



# The triple layered business model canvas: A tool to design more sustainable business models



Alexandre Joyce <sup>a, \*</sup>, Raymond L. Paquin <sup>b</sup>

<sup>a</sup> Institut de développement de produits, 4805 Molson, Montréal, Québec H1Y0A2 Canada

<sup>b</sup> Concordia University, John Molson School of Business, MB 13.125 – Dept. of Management, 1455 De Maisonneuve Blvd. W., Montreal, Quebec H3G 1M8 Canada

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## ABSTRACT

The Triple Layered Business Model Canvas is a tool for exploring sustainability-oriented business model innovation. It extends the original business model canvas by adding two layers: an environmental layer based on a lifecycle perspective and a social layer based on a stakeholder perspective. When taken together, the three layers of the business model make more explicit how an organization generates multiple types of value – economic, environmental and social. Visually representing a business model through this canvas tool supports developing and communicating a more holistic and integrated view of a business model; which also supports creatively innovating towards more sustainable business models. This paper presents the triple layer business model canvas tool and describes its key features through a re-analysis of the Nestlé Nespresso business model. This new tool contributes to sustainable business model research by providing a design tool which structures sustainability issues in business model innovation. Also, it creates two new dynamics for analysis: horizontal coherence and vertical coherence.

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## 1. Introduction

The pressure for businesses to respond to sustainability concerns is increasing. Organizations are expected to more actively address issues such as financial crises, economic and social inequalities, environmental events, material resource scarcity, energy demands and technological development as part of their focus. On the one hand, those challenges can be seen as an increase in risk (Tennberg, 1995; Paterson, 2001). On the other, those same challenges can be seen as opportunities for organizations to engage in sustainability-oriented innovation (Adams et al., 2015; Hart, 2005; McDonough and Braungart, 2002). For organizations to succeed, they must respond to such challenges by creatively integrating eco-efficient and eco-effective innovations which help conserve and improve natural, social and financial resources into their core business (Castelló and Lozano, 2011; Rifkin, 2014; Jackson, 2009). Yet for sustainability-oriented innovation to be truly impactful, it needs to move beyond incremental, compartmentalized changes within an organization and towards integrated and integral

changes which reach across the organization and beyond it its larger stakeholder environment (Adams et al., 2015; Nidumolu et al., 2009).

For the past 25 years, businesses have been looking at sustainability issues from a far (Dyllick and Hockerts, 2002) without meaningfully reducing their aggregate resource and energy use. Most organizational approaches have failed to create necessary reductions in impact at least, in part, because business thinking has failed to integrate a more natural sciences-based awareness of sustainability and the ecological limits to our planetary boundaries (Pain, 2014; Rockström et al., 2009; Whiteman et al., 2013).

This article proposes the Triple Layer Business Model Canvas (TLBMC) as a practical tool for coherently integrating economic, environmental, and social concerns into a holistic view of an organization's business model. The TLBMC builds on Osterwalder and Pigneur (2010) original business model canvas – a popular and widely adopted tool for supporting business model innovation – by explicitly integrating environmental and social impacts through additional business model layers that align directly with the original economic-oriented canvas. The TLBMC is a practical and easy to use tool which supports creatively developing, visualizing, and communicating sustainable business model innovation (Stubbs and Cocklin, 2008). The TLBMC follows a triple-bottom line approach to

\* Corresponding author.

E-mail addresses: [alexandre.joyce@idp-ipd.com](mailto:alexandre.joyce@idp-ipd.com) (A. Joyce), [Raymond.paquin@concordia.ca](mailto:Raymond.paquin@concordia.ca) (R.L. Paquin).

organizational sustainability (Elkington, 1994), explicitly addressing and integrating economic, environmental, and social value creation as core to an organization's business model. In particular, it leverages life-cycle analysis and stakeholder management perspectives within newly created environmental and social canvases to conceptualize and connect multiple types of value creation within a business model perspective.

As a tool, the TLBMC bridges business model innovation (Zott et al., 2011; Spieth et al., 2014) and sustainable business model development (Boons and Lüdeke-Freund, 2013) to support individuals and organizations in creatively and holistically seeking competitive sustainability-oriented change as a way to address the challenges facing us today (Azapagic, 2003; Shrivastava and Statler, 2012). The TLBMC can help users overcome barriers to sustainability-oriented change within organizations (Lozano, 2013) by creatively re-conceptualizing their current business models and communicating potential innovations. Sustainability is argued to be the key driver of creative innovation for many firms and improvements towards sustainability requires innovating on existing business models to create “new ways of delivering and capturing value, which will change the basis of competition” (Nidumolu et al., 2009, p.9). While this point is not new, relatively little work sheds light on tools which may support the creative conceptual phase of innovating business models towards organizational sustainability.

Through private consulting, organizational workshops, and university courses, the TLBMC has been found to help users quickly visualize and communicate existing business models, make explicit data and information gaps, and creatively explore potential business model innovations which were more explicitly sustainability-oriented. The TLBMC's layered format helped users better understand and represent the interconnections and relationships between organizations' current actions and its economic, environmental and social impacts. By developing environmental and social canvas layers as direct extensions of Osterwalder and Pigneur (2010) original economic-oriented business model canvas, each canvas layer provides a horizontal coherence within itself which also connects across layers, providing a vertical coherence or more holistic perspective on value creation, which integrates a view of economic, environmental, and social value creation throughout the business model. Thus, the TLBMC may enable users to creatively develop broader perspectives and insights into their organizations' actions.

The TLBMC contributes to this special issue on organizational creativity and sustainability by proposing a user-friendly tool to support sustainability-oriented business model innovation. First, as a multi-layer business model canvas, the TLBMC offers a clear and relatively easy way to visualize and discuss a business model's multiple and diverse impacts. Instead of attempting to reduce multiple types of value into a single canvas, the TLBMC allows economic, environmental and social value to be explored horizontally within their own layer and in relationship to each other through the vertical integration of these layers together. This, in turn, supports richer discussion and more creative exploration of sustainability-oriented innovations as a way to explore how action in one aspect of an organization may ripple through other parts of the organization.

Second, the TLBMC provides a concise framework to support visualization, communication and collaboration around innovating more sustainable business models (Boons and Lüdeke-Freund, 2013). As a relatively easy to understand approach to conceptualizing organizations, the TLBMC is as a boundary object (Carliile, 2002) to communicate change to diverse audiences. At its core, the TLBMC may support transitioning from incremental and isolated innovations to more integrated and systemic sustainability-oriented innovations which are likely better suited to meeting

ongoing global crises, and energy and material constraints (Adams et al., 2015; Shrivastava and Paquin, 2011; von Weizsacker et al., 2009). To support future research and practice around sustainability-oriented business model innovation, the TLBMC is reproduced in Annex 1 and is available for use under a creative commons licence.

## 2. Business models and business model canvases

While the concept of a business model as a “theory of a business” is not new (Drucker, 1955), business model research has only relatively recently gained the attention of many scholars. In fact, as one recent review noted, scholars “do not [readily] agree on what a business model is” (Zott et al., 2011, p.1020). However, for this article a business model is defined as “the rationale of how an organization creates, delivers and captures value” (Osterwalder and Pigneur, 2010, p.14). In particular, it is a conceptualization of an organization which includes 3 key aspects (Chesbrough, 2010; Osterwalder, 2004):

- (1) How key components and functions, or parts, are integrated to deliver value to the customer;
- (2) How those parts are interconnected within the organization and throughout its supply chain and stakeholder networks; and
- (3) How the organization generates value, or creates profit, through those interconnections.

