Journal of Cleaner Production 140 (2017) 155–166

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

An approach to business model innovation and design for strategic sustainable development

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ARTICLE INFO

Article history:
Received 25 August 2015
Received in revised form
13 June 2016
Accepted 20 June 2016
Available online 25 June 2016

Keywords:
Business model design
Strategic sustainable development
Sustainable business model
Sustainable product-service systems

ABSTRACT

Successful business is increasingly about understanding the challenges and opportunities linked to society's transition towards sustainability and, e.g., being able to innovate, design and build business models that are functional in this context. However, current business model innovation and design generally fails to sufficiently embrace the sustainability dimension. Typically, the business case of sustainability is not understood profoundly enough; the planning horizon and system scope are insufficient; the competence to bring together people into systematic ventures towards sustainable business is too low. A unifying framework for sustainability analyses, planning, cross-disciplinary and cross-sector cooperation, and cohesive use of the myriad sustainability tools, methods and concepts has been developed: the Framework for Strategic Sustainable Development (FSSD). Similarly, a generic approach to business model design has been put forward: the Business Model Canvas (BMC). In this paper we explore how the FSSD could inform business model innovation and design by combining it with the BMC and supplementary tools, methods and concepts such as creativity techniques, value network mapping, life-cycle assessment, and product-service systems. The results show that the FSSD-BMC combination can support business model innovation and design for strategic sustainable development, as well as strengthen each supplementary tool, method and concept in its own primary purpose. We apply the combined approach, for the purpose of initial testing and presentation, to a real case of business model evolution. Based on our findings we propose a new approach to business model innovation and design for strategic sustainable development. The new approach facilitates, e.g., business scalability and risk avoidance and clarifies the interplay between classical business model development and strategic sustainability thinking. The new approach highlights the opportunity for novel business model design for future sustainable success.

1. Introduction

The ongoing degradation of ecological and social systems, and efforts to turn this trend around to achieve sustainable development, is redefining the overall conditions for business in the twenty-first century (McNall et al., 2011; Broman and Robèrt, 2016). Successful businesses must, thus, increasingly include and embed an understanding of the challenges and opportunities linked to society's transition towards sustainability (Willard, 2012). Many businesses have realized this and have started to work with 'sustainability' in some way. They have, e.g., adopted sustainability values and new management systems, published sustainability reports, and created specific sustainability departments. However, a growing feeling of fatigue among senior managements has been reported, linked to a lack of ability to make further advances and embed sustainability throughout their organizations' value creation processes, including products and services, operations and decision making in general (Bertels et al., 2010; Bansal et al., 2016).

1.1. Business model innovation and design

Addressing sustainability challenges both demands and brings

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http://dx.doi.org/10.1016/j.jclepro.2016.06.124
0959-6526/

great opportunity for innovation in all dimensions of business, from overall creation of value and definition of business success to product and service delivery (Basile et al., 2011). An important but historically neglected aspect is the innovation and design of business models (Schaltegger et al., 2016). However, the accelerating need to identify new pathways for the innovation and design of sustainable business models has led to increased attention to the field (e.g., Bocken et al., 2014; Clinton and Whisnant, 2014; Upward and Jones, 2016; Kurucz et al., 2016). Osterwalder and Pigneur (2010) define a business model as the rationale of how an organization creates, delivers, and captures value, and they provide a practitioner's tool to operationalize this; the Business Model Canvas (BMC), which has become one de facto standard for business model development. Unit (2005) reports that the majority of business executives are identifying the design of new business models as a greater source of competitive advantage than new products and services per se. Extending the effort to include sustainability, Lee and Casalegno (2010) propose that the business model is a new unit of discussion and analysis for sustainability initiatives. Schaltegger et al. (2012) and Wells (2013) extend this further, concluding that to support systematic, ongoing creation of business cases for sustainability, business model innovation that goes well beyond traditional business model designs is required. Conversely, business model innovation has been shown to be a critical lever for overall organizational sustainability (Kiron et al., 2013) and that integrating sustainability strategy is not only possible, but required for businesses to be competitive (Baumgartner and Ebner, 2010; Osterwalder and Pigneur, 2011). However, the grand challenge remains: current business model innovation and design generally fails to sufficiently embrace the sustainability dimension (Boons and Lüdeke-Freund, 2013; Upward and Jones, 2016). The business case of sustainability is typically not understood profoundly enough (e.g., Stubbs and Cocklin, 2008); the planning horizon and system scope are often insufficient (e.g., Baumgartner and Korhonen, 2010); the competence to bring together people into systematic ventures towards sustainable business is typically too low (e.g., Rohrbeck et al., 2013). The result is a lost opportunity for advancing and embedding sustainability throughout business-value creation processes via business models that are designed to embrace emerging dimensions of global sustainability.

