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Conference Paper

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Provided in Cooperation with:

Governance Research and Development Centre (CIRU), Zagreb

Suggested Citation: Serhan, Hiam; Bris, Gwenola Yannou-Le (2018) : Sustainability Business Model: A Case Study of The Evolution of Activity System by Eco-Design and Eco-Innovation Practices to Value Wine Production, In: Tipurić, Darko Labaš, Davor (Ed.): 6th International OFEL Conference on Governance, Management and Entrepreneurship. New Business Models and Institutional Entrepreneurs: Leading Disruptive Change. April 13th - 14th, 2018, Dubrovnik, Croatia, Governance Research and Development Centre (CIRU), Zagreb, pp. 61-85

This Version is available at:

<https://hdl.handle.net/10419/179983>

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Sustainability Business Model: A Case Study of The Evolution of Activity System by Eco-Design and Eco-Innovation Practices to Value Wine Production

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Abstract

Innovation, sustainability, sustainability innovations are the challenges that today's businesses are facing. While many scholarly research has produced a great deal of useful knowledge about various forms of sustainability and innovation and their integration in business models, there has been no attention given to the process through which a business activity model evolves from a quality management system to a sustainability business model. In this paper, through a case study, we address this gap in research by focusing on the evolution of management practices related to the dynamics of new knowledge introduced by management innovations, i.e. the implementation of management tools, ideas, processes and practices in organizations, intended to alter the way in which the managerial work is performed and to further organizational goals. Building on Engeström theoretical model of activity system and expansive learning, we show how a French wine Château has learned to improve its capabilities to reinvent its business model through the implementation of ISO standards and created sustainability values to its products, services and customers.

Our results show how sustainable development is achieved through the implementation of eco-design and eco-innovation practices. They also show that sustainability in business models and practices is a dynamic and expansive learning mechanism. It is leveraged by management tools and management philosophy that help organizations exploiting their good practices, and exploring and seizing in their environment and among their key partners, the opportunities that can reconfigure the value of their products and services.

Keywords: Business model, Eco-conception, Eco-innovation, Management innovation, Sustainability, Value creation.

Track: Governance

Word count: 10.882

1. Introduction

The systematic improvement of the environmental performance of industrial products and services to generate sustainability innovations is becoming the core element of good governance and good business. While many scholarly research has produced a great deal of useful knowledge about various forms of sustainability and innovation and their integration in business models (Nidumolu et al., 2009; Teece, 2010; Millar et al., 2012; Lüdeke-Freund, 2013), there has been no attention given to the process through which a business activity model evolves from a management system to a sustainable business model. Through a case study, we address this gap in research by focusing on how a particular company has improved its capabilities to reinvent its business model through the implementation of

management innovations (ISO standards) and created value to its products, services and customers. A management innovation is the implementation of management tools, ideas, and processes and practices in organizations, intended to alter the way in which the managerial work is performed and to further organizational goals (Birkinshaw et al., 2008).

The purpose of this paper is to show that innovation in business models to implement sustainability in strategic goals and operational practices occurs through a dynamic process of learning. We argue that management tools that organizations introduce to improve their performance, implement in management systems the new knowledge that allow these learning mechanisms and the reconfiguration of value creation process.

Building on Engeström theory of system activity and expansive learning (2001, 2015), we develop a case study by focusing on the role of the middle manager (quality responsible) of a French wine château who interacts with management innovation tools (ISO standards), within a community (internal and external partnerships) to reach and extend the organizational goals and reconfigure its business model towards the sustainable development pillars (economic, social and environmental). The interest of this study is twofold:

First, it shows how some ISO management systems standards implemented to manage quality (ISO 9001 of quality management system and ISO 14001 for environmental quality management) and ISO 26000 for social responsibility, can be used as frameworks and catalysts for the change of business models.

Second, it illustrates how the evolution of managerial practices and ideas improved the organization's business model in a sustainable way to achieve societal needs through eco-design and eco-innovation practices.

Arguments are presented in three sections: The first section develops the literature review through three points. The first point describes how sustainability become an issue for innovation and integrate business models to frame strategic and operational practices. The second point explains how management innovations such as ISO standards can be frameworks for learning, evolution of practices and reconfiguration of business model. It develops the principles of ISO 9001 of quality management, ISO 14001 of environmental management, and ISO 26000 of social responsibility standards. The third point examines Engeström's model of activity system and expansive learning to explain how an activity system can be managed as a learning framework through the interaction of managers with management tools and organizational stakeholders' expertise, and how learning generates knowledge, relations that expand organizational goals sustainably.

The second section represents our case study. The third section represents the discussion and the conclusion.

2. Literature review

2.1 Sustainability and organizational change

The word sustainability stems from the concept of sustainable development, which means the ability to manage business resources indefinitely. Development consists of a set of practices, sometimes appearing to conflict one another, which require – for the reproduction of society – the general transformation and destruction of the natural environment and of social relations. Its aim is to increase the production of commodities (goods and services) geared, by way of exchange, to effective demand” (Rist, 2006).

In today's businesses, the quest for sustainability as a societal requirement is challenging companies and imposing change programs in business models design, i.e. the processes, technologies, stakeholders, and practices that deliver the value of products and services to customers (Teece, 2010). To achieve this challenge, organizations must learn how to develop the suitable competencies and how to implement the appropriate practices that permit the creation of sustainability innovations. The questions that arise are: what business models are, and how they can help organizations changing their practices to create and commercialize sustainability innovations?

2.2 Business models and sustainability innovation challenges

Developed in the 90s (Ghaziani & Ventresca, 2005) the concept of business model remains polysemic. Thus, Osterwalder and Al (Osterwalder, Pigneur et al., 2005) show that this concept covers different realities according to different practitioners. These authors highlight that the meaning of this concept extends from the enunciation of the value created for the final customer to the identification of the activities that generate this value. They propose to define business models as the representations that provide information on some singular components of the key activities of an organization (contributors to value creation) and the way they interact. Their model offers to managers a conceptual support to analyse how their organization creates, delivers and capture value. Moingeon and Lehmann-Ortega (2010) reformulate this proposition and define business models as the pivot that links the company's customers and the products or services offered to them through the value chain activities creating this offer. However, the usage that can be made of this model varies according to the authors who refer to it and the actors of the organizations that implement it. A first form of use of the business model is called static (Demil & Lecoq 2010): it reports and describes one or more existing configurations. This descriptive approach contributes to the constitution of a set of cases whose existence allows the construction of a typology of business models. A second mode of use of business models, positions business model as an organizational management tool (Moisdon 1997, David 1998) in a paradigm of interactive rationality (Oiry, 2001). Indeed, the model is then considered as a representation that supports the interaction between different actors: the leaders of the organization, the internal stakeholders that drive the organization processes and the external stakeholders (direct and indirect customers). The model becomes according to Demil et al (Demil and Lecoq 2010), a support for change and innovation. In other words, a business model represents an abstract model of the business strategy. It is dynamic: the nature, and value of its building blocks change or evolve when the organization learns from its environment why, how and with who, it must change its practices and the value of its products and services.

