

The Design of a Sustainable Organization: a solid path through Innovation.

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Abstract

This paper explores the interplay of organizational design, innovation and sustainability. The literature suggests that the nascent concept of sustainable organization has gained popularity in the last years and it is being developed forward opening new lines of research. Sustainability has become a synonym of Innovation. Every company willing to become sustainable necessarily has to become innovative. The design of an innovative-led sustainable company requires different configuration of the organizational design elements. Some preliminary propositions are stated as a synthesis of various research papers from diverse research perspectives that were covered during the review. A further agenda for research is also provided.

Keywords: Organizational Design; Innovation; Sustainability; Sustainable Organization

1. Introduction

Sustainability and Innovation are topics that have attracted attention during the last decades. Some studies have shown the importance of these topics to gain competitive organization in a firm, however, little has been said about the implication of organizing for innovation and sustainability from an organizational design perspective. Not only managers but also entrepreneurs, governments and citizens are looking for a guidance to transform current organizations into sustainable and innovative ones, as well as creating new entrants that share the same characteristics. In a world that is going through disruptive change thanks to globalization, digitalization as well as scarcity of resources and violation of ethics, there is a need for a new era of organizations that are less short-term, self-focus and economic oriented towards a sustainable organization having innovation as its core engine. The purpose of this paper is to contribute to this endeavor by bringing light into how are correlated the concepts or organizational design, innovation and sustainability. The second section introduces the details of the literature review conducted. The third part presents a brief discussion about the selected papers and the statement of propositions derived from the review. Finally, the paper closes with a conclusion section including limitations and an agenda for further research.

2. Literature Review

A literature review was conducted in order to explore and analyze the intersection of the following concepts (keywords) during the last years: “Organizational Design”, “Innovation” and “Sustainability”.

Fink (2005) defined a literature review as “a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioner” (See Figure 1).



Figure 1 - Key steps for performing literature review (adapted from Fink, 2005)

Table 1 show the list of Papers selected for the present review, classified according to their type (conceptual, empirical) and their topic (organizational design, innovation, sustainability).

Topic	Type	Significance	Paper Reference	Publication
Organizational Design & Sustainability	Review	Comparison of organizational, ecological and institutional views in the design of sustainable organizations	(Devereaux & Zandbergen 1995)	Academy of Management
	Conceptual based on empirics	Proposes the “responsible progress” as a concept to new organization development theory that also encompasses the sustainability triple bottom line.	(Worley & Lawler 2010)	Research in Organizational Change and Development
		Review of current literature on sustainable organizations and using the organization design framework articulated by Jay Galbraith (1994) to analyze Unilever case	(Albers Mohrman & Lawler III 2014)	Journal of Organizational Effectiveness: People and Performance
	Empirical	Organization design expertise necessary for sustainability-driven entrepreneurs	(Parrish 2010)	Journal of Business Venturing
		Organizational level capabilities necessary to enhance learning for sustainability	(Ryan et al. 2012)	Journal of Organizational Change Management
		Some practices related to new forms of work organization are linked to sustainability performance.	(Longoni et al. 2014)	International Journal of Production Economics
Innovation & Organizational Design	Empirical	Organization transformation requires the development of innovation and change capability	(Winby et al. 2014)	Reconfiguring the ecosystem for sustainable healthcare
	Conceptual	Design of agile organizations and	(Winby &	Organizational