1.2. Product-service systems in business model innovation

Business model innovation and design links business aspirations with the business platforms through which success can be realized (Osterwalder and Pigneur, 2010). A product-service systems (PSS) approach has been proposed as an opportunity for promoting sustainability and strategic business model development (Manzini and Vezzoli, 2003; Tukker, 2004, 2015). PSS reconsiders the delivery of functional value to end-users through an integrated mix of product and service, whereby value creation is less about sales and ownership of individual products and more of a focus on the ongoing delivery of the service-value embedded in that product (Mont, 2002; Tukker, 2004). Rifkin (2014), e.g., potentially links PSS to business model innovation when describing how decision makers are changing their business models to operate in a market where the relationship with products and services is shifting from one based on ownership (i.e., goods sold) to one based on access and exchange of combined goods and services (i.e., PSS) at near-zero marginal costs. Here, the competitive edge shifts toward business models capable of applying modern ICT and supply webs to provide easily accessible and highly contextualized high-performance services with fewer intermediates. However, while the logical leap can be made that PSS in the context described above could enhance sustainability performance in businesses, e.g., through enhanced product stewardship promoted by service contracts and cyclical use of resources as part of product-service efficiencies (Mont, 2002; Maxwell et al., 2006; Tukker, 2015), the business case for, and integration of, global sustainability considerations is not inherent to the ongoing business model innovation process (Schaltegger et al., 2012; Upward and Jones, 2016). Further, in the arena of PSS, while sustainability is often mentioned, there is little concrete support to actually promote integration of sustainability aspects (Vasantha et al., 2012; Tukker, 2015). This is a long-standing challenge. Ehrenfeld (2001) argued that in the product-service systems research field there is a need for a *coherent* strategy foundation that points towards sustainability. The result is that a gap remains in experiential knowledge for how to combine strategic sustainability thinking, PSS and business model innovation and design for sustainability. In this paper, we term this combination Sustainable PSS Innovation.

1.3. Merging business model innovation and design with a systems perspective for strategic sustainability thinking

In this paper, we argue that a major barrier to sustainable business model innovation and design is the lack of a structuring systems perspective that includes an operational definition of sustainability and strategic guidelines for how an organization can support sustainable development of society while strengthening its own competitiveness. The importance of having a systems perspective when working with business models is highlighted by, e.g., Zott and Amit (2010), and Teece (2010) asserts that coupling strategy analysis with business model analysis is a way to protect competitive advantages that result from the design and implementation of new business models. Casadesus-Masanell and Ricart (2010) suggest that the business model is a way to put a strategy into practice, and argue that a business model is a reflection of the firm's realized strategy. Thus, to design a business model that is both informed by and supports the execution of a sustainability-informed strategy, it is necessary to appropriately define sustainability and apply concrete strategic guidelines. The Framework for Strategic Sustainable Development (FSSD) includes an operational definition of sustainability and strategic guidelines for how an organization can support society's transition towards sustainability while strengthening its own organization. The FSSD has also proven useful for structuring analyses and facilitating coordination of various tools, methods and concepts (Robèrt et al., 2002; Robèrt et al., 2013; Broman and Robèrt, 2016). In this study we therefore further explore how the FSSD could inform business model innovation and design via the BMC and supplementary tools, methods and concepts such as creativity techniques, value network mapping, life-cycle assessment, and PSS. The work is guided by the following overall research question: *How can the FSSD support business model innovation and design for strategic sustainable development?*

1.4. Paper structure

Besides this introduction, the paper includes the following five parts: research design, describing the research approach used and the case example; an overview of the main components of the study, including the FSSD and the BMC; results, including the proposed combined FSSD-BMC approach and findings in the case-study; discussion of the results and findings; and conclusions.

2. Research design

In this paper we use a qualitative case-study research approach,

which according to, e.g., Patton (2002) is appropriate for investigating issues that are complex and difficult to quantify, as well as identifying themes, patterns, concepts and insights that are needed to understand such issues. We use this in combination with conceptual modeling and prototyping as outlined below.