In line with Chesbrough (2010), we argue that if business models are used in companies to produce and commercialize ideas and technologies, then, companies produce and commercialize sustainability innovations through sustainability business models.

2.3 Sustainability business models: eco-design and eco-innovation practices

Sustainability business models take into consideration the economic, social and environmental impacts of organizations' activities to achieve sustainability innovations (Lüdeke-Freund, 2013). Sustainability innovations represents the processes through which, the criteria of sustainable development pillars (environmental, social, and financial) integrate the company systems from idea generation to production and commercialization of products/services (Boons & Lüdeke-Freund, 2013). Results of such processes are new

technologies, products, and services as well as business and organizational models that can be generated through two strategies related to the circular economy: Eco-design and Eco-innovation practices (Yannou-Le Bris et Ferrandi, 2016).

Eco-design is about improving an existing production system. Its goal is to reduce losses and wastes. Eco-design is a well-established concept and its most accepted definition is that of ISO 14006:2011 that defines it as follows: “integration of environmental aspects into product design and development, with the aim of reducing adverse environmental impacts throughout a product's life cycle”.

In Eco design implementation process, five central questions must be treated carefully (Wimmer et al., 2004): the product modeling (understanding the product system), the life cycle assessment (understanding the environmental impacts of the product along his life cycle), the eco-design tasks (environmental and stakeholders requirements), the product improvement (redesign the product to improve its impacts) and the environmental communication (introducing and marketing eco-designed product to increase its market share and the company's image). The improvements to be made are determined by the measurement of the quantities of flows used or rejected, tons of falls or wastes, the water volume consumed, etc. during the life cycle of the product. Today, all eco-design approaches have the common goal of reducing the quantities of water and energy inputs and chemical outputs released into the water, air and soil in the project development stages.

Eco-innovation means the creation of new knowledge, organizations, ingredients, products, processes and services that provides significant environmental performances, and the ways of using and sharing them. An ‘eco-designed offer’ derives from technical and or/organizational innovations. Technological innovations are implemented for the production of the product (use of certain new ingredients, enhancement of previously neglected co-products, innovations on energy-consuming processes, etc.). Organizational innovation concerns the structure of the business model and involves sustainable supply chain and distribution methods. Developing sustainability business model requires then from businesses the exploration of alternatives to current ways of doing business as well as understanding consumer concerns and examines product life cycles (Yannou-Le Bris et Ferrandi, 2016).

Because businesses are a part of ecological and social problems, they are then a part of the sustainability solution. Business leaders and managers can take an active co-responsibility in creating sustainability business models by rethinking the customer value proposition and figuring out how to capture revenues and deliver the products and services that meet both customers' and societal needs. This “responsible process” requires “responsible managers” or ‘sustainable entrepreneurs’ who are aware of their social and environmental responsibilities as well as their financial ones. Sustainable entrepreneurs aim for multiple outcomes in terms of solutions to social and ecological problems, whereas they are often faced with limited input availability. They develop new supply chains to gain access to alternative sources, manufacturing capacities, and management competencies (Hansen & Schaltegger 2013). Sustainable entrepreneurs pursue the corporate sustainability through the creation of business cases that support the commercialization of sustainability innovations through their sustainable business models (Chesbrough, 2010). But before commercializing sustainability innovations, financial, social, and ecological criteria of sustainable performance must be integrated in strategic and operational practices. The translation of strategic sustainability

principles into operational good practices and their implementation in daily routines is the task of management and middle managers.

Middle managers – who bridge top management and the bottom line (Drucker, 1986) – can play a crucial role in creating and maintaining new sustainability management system of a company. Their proximity to the employees and opportunity to identify and understand conflicts, as well as decoding corporate messages for employees, play a key role in managing change and contributing to the organization's desired goals (Kumarasinghe & Hoshino, 2010). They change the mental schemes, attitudes, relations and actions of individuals and organizations, and thus facilitate the understanding and implementation of new requirements that leverage evolution.

A company that tries to improve its sustainability has to change its business model (Schaltegger et al., 2012). Chesbrough emphasizes that if companies may have extensive investments and processes for exploring new ideas and technologies, they often have little if any ability to innovate the business models through which their inputs will pass. So the challenge of companies is to develop their capability to innovate their business models (Chesbrough, 2010). To address this challenge, companies engage change programs and adopt various management innovations or tools (such as ISO management standards) to frame and facilitate organizational change and innovations in the nature and value of the building blocks that construct their business models.

3. ISO standards to manage organizational, environmental and corporate social responsibility practices

International Organization for Standardization (ISO) creates standards or documents that provide requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are safe, reliable and of good quality, and fit to their purpose (www.iso.org). For business ISO standards are strategic tools that help reducing costs by minimizing waste and errors, increasing productivity and customers' satisfaction.

Today there are considerable international standards that aim to systematize the implementation of business management systems. Two series of standards issued by the International Organization for Standardization (ISO) had attained major impact worldwide: the ISO 9000 series, related to the implementation of Quality Management Systems (QMS) and the ISO 14000 series, related to the implementation of Environmental Management Systems (EMS).

ISO 9001 of quality management system is the first quality management standard published by ISO and on the impact of its implementation we have the most feedback (over one million companies and organizations are certified to its requirements).

ISO 14001 for environmental management provides requirements and practical tools for companies looking to manage their environmental responsibilities.

ISO 26000 for social responsibility provides guidance on how businesses and organizations can operate in a socially responsible way. The principles of ISO 26000 standard help companies acting in an ethical and transparent way that contributes to the health and welfare of society.

The following section develops the principles and goals of these three mostly used standards throughout the world (www.iso.org). It describes how they can be introduced in organizations as management tools to continuously improve goals, practices and partnerships requirements.