When clearly understood, an organization's business model can provide insight into the alignment of high level strategies and underlying actions in an organization, which in turn supports strategic competitiveness (Casadesus-Masanell and Ricart, 2010). Given that such connections are often only tacitly understood within organizations (Teece, 2010), scholars and practitioners have increasingly turned to business models as a way to make these connections more explicit (Chesbrough and Rosenbloom, 2002; Amit and Zott, 2010; Schaltegger et al., 2012). Making explicit these connections through an organization's business model can also support business model innovation through the discovery of previously unseen opportunities for value creation through transforming existing actions and interconnections in new ways (Johnson et al., 2008).

### 2.1. A canvas as a creative tool for business model innovation

Business model tools can be used to support sustainability through outside-in or inside-out approaches (Baden-Fuller, 1995; Simanis and Hart, 2009; Chesbrough and Garman, 2009). An outside-in approach involves exploring opportunities for innovation by looking at an organization through different types of idealized business models, or business model archetypes (Bocken et al., 2014). This allows firms to explore innovations which may result from adapting their current business model towards a particular archetype. Put another way,

*“Firms can use one or a selection of business model archetypes for shaping their own transformation, which are envisaged to provide assistance in exploring new ways to create and deliver sustainable value and developing the business model structure by providing guidance to realise the new opportunities” (Bocken et al., 2014, p.13).*

As an outside-in approach, Business model archetypes allow users a relatively easy way to explore the potential impacts of innovating towards different types of business models, inspiring a

form of creative confrontation or cross-pollination of diverse ideas (Fleming, 2004). The cross-pollination of business models ideas happens when an archetype from one context or industry is reinterpreted or applied in another. The term outside-in applies because an 'outside' business model archetype is adapted or translated to the organization.

Inversely, an inside-out approach to business model innovation involves starting with the current elements in the organization. First, one details an organization's existing business model then explores the potential changes to the model. A business model canvas (BMC), such as that developed by Osterwalder and Pigneur (2010) tool can be quite effective here in helping users understand an organization's business model. The BMC can help users visually represent of the elements of a business model and the potential interconnections and impacts on value creation. As a visual tool, the BMC can facilitate discussion, debate, and exploration of potential innovations to the underlying business model itself; with users developing a more systemic perspective of an organization and highlighting its value creating impacts (Wallin et al., 2013; Bocken et al., 2014). Osterwalder and Pigneur (2010) BMC, in particular, was developed following design science methods and theory underlying business model development (Osterwalder, 2004) with a focus on providing accessible, visual representation of a business system to guide the creative phase of prototyping, gathering feedback, and revising iterations on business model innovation. Their BMC has been widely adopted by practitioners (Nordic Innovation, 2012; OECD et al., 2012; Kaplan, 2012) and researchers (Abraham, 2013; Massa & Tucci, 2013). Given its wide adoption and ease of use for multiple types of users, the business model canvas is an ideal foundation to expand upon by integrating sustainability.

As an example, Fig. 1 shows an interpretation of the Nestle Nespresso business model through the nine components which make up Osterwalder and Pigneur (2010) original BMC. As discussed below, their BMC forms the economic layer of the proposed Triple Layered Business Model Canvas. This is discussed more in section 4.

2.2. Building on the original canvas

The business model canvas, as proposed by Osterwalder and Pigneur (2010), distills an organization's business model into nine interconnected components – customer value proposition,

segments, customer relationships, channels, key resources, key activities, partners, costs and revenues. While using it may help users align profit and purpose to support more sustainability-oriented value creation on its own (Osterwalder and Pigneur, 2011), in practice environmental and social value is implicitly de-emphasized behind the canvas's more explicit 'profit first' or economic value orientation (Upward, 2013; Coes, 2014). This has led to the criticism that developing more sustainability-oriented business models likely either requires an expert facilitator to support this orientation or a different tool altogether (Bocken et al., 2013; Marrewijk and Werre, 2003). A new tool would need to more explicitly integrate economic, environmental, and social value into a holistic view of corporate sustainability. As a way to put this into practice, the TLBMC offers the opportunity for users to explicitly address a triple bottom line where each canvas layer is dedicated to a single dimension and together they provide a means to integrate the relationships and impacts across layers.

The triple bottom line (TBL) perspective, advocating organizations consider and formally account for their economic, environmental, and social impacts (Savitz, 2012), is useful here. While criticized for simplifying sustainability's complexity (Norman and MacDonald, 2004; Vanclay, 2004; Mitchell, 2007), many organizations have adopted TBL thinking, implicitly or explicitly, through corporate social responsibility reporting and initiatives such as the Global Report Initiative, Carbon Disclosure Project, and others. Thus, despite its potential flaws, TBL is a relatively widely understood perspective for considering an organization's economic, environmental, and social and as a conceptual framework for designing business models to support more sustainable action.

Innovating towards more sustainable business models requires developing new business models which go beyond an economic focus to one which generates and integrates economic, environmental and social value through an organization's actions (Bocken et al., 2013; Willard, 2012). Therefore the structure of the tool leads to clearly understand and align an organization's actions towards sustainability at a strategic business model level.

3. Presentation of the triple layered business model canvas tool

The wide adoption and use of Osterwalder and Pigneur (2010)

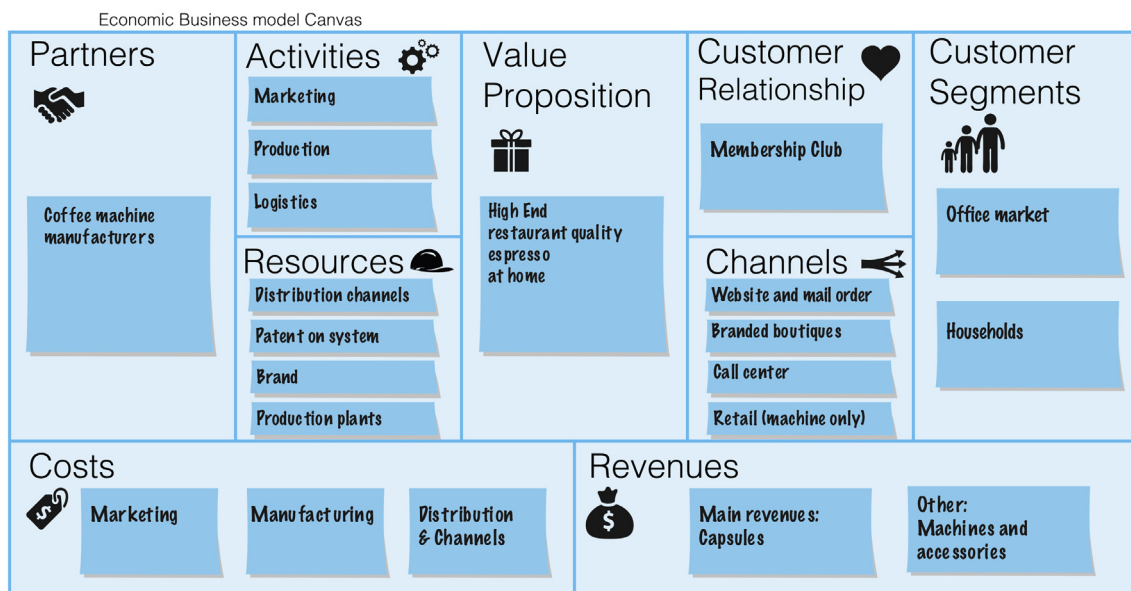


Fig. 1. An analysis of Nespresso through Osterwalder and Pigneur (2010) original Business Model Canvas, which forms the economic layer of the Triple Layer Business Model Canvas.

business model canvas suggests it is valuable for understanding and communicating an organization's business model and creatively supporting business innovation (Abraham, 2013). Yet, as noted above, for organizations seeking sustainability-oriented innovation, new creative tools are likely needed (Lozano, 2014).