The research was organized into three stages:
(Flowerdew and Martin, 2005)

2.1. Stage 1. Preparing for the research

Literature searches and selection of major papers related to business model design, PSS and strategic sustainable development were conducted through a snowballing procedure adapted from Wohlin (2014). Previous work was studied and the research need was clarified and summarized in a research question. The FSSD (Broman and Robèrt, 2016) stood out as a suitable overarching framework for guiding business model innovation and design for strategic sustainable development, for the reasons stated in the introduction. The BMC (Osterwalder and Pigneur, 2010) stood out as a suitable main tool to combine with the FSSD since the BMC is frequently referenced and considered as one de-facto standard support for traditional business model design.

We also identified a case useful for initial testing of the intended combination of the FSSD and the BMC. Since it takes significant time to reach more advanced levels of strategic sustainability thinking, we wanted a case company that was to some extent already familiar with this way of thinking and working. To be able to really test the intended combined FSSD-BMC approach, we also wanted a case company being in the initial stages of significantly redesigning their overall business model, preferably from a classical product sales logic into a more service-oriented logic, because of the potential sustainability advantages of PSS identified in the literature as mentioned in the introduction. We also wanted a case company with which we had established contacts with business developers and product developers as well as with top management, to allow for a participatory approach and actual change (real decisions) during the study. The case of Aura Light fulfilled all those criteria. Aura Light has a history of strategic sustainability work, focusing on sustainable lighting solutions to professional customers, and is now aiming at shifting their business model from selling light products to selling light as a service. Aura Light subsidiaries and distributors sell lighting solutions worldwide with customers primarily found in industry, retail and the public sector. The company has approximately 300 employees, has its head office in Solna, Sweden, and main development and manufacturing facilities in Karlskrona and Vimmerby, Sweden. Europe and the U.S. are the main markets. The company has lately experienced a high growth rate and good profitability. According to its CEO, this is much due to their strategic sustainability work, also mirrored by a number of national and international awards. Increasingly, the company is interested in exploring a new PSS business model. The interest is driven by a belief that such a PSS model may have higher potential to support sustainable development, e.g., because of economic benefits both for the customers and Aura Light and because of better control of the materials used in the products, which could remain the property of the company. Aura Light is generally examining how to develop and communicate the full market benefits and customer value of the sustainability advantages of their offerings and wished to have their overall business and product development processes reviewed and renewed. The value network, of the current and future business models, was established as the main unit of analysis (Bernd, 2011). The case study set-up was generally informed by recommendations by Yin (2013) and Bryman (2015).

2.2. Stage 2. Prototyping and data analysis

The authors of this paper convened in several group modeling and prototyping sessions to explore, through conceptual modeling (e.g., Brooks, 2007; Kotiadis and Robinson, 2008; Jaccard and Jacoby, 2010) and by using various creativity approaches and tools (Amabile, 1997; Osterwalder and Pigneur, 2010; Kelley, 2001, 2007; Carleton et al., 2011), how the FSSD could, in principle, be combined with the BMC in support of business model innovation and design for strategic sustainable development. Several workshops to discuss business model development approaches and to explore specific business model prototypes were then held with executives, business developers and product developers within the case company. Feedback was gathered directly at these occasions and also afterwards through qualitative interviews (Patton, 2002). We also took direct part in the actual business model innovation and redesign exploration at Aura Light in an action research mode (Reason and Bradbury, 2008). Observations were made during these occasions and we convened afterwards, taking a step back to reflect upon and discuss our respective observations (perceptions) as researchers. The FSSD was used to guide data collection and data analysis. Specifically, to support the value network mapping and analysis we developed five FSSD-informed generic templates, covering: design, production, distribution, use, and end of life. The following main question was asked: *How are stakeholder relationships in the value network of the business model configured and what are the sustainability implications of this configuration?* This was broken down into sub-questions to help us identify key stakeholders related to each activity and product life stage, identify and characterize the relationships, and identify information flows, material flows, energy flows and socio-ecological sustainability issues (vis-à-vis the sustainability principles of the FSSD). All of this informed new conceptual modeling and prototyping of a combined FSSD-BMC approach. The iterative process is open-ended and remains in progress. See Section 4 for more details.