3.1 ISO 9001 standard for quality management system

ISO 9001 standard represents a set of expert knowledge encoded into requirements or rules to be implemented in practices (Brunsson & al., 2012) to improve processes and maximize customers' satisfaction. Its principles are based on a strong customer focus, the motivation and implication of top management, the process approach and continual improvement, the management of risks and opportunities, the analysis and understanding of internal and external context, and the management of organizational knowledge (ISO 9001: 2015) (www.iso.org). These requirements help constructing a quality management system (QMS) grounded on the continuous improvement cycle or the plan, do, check, act Deming's cycle (PDCA). This cycle allow organizations to adapt their practices to the needs of their environment, by identifying risks to be managed and opportunities that can be seized to create new values. But the introduction of ISO 9001 requirements into an established system can create tensions in practices and resistance from employees to adopt the new rules in their routines (Lambert & Loos-Baroin, 2004). These tensions could provoke the failure of the implementation process or help organizations discovering the relevant organizational skills and partners on which they can lean to reconfigure organization's competences and innovate (Serhan, 2017). We argue that failure or innovation outcome from ISO 9001 implementation depends on the managers' skills and managerial style used to approach employees and other stakeholders in quality management program.

We consider ISO 9001 as a management innovation (Serhan, 2017), i.e. a new management tool to the adopting company, which involves the implementation of a new management program that alters practices and further organizational goals (Birkinshaw & al., 2008; Ansari & al., 2010). As a management tool, ISO 9001 is composed of three interacting elements (Hatchuel & Weil, 1995): an artefact of the requirements to implement; the management philosophy that interprets and implements requirements; a simplified vision of organizational practices and relations, since the standard is generic to fit all types of organizations. Like all management tools, ISO 9001 has three functions (Moisdon, 1997): (1) Conformity to rules; (2) Managing internal change by a collective approach to action; (3) Exploring new opportunities.

Through these ambidextrous roles - conformity and creativity – the creative mission of managers is emphasized. Managers must use the 'disruptive' factors that feature in their system as levers for expansive learning, which modifies the object and rules of the organization (Engeström, 2001, 2015). Therefore, it appears that the implementation of new requirements in practices could be a double learning process: *Learning the code* and *learning by the code* (March, 1991) (Lambert & Loos-Baroin, 2004). By “learning the code” practitioners learn how to improve their individual operations. Through “Learning by the code”, practitioners learn new knowledge that expands organizational values. Using the common framework or unified high-level structure of ISO (common text, terminology and continuous improvement cycle), ISO 9001 structure facilitates the “graft” of other management standards - mainly ISO 14000 for environmental management- that expands organizational knowledge, goals and product/service values.

3.2 ISO 14001: an environmental quality management tool for ecological performance

ISO 14001 requirements define the environmental management system (EMS) that allows organization developing an environmental policy with measurable objectives. These objectives are based on and managed with a systematic approach that can provide the organization with the appropriate information to create options for contributing to sustainable development by (www.iso.org):

- Protecting the environment by eliminating negative activities' impacts;
- Helping the organization meet compliance obligations;
- Realizing financial and operational benefits from eco-friendly alternatives that strengthen products market position;
- Providing environmental information to relevant key parties;
- Evaluating how products/services are designed, manufactured, distributed, consumed and disposed of in a life-cycle perspective to prevent unintended environmental impacts from being transferred to other life cycle stages.

Lifecycle analysis is a standardized method (ISO 14040 and ISO 14044) that allows an environmental assessment of a system (product, company, process) by covering all the impacts of its life cycle, from its design to its elimination or end of life (Joliet et al., 2005). This analysis helps identifying the stages where a product can be improved by eco-design practices to create sustainability values. The typical life cycle phases of a product (or service) include the acquisition of raw materials, design, production, transportation / delivery, use, end-of-life treatment and final disposal.

If the main focus of ISO 14001 relies on the environmental pillar of sustainability - as stated in its 2015 version: *"This International Standard specifies the requirements of an environmental management system for organizations seeking to establish, implement, maintain and continually improve a framework with the aim to manage its environmental responsibilities in a manner that contributes to the 'environmental pillar' of sustainability"* - it also helps organizations to reconcile the social and economic pillars of sustainability. Boiral emphasizes various benefits of integrating environmental concerns into business activity (Boiral, 2004). The respect of natural resources (ecosystems), human resources (social factors) and ecology (environmental impacts) are interlinked and influence each other. Saving material and energy to cost reduction, reducing contaminants, respecting natural resources, are examples of good practices that help economic, social and environmental resources. Since in companies good practices to protect the ecological environment are operated by several individuals, we consider that if these individuals or practitioners are respected and fairly treated, if they receive the appropriate knowledge and information about how and why they should follow some new rules that alters the way they think and achieve their routines, and what are the impacts of this change on the image of their company, then they can better accept to integrate new procedures in their daily tasks and feel part of the desired solution to their company and the society. Otherwise, they resist to new rules, and the new management requirements – instead of becoming absorbed by employees and in practices – remain adsorbed to the organization's management system (Serhan, 2017). Thus, during the implementation of ISO 14001 requirements, the role of top management involvement, the employees' motivation and key stakeholders' participation is crucial to evaluate business activities vis-à-vis the environment, to implement and demonstrate their commitment to the protection of their ecosystem: through eco-friendly management of water, air, soil, waste, noise and odors that an organism is likely to generate.

Companies that follow some of these basic principles of sustainability facilitate their organization forge a path toward larger corporate social responsibility goals. These social responsibility practices can be framed by ISO 26000 standard.

3.3 ISO 26000 for social responsibility

ISO 26000 is intended to assist organizations in contributing to sustainable development pillars the society is increasingly demanding. It provides guidance on social responsibility concepts, trends, principles, core subjects and practices, and helps a company integrating, implementing and promoting socially responsible behaviour throughout the organization and through its policies and practices, within its sphere of influence. It helps identifying and engaging the relevant stakeholders in the social performance decision-making (www.iso.org).

ISO 26000 standard defines seven core subjects of a company's social responsibility (Figure 1). Core subjects comprise a number of issues, and it is an individual organization's responsibility to identify which issues are relevant and significant for the organization to address through its own considerations and through dialogue with key stakeholders.



Figure 1: The seven key principles and core subjects of IO 26000

1- Organizational governance: The stakeholders should be factors in the organization's decision-making process and take into consideration the expectations of society: accountability, transparency, ethical behavior, respect for stakeholders' interests, and respect from the rule of law.

2- Human rights: Employees should have a fair treatment. Economic, social and cultural rights are to be respected.

3- Labor practices: Conditions of work and social protection; social dialogue, health and safety at work; human development and training in the workplace.