The Triple Layer Business Model Canvas (TLBMC) is a tool to support the creative exploration of sustainable business models and sustainability-oriented innovation more broadly. The TLBMC complements and extends Osterwalder and Pigneur (2010) original economically-oriented business model canvas concept with new canvas layers exploring environmental and social value creation. These additional layers both parallel the original business model canvas by highlighting the interconnections which support environmental and social impacts separately, and extend it by drawing connections across the three layers to support an integrated triple bottom line perspective of organizational impact (Glaser, 2006; Hubbard, 2009; Sherman, 2012). In other words, the TLBMC provides 'horizontal' coherence within each canvas layer for exploring economic, environmental and social value individually and 'vertical' coherence integrating value creation across the three canvas layers; which supports developing a deeper understanding of an organization's value creation (Lozano, 2008). Thus, the TLBMC is proposed to creatively explore sustainability-driven product, process, and business model innovation in support of organizations better addressing sustainability challenges. As the original business model canvas is treated at length by the original authors (Osterwalder and Pigneur, 2010), the next section focuses only on the new environmental and social canvas layers proposed as part of the TLBMC.

### 3.1. Foundation of the environmental layer of the TLBMC

The environmental layer of the TLBMC builds on a life cycle perspective of environmental impact. This stems from research and practice on Life Cycle Assessments (LCA), which is a formal approach for measuring a product's or service's environmental impacts across all stages of its life (Svoboda, 1995). A formal LCA provides an evaluation of environmental impacts across multiple types of indicators (e.g., CO<sub>2</sub>e, eco-systems quality, human health, resource depletion, water use cf., Hendrickson et al., 2006; Pennington et al., 2004) over the full life-cycle of a product or service (e.g., raw material extraction, manufacturing, distribution, use and end of life cf., Svoboda, 1995; Guinée, 2002). Coupling LCA with business innovation can support competitive product, service and business model innovations with enhanced environmental characteristics vis-à-vis traditional business innovations (FORA, 2010) and support ongoing impact measurement and improvement of sustainability-oriented innovations over time (Chun and Lee, 2013). While the TLBMC does not integrate a formal LCA into the canvas, it does ensure a life cycle perspective when considering a business model and its environmental impacts. Section 4.1 describes the components of the environmental canvas layer.

### 3.2. Foundation of the social layer of the TLBMC

The social layer of the TLBMC builds on a stakeholder management approach to explore an organization's social impact (Freeman, 1984). A stakeholder management approach seeks to balance the interests of an organization's stakeholders rather than simply seeking maximum gain for the organization itself. Stakeholders are considered those groups of individuals or organizations which can influence or be influenced by the actions of an organization. Typical stakeholders include employees, shareholders, community, customers, suppliers, governmental bodies, interest groups, though others advocate expanding stakeholders to include

groups such as media, the poor, terrorist groups, and even non-human actors such as natural ecosystems (Miles, 2011; Post et al., 2002; Hart and Sharma, 2004). While there are a number of approaches for addressing social impacts in business such as social life cycle assessments (Jørgensen et al., 2008), ISO 26000 and other common standards (Pojasek, 2011; Moratis, 2011), and social impact factors (Benoît et al., 2010); they all build from a stakeholder perspective; thus our decision. Similar to the environmental canvas layer, the social canvas layer extends the original business model canvas by filtering an organization's business model and impacts through a stakeholder perspective. Given that an organization's particular stakeholders may vary based on context and salience (Mitchell et al., 1997), the stakeholder layer is intendedly broad and flexible in use. Section 4.2 describes the components of the social canvas layer.

## 4. Elements of the TLBMC layers through Nespresso's business model

The economic aspects of Nespresso's business model, as illustrated in Fig. 1, begin with the quest to sell high-end restaurant quality espresso at home and is elaborated elsewhere (cf., Osterwalder and Pigneur, 2010). In summary, however, Nespresso, at this time, sold high-margin coffee pods for making coffee and lower-margin machines manufactured by partners. Costs associated with these activities include marketing, production and logistics and include resources such as distribution channels, brand, production plants and patents. Nespresso targeted the office market and affluent consumers through a membership club, developing longer term relationships with these customer segments. They distributed machines through retail shops but coffee pods were ordered online, by mail, by phone and in boutiques. Nespresso offers a clear example of creatively innovating a business model around coffee as "it changed the face of the coffee industry by turning a transactional business (selling coffee through retail) into one with recurring revenues (selling proprietary pods through direct channels)" Osterwalder (2013, p.1).

In the following section, the ensuing environmental and social canvas layers are presented and they are exemplified by expanding on Nespresso's business model. For this Nespresso case, the additional canvas layers share public information, such as company reports, press releases, and articles and other public data. In particular, the environmental data comes from Nespresso (2014) and Nestlé (2015) which extracts the carbon footprint LCA data from a third party report (Quantis, 2011). The social layer data comes from their report on creating shared value (Nestlé, 2014).

### 4.1. Environmental layer of the TLBMC

Much in the same way the original business model canvas is used to understand how revenues outweigh costs, the main objective of the environmental layer of the TLBMC is to appraise how the organization generates more environmental benefits than environmental impacts. Doing so allows users to better understand where the organization's biggest environmental impacts lie within the business model; and provide insights for where the organization may focus its attention when creating environmentally-oriented innovations. As mentioned above, environmental impacts can be tracked with multiple indicators. However, in this Nespresso case, environmental impacts are tracked in terms of carbon impact due to data availability. Leveraging the life cycle approach discussed above, each of the nine components of the environmental layer are defined below. The TLBMC elements were elaborated using the Nespresso business model.

#### 4.1.1. Functional value

The functional value describes the focal outputs of a service (or product) by the organization under examination. It emulates the functional unit in a life cycle assessment, which is a quantitative description of either the service performance or the needs fulfilled in the investigated product system (Rebitzer et al., 2004). The difference between a LCA's functional unit and the functional value can be seen as one of usage. For example, the functional unit of the Nespresso LCA is a 40 ml espresso pod, while the functional value is the total of these pods consumed by customers in a given time-frame such as a year. The point of defining the functional value is first to clarify what is being examined in the environmental layer; and second, to serve as a baseline for exploring the impacts of alternative potential business models.

#### 4.1.2. Materials

The materials component is the environmental extension of the key resources component from the original business model canvas. Materials refer to the bio-physical stocks used to render the functional value. For example manufacturers purchase and transform large amounts of physical materials, whereas service organizations tend to require materials in the form of building infrastructure and information technology. These service organizations also consume significant material resources in the form of assets such as computers, vehicles and office buildings. While introducing all materials into the canvas is not practical, it is important to note an organization's key materials and their environmental impact. For Nespresso, materials are first and foremost the coffee beans which represent 19.9% of its carbon footprint. The aluminum used for the capsules is also to be included in the materials of the life cycle as it represents 6% of the carbon footprint.