	based on empirics	management process supporting continuous innovation with speed and quality.	Worley 2014)	Dynamics
	Empirical	The change of the organizational design because of an innovation project	(Brix & Peters 2015)	Journal of Organization Design
Corporate Sustainability	Review	A review of 'theories of the firm' and their contributions to Corporate Sustainability	(Lozano et al. 2015)	Journal of Cleaner Production
	Conceptual	Development of the concept of sustainability-oriented organizational culture	(Linnenluecke & Griffiths 2010)	Journal of World Business
	Empirical	Environmental programs and social practices impacts in sustainability performance.	(Gimenez et al. 2012)	International Journal of Production Economics
		Before adopting environmental and social sustainability programs, manufacturing firms should have competences in operations beyond production activities.	(Golini et al. 2014)	International Journal of Production Economics
		Sustainability companies outperform their counterpart on the long-term because of their distinct organizational processes	(Eccles et al. 2014)	Management Science
		Identification of authority and responsibilities of the Chief Sustainability Officers (CSO)	(Miller & Serafeim 2014)	Harvard Business School Working Paper
Innovation & Sustainability & Organizational Design	Review	The shift in business focus from competitiveness to sustainability its impacts on organizational capabilities and competence for innovation	(van Kleef & Roome 2007)	Journal of Cleaner Production
		A multidimensional model for sustainability based in Human Resource Management (HRM) and innovation	(Jabbour & Santos 2008)	The International Journal of Human Resource Management
		Current literature on business models (technological, organizational and social innovation) and conceptual definition of sustainable business models	(Boons & Lüdeke-Freund 2013)	Journal of Cleaner Production
		An integrated framework for sustainability-oriented innovation practices in SMEs	(Klewitz & Hansen 2014)	Journal of Cleaner Production
	Conceptual	The role of corporate culture in sustainability with innovation as a core cultural capability	(Eccles et al. 2012)	MIT Sloan Management Review
		Identification of a sustainability innovation model	(Perrott 2014)	Journal of Business Strategy
		Conceptualization and Typology of Sustainability-Oriented Innovation (SOI)	(Jay & Gerard 2015)	MIT Working Paper
		Identification of a sustainability strategic management process	(Perrott 2015)	Journal of Business Strategy
	Conceptual based on empirics	Sustainability equals innovation	(Nidumolu et al. 2009)	Harvard Business Review
		Key innovation management challenges associated with sustainability-linked	(Seebode et al. 2012)	R & D Management

		innovation		
		Practices for sustainable innovation	(Milliman et al. 2012)	Environmental Quality Management
		Practices and barriers to change when innovating for sustainability	(Eccles & Serafeim 2013)	Harvard Business Review
		Linking sustainability change to strategic and organizational processes, supported by capabilities and relational capital	(Zollo et al. 2013)	Organization & Environment
		Sustainable Business Models as corporate innovation and identification of different archetypes	(Bocken et al. 2014)	Journal of Cleaner Production
		Business model innovation and organization design towards sustainability	(Carayannis et al. 2014)	Journal of Technology Transfer
		Culture and technology as key drivers for social-driven service innovation	(Reynoso et al. 2015)	Journal of Service Management
	Empirical	The impact of environmental Strategies and Green Product Development on Sustainability-Driven Companies	(Albino et al. 2009)	Business Strategy and the Environment
		Analysis of the innovation process of sustainability driven entrepreneurs	(Keskin et al. 2013)	Journal of Cleaner production
		Developed a framework of system innovation for sustainability	(Gaziulusoy et al. 2013)	Journal of Cleaner production
		Framework for integrating sustainability into innovation project portfolio management	(Brook & Pagnanelli 2014)	Journal of Engineering and Technology Management
		Companies that maintained R&D and CSR initiatives during and after the recession had better results than the ones that cancel or only kept one of them.	(Flammer & Ioannou 2015)	Social Science Research Network



3. Research hypothesis/propositions

This section describes the key content of papers selected into the review and extends the discussion in terms of propositions.

The Concept of Sustainable Organization

According to Worley and Lawler (2010), the integration between organizational development theory and the sustainability triple bottom line (economic, social, environmental) is though “responsible progress”. This concept builds on the need of organizational effectiveness criteria from a multi-stakeholder angle with the aim to tackle the appropriate strategies, structures, systems and process to tackle sustained change in and organization.

A different view about a sustainable organization is provided by Eccless et al. (2014), who state that they are a category of modern corporations that compete by integrating social and environmental issues into their strategy and processes. It differs from the previous definition because it does not include the fact of constant transformational changes inside the company (despite the one addressed for social or environmental issues) as part of a sustainable organization.