4- Environment: The organization has a responsibility to reduce and eliminate unsustainable volumes and patterns of production and consumption and to ensure that resource consumption per person becomes sustainable (prevent pollution; climate change adaptation, sustainable resource use, protection of the environment, biodiversity and restoration of natural habitats).

5- Fair operating practices: Responsible political involvement, fair competition, anti corruption, promoting social responsibility in the value chain, and respect for property rights).

6- Consumer issues: The promotion of just, sustainable and equitable economic and social development with respect to consumer health, safety, and access is the organization's responsibility. This includes fair marketing, factual and unbiased information; protecting consumers' health and safety; sustainable consumption; consumer service, support and complaint and dispute resolution; consumer data protection and privacy).

7- Community involvement and development: The organization should be involved with creating sustainable social structures where increasing levels of education and wellbeing can exist.

These principles and those of ISO 9001 and ISO 14001 developed above, summarize the mostly used requirements to achieve organizational performance, environmental and social responsibilities in business activities and relations.

We consider that the implementation of ISO standards' requirements is a learning process to both employees and the company: these management tools introduce new knowledge (expert scientific and technical knowledge encoded into good practices) that aims improving competences and operational performance of employees (individual learning) and organization, by expanding strategic goals and creating new values (organizational learning). But this learning process can also create disturbances or emotional and cognitive tensions among the employees (Lewis, 2000; Serhan, 2017) due to the collision of two different systems: the operational existing system of the company and the new quality management system introduced by the standard. These disturbances in the change program are also considered to be vectors of expansive learning of a system (Engeström, 2001, 2015), i.e. they allow an activity system to go beyond its predefined objectives, to transform its model of activity, its production system and practical tasks (Engeström, 2008).

The following section develops the theory of activity system and expansive learning of Engeström we used to analyse the learning processes of our case study that occurred through the implementation of ISO standards and help the Château reconfiguring its business model to meet sustainability requirements.

4. The theoretical model of activity system and expansive learning (Engeström, 2001, 2015)

The activity system model of expansive learning of Engeström (2001, 2015) (Figure 2) represents the third generation of activity theory, initiated by Vygotski (1934) for the

individual's learning theory (first generation) and Leont'ev (1981) for the collective learning theory (second generation).

This theoretical model interprets the concept of learning as organizational, which takes place through a dynamic relationship between a 'subject' (any practitioner) who interacts (coordination, cooperation, reflective communication) with his/her 'community' (internal and external stakeholders) in the implementation of an 'artifact' (management tool) or rules (formal or informal, explicit or implicit) to reach a common objective (object or goal).

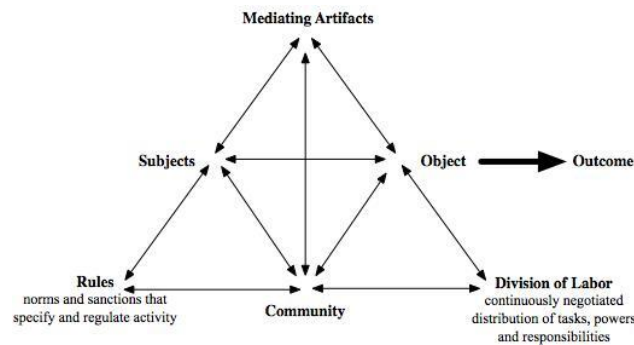


Figure 2: The activity system theory model (Engeström, 2001)

In Engeström model, an activity represents a practice, an operation, a discourse or an attitude used to facilitate the implementation of an idea, a concept or a tool in order to reach societal benefits. The theory of expansive learning is a method that allows us to theoretically trace the logic behind the development of an intention or an objective hidden behind an activity, as well as the history of its formation via the emergence and solving of contradictions inherent to the system (Engström, 2015). Engeström stresses that in a model of collective system activity, individuals' and group actions are integrated into a collective activity system where every action is oriented in an explicit or implicit manner towards the same object; and these actions are characterized by ambiguity, surprise, interpretation, sense making, and a potential for change.

According to Engeström, learning cannot be understood without cultural tools; and the society could no longer be understood without the agency of individuals who use and produce these artifacts (Engeström, 2008). This means that objects can no longer be seen as just raw materials for the formation of logical operations in the subject's activity system. They become cultural entities and they are moving targets. They change and expand according to disturbances that occur within and in the environment of a system or a company. This expansion in the activity's goal is related to an expansion of knowledge in an organization due the collision of minimally two interacting activity systems (figure 3).

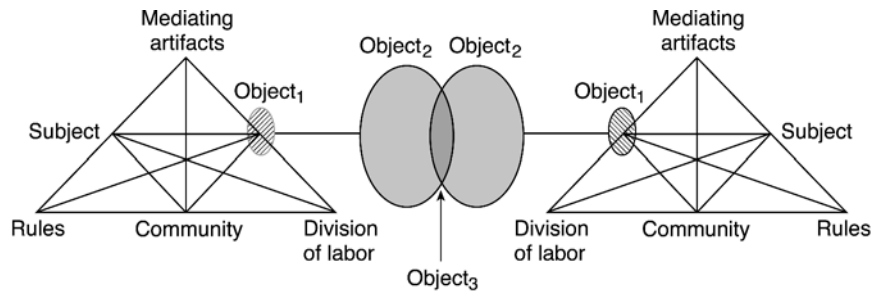


Figure 3: Two interacting activity systems to expand knowledge, learning and organizational goals

Activity theory is a theory of object-driven activity. Objects are concerns; they are generators and *foci* of attention, motivation, effort and meaning (Engeström, 2008). Contradictions appear when the goals (objects) differ between a practitioner and his community, or when a new rule collides with an old one. Such contradictions generate disturbances and conflicts that are considered as sources of evolution of the established routines, as well as opportunities to create new knowledge (expansive learning). Expansion means the transformation of the scope of the object (usually not intentional product) by a better understanding of the sense and value of the goal to be achieved. This expansion leads to the elaboration of new concepts.

Thus, the object of an activity (goal or outcome) is a moving target, not reducible to conscious short-term goals. It moves from an initial state of unreflected, situationally given “raw material” (object 1) to a collectively meaningful object constructed by the activity system (object 2); and then to a potentially shared or jointly constructed object (object 3). According to Engeström, the goals of an activity system are “run away” objects. They can generate opposition and controversy and can also open up radically new possibilities of development and well-being. The societal relevance and impact of activity theory depend on our ability to grasp the changing character of objects (Engeström, 2008). The challenge of companies is then to grasp the sense and societal value of this ‘run away’ object to implement in the activity system, the appropriate tools, practices and relations that facilitate its generation.