#### 4.1.3. Production

The production component extends the key activities component from the original business model canvas to the environmental layer and captures the actions that the organization undertakes to create value. Production for a manufacturer may involve transforming raw or unfinished materials into higher value outputs. Production for a service provider can involve running an IT infrastructure, transporting people or other logistics, using office spaces and hosting service points. As with materials, the focus here is not on all activities but rather those which are core to the organization and which have high environmental impact. For Nespresso, the industrial processes to prepare the coffee beans represent 4.5% of the carbon impact and the manufacturing of the packaging capsules represents 13.3%.

#### 4.1.4. Supplies and outsourcing

Supplies and out-sourcing represent all the other various material and production activities that are necessary for the functional value but not considered 'core' to the organization. Similar to the original business model canvas, the distinction here is between is considered core versus non-core to support the organization's value creation. This can be considered in terms of actions which are unique to the organization and support its competitive advantage and those actions which are necessary but not unique (Porter, 1985) and may also be conceived of as those actions which are kept in-house versus those which are outsourced, though this can be not strictly accurate. Within the environmental layer, examples of may include water or energy which, while they could come from in-house sources (local wells and on-site energy production); they are likely to be supplied by local utility companies. As such, many organizations have little influence in these areas unless they are willing to take more control over these actions through, for example, creating on-site energy and utility services. In the

available carbon footprint data of the coffee pod manufacturer, most of the impacts of supplies and outsourcing such as the machines and pods were included in the use phase.

#### 4.1.5. Distribution

As with the original business model, distribution involves the transportation of goods. In the case of a service provider or a product manufacturer, the distribution represents the physical means by which the organization ensures access to its functional value. Thus within the environmental layer, it is the combination of the transportation modes, the distances travelled and the weights of what is shipped which is to be considered. As well, issues of packaging and delivery logistics may become important here. For Nespresso, distribution involves the shipment of coffee beans and, subsequently manufactured, coffee pods over thousands of kilometres with the total effect of representing only 4.6% of Nespresso's carbon footprint. Their distribution practices favour train over trucks. In addition, the products are packaged in cardboard boxes which represent 3.6% of their carbon footprint.

#### 4.1.6. Use phase

The use phase focuses on the impact of the client's partaking in the organization's functional value, or core service and/or product. This would include maintenance and repair of products when relevant; and should include some consideration of the client's material resource and energy requirements through use. Many electronic products incur use phase impacts when charging a device and using an infrastructure needed to support the network of users. This can outweigh production impacts (Nokia, 2005). As well, the line between production and use phase may not be clear, especially as organizations increasingly offer co-creation of services (e.g., user created content) and product sharing (e.g., car sharing) in lieu of more traditional product and service business models (Pralhad and Ramaswamy, 2004). For Nespresso, the use phase consists of three elements. First, a client's energy and water needs to prepare coffee add up to 10.9%. Second, the machine use and production represents 7.8%. And lastly, the coffee pod production and washing is the largest single element of the entire life cycle with 28% of Nespresso's carbon impact.

#### 4.1.7. End-of-life

End-of-life is when the client chooses to end the consumption of the functional value and often entails issues of material reuse such as remanufacturing, repurposing, recycling, disassembly, incineration or disposal of a product. From an environmental perspective, this component supports the organization exploring ways to manage its impact through extending its responsibility beyond the initially conceived value of its products. Increasingly governments are forcing organizations to address this through various substance restrictions (European Commission, 2012) and recycling requirements (Environment Agency, 2012). This can also be an opportunity for organizations to creatively explore new business models such as product service systems (Mont and Tukker, 2006; Bey and McAloone, 2006) and industrial symbiosis (Paquin et al., 2013). For Nespresso, end-of-life means addressing the impacts of its spent espresso pods consisting of spent coffee and aluminum. The capsules, the packaging and the machine in a mix of end of life scenarios that includes landfill and recycling adds up to 5.5% of Nespresso's total carbon impact. However, the pods can only be recycled if taken back to one of the 14 000 Nespresso dedicated collection points (Nespresso, 2014).

#### 4.1.8. Environmental impacts

The environmental impacts component addresses the ecological costs of the organization's actions. While a traditional business

model often summarizes organizational impacts primarily as financial costs, the environmental impacts components extends that to include the organization's ecological costs. Based on LCA research (Jolliet et al., 2003), these performance indicators may be related to bio-physical measures such as CO<sub>2</sub>e emissions, human health, ecosystem impact, natural resource depletion, water consumption. Some environmental indicators can take the form of traditional business metrics still related to LCA (De Benedetto and Klemes, 2009) such as energy consumption, water use and emissions. And, as with exploring an organization's financial costs, this provides an opportunity to explore where, in the organization's actions, are its biggest environmental impacts. For Nespresso, its environmental impacts can point to its largest contributor, the use stage with 46.6% of the carbon footprint.

4.1.9. Environmental benefits

Similar to the relationship between environmental impacts and costs, environmental benefits extends the concept of value creation beyond purely financial value. It encompasses the ecological value the organization creates through environmental impact reductions and even regenerative positive ecological value. From a sustainability perspective, this component provides space for an organization to explicitly explore product, service, and business model innovations which may reduce negative and/or increase positive environmental through its actions. For Nespresso, an example of this would be the 20.7% reduction in carbon emissions they achieved by redesigning the machines to be energy efficient. By evaluating environmental impacts with a life cycle approach in the business model canvas, the description of impacts can move beyond generalizations and intuitions to establish a firmer even quantitative basis upon which to design more sustainable business models.

In Fig. 2, a life cycle approach informs the environmental layer as projected through the original business model canvas. The content provided inside the canvas framework has been extracted from the report available on the company's website (Nespresso, 2014) which recounts the third party life cycle assessment (see Fig. 3).

4.2. Social layer of the TLBMC

A key point of using the social layer of the TLBMC is to extend

the original business model canvas through a stakeholder approach to both capture the mutual influences between stakeholders and the organization. Also, this layer seeks to capture the key social impacts of the organization that derive from those relationships. Doing so provides a better understanding of where are an organization's primary social impacts and provides insight for exploring ways to innovate the organization's actions and business model to improve its social value creation potential. Leveraging the stakeholder approach discussed above, the nine components of the social layer make up the third layer of the TLBMC. Again, the Nespresso business model case serves as an example of it use.

4.2.1. Social value

Social value speaks to the aspect of an organization's mission which focuses on creating benefit for its stakeholders and society more broadly. For sustainability-oriented firms, creating social value is likely a clear part of their mission. However, even the most profit-oriented organizations likely consider their value creating potential beyond simply financial gain (Collins and Porras, 1996). For Nespresso, they use the term creating shared value (Porter and Kramer, 2011). Their intended social value can be interpreted through their "roadmap for sustainable growth" (Nespresso, 2015) where one of their core competencies is developing long term value from mutually beneficial relationships with coffee farmers. A broader understanding of the company's social value can be extrapolated from its corporate business principles "to enhance the quality of consumers' lives every day, everywhere, by offering tastier and healthier food and beverage choices and encouraging a healthy lifestyle" (Nestlé, 2014, p44).