2.3. Stage 3. Presenting results

A preliminary combined FSSD-BMC approach is presented in this paper in the context of the case of Aura Light aiming at shifting their business model from selling light products to selling light as a service.

3. Main components

In this section we present the main components of the intended combined approach; the BMC and the FSSD.

3.1. Overview of the BMC

The BMC (Osterwalder and Pigneur, 2010) is a tool that can be used to visualize an existing or potential business model in a single page. The tool can be used by individuals and organizations to facilitate design and re-design of business models as it provides a shared language of business model terms and clarifies their relations. The BMC includes nine basic building blocks and visualizes a logic for how an organization creates, delivers and captures value, covering the four main areas of a business: customers, value offer, infrastructure, and financial viability. The building blocks are briefly described below (see also Fig. 1).

Customers segments describes the different groups of people or organizations an enterprise aims to reach and serve. The focus is on exploring, understanding and delineating specific customer needs. Examples of customer segments are: mass market, niche market, segmented market, diversified market, and multi-sided market.

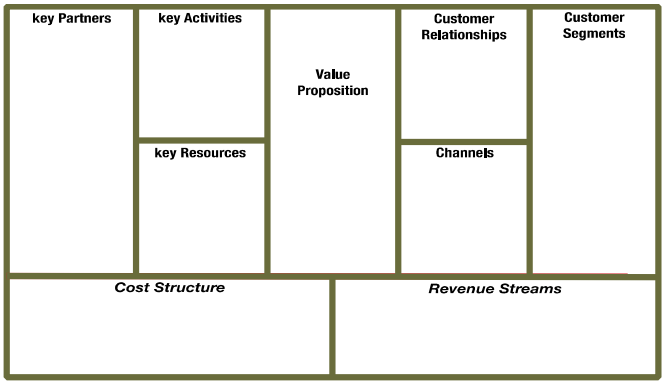

Fig. 1. The business model canvas (BMC).

Value proposition describes the bundle of products and services that create value for a specific customer segment. Examples of aspects that can contribute to customer value creation are: newness, performance, customization, 'getting the job done', brand/status, price, cost reduction, risk reduction, accessibility, convenience, and usability.

Channels describes how a company communicates with and reaches its customer segments to deliver a value proposition. These customer touch-points play an important role in the customer's experience. The channels serve several functions, including: raising awareness among customers about a company's products and services, helping customers evaluate a company's value proposition, allowing customers to purchase specific products and services, delivering a value proposition to customers, and providing post-purchase customer support. Channels can be direct or indirect through partners. Examples include: own sales force, own stores, web stores, partner stores and wholesalers.

Customer relationships describes the types of relationships a company establishes with specific customer segments. Customer relationships can range from personal to automate and are driven by the following motivations: customer acquisition, customer retention, and boosting sales (upselling). The customer relationships deeply influence the overall customer experience. Several categories of customer relationships can be distinguished, e.g., personal assistance, dedicated personal assistance, self-service, automated services, communities, and co-creation.

Revenue streams describes the revenue streams, i.e., the cash a company generates from each customer segment. Costs (see below) are subtracted from revenues to calculate earnings. This way, it can be deemed whether the business model is profitable (i.e. successful) or not. A business model can involve two different types of revenue streams: transaction revenues resulting from a one-time customer payment and recurring revenues resulting from ongoing payments. There are several ways to generate revenue streams, including: asset sale, usage fees, subscription fees, lending, renting, leasing, licensing, brokerage fees, and advertising.

Cost structure describes all costs incurred to operate a business model. It includes costs for creating and delivering value, maintaining customer relationships, and generating revenue. Many business models fall under two broad classes of cost structures: cost-driven and value-driven. Cost structures can have the following characteristics: fixed costs, variable costs, economies of scale, and economies of scope.

Key resources describes the most important assets required to make a business model work. Key resources can be physical, financial, intellectual or human. Key resources can be owned or leased by the company or acquired from key partners.

Key activities describes the most important things a company should do to make its business model work successfully. Key activities are required to create and offer a value proposition, reach markets, maintain customer relationships, and earn revenues. Examples of some categories of key activities are production, problem solving, and network related activities.

Key partners describes the network of suppliers and other partners that make the business model work. Some main types of partnerships are: strategic alliances between non-competitors, strategic partnerships between competitors (coopetition), joint ventures to develop new business, and buyer-supplier relationships to assure reliable supplies. Some motivations for creating partnerships are: optimization and economy of scale, reduction of risk and uncertainty, and acquisition of particular resources and activities.