5. Methodology

To study our research question, we adopted a qualitative research method. This approach helps studying a subject in an interpretive way (Denzin & Lincoln, 1994) and raises questions about how actors create and give meaning to a social experience (Gephart, 2004). According to these features, qualitative research becomes descriptive and focuses on how a theory operates in some cases through a case study. Yin emphasizes that a case study is a survey that examines a phenomenon within its real context. It tests a theory or propositions to capture the complex features of social phenomena (Yin, 2009). In this research, the case study is both a methodological choice and an object of study. We study a subject’s profile (the Château quality manager), practices, motivations, relations and goals (its activity system) to explain his behaviour and that of his company; so the adoption of case study approach becomes unavoidable (Gagnon, 2012).

Data was collected through two interviews (three hours) with the quality manager of the Château responsible of the implementation of ISO standards. Interviews were conducted with

two semi-structured questionnaires: the first one was conceived according to the five principles of the activity system model (Figure 2). This model helped us collecting data about the system of activity of the middle manager, his relations with his community and his primary goals (the management tools he uses, his objectives, his internal and external stakeholders, the tensions and conflicts he deals with, his role, vision and mission in the Château, etc.). Semi structured questions allow the interviewed person to freely give his point of view on a subject and give meaning to his activities and way of managing and thinking. Gioia et al., (2010) explains how companies can forge an identity through the speech of their managers and leaders, and how these speeches become the strategic objectives and mission of companies. In their speeches, managers articulate expressions that legitimize the objectives of their actions (Clegg & al., 2007) and by which organizational identity becomes the social actor that acts in society for social causes (Gioia & Chittipeddi, 1991).

The second questionnaire represents the actual sustainability business model building blocks of the Château. It summarizes the customers' requirements, the main stakeholders, and the distribution channels that create the sustainable wine of the Château.

The collected data was analysed according to the activity system and expansion learning of Engeström (2001). We have chosen this model for two complementary reasons. First, it reveals the interaction of the three components of the management tool described earlier (requirements of the standard (artifact), the management philosophy of the middle manager (subject), and the reductionist vision of the organizational knowledge and relations (community of multiple points of view and expertises and interests). Second, the analysis of these interactions helps us understanding how the implementation of standards' requirements allowed an expansion of knowledge and how the evolution of practices made the expansion of organizational goals in a sustainable way possible. Another interest of this model resides in the fact that it focuses on the role of the middle manager in driving management innovations. Middle managers play the role of boundary spanners who are able to bridge the external needs of the company with its internal practices to create novel combinations of concepts.

The case study is developed below according to Engeström themes (Figure 2). We develop the profile and mission of the quality manager interviewed, the management tools he uses, the object of his activity, his community, the division of labour, and the rules applied to and in his activity system.

To illustrate how the activity system of the Château has evolved from a quality management system to a sustainability business model, we use the business model canvas (BMC) of Osterwalder and Pigneur (2010) as a tool to describe and analyse the sustainable characteristics of its building blocks induced by the implementation of ISO standards. The BMC is described through nine building blocks that cover the four main areas of a business: customers, offer, infrastructure, and financial viability. These blocks are respectively: the value proposition (what the company brings to the customer to satisfy their needs and solve their problems and make them turn to it over its competitors); the customer segments the company serves by its products/services; the distribution and sales channels that deliver value to customers, the modes and media of communication developed with the company to communicate with and reaches its customer segments; the modes of revenue retained to value the products / services; the key resources mobilized for this creation of value; the key activities mobilized; the key partners, and the cost structure. For each of these topics we propose to identify their sustainability characteristics and practices in the new business model of the Château.

In the case study below, the sentences in italic are *verbatim* of the quality manager of the Château.

6. Case study

6.1 The activity system of the quality manager

6.1.1 The manager (subject): profile and mission

My mission consists of achieving organizational goals through quality management systems we implemented. Their foundations go back to the 1990s, when the first ISO 9001 certification process was obtained to guarantee customers the absence of air in the wine bottles. I am responsible of an integrated management system (IMS) composed of ISO 9001, ISO 14001 and ISO 26000 principles. They frame our risk management system with organizational, environmental and societal indicators. in their daily tasks.

6.1.2 Object and daily practices

The object of our system is always evolving. ISO 9001 certification imposes from employees the writing of their daily procedures (what and how they execute their operations) to identify and standardize the good practices (GP). These GP are then the new procedures to implement, control and evaluate their performance. When I introduced this new rule to employees, they manifested resistance. They considered this initiative as a questioning of their know-how. So, I changed my attitude from a quality controller to quality manager, the best way to change their state of mind. I integrated then their workplace where the daily operations and problems happen and where new rules must be implemented.

6.1.3 Collaborators – Community

I work directly with the director of the Château with whom I develop the strategic and operational objectives. I communicate regularly with the administrative and the communication managers. My direct collaborators are the operational ones, those who run the processes and produce wine. I also do Benchmarking with my neighbours to identify my competitors, understand their business strategies to better improve ours.

6.1.4 Division of labour

QMS is maintained by different actors' expertise: director, internal collaborators and external stakeholders. I am the interface between employees and top management. I accompany them to understand how they work in a way that allows me to propose improvements and allocate operational roles according to their skills. The goal of the Château is to make the best wine possible and I do not know how to make wine, so my role consists of making available to those who make it, the best conditions in a way so that they can continue to do what they are used to do but in an evolutionary way i.e. in line with the variations of customers' and society requirements. We are also helped by an external consultant who comes 4 times a year for our internal audits (blank audits that prepare the audit of certification). He meets each of the pilots, and elaborates new plans to correct some dysfunctions.

6.1.5 Artifacts

ISO 9001 certification imposes the writing of a quality management manual (QMM) that no one reads or follows. So I focus on procedures and work instructions that structure our activities at the operational level. These procedures make visible what employees do, how they do it, and the results of each process. Improvement is thus easier and targeted. But the improvement of any work is never achieved if the operators are not convinced by the approach. So I use a lot of psychology, I often repeat the rules, their meanings and their values. In quality management, dialogue is the best way to implement the new rules in the employees' mental schemes.

In ISO 9001 standard, the "customer satisfaction" requirement concerns internal employees (internal stakeholders) and external customers. To meet their needs, we use "non-satisfaction sheets" for both parties. The Château customer's service deals with the complaints of our wine consumers (external customers). For internal non-satisfaction, we have two types of improvement sheets: the standard requirements improvements sheets (or negative gaps) report the operational dysfunctions. The positive gaps represent the employees' good practices and their propositions for improvements. The purpose of these positive gaps is to feed our information system with the employees' good practices that are not visible to management. This practice involves all the individuals in the system improvement process and permits a bottom-up emergence of relevant questions, ideas, and new concepts.

