and Corporate Change*, Vol. 5 No. 3, pp. 653-698.

Cyert, R.M. and March, J.G. (1963), *A Behavioural Theory of the Firm*, Prentice-Hall, Englewood Cliffs, NJ.

Demil, B. and Lecocq, X. (2010), "Business model evolution: in search of dynamic consistency", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 227-246.

Deslée, C. (2012), "The steps of an organizational routine's transformation: the case of the employee driven innovation routine at the French National Railways company (SNCF)", in Fulford, H. (Ed.), *Case Studies in Innovation for Researchers, Teachers and Students*, API Ltd, UK, pp. 65-84.

Deslée, C. (2013), "Different stages of the positioning of participative innovation (PI) over time: the case of the PI routine at the French National Railway Company (SNCF)", *International Journal of Innovation and Regional Development*, Vol. 5 No. 1, pp. 58-72.

DiMaggio, P.J. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147-160.

Doganova, L. and Eyquem-Renault, M. (2009), "What do business models do? Innovation devices in technology entrepreneurship", *Research Policy*, Vol. 38 No. 10, pp. 1559-1570.

Durieux, F. (2000), *Management de l'innovation*, FNEGE, Vuibert.

Eisenhardt, K.M. (1989), "Building theories from case study research", *Academy of Management Review*, Vol. 14 No. 4, pp. 532-550.

Feldman, M.S. (2000), "Organizational routines as a source of continuous change", *Organization Science*, Vol. 11 No. 6, pp. 611-629.

Feldman, M.S. and Pentland, B.T. (2003), "Reconceptualizing organizational routines as a source of flexibility and change", *Administrative Science Quarterly*, Vol. 48 No. 1, pp. 94-118.

Gersick, C.J. (1991), "Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm", *The Academy of Management Review*, Vol. 16 No. 1, pp. 10-36.

Gersick, C.J. and Hackman, J.R. (1990), "Habitual routines in task-performing groups", *Organizational Behavior and Human Decision Processes*, Vol. 47 No. 1, pp. 65-97.

Gioia, D. and Poole, P. (1984), "Scripts in organizational behavior", *Academy of Management Review*, Vol. 9 No. 3, pp. 449-459.

Hannan, M.T. and Freeman, J.R. (1984), "Structural inertia and organizational change", *American Sociological Review*, Vol. 29 No. 2, pp. 149-164.

Huff, J.O., Huff, A.S. and Thomas, H. (1992), "Strategic renewal and the interaction of cumulative stress and inertia", *Strategic Management Journal*, Vol. 13 No. 1, pp. 55-75.

Janssoone, D. (2003), *La boîte à idées: une richesse pour l'entreprise, coll. Pratiques d'entreprises*, Ed. EMS, Colombelles.

Johnson, M.W., Christensen, C.M. and Kagermann, H. (2008), "Reinventing your business model", *Harvard Business Review*, Vol. 86 No. 12, pp. 50-59.

Lecocq, X., Demil, B. and Warnier, V. (2006), "Le business model, un outil d'analyse stratégique", *L'Expansion Management Review*, Vol. 4 No. 123, pp. 96-109.

March, J. and Simon, H. (1958), *Organizations*, Wiley, New York, NY.

Miner, A.S., Bassoff, P. and Moorman, C. (2001), "Organizational improvisation and learning: a field of study", *Administrative Science Quarterly*, Vol. 46 No. 2, pp. 304-337.

Nelson, R.R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Harvard University Press, Cambridge, MA.

Osterwalder, A. (2004), "The business model ontology: a proposition in a design science approach", Thesis, Université de Lausanne.

Penrose, E.T. (1959), *The Theory of the Growth of the Firm*, John Wiley, New York, NY.

Pentland, B.T. and Feldman, M.S. (2005), "Organizational routines as a unit of analysis", *Industrial and Corporate Change*, Vol. 14 No. 5, pp. 793-815.

Pentland, B.T. and Ruetler, H. (1994), "Organizational routines as grammars of action", *Administrative Science Quarterly*, Vol. 39 No. 3, pp. 484-510.