4.2.2. Employee

The employees' component provides a space to consider the role of employees as a core organizational stakeholder. A number of elements may be included here such as amounts and types of employees, salient demographics such as variations pay, gender, ethnicity, and education (to name a few) within the organization. As well, it provides a space for discussing how an organization's employee-oriented programs – e.g. training, professional development, additional support programs – contribute to the organization's long term viability and success. Due to the diverse aspects of employees, this component does risk overflowing with many

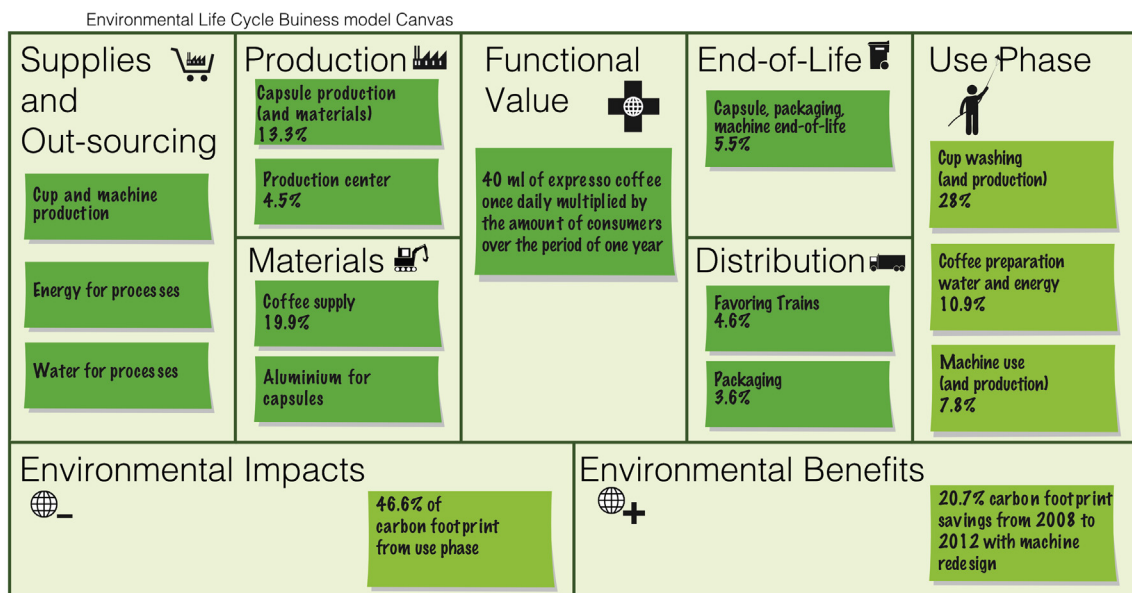


Fig. 2. The environmental life cycle layer of the triple layered business model canvas demonstrates the Nespresso case.

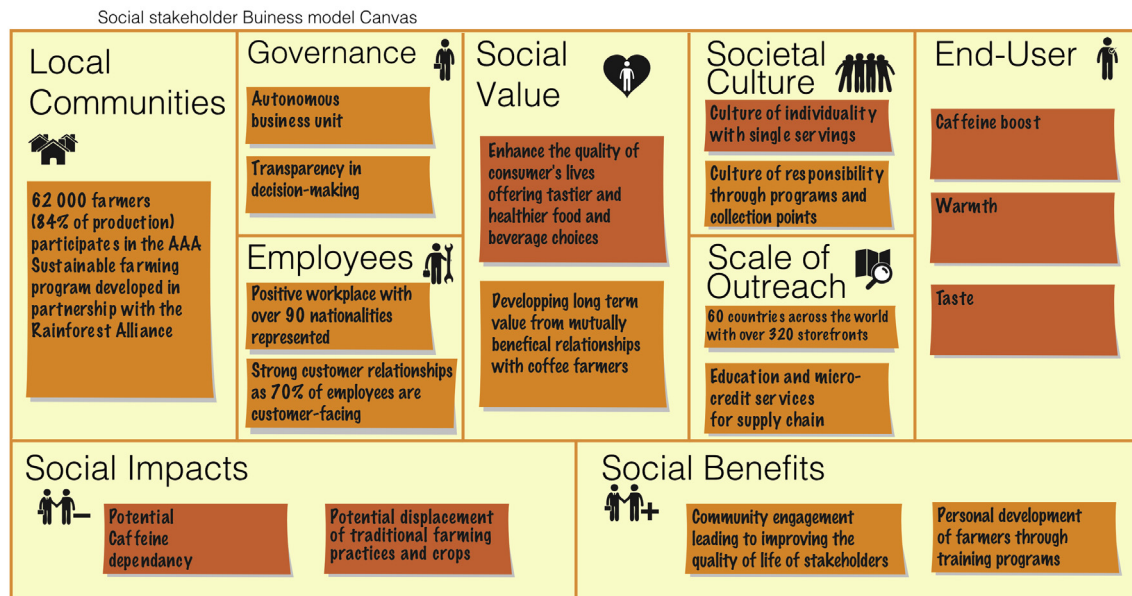


Fig. 3. The social stakeholder layer of the triple layered business model canvas demonstrates the Nespresso case.

data points of varying relevance for exploring an organization's business model. Thus, it is suggested to focus only on those aspects which are most relevant for supporting the organization's business model. While data on this component it is not as explicit here, among the issues worth considering based on Nespresso's goals are its rapid employee growth since its founding, that some 70% of its employees are customer-facing, its employees work in over 60 countries and themselves represent more than 90 nationalities (Nespresso, 2015). Given Nespresso's global reach and rapid growth, maintaining a positive workplace and strong customer relationships likely need to be considered a core part of its business.

#### 4.2.3. Governance

The governance component captures the organizational structure and decision-making policies of an organization. In many ways, governance defines which stakeholders an organization is likely to identify and engage with and how the organization is likely to do so (Mitchell et al., 1997). Organizations can vary widely based on several aspects of governance including ownership (e.g., cooperative, not-for profit, privately owned for-profit, publicly traded for-profit) (Young, 2013), internal organizational structures (e.g., organizational hierarchy, functional v. unit specialization) (Williamson, 1991) and decision-making policies (e.g., transparency, consultation, non-financial criteria, profit sharing) (Turskis and Zavadskas, 2011) and each of these points can influence how an organization may engage stakeholders in creating social value. As an autonomous business unit within Nestlé, Nespresso has made a point of being transparent in decision making and actively engaging stakeholders to create value (Nespresso, 2014, p.1).

#### 4.2.4. Communities

While economic relationships are built with business partners, there are social relationships built with suppliers and their local communities. These two stakeholders come together as communities when aligning the three layers of the TBLMC. When interacting with communities, an organization's success can be greatly influenced through developing and maintaining mutually beneficial relationships. If an organization has only one or multiple facilities located in the same geographical area, then there may be

only one local community. However, if an organization has facilities in different countries, it is important to consider each community as a different stakeholder with different cultural needs and realities. While organizations have tended to focus more on the community where they are headquartered (Landier et al., 2009), organizations should consider all communities where it has facilities as important.

Though individual suppliers may have more or less influence over an organization (Pfeffer and Salancik, 1978), as a group, suppliers are also critical as they provide the organization with critical resources necessary to support its success. For those organizations sourcing materials locally (say, for instance, a restaurant focused on the local food movement), suppliers are also part of the local community. For Nespresso, developing successful supplier relationships within coffee farmers is particularly important as Nespresso requires large quantities of high quality coffee. As a way to meet its coffee demands, Nespresso has partnered with the NGO Rainforest Alliance to train and support over 62 000 farmers in ways to sustainably improve their coffee quality and yields, which in turn increase their incomes (Nespresso, 2014, p.3).