6.1.6 Operating formal and informal rules

ISO 9001 standard does not impose rules but general requirements to achieve the goals we define. My challenge was to ensure the transition to a structured and formalized system according to both ISO requirements and the employees' needs and problems. I relied heavily on dialogue to explain that transition means a new way to produce the same wine, and this way will help us avoiding mistakes, reducing our costs, and improving our wine's value. The organization was simplified by writing, "who does what and in which order, and to obtain which outcome"? These new rules represent in a simplified way all the requirements of the standard. The roles were then distributed to employees and practices' results were controlled and evaluated as knowledge, competence and risk management practices. The management of competences to achieve organizational goals is not easy, it must be practical and logical. I say for example to the person concerned: "You are a winemaker, tell me how do you see yourself in ten years? And according to his ambitions, I show him how we can work together to reach what he wants by filling his competence gap.

6.2 Outcome of the activity system (Object 1) related to ISO 9001 standard

The goal "air bubbles elimination from bottles" (Object 1) was achieved (Figure 4). The quality manager emphasizes: *if our first certification was obtained three years after the implementation of ISO requirements, the quality management practices were fully understood and well practiced after ten years of efforts.*

In these ten years, knowledge and competences of employees, those of the quality manager and the organization has expanded to reach another quality system: the environmental management system (EMS): In 1999, we began our ISO 9001 process by wondering where we want to go with the certification and how we should proceed to implement it. We understood during these years that our good practices were oriented to operational cost reduction and key processes improvement. Our activity is known as polluting: grapes wastes, bottle disposal, and the usage of water and energy to produce wine, are objects on which we can work to improve their negative ecological impacts. By reconsidering the good organizational practices we have in place from ISO 9001 we found out that our QMS overlap

with environmental management good practices and what we have already in place allow us to graft ISO 14001 requirements. So I worked out to integrate the environment goals and indicators into the existing system. Shifting from customers' satisfaction of ISO 9001 (Object 1) to different stakeholders' satisfaction of ISO 14001 means an eco-friendly expansion of practices, knowledge and goals. This was the beginning of the second activity system (Object 2) (Figure 4).

6.3 The second activity system of the Château: eco-friendly practices of ISO 14001

The main objectives to achieve through the environment management system were to reduce chemical products, preserve biodiversity and reduce the impact of our activity on ecology. Using ISO 14001 as a framework to achieve these goals, helped us obtaining the following results: we reduced our phytosanitary products by 30% in five years, we installed bee hives in the park to preserve biodiversity, we reduced the weight of bottles of 70g, reduced the use of paper, and put a new system to value 80% of our wastes (grapes wastes are used to produce energy).

The quality manager emphasizes that the production system of the Château based on ISO 9001 and ISO 14001 principles, allowed internal organizational rigor and called for the involvement of different external parties: *Quality management became a process that concerns more and more actors. ISO 14001 requires the identification of key partners needs and setting how the Château could do to continuously satisfy their needs. The expansion of our internal knowledge (from ISO 9001 to ISO 14001 indicators) and the combination of these newly acquired competences with external societal needs, allowed us targeting new considerations that our system manage. We realized also that the employees do the big work of the Château and they need more consideration from our part. So we introduced ISO 26000 of social responsibility principles. By ISO 26000, we wanted to facilitate the hard work of our employees, and look for new ways that enable us improving our activity. ISO 26000 guidelines help us also preserving our image, employees' health and life quality of the village.*

Now, the IMS we have is based on the combination of ISO 9001, ISO 14001 and ISO 26000 principles to manage business risks. Such evolving system allowed us expanding our goals from "bottles free from air bubbles" to a new eco-friendly object and practices through which we obtained the "Responsible Vineyard" label we are claiming actually on our bottles (Object 3). This label means two things: First, explicitly, it means that we have received an AFAQ¹ 26000 evaluation and that we are exemplary on all subjects of corporate social responsibility; and second, it means implicitly that I am a responsible entrepreneur, a responsible employer, a responsible farmer, a responsible producer, and a responsible actor (Table 1). All these measures of social responsibilities are visible in each of our practices. My role now is to verify that these commitments are applied in each operation and at all levels.

¹ AFAQ: Association Française de l'Assurance Qualité (French Association of Quality Assurance).

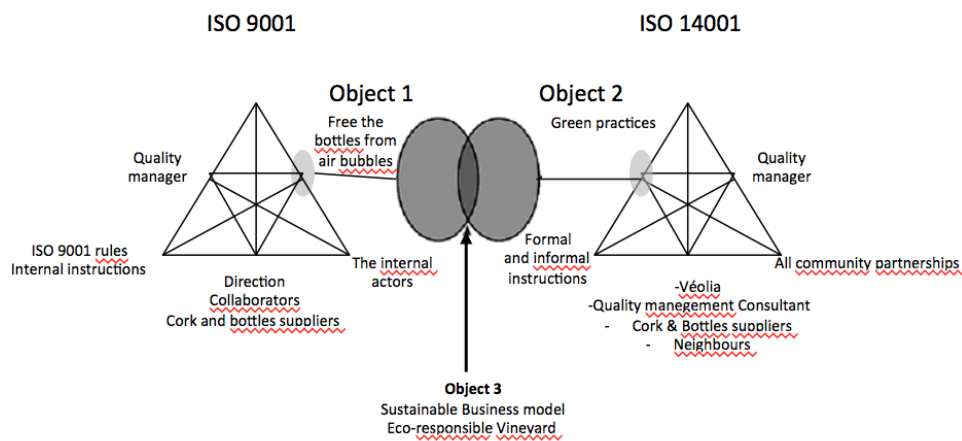


Figure 4: ISO 9001 and 14001 activity systems

The new object obtained (Object 3) represents the actual business model of the Château (Figure 5): *Our actual business model is oriented to societal responsibility and grounded on the three pillars of sustainable development:*

- *On the economic level, we are in Bordeaux, in the Médoc, we make part of the “Crus Bourgeois” family, a wine classification recognition that we get every year. The origins of the Château date from the 1800s. It is known as one of the largest vineyards of the Médoc by its area and production of Cru Bourgeois. It currently has 200 ha of vines and produces 1400 000 bottles of wine a year. We believe that the quality of our wine is related to the rigorous organization structured by ISO standards that allowed us preserving the image of the historicity of the Château and its products. We distribute in France and other countries a wine of good organoleptic quality and with a good quality / price ratio.*

We believe also that our IMS helped us maintaining our market share. Ten years ago, there were 8 Médoc wines at Carrefour; today there are only three, we are one of them. Carrefour considers that our wine is good, they can sell it and behind it they have a lot of environmental and social guarantees that are increasingly demanded by customers and consumers.