Pitelis, C. (2009), "The co-evolution of organizational value capture, value creation and sustainable advantage", *Organization Studies*, Vol. 30 No. 10, pp. 1115-1139.

Plassard, F. (1995), "A une nouvelle demande, un nouveau service", *CEMT (Conférence Européenne des Ministres des Transports), Des chemins de fer, pour quoi faire?, Séminaire International*, 19-20 January, pp. 99-135.

Plé, L., Lecocq, X. and Angot, J. (2010), "Customer-integrated business models: a theoretical framework", *M@n@gement*, Vol. 13, pp. 226-265.

Prahalad, C.K. and Bettis, R.A. (1986), "The dominant logic: a new linkage between diversity and performance", *Strategic Management Journal*, Vol. 7 No. 6, p. 6.

Rerup, C. and Feldman, M.S. (2011), "Routines as a source of change in organizational schemata: the role of trial-and-error learning", *Academy of Management Journal*, Vol. 54 No. 3, pp. 577-610.

Richardson, J. (2008), "The business model: an integrative framework for strategy execution", *Strategic Change*, Vol. 17 Nos 5/6, pp. 133-144.

Schreyögg, G. and Kliesch-Eberl, M. (2007), "How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization", *Strategic Management Journal*, Vol. 28 No. 9, pp. 913-933.

Scott, W.R. (1995), *Institutions and Organizations*, Sage, Thousand Oaks, CA.

Shafer, S.M., Smith, H.J. and Linder, J.C. (2005), "The power of business models", *Business Horizons*, Vol. 48 No. 4, pp. 199-207.

Sosna, M., Trevinyo-Rodriguez, N.R. and Velamuri, S.R. (2010), "Business model innovation through trial-and-error learning: the Naturhouse case", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 383-407.

Teece, D., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-534.

Teece, D.J. (2010), "Business models, business strategy and innovation", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 172-194.

Voelpel, S.C., Leibold, M. and Tekie, E.B. (2004), "The wheel of business model reinvention: how to reshape your business model to leapfrog competitors", *Journal of Change Management*, Vol. 4 No. 3, pp. 259-276.

Winter, S.G. and Szulanski, G. (2001), "Replication as strategy", *Organization Science*, Vol. 12 No. 6, pp. 730-743.

Yin, R. (1994), *Case Study Research: Design and Methods*, Sage, Thousand Oaks, London, New Delhi.

Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, pp. 339-351.

Zott, C. Amit, R. and Massa, L. (2010), "The business model: theoretical roots, recent developments, and future research", Working Paper WP-862, IESE Business School, Madrid.

Appendix. Interview structure

Innovation and PI: management of innovation

What are the forms of innovation in your company?

What types of difficulties have you encountered in developing and implementing innovative practices in your company?

Innovation development and the development of new competences

How have your innovation practices evolved through time?

Has your company developed specific competences to be more innovative?

Resource investment and organizational configuration

What type of resources has the company invested to deploy innovation?

How has your company accompanied the innovative practices and initiatives at the business, managerial and organizational levels?

Value proposition and mission statement

What have been the main concerns of the company: productivity and profitability versus innovation and growth?

Has the offer of the company evolved accordingly to its innovations practices? How?

About the authors

Dr Carine Deslée is a Lecturer at the Institute of Marketing and Management Distribution (IMMD) at the University of Lille, Université Lille Nord de France. Affiliated to LEM UMR CNRS 9221, her research topics are innovation process, organizational transformation, new forms of services, organizational routines and strategic change. Graduated from NEOMA, she was previously director of a mail order company. Carine Deslée is the corresponding author and can be contacted at: cdeslee@gmail.com

Dr Oussama Ammar is a permanent, Associate Professor in strategic management at SKEMA Business School. He is also the academic Dean for Skema US campus in Raleigh. Dr Ammar has over 10 years' experience in teaching strategy and strategy-related topics to a large range of audiences. His research topics deal with business model innovation, strategic experimentation and organizational change. Dr Ammar can be contacted at: oussama.ammar@skema.edu