#### 4.2.5. Societal culture

The societal culture component recognizes the potential impact of an organization on society as a whole. Returning to the point that business cannot succeed when society fails, this component leverages the concept of sustainable value (Laszlo, 2008) to acknowledge an organization potential impact on society and how, though its actions, it can positively influence society (Steurer et al., 2005). Non-governmental organizations (NGOs) represent another element that can be included in the societal culture space as they carry social agendas through their influence on businesses. For Nespresso, one could argue that individual cup servings of restaurant quality points to a culture of individualism. On the other hand, Nespresso's strong corporate social responsibility practices and programs can be interpreted as a culture of accountability and proactiveness.

#### 4.2.6. Scale of outreach

Scale of the outreach describes the depth and breadth of the relationships an organization builds with its stakeholders through

its actions over time. This may include the idea of developing long term, integrative relationships and the outreach of impact geographically – e.g. local, regional, or global focus; as well as an organization's impact in how and whether it addresses societal differences such as locally interpreting ethical and or cultural actions across different cultures and countries. For Nespresso, the scale of outreach is represented by a growing company operating in over 60 countries with over 320 storefronts. Its outreach is also deep and diversified when creating additional social programs such as language education and micro-credit programs for its supply chain.

#### 4.2.7. End-users

The end-user is the person who 'consumes' the value proposition. This space is concerned with how the value proposition addresses the needs of the end-user, contributing to his/her quality of life. Users with similar needs have typically been segmented based on relevant demographics – e.g., age, income, ethnicity, education level, etc. Importantly, the end-user is not always the customer as defined in the economic layer of the business model canvas. For instance, textbook publishers historically consider course instructors as customers though students are the end-users. For Nespresso, the end-user often happens to be the customer who seeks high-quality/low-effort coffee on demand in the economic canvas. In the social canvas, Nespresso seeks to provide value by meeting the user's need in terms of taste, warmth and a caffeine boost.

#### 4.2.8. Social impacts

The social impacts component addresses the social costs of an organization. It complements and extends the financial costs of the economic layer and the bio-physical impacts of the environmental layer. Although there is a growing body of work on social impact measures (UNEP, 2009), there is not yet a consensus on what social impacts to consider, nor how to quantify them. Some of the more common indicators as provided by Benoit-Norris et al. (2011) include working hours, cultural heritage, health and safety, community engagement, fair competition, respect of intellectual property rights; though which ones to focus on likely depends on the nature of the organization and an organization may find the need to create its own indicators here. For Nespresso, negative social impacts could stem from its engagement with local farmers, potentially disrupting or displacing existing cultural farming and social practices; or potentially the impact of caffeine addiction should perceptions change to consider caffeine a social ill as with tobacco, alcohol, and junk food.

#### 4.2.9. Social benefits

Social benefits are the positive social value creating aspects of the organization's action. This component is for explicitly considering the social benefits which come from an organization's actions. As with social costs, social benefits can be measured using a broad range of indicators. For Nespresso, social benefits may include the personal development and community engagement impacts of providing training opportunities for its employees directly and indirectly with its coffee suppliers through its partnership with the Rainforest Alliance.

## 5. Discussion

This section explores the field testing, including feedback and iteration on the TLBMC with innovation professionals and undergraduate and graduate-level business majors. This section also discusses how the TLBMC can support business model analysis and innovating towards more sustainable business models through

providing a horizontal coherence within each canvas layer by developing a deeper understanding of and organization's economic, environmental, and social impacts; and vertical coherence by providing clear connections across the layers supporting a more holistic and integrating perspective of sustainable-oriented value creation potential.

### 5.1. Field testing the TLBMC

The TLBMC concept stems from the authors' professional experiences in design innovation and sustainability in business and from their desire to develop a practical tool to support those interested in pursuing sustainability-oriented innovation. Given that the details of an organization's business model is often only implicitly understood (Teece, 2010), the authors took a participatory action research approach (Stringer, 2013) to work with participants to jointly develop a tool which could uncover the "latent dynamics" of their organizations (Argyris, 1993) and innovate towards more sustainable organizational action. In particular, the TLBMC evolved through three interrelated cycles of action between the authors and interested participants (Winter and Zuber-Skerritt, 1996). First, their experience and expertise in sustainability-oriented innovation, the authors developed a TLBMC prototype as a practice-derived tool to support uncovering an organization's business model and sustainability-oriented innovation. Second, seven sustainability and innovation professionals, including practitioners and academics, reviewed and gave feedback on the prototype and subsequent iterations as the authors refined it. Third, a revised TLBMC was used and further refined through a series of consulting engagements with management and product teams from 13 North American-based manufacturers actively seeking sustainability-oriented innovations, and 17 university- and organization-based workshops involving over 400 participants, including undergraduate and graduate business students, entrepreneurs and industry professionals.

Through these experiences, the TLBMC seems well suited to support creatively developing more sustainable business models through a two-step approach. First, the TLBMC can be used collaboratively among small groups to analyze and communicate an organization's current business model, providing a baseline understanding of the organization's positive and negative economic, social and environmental impacts. Second, the TLBMC can then be used to creatively explore possible innovations on the existing business model and the potential value creating impact of such innovations. In other words, the TLBMC can be used as a tool to help users reimagine the organization through changes to its business model. By using the same tool to both analyze an existing business model and create potential new ones, users seemed more readily able to discuss and give feedback to new ideas. As the R&D director of a large manufacturer stated:

*"We were able to use the triple layered canvas to discover unexpected opportunities for innovation in areas of our business we hadn't explored. This new vision, brought by this tool, is extremely useful today in a context where everything is accelerating and where businesses must continually adapt and innovate."*

Feedback from each action cycle suggests the TLBMC supported users in creatively exploring sustainability-oriented business model innovation at least three ways. First, it provided a visual **representation** of an organization's business model. Users can make explicit otherwise implicit or only informally understood elements of a business model. This greater clarity better informed how an organization may create value, supporting a more holistic view of the organization. Doing so also helped



highlight some of the more intangible and tacit connections within an organization, supported conversations among users, which in turn, may support a more collaborative and creative approach across the functional and departmental perspectives of different team members.

Second, the TLBMC is a **creation** tool. Users explored the consequences of changing individual elements of a business model through the cascading impacts of such change within and across the canvas layers. The ‘visualized’ business model through the TLBMC can facilitate the understanding and creation of new business models ideas by highlighting the interconnections of key elements within the business model. The various uses for colour in workshops was one demonstration of this creative process as participants assigned one colour to ‘fixed’ elements of their business model and another colour to elements which may be altered. This allowed users to more readily communicate and explore changes and impacts across the business model.

Third, the TLBMC is a **validation** tool. Users tried to balance the costs and benefits of their business model idea in a more holistic manner with economic, environmental and social perspectives. Validation also came from a broader systems perspective as the TLBMC was used to explore and weigh the potential stakeholder consequences of particular ideas. For example, an environmental decision to switch to water-based wood finishes comes with an economic cost on materials, but it is outweighed by reducing health-related measures and costs to ensure worker’s well being.

5.2. New dynamics in a layered approach to a business model canvas

The Triple Layer Business Model Canvas (TLBMC) provides an integrative approach to support those seeking to understand existing business models and creatively explore potential sustainability-oriented business model innovations. In particular, the TLBMC layers support horizontal and vertical coherence (see Fig. 4). Each layer supports a horizontal coherence, or an integrated approach to exploring an organization’s economic, environmental or social impact, by highlighting key actions and relationships within the nine components of each layer. Combined, the three

layers provide a vertical coherence through connecting the components of each layer to their analogs in the other layers, further elucidating key actions and connections and their impacts across layers. Integrating the economic, environmental, and social layers supports a more robust and holistic view of an organization’s business model through its actions and relationships, which can support a more systems-level perspective of sustainability-oriented innovation (Zott and Amit, 2009). Horizontal and vertical coherence are discussed more below.