- *On the environmental level, we made an environmental analysis of the impact of our activity on the territory (village, river), air, soil and water. Then we made a carbon assessment and defined a plan with measurable objectives to reduce its impact. Then we worked on the weight of our inputs (glass, packaging cartons). Finally, we made a product life cycle analysis that help us making the right decisions in terms of eco-design and eco-innovation practices (Table 2).*

Sustainable development we are pursuing concerns all the value chain of our activity and reach several stakeholders. I try to involve many of our partners in our sustainability program. For example, I dialogue and exchange sustainability good practices with Veolia and the post-office. These companies have quality functions and environment quality management programs. We are also members of the “collective environment system management wines of Bordeaux”, through which we exchange on the new environmental indicators to implement and new goals to achieve.

To identify our key stakeholders, we first defined the objectives of the Château and asked various stakeholders interested in our activity the following question: What do you expect

from us? And according to their expectations we have been able to identify and chose the parties that are more reliable in terms of social, environmental and economic values. I dare saying here that the evolution of our activity system is visible in this practice: at the beginning, we were managing our quality system to satisfy the customers' requirements. Now, the requirements of our system are choosing the partners who are in line with our system of values.

- On the social level, to continually improve the practices of the "responsible winemaker" that I am, I must dialogue and respond to the needs of three stakeholders: the direct stakeholders (my management and the employees), a primary indirect part (suppliers of corks, direct customers, supermarkets, AFAQ), and a secondary indirect part (the local community, competitors, local residents, etc.). The purpose of these dialogues is to come up with a 'win-win' decision. Now we pay big attention to the working conditions of our employees. On the conditioning chains we have installed carpets to rest their feet and a system to rest their backs. We propose them training sessions to improve their employability and their skills development.

In the park of the Château, we have bicycles available to employees. We also offer them at the Château, three sports sessions per week with a professional coach. Thanks to these sessions we have reduced the absenteeism rate and the muscular accidents related to the hardness of the work. You can see that our stakeholders are not only those who are interested in what the Château produces; they come from different sectors with various backgrounds (waste management, sports, quality management, etc.) because we consider that each party able to improve our system of activity, is a stakeholder. Now our employees are actors and drivers of the management system evolution, they are demanders of improvement and pay attention to each step of the processes they manage. They auto-evaluate their results, and here I can consider myself as an orchestra conductor: I lead their operations by specifying where to accelerate a step, or where to go slower to better integrate a new rule in practices.

Key partners - Collaborateurs - Top Management - Cork and bottles Suppliers - Véolia - External quality management consultant	Key activities - Quantitative (140 000 bottles a year) and qualitative wine (tasty and healthy) Key resources - Physical assets : Vineyard, Château - Patrimonial resources : Haut-Médoc and Cru Bourgeois labels - Well trained human resources	Value proposition - Sustainable wine - Responsible Vineyard label - Social and environmental factors are respected	Customer relationships Personal and automated Ditribution channels - Carrefour - Export - Website	Customer segments - wholesale distribution in France and export (China North America and Canada) 4
Cost structure Not communicated		Revenue stream Not communicated		

Figure 5: The Sustainable Business model of the Château

Our actual business model is based on the continuous improvement cycle of societal innovations in which the economic, social cost, societal costs and ecological problems are

internalized. In general, innovations in Business models help creating new value to product/service innovations. In wine production we cant innovate in the wine. We are in Bordeaux and we will never touch the typical flavour of our product. But what we can do is on each vintage, we try to obtain the massive extraction of tannins' power (since ten years it is the big trend). This operation represents the maceration (prolonged contact between the skins of the grapes and the juice) to extract tannins (precipitates), aromas and colour).

Concerning value creation from our activity, the business model we have helps us making the right decisions to improve our practices and stakeholders to create societal values. And in each search we make within our internal needs and each step me make towards key stakeholders or a new requirement in our competitive environment, we consider ourselves stepping through sustainability innovations. For example, in the identification of our internal needs to be improved, we have identified a non-sustainable practice; it concerns "the usage of papers". This need became a new requirement (reduction of papers) to implement in routines. So to achieve this new goal, we put in front of it as a solution "sales on internet". This solution – selling via our proper website- means that we have to be adapted to a new environment, which impose a different kind of management: the management of social networks. The creation of this website is an eco-friendly innovation that has also has increased our revenues.

7. Discussion

This case study illustrates how a particular company has improved its practices and elaborated a sustainability business model through a long learning process, achieved by the implementation of management innovations such as ISO standards.

This learning mechanism was acquired at both individual and organizational levels. To implement the appropriate quality management practices, the quality manager faced resistance from employees related to quality control requirements imposed by the standard. To counteract this disturbance in his activity system, he adopted a more social approach (close to employees in their workplace) than a technical one (quality controller of their operations). This practice facilitated the absorption of the new rules in the attitudes and operations of employees (individual learning or code learning) and allowed at the same time an expansion of the organizational knowledge and goals (organizational learning or learning by the code). The "code learning" represents the understanding of the new rules and their exploitation in practices (effective application of formal procedures, control of the operations, internal audits). The "learning by the code" is visible in the exploration practices that expanded organizational goals (benchmarking, exchanging good practices with different parties, learning the good practices from external consultant). This expansion was also facilitated by the management philosophy to approach quality requirements: his daily involvement in the change program- by explaining new procedures and controlling their compliance to standards' requirements - has reduced the cognitive distance between the top management who translates the abstract standards' requirements into new procedures and the employees who apply them. This 'socialization' practice helped the grafting of ISO 26000 of Social Responsibility on ISO 9001 and ISO 14000 principles. His management philosophy (participative and social) permitted ISO 9001 first and ISO 14001 achieving their three functions as management tools: (1) Conforming practices to standard requirements; (2) Coordination of processes through a collective approach to action; and (3) Exploring new opportunities that reconfigured the Château competences and values.

The expansion of knowledge and learning in the Château activity system can also be attributed to the position of the quality manager (middle manager) in the Château hierarchy, the multiple roles he has and the evolution of his mission from a quality controller to a responsible wine producer and manager (Table 1).