Another philosophical issue to address is if the new focus in sustainability and innovation redefines in some way the definition of “organization”. Baum & Rowley (2002) gather three main definitions of organizations according to the rational, natural and open system perspectives. However, maybe a sustainable organization does not quite fit into these conceptual boundaries and their theories, especially it does not fit the rational view definition.

More recently, Jay and Gerard (2015) have proposed a definition of Sustainability-Oriented Innovation (SOI). They propose an integrative framework that distinguishes across: three sustainability orientations (sustainability-relevant, -informed and -driven), four dimensions of innovation (technological, i.e. Product, process and infrastructure; organizational, i.e. Business model; institutional and social), two natures of innovation (sustaining and disrupting) and two rates of change (incremental and radical)

Proposition 1: There is no clear definition about what is a sustainable organization.

The Relation between Sustainability and Innovation

The fact that sustainability equals innovation has been stated by Nidumoli et al. (2009). They identify five stages in order to become sustainable: 1) viewing compliances as an opportunity; 2) making value chains sustainable; 3) designing sustainable products and services; and 4) developing new business models. And during all this stages innovation is the solution to do so.

Another example would be the study realized by Golini et al. (2014), that indicates that manufacturing firms need to have competences in operations beyond merely production activities before adopting environmental and social sustainability programs. This more short-term, economic-driven call for developing more operation competences claims for organizational innovations at the network, supply and process level so that consequently, they can support the development of other sustainable projects.

Albino et al. (2009) found out that sustainability-driven companies had innovated in order to achieve their aim. More than 70% of them have adopted a high level of green management, material eco-efficiency and energy efficiency; which has transformed mainly their supply chain. In this line, Miller and Serafeim (2014) have identifies the authorities and responsibilities attributed to Chief Sustainability Officers across different organizations. They have also distinguished among three maturity levels of the CSO: Compliance, Efficiency and Innovation stage. The latter equals innovation at the core of the sustainability process and the organizational design.

Proposition 2: Sustainability has become a key driver for Innovation.

In a recent working paper, Flammer & Ioannou (2015) conducted a quantitative research about firms that have maintained with innovation (Research & Development) and sustainable (Corporate Social Responsibility) initiatives during the big recession. They found out that companies that kept doing CSR that better results after the recession that the ones which cut it off. Even better results were achieved by companies keeping R&D activities. However, the better results were obtained by the companies that maintained both R&D and CSR projects. This can be explained by the concept of complementarity stated by Ennen and Richter, showing that the interplay between innovation and sustainability increases the value of each other in (Ennen & Richter 2010).

One point to consider is if all type of sustainable projects have an across impact at the economic, social and environmental performance, in this line Gimenez et al. (2012) reported finding about environmental initiatives (such as design to recycle, life cycle analysis or environmental certification) having a higher impact that social initiatives (such as programs to improve employees' working conditions or projects to support the external community) in terms of firms performance considering the triple bottom line.

Proposition 3: Sustainability and Innovation are complementary in increasing firm's performance.

The Organizational Design of a Sustainable and Innovative Company

General Frameworks

Taking an innovation perspective, Seebode et al. (2012) made study about managing innovation for sustainability covering the case of Phillips. They evolution of innovation in Phillips started with a technology-led focus, changing to a end-user driven and now moving to sustainability-driven. They also state that the major innovation management challenges with sustainability come when reframing and co-evolving in the innovation space at each innovation activity: search (peripheral vision, reframing, networks), selection (resource allocation under great uncertainty, cognitive dissonance), implementation (internal mobilization of skills and structures, new language, crossing the chasm and diffusion problem), innovation strategy (need for a clear framework and roadmap, new corporate paradigm people, profit and planet).