5.2.1. Horizontal coherence

Each layer allows some level of depth in making explicit different types of value creation, which may facilitate broader systems thinking towards a more holistic view of the entire business model. For Nespresso, its business model is built on two main vectors. First, they sell a machine, made by partners, that runs proprietary technology. Second, they offer single coffee pods as a branded consumable. At the economic level, this model thrives because it locks customers into a “razors and blades” business model through recurring coffee pod sales. At the environmental level, this model distributes the impact between the machine and pods but Nespresso excludes the impacts of the machine production. At the social level, Nespresso actively supports farmers/suppliers but says little of the social impact of its product on its users. A simple analysis of these two vectors demonstrates opportunities for improving environmental and social inefficiencies of the business model. Using the TLBMC, one may then begin exploring issues beyond the organization itself, potentially including discussions with stakeholders to collaboratively innovate new business models with stronger environmental and social benefits.

5.2.2. Vertical coherence

The alignment of each layer component across the canvas layers provides a vertical coherence. This supports exploring the alignment of actions and interconnections across the different types of value. With Nespresso, one may see a lack of alignment across the canvas layers in terms of the connection between its customer relationship, end-of-life actions, and social impact. The customer

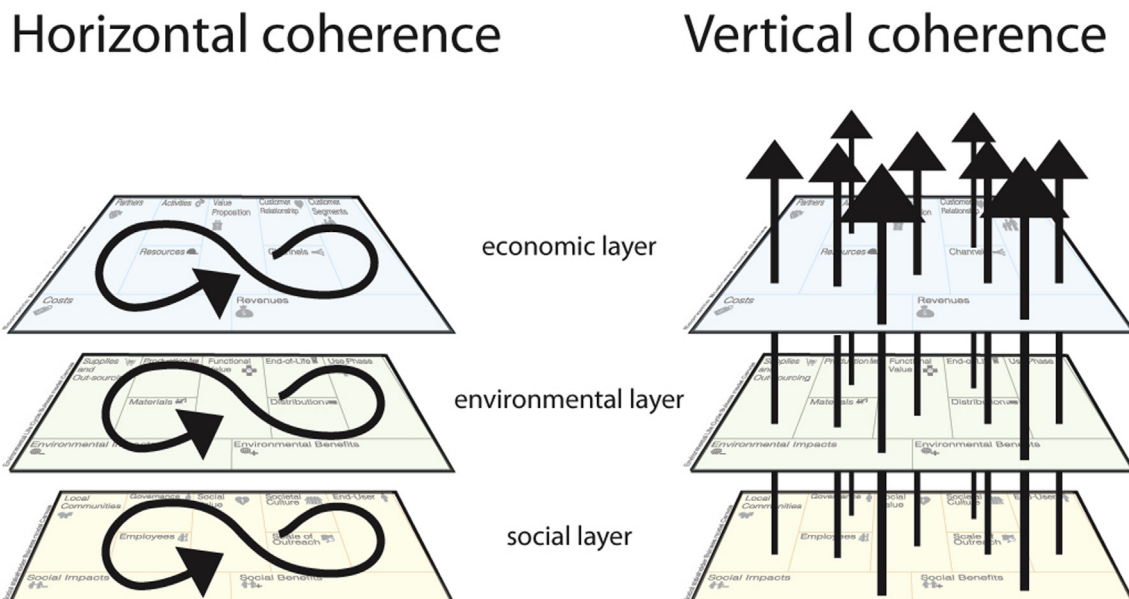
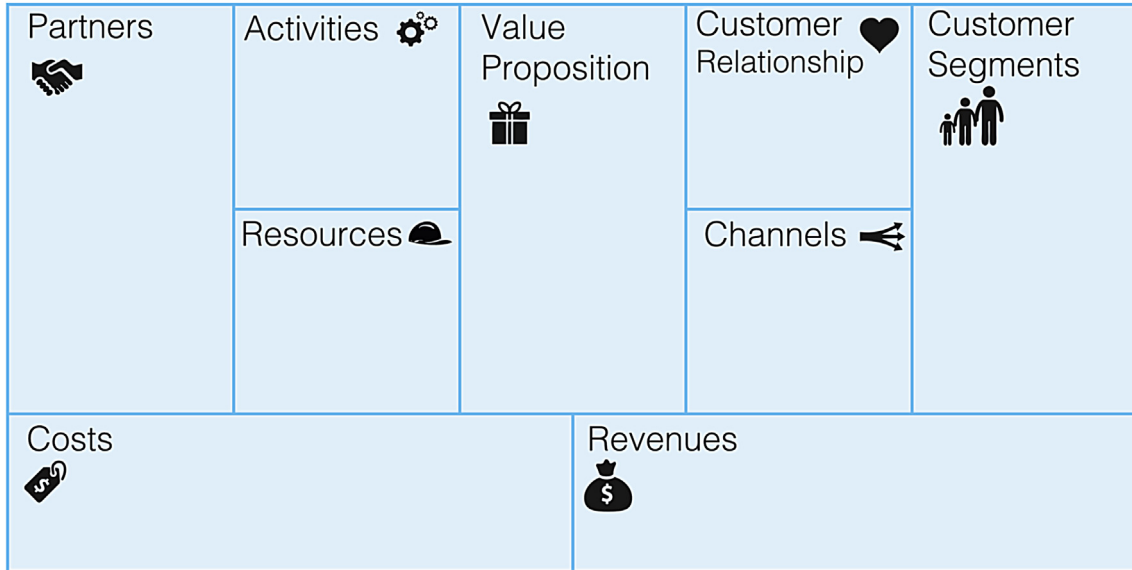


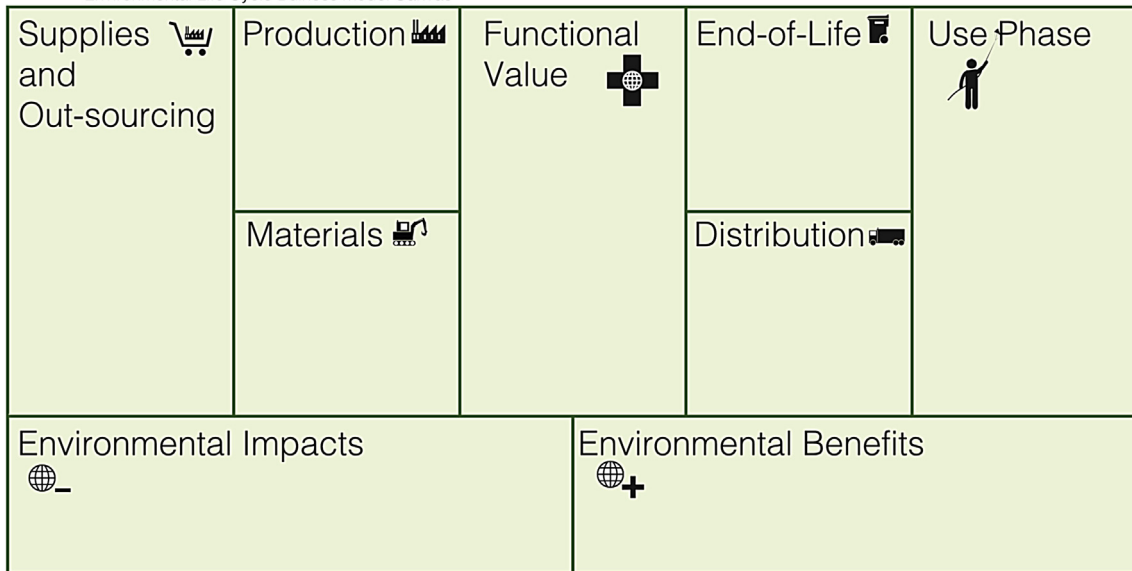
Fig. 4. The triple layered business model canvas creates two new dynamics: horizontal and vertical coherence.