3.2. Overview of the FSSD

An up-to-date and comprehensive description of the FSSD is given by Broman and Robèrt (2016). We briefly summarize its main features here.

3.2.1. The funnel-metaphor

The ongoing loss of the ecological and social systems' capacities to support fulfillment of human needs can be conceptualized as those systems moving deeper and deeper into a funnel whose narrowing circumference represents increasingly harsher constraints and smaller degrees of freedom for the human civilization (Fig. 2). Organizations who are dependent on relatively larger resource-flows, waste-flows, etc. (thereby contributing relatively more than others to the in-leaning wall of the funnel) and who stay relatively more ignorant about the necessary and already ongoing paradigm shift towards sustainability, are also those organizations exposed to higher and higher economic risks. Such organizations will increasingly, and often in abrupt ways that will be increasingly difficult to foresee in detail, experience harsh financial impacts due to the narrowing funnel. Even if it is possible to postpone some of the economic consequences somewhat, e.g., by political lobbying against tax increases on unsustainable practices, it will eventually be impossible to avoid higher and higher costs for resources, waste management, insurances, credits, etc. Such organizations also risk losing innovation opportunities, market shares and new markets to competitors who skillfully become part of 'the solution', developing their practices so that they are moving towards the opening of the funnel. The funnel-metaphor helps clarify the systematic and dynamic character of the sustainability challenge as well as the self-benefit of sustainability proactivity. Understanding these dynamics is a good starting point when developing business models in our time. For a further discussion of the funnel metaphor and the business case of sustainability, please refer to, e.g., (Holmberg and Robèrt, 2000; Broman and Robèrt, 2016).

3.2.2. The five-level model

How could it be possible to systematically exploit the above outlined potential to capitalize on the dynamics of sustainability, as made clear by the funnel-metaphor? The generic design of the FSSD, and not least its structuring and coordinating qualities, should lend itself well to create cohesion among all aspects of business model innovation and design, including for choosing, combining, informing or developing support tools. The structuring and coordinating qualities of the FSSD rely partly on a clear intellectual differentiation between phenomena of fundamentally different character. This is accomplished by the five-level model of the FSSD.

The system level: This level describes the overall major functions of the system an actor (e.g., an organization) is in and depend

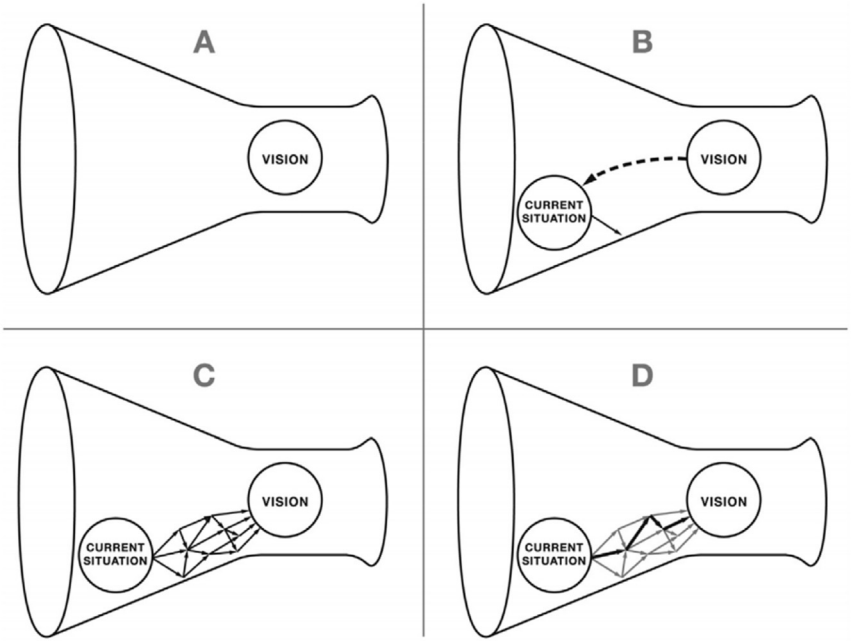

Fig. 2. The funnel–metaphor of the FSSD and the ABCD-procedure (adapted from Broman and Robèrt (2016)).

on, i.e., markets, value-chains and other stakeholder networks within society within the biosphere. The organization needs to understand this system enough, to at least be able to approach the next level and define a vision within sustainability constraints, i.e., what it is the organization wants in the system. The organization, with all its interdependencies with natural systems, as well as with its suppliers and clients and other stakeholders, is explored and mapped at this level.