A study on sustainability-oriented innovation (SOI) of Small Medium Enterprises (SMEs) has been conducted by Klewitz and Hansen (2014) categorizing different types of innovation with associated sustainability labels and detecting interactions among types. In addition, they offer a framework for SOI of SMEs that shows five different strategic sustainability behaviors (resistant, reactive, anticipatory, innovation-based and sustainability-rooted) that interact with three innovation types (product, process and organizational), drivers and barriers in order to create sustainability-oriented innovation practices of SMEs.

Other authors have also been explored at the intersection between the firm and the societal level. For instance, Gaziulusoy et al. (2013) developed a framework of system innovation for sustainability. This is a double-flow scenario method that can be used by companies during their sustainability transformation journey covering product development (action), the company (strategy), and society (societal vision). The outline of the scenario method has three main steps: preparations (develop the understanding of the system, identify risks and identify the social function), scenario development (develop vision, develop scenario map, stakeholders, and products/services), and completion (action plan/strategy). Their results show that each company molds their model in a different manner, with different visions, and showing diverse type of sustainability risks.

Winby & Worley (2014) have recently proposed the simultaneous use of the Agility framework and the Adaptive Work Systems models (AWS) as a solution to manage innovation in speed and quality. The two models complement each other to manage long-term and short-term success. In one hand, Agility provides sustained performance using good management and capabilities to become agile, bringing leadership and strategic choices as inputs from the AWS model. On the other hand, AWS provides a process to mobilize, act and adapt, so that managers can innovate without regarding the testing and implementation issues to sustain success and develop capability improvement and development.

From a project management perspective, Brook and Pagnanelli (2014) propose a framework for integrating sustainability into project portfolio management, which impacts in the organizational design needed to operate with projects that are ecological, social and economically sustainable and sharing an dealing with an architecture for breakthrough, platform and derivative changes. They take the view of sustainability as and integrative part of a firm's innovation strategy, because current portfolio management practices mainly involve projects focusing in process, technology and product innovation, whereas sustainability also claims for projects related to organizational, and business model innovations.

Perrott (2015) suggest a strategic sustainability management process and an integrated sustainability model (Perrott 2014) to guide the organizations to all sustainability cases: environmental equity and efficiency, social equity and productivity, sufficiency and growth.

In the view of Jay and Gerard (2015), the design of a sustainability-oriented organization needs to evaluated in relations with 4 dimensions and their aspects levels: alignment to mission (materiality of challenge, alignment with goals and capacities), suitability or potential for adoption (technical viability, user fit), scalability or potential for diffusion (business and organizational model, institutional and infrastructure requirements, management capability), and sustainability of potential for systemic impact (impacts on system and subsystem, governance and impact on need fulfillment system).

Another perspective is taken by Jabbour and Santos (2008) who create a multidimensional model for sustainability based on human resource management. This model proposes that sustainable organizations execute human resources management by coping with performance in innovation, environmental performance and diversity performance, which in turn bring sustainable development outside the firm.

Organizational Elements

The oldest paper that we found addressing organizational design and sustainable organizations was the work by Devereaux and Zandbergen (1995). They compare organization theory and ecological theory views on sustainability (identifying definitions and the role of organizations) and propose the application of institutional theory elements in the design of systems for sustainability.

In another study, Brix and Peters (2015) demonstrated that conducting even a single innovation project can have impacts in the different organizational design elements. They tested the components proposed by Burton, Obel and De Sanctis at the strategic (goals, operationalization of goals, environment), tactical (configuration, organizational complexity, geography distribution, knowledge exchange, tacks design, people, leadership style,

organizational climate) and operational level (control and coordination, information systems, incentives). The main findings are related to the fact that innovation projects have the biggest impact at the strategic level in elements such as exploration, exploitation and complexity. They also impact the knowledge exchange, leadership style and organizational change climate at the tactical level. At the operational level, information systems (tacitness of information) and incentives (basis of evaluation) were the main elements affected.

The impact of sustainability on organizational design has been studied by Mohrman and Lawler III (2014), who explained Unilever's journey to sustainability in terms of the organizational design framework articulated by Jay Galbraith (1994): strategy; metrics and reporting; participative planning; decision making; communication and informal sharing; people, process and reward systems. However, they recognize that different frameworks and approaches need to be developed to cope with new drivers changing organizations such as sustainability.