**Annex 1. Triple layered business model canvas (TLBMC)**

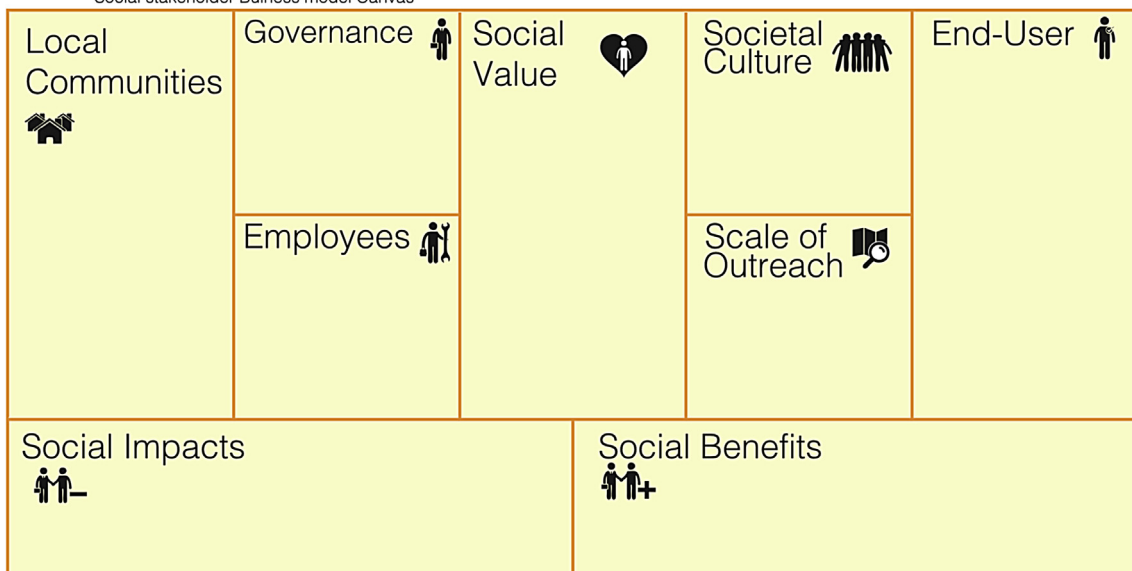
Economic Business model Canvas



Environmental Life Cycle Business model Canvas



Social stakeholder Business model Canvas



relationship stems from a long-term relationship founded on membership and exclusivity, yet over time Nespresso capsules became a grocery store commodity. Its products are one-time consumables which seem to promote individual consumption rather than a community experience such as a local café. And, even with an active product take-back and recycling program, its coffee pods are landfilled in many countries. Opportunities here may include leveraging its customer relationship to develop stronger product take-back and recycling programs, perhaps through refundable deposit charges, and/or through community-focused activities with customers in stores, both of which may impact environmental and social value. These potential actions show how environmental and social concerns, seen through the TLBMC, can lead to a more active and creative exploration of sustainability-oriented innovations in organizations.

### 5.3. Limits and future research

While the TLBMC offers a novel approach for analyzing and conceptualizing sustainability-oriented innovation and sustainable business models, there are also some clear limitations to consider. One, the TLBMC is simply a tool. It does not do the work of exploring and assessing potential innovations. Some users have found the 'blank page' of the TLBMC a bit overwhelming at first. To overcome this, users may consider starting off with sample cases of other organizations, considering more focused and probing questions of their own organization, or drawing comparisons with other organizations as a way to familiarize themselves with the tool and business model analysis process. As well, the TLBMC provides only a high-level summary analysis, it lacks the often necessary detailed analysis one may find in other ways. Yet, this is not the point of the TLBMC. The TLBMC is meant for developing a high-level, integrated and holistic perspective of the entire business model, which may, in turn, shed light on where deeper and more focused analysis may need to be done. Lastly, the TLBMC provides an integration of the specialized analyses back into the high-level viewpoint of the business model. Here are two examples of the new dynamics and analyses that the TLBMC offers.

The TLBMC tool supports users seeking to creatively innovate towards more sustainable business models in a number of ways. First, building directly from the widely adopted business model canvas (Osterwalder and Pigneur, 2011), the TLBMC provides an easy to use, enhanced canvas to explore and innovate towards economic, environmental, and social value creation in an integrated manner. Though not the only tool designed to support sustainability-oriented innovation through business model change (Upward, 2013; Bocken et al., 2013), the TLBMC's inside-out approach supports users leveraging their understanding of the organization's existing business model for innovation opportunities to emerge rather than attempting to translate or reinterpret external ideals or archetypes for their business. The TLBMC also provides an intuitive visualization of the organization and value creation which may be used to provoke conversations around particular changes in an organization. As such, a number of questions may be worth considering such as how do different conceptualizations of business models influence how users conceive of and communicate sustainability-oriented innovations in support of creating change? How might such tools be used to support more sustainable action? Would such tools provoke the deep-level changes the natural sciences suggest are likely needed for business to adapt to more globally sustainable outcomes (Rockström et al., 2009; von Weizsacker et al., 2009) or merely create incremental change?

Second, the TLBMC is offered through creative commons to support those interested in developing sustainability-oriented

changes through business model innovating. A key aspect of meaningful change is sparking the collaborative conversations often necessary to support the change process (Quinn, 2010) and the TLBMC seems to be an effective tool for just that. Yet, the usefulness of any tool or activity is its usefulness to the group using it (Schön, 1983). Future work may explore whether and how the TLBMC might support organizational users as they collaboratively develop and validate their own business model innovations. Over time, it would be interesting to see whether and how actual organizational impacts (economic, environmental, and social) align with the anticipated changes in impacts conceptualized through business model changes.

Third, the TLBMC proposes to make more explicit the often tacit and informal dynamics within organizations through vertical and horizontal coherence. The three layers of the TLBMC seems to help elucidate opportunities for developing deeper and more integrated views of the economic, environmental, and social value of an organization's business model. Yet, this is supported on client and workshop participant feedback and not from objective organizational changes in actions or outcomes. Future work may consider exploring how the TLBMC and other tools may best help users conceptualize, understand, and communicate an organization's impacts through its business model as a way to more clearly support meaningful sustainability-oriented innovations with demonstrable impacts.

## 6. Conclusion

This paper contributes to the existing research on sustainable business models by providing a framework in the form of the triple layer business model canvas (TLBMC) to enable a triple bottom line perspective to sustainability – that of economic, environmental and social impact - applied to a business model. The TLBMC expands the economic-centred approach to a standard business model by developing and integrating environmental and social canvas layers built from lifecycle and stakeholder perspectives into an extended business model canvas. This expanded canvas support developing more robust and holistic perspectives on sustainability-oriented business model innovation. As such, the TLBMC has the potential to support those seeking ways to transform organizations for sustainability.

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## Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.jclepro.2016.06.067>.

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