The success level: This level specifies a vision or visions of success for the organization or other subject of the planning *within* robust boundary conditions for a global sustainable society (sustainability principles; see below). It is important to note that the vision(s) can comprise additional success criteria and that many possibilities for sustainable visions exist.

The strategic guidelines level: This level specifies generic guidelines for how to approach the outlined sustainability-framed vision strategically (D-step of the ABCD-procedure; see below). It implies a step-by-step approach that ensures that resources, including financial resources, continue to feed the process towards the defined vision. Additional guidelines can be added by an individual organization depending on the context. It is important to note that many viable pathways to a vision usually exist.

The actions level: This level describes concrete actions that have been prioritized into a strategic plan[1] using the above strategic guidelines to arrive at the vision of success in the system. It is important to note that the plan needs to be continuously re-assessed and adjusted as the specific contextual conditions change over time.

The tools level: Tools, methods, concepts and other types of support are often required to aid decision making, monitoring and disclosures of the actions to ensure they are chosen strategically to arrive at the defined success in the system. Examples are modeling tools, management systems, indicators, life-cycle assessment tools, etc. It is important to note that the FSSD is designed to not compete with any other type of support for sustainable development, but to be structuring and unifying to aid people in making the best use of all available support depending on purpose and context.

3.2.3. The sustainability principles

To be functional for strategic sustainable development, the set of framing principles need to be: (i) necessary, but not more to avoid unnecessary restrictions and to reduce distraction over elements that may be debatable, and (ii) sufficient, to cover all aspects of sustainability. In addition, the set of principles should be (iii) general to make sense to all stakeholders and thus allow for cross-disciplinary and cross-sector cooperation, (iv) concrete to inspire and guide innovation, problem solving and actions, and (v) non-overlapping to enable comprehension and facilitate development of indicators for monitoring progress. Guided by these criteria, the following basic sustainability principles have been derived from understanding first-order mechanisms through which society causes destruction of the socio-ecological system (Broman and Robèrt, 2016):

In a sustainable society, nature is not subject to systematically increasing:

1 … *concentrations of substances extracted from the Earth's crust (e.g., fossil carbon and metals);*
2 … *concentrations of substances produced by society (e.g., CFCs and NOx);*
3 … *degradation by physical means (e.g., over-harvesting of forests and over-fishing);*

and people are not subject to structural obstacles to:

4 … *health (e.g., by dangerous working conditions or insufficient rest from work);*
5 … *influence (e.g., by suppression of free speech or neglect of opinions);*
6 … *competence (e.g., by obstacles to education or insufficient possibilities for personal development);*

[1] A combination of actions is often referred to as a 'strategy'. The term 'strategy' therefore belongs to this fourth level, and should not be confused with the strategic *guidelines* level. Strategic guidelines are informing combinations of actions to really be strategic, deserving the term 'strategy'.

7 … *impartiality (e.g., by discrimination or unfair selection to job positions);*
8 … *meaning-making (e.g., by suppression of cultural expression or obstacles to co-creation of purposeful conditions).*

3.3. The ABCD-procedure

The FSSD uses an application procedure with four general steps as follows (see also Fig. 2):