Some practices recommended by Eccles and Serafeim (2013) when innovating for a sustainable strategy are: 1) identify material Ecological, Social and Governance (ESG) issues, quantify the relationship between financial and ESG performance, innovate products, processes and business models, 4) communicate the company's innovations to stakeholders. They also identify the following barriers to change: short-term incentives, shortage of expertise and capital-budget limitations.

Milliman et al. (2012) also exemplify other key practices for sustainable innovation used in companies: emphasis on customer value proposition, close relationship with customers, integrated new-product development, Leveraging core technologies across different industries and products, Testing and data-driven approach to new products, Streamlined, web-based new-product development process, Preparing customers for new products.

Culture

Culture change also plays an important role in sustainability-oriented organizations as has been pointed out by Linnenluecke and Griffiths (2010), who have contributed to define the concept of corporate sustainability and the link between the cultural orientation of an organization and the pursuit of corporate sustainability principles. They propose that organizations dominated by a human-relations culture will place greater corporate sustainability, opposite to internal-process-oriented cultures.

Eccles et al. (2012) also identify the role of corporate culture in sustainability. They state that corporate culture (innovation, trust, capacity for transformational change) reinforces corporate identity (reframing identity, codifying new identity) that cyclically also creates and amplifies corporate culture. For these authors, innovation is a core cultural capacity that is encouraged by sustainable companies.

Another study conducted by Reynoso et al. (2015) signals culture as a key driver for socially-driven service innovation along with technology, inclusion and solution. They also identify changes in the market dynamics and bring the idea of social innovation grounded in national culture. Thus, many social innovations have emerged from developing countries that have a collectivist culture.

Capabilities

The development of innovation and change capabilities to transform an organizational is required in order to improve measures and sustain them according to Winby et al. (2014).

The identification of capabilities contributing to sustainable business management in terms of innovation has also been explored by van Kleef and Roome (2007). They identified capabilities to discover unknown options (capability to think independently and inventively), capabilities to collaborate in highly diverse teams -including local actors- (capabilities to create and maintain trust, capabilities to solve problems collectively in diverse teams, networking capabilities, capabilities to form and maintain strong relationships), enabling factors (formal and informal organization arrangements).

From the sustainability point of view, Longoni et al. (2014) found out that some organizational practices related to New Forms of Work Organizations (NFWO) such as teamwork, training and employee involvement should be implemented to increase sustainability performances in the environmental and social arena. Hence, they point out that more qualitative studies should also be conducting addressing the change in organization design elements for sustainability.

From a higher level of analysis, Ryan et al. (2012) explore the development of a sustainable organization from a network perspective. They identified specific capabilities such as network visioning, orchestration and the ability to perceive others as “partners” that are required. They also propose a framework (the system/network, issue-based or strategic nets, dyadic relationships and the network organization) to conceptualize change and learning for sustainability.

Entrepreneurship

Keskin et al. (2013) took a different view about the link between innovation and sustainability. They studied the design of the innovation process following by entrepreneurs to design new businesses, finding out that innovation process internal and external factors change over time as the new organization forms. Their results indicate that sustainability-oriented companies are influenced by the firms’ ability in understanding and managing the differences between intended and created value overlapping between customer benefits and sustainability goals.

Complementing this view, Parrish (2010) has made a comparison of ‘perpetual’ and ‘exploitative’ reasoning as response to organization design requirements for sustainability-driven entrepreneurship: purpose (justifying existence), efficiency (achieving synergies), trade-offs (balancing competing objectives), criteria (prioritizing decision choices), inducements (allocating benefits).