Quality manager roles	Practices
Decision maker	<i>I translate with top management the standard requirements according to employees' problems and to the Château needs.</i>
Quality controller	<i>I accompany the implementation of the procedures; verify the compliance of the results of each procedure. I perform the internal audit with an external consultant.</i>
Internal consultant	<i>I propose trainings to improve the processes and the skills of the staff.</i>
Responsible entrepreneur	<i>I must generate profits based on the principles of the ISO 9001 standard, geared to reduce the production costs and the customers' satisfaction.</i>
Responsible employer	<i>I take care of the working conditions of my collaborators. I afford them training sessions, health and safety lessons and practices</i>
Responsible farmer	<i>I manage the environment in which I live and I value the waste. I preserve biodiversity, and protect the soil on which my children and those of all the employees play daily, and walk on to go to school;</i>
Responsible producer	<i>I assure the food safety and hygiene rules</i>
Responsible actor	<i>I participate to the life of the community in which my company is located</i>

The permanent interaction between the standards' requirements and different actors (or management innovators who change the way in which the management work is done) (Hamel, 2006) represents the continuous learning process that allowed the evolution of practices to sustainability practices by the implementation of eco-design and eco-innovation practices. The analysis of the case we studied highlights different types of these new practices (Table 2).

Sustainability pillars	Organizational/economic	Environmental	Social
Eco-design and Eco-innovations new Practices	<ul style="list-style-type: none"> - New way of working with new rules - Selling through website increased revenues - Several certifications and guarantees (ISO 9001, ISO 14001, ISO 26000, Responsible Vineyard) - First wine Château in Europe having the AFAQ assurance for social responsibility exemplarity - Market share preserved (one of three wines present at Carrefour) 	<ul style="list-style-type: none"> - Weight of wine bottles (70 g less) - Weight of the packaging (wine boxes and cartons) - Use of recycled carton - Bees hives - Grapes wastes are valued to produce energy - Reduction of chemicals and carbon 	<ul style="list-style-type: none"> - System to rest the employees' feet and back - Competence development (training) - Sports sessions - Bikes for employees - Exchanging green good practices with different stakeholders (Véolia, Bordeaux EMS collectivity)

Eco-design and eco-innovation practices represent the pillars of the actual business model of the Château. They are responsible of the wine sustainability value and the maintenance of its market share.

The building blocks of the eco-innovated business model of the Château derive from the growing demand for sustainability in wine production and consumption detected in the Château business environment (suppliers, supermarkets and wine consumers). Learning how to manage cost reduction and quality management through ISO 9001 helped the organization developing new capabilities to consider these societal demands as opportunities to seize to reconfigure its wine values by setting new strategic goals through ISO 14001 and 26000 standards.

The actual goals of the Château can be summarized as follows:

- The Production of a sustainable (eco designed and eco-innovated) tasty wine (Massive extraction of phenols) and in large quantity to satisfy the demand of its first customer (Carrefour) and to export (*environmental and economic pillars of sustainable development*);
- A long-term sustainability of activities (employees' well being, the village community health and other partnerships, suppliers, distributors, consumers) (*social pillar*);
- To maintain the environmental friendly system management and the responsible vineyard label (*societal pillar*).

The Château benefits from a holistic approach towards environmental practices with significant focus on employees well being, carbon emissions reduction, increasing biodiversity in the park and exploring interpretations of sustainable viticultural and winemaking practices. These sustainability goals allowed the Château becoming the first Vineyard in Europe to have obtained the official recognition of exemplarity of its social responsibility approach evaluated by AFAQ. Through this added value, the Château acquired a sustainable competitive advantage among its competitors and maintained its market share.

8. Conclusion

The purpose of this paper is to show that the integration of sustainability principles in business models and operational routines is a learning process that involves different actors and management tools. We illustrated how these tools - materialized with ISO standards- can be used as frameworks and catalysts for the change of business models and the evolution of practices to achieve sustainable development pillars.

We illustrated through the theoretical model of activity system that the evolution of practices to sustainability innovations has occurred through the implementation of management tools (ISO 9001 for organizational quality management performance, ISO 14001 for environment management system, and ISO 26000 of social responsibility). We also showed how the management innovator or the quality manager has facilitated this evolution by adopting a social approach. Such approach to quality management permitted a direct and an expansive learning to both, the individuals and the organization. It also expanded the strategic goals of the Château. We also showed how eco-design and eco-innovation practices frame the sustainability business model and are considered as drivers of value creation at the three levels of sustainable development: for the Château (economic), the people who are working in and collaborate with (social), and to the environment in which everybody operates and evolves (societal and environmental).

The activity system model applied to our case, allowed highlighting the disturbances that emerge during the implementation of new procedures into practices (time to implement quality management practices, resistance to change the routines, dialogue with different stakeholders). This model helped us also showing that in practice and in the appropriation process of standards' requirements – (usually oriented to achieve conformity, the first function of standards) – internal practitioners and external stakeholders are not neutral. They do not apply the new instructions, but they learn how to co-construct with top management and the middle manager (sheets of improvements), the abstract rules introduced. Disturbances in practices and the long years followed to implement quality management principles seem in our case study, the factors responsible of expansive learning and sustainable creativity of the Château. The absorption of these new rules offered a societal value to the wine, which in turn, helped the Château maintaining his reputation and market share.

We conclude this case study with a quote of the quality manager who explains the actual goals of the Château: *The actual IMS of the Château to produce a sustainable wine, having a good quality of wine with healthy and happy employees, and with green practices (eco-design and eco-innovation practices) represent the state of mind of the managers of the Château. This state of mind cannot be reflected by the certifications alone. Our goal is not the diploma of the certification, but the risk management good practices that ISO standards can offer to us. The château is the first European vineyard to have obtained the official recognition of its exemplarity in societal responsibility (socially and environmentally friendly). The evaluation of its corporate policy and the attribution of HVE certification (Haute Valeur Environnementale) by AFAQ is a real guarantee of our commitment in the improvement of the societal value of our wine and a recognition of the maturity level of our organizational capabilities to always anticipate and develop sustainability with new societal requirements. Sustainable development means for us maintaining relationships with internal and external stakeholders indefinitely. This can happen if we continue considering that we should evolve within a continuous improvement cycle because the direction of innovation impacts, positive or negative, social or environmental, cannot be all anticipated.*

Limits of the research

Despite the relevance of this case study research to analyse the learning mechanism and the evolution of routines through the implementation of system management standard's requirements into business models and practices, this research presents two limits. The first limit is related to the study of one company to analyse learning and value creation from sustainable development pillars. The second limit is related to the lack of some information, not communicated during our interviews concerning the business model Canvas.

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