(A) Participants learn and apply the FSSD to share and discuss the topic of the planning endeavour in the context of the global sustainability challenge and related opportunities, and the participants agree on a preliminary vision of success, framed by the basic sustainability principles. This vision sits, metaphorically, at the future 'opening of the funnel'. The vision usually contains aspects such as core purpose, core values and overall long-term goals.
(B) Participants assess the current situation through the lens of the sustainability-framed vision of success (A). The assessment should in particular review how the organization contributes to society's violations of the sustainability principles as well as current assets to deal with those challenges.
(C) Participants turn to creative thinking and co-create possible solutions that can help closing the gap between the vision (A) and the current situation (B). Constraints related to the current situation are temporarily disregarded, e.g., constraints related to the current infrastructure, the current energy system, the current dependencies in the value chain and to other stakeholders, current financial capacity, etc. Before proceeding, it should be stressed that the (B) and (C) steps, though seemingly trivial, are different to traditional analyses of business and business opportunities. Current practices (B) are assessed, and future opportunities (C) are derived, through the lens of robust sustainability principles that need to be fulfilled in the future. This is at the core of the FSSD, i.e., 'backcasting from sustainability principles', as opposed to either forecasting, i.e., projection from current situations and trends in an attempt to predict the future and fix the problems that can be anticipated, or 'backcasting from scenarios', i.e., planning from detailed images of the future. In the sustainability context it is more helpful to backcast from a principled definition of success or from scenarios framed by such principles (Ny et al., 2006; Broman and Robèrt, 2016).
(D) Participants apply the more pragmatic strategic dimension and prioritize amongst the possible solutions (C), i.e., begin outlining a concrete plan for closing the gap between the vision (A) and the current situation (B). In this D-step, priorities are set with an intuitive logic. It means a stepwise approach, ensuring that early steps are designed to serve as (1) flexible platforms for forthcoming steps that, taken together, are likely to bring society, the organization and the planning endeavour to the defined success, while striking a good balance between (2) direction and advancement speed with respect to the defined success and (3) return on investment to sustain the transition process. This logic creates the opportunity for pragmatic leadership, not only looking at the promise of an improved bottom-line in the future, but also considering short-term profits designed in a way that opens up the potential for the longer-term profits. This way, the FSSD allows for the above outlined self-benefit of sustainability proactivity to be captured by businesses.

4. Results

As pointed out by many, it is important to work with business model development and value creation (including product and service development) in parallel and to coordinate these processes, as these activities (should) strongly influence each other (Boons and Lüdeke-Freund, 2013; Bernd, 2011; Breuer and Lüdeke-Freund, 2014; Wells, 2013). The FSSD offers a possibility to facilitate communication and coordination between these processes through a shared mental model and language regarding strategic sustainable development. The combination of the FSSD with tools, methods and models for product development has been explored by, e.g., Hallstedt (2008), Ny (2009), and Thompson (2012).

Regarding FSSD-informed business model development, we propose the approach presented below (Section 4.1). As explained in the research design section, the evolution of the combined FSSD-BMC approach has been iterative and has included both theoretical work and co-creation and testing with case partners. We present the latest version of the approach in the context of the application to the case of Aura Light aiming at shifting their business model from selling light products to selling light as a service. Presenting the proposed approach this way allows us to convey more specifically and in concrete terms how the approach is intended to be used. We end the results presentation by summarizing the complementarity of the FSSD and the BMC that we have noted (Section 4.2).

4.1. Business model innovation and design for strategic sustainable development

The combined FSSD-BMC approach we propose is organized along the ABCD-procedure of the FSSD. As described by Broman and Robèrt (2016), the ABCD-procedure is iterative. We present the current status in each of the A, B, C and D steps, respectively. Due to confidentiality we do not provide all details of the case outcomes.

4.1.1. A STEP

Activities: The FSSD, the BMC, the combined FSSD-BMC approach and supplementary tools, methods and concepts such as creativity techniques, value network mapping, life-cycle assessment, and product-service systems were introduced by researchers and advisors, through a series of workshops and meetings, to the CEO, the sustainability manager, and key business developers and product developers at Aura Light. The participants discussed all of this, and reviewed and revised the strategic documents of the company, during and between the workshops and meetings. The FSSD was used as the overall guide for the work.

Outcomes: The company's mission (core purpose) and vision are now described through the following statements. *Mission*: Aura Light develops and supplies sustainable lighting solutions to professional customers enabling them to reduce cost, energy consumption and environmental impact. *Vision:* Aura Light's vision is to become the global leading partner for sustainable lighting solutions to professional customers. Note the key words *sustainable* and *solutions*, implying a focus on *sustainable PSS*. Aura Light clearly states in their strategy documents that *sustainable* ultimately means that the company has eliminated its contribution to society's violation of the FSSD sustainability principles. Lighting *solutions* are described in the strategy documents as both products and projects with different levels of complexity that solve the lighting needs of the customers. The trend is towards more complex, systemically sustainability-informed solutions.

4.1.2. B STEP

The B step was performed in two stages.

4.1.2.1. Stage 1: Mapping the current business model. **Activities:** Analysis of the current business model was done through workshops and interviews with the same people as above. Observations and secondary research complemented the analysis. The BMC was used to capture the business model.