Business Models

In a recent work, the sustainable business model has been studied by Bocken et al. (2014). They develop a methodology to develop sustainable business models and identified 8 archetypes in 3 groups: technological (maximize material and energy efficiency, create value from waste. Substitute with renewables and natural processes), social (deliver functionality rather than ownership, adopt a stewardship role, encourage sufficiency), and organizational (repurpose for environment/society, develop scale up solutions). As all business model innovation literature, they base their analysis distinguishing between value proposition, value creation and delivery, as well as value capture.

In the same line, Zollo et al. (2013) propose a general framework of sustainable enterprise model innovation, based on 3 dimensions: the sources of change (why), the engines of change (how) and the objects of change (what). This framework links change to the strategic and organizational processes supported by capabilities and the relational capital of the firm towards sustainability.

Carayannis et al. (2014) coincide with the previous authors in pointing out that business model innovation is at the core of enterprise governance and organization design for sustainability. Their findings support the importance of organizational design on the development of innovation and the ability of firms to reconfigure their capabilities and processes.

Complementing this view on business models for sustainability, Boons and Lüdeke-Freund (2013) propose normative requirements on each of the 4 business model elements: the value proposition should provide a measurable ecological, social and economic value. The supply chain should involve providers who take responsibility of themselves as well as other stakeholders, the customer interface motivates customers to have a responsible consumption and the financial model reflects and appropriate distribution of economic costs and benefits across all stakeholders involved.

Proposition 4: Innovation and Sustainability require a different organizational design whose elements still need to be further researched.

4. Conclusion

In this paper, a literature review was carried out on organizational design, innovation and sustainability in order to understand what is the role of innovation in the design of a sustainable organization. The review shows that there is a scarcity of papers about the topic. Four main results are identified as propositions.

First, there is still a confusion whether a sustainable organization is the one that can achieve a sustained change and transformation over time, or that addresses the sustainability triple bottom line (environmental, social and economic), or that complies with both characteristics.

Second, in any of the last three cases, innovation has become a driver for innovation, because studies suggest that the only way to be sustainable is to innovative in order to come up with a new product, service, process, business model, or organizational innovation that enables an organization to sustain its survival in the market while becoming economic, social and environmentally responsible.

Third, studies also show that organizations get better results when having both innovation and sustainable initiatives than only possessing one of the two.

Fourth, the need to be sustainable and therefore be sustainable claims for a new configuration of organizational design elements that can cope with constant change and transformation in competitive markets, interacting with multiple stakeholders (clients, suppliers, employees, users, citizens, government, universities, competitors, allies, etc) whilst fostering organizational capabilities to manage innovation (knowledge, creativity, technology, leadership, etc.) or creating/reshaping business models.

There are several limitations of this research. First, the author might have used other words used in different streams but referring to the same topics in order to look for related papers. Second, the online database was used for searching, which is not inclusive. Journals that are not in this database or hardcopy material are missed. Third, papers without full text available based on subscription to the Libraries of the Politecnico di Milano and Universidad Politecnica de Madrid were not included in the review.

A research agenda is needed with the aim to develop this new stream of literature by academics. For example, the definition of a sustainable organization needs to be clearly stated. Also the common points and discrepancies among management, innovation and sustainable theories need to be addressed. The managerial challenges for sustainable action need to be explored. It needs to be determined the organizational design elements that can better make use of innovation in order to foster sustainability as an outcome at the strategic, tactical and operational level. More studies need to be conducted beyond the firm level as unit of analysis, exploring the microfoundations (knowledge, leadership, creativity, ethics, etc.) and the

ecosystem levels (networks, laws, partnerships, collaboration, etc.). We can also take a look back at history of both innovation and management with the aim to bring light into sustainability. Other studies can focus on the development of material and initiatives for consciousness aimed to the business, educational and society audiences. We need to test current innovation models and tools to understand which one is more appropriate for sustainability (open innovation, design-driven innovation, user-center innovation, technology-driven innovation) as well as the impact of different types of innovation at the triple-line (product/service innovation, organizational innovation, business model innovation, process innovation, and so forth). Finally, we need to determine the emergence of strategies to overcome to the new competitive environment where innovation and sustainability play a key role for a sustained survival of an organization.

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