Outcomes: Participants gained an overview of the full business model as captured by the BMC. Examples of outcomes for the BMC building blocks are briefly shown in Fig. 4. The financial model (primarily 'revenue streams') was identified as a major challenge with the current business model. The current revenue streams are mainly based on direct sales of physical products to the customers who become owners and then take responsibility for installations, maintenance and the end of life of the product. The high quality and high energy-efficiency and the long lifetime of Aura Light's products are beneficial from a life-cycle cost point of view. However, these characteristics also imply a relatively high price (investment). Some customers have limited access to capital for investments and the perceived high 'cost' (initial investment) can then constitute an obstacle for sales of these high-end products. The ongoing technology shift to light emitting diodes (LEDs) also contributes to hesitation among the customers. The fast development of the new LED-technology and the lack of long-time experience of its use tend to make customers postpone big investments.

4.1.2.2. Stage 2: Mapping the current value network and analyzing its sustainability implications. **Activities:** Value network mapping was justified based on a need to more deeply understand networks and value creation systems (Boons and Lüdeke-Freund, 2013; Bernd, 2011; Breuer and Lüdeke-Freund, 2014; Wells, 2013) and to capture how it currently reflects the dialogue among stakeholders and their efforts to embed socio-ecological and economic aspects into their development processes and operations. As mentioned in Section 2, the following main question was asked: *How are stakeholder relationships in the value network of the business model configured and what are the sustainability implications of this configuration?* We used the five generic 'value network mapping and analysis templates' also mentioned in Section 2. These templates were used to analyse the following activities and product life stages: design, production, distribution, use, and end of life (collection, reuse/recycling and/or disposal). More specifically we aimed to: *(1) Identify all key stakeholders related to each activity and product life stage. (2) Identify the relationships between the key stakeholders and characterize the respective relationship. (3) Identify information flows, material flows, energy flows and socio-ecological sustainability issues among key stakeholders throughout product life stages.* The mappings and analyzes were focused on Aura Light's

Fig. 3. NoctiLED as part of Aura Light's street lighting system.

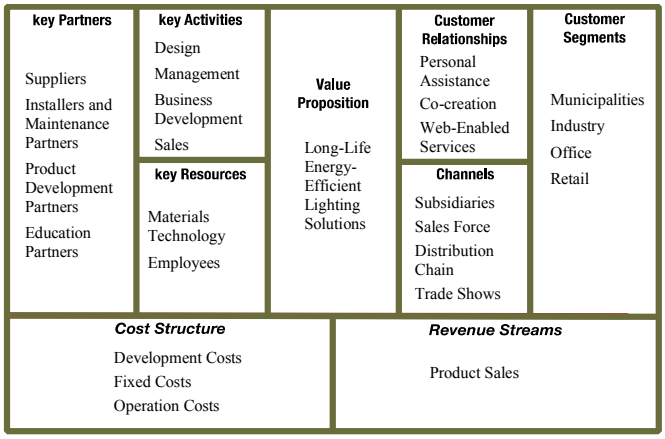

Fig. 4. Examples of elements of Aura Light's main business model.

NoctiLED street light fixture (Fig. 3) as an example. Similar results should be expected for other products. The sustainability principles of the FSSD were used for the sustainability analysis. Data for the analyzes was provided by Aura Light and complemented with information from a comparative life-cycle assessment of street light technologies using the software SimaPRO V.7.3.2 (Hadi et al., 2013). The components considered were: ballast, housing, fitting, lamp, lens, and packaging.

Outcomes: The outcomes include insights about existing patterns and trends within Aura Light and the value network and challenges and assets in relation to the vision. Some examples of current challenges are:

- Investors might see difficulties to recover the goods if customer does not pay their fees.
- The focus on sales of physical products in the current business model is related to one-way flows of materials (rather than reuse/recycling).
- Management routines and incentives are set up for selling (more of) physical products.
- The Aura Light design group (product development group) is focused on, is used to, and has competence in developing physical products.
- The Aura Light sales force is focused on, is used to, and has competence in developing physical products, and the need-finding tools are adapted to this.
- There is a rather weak connection between the Aura Light design group and other functions such as business development, procurement, sales and auditing.
- The attention and communication around sustainability performance are mainly linked to energy-efficiency and not so much to the other sustainability aspects as informed by the FSSD sustainability principles.
- Some company functions and value network partners have a rather limited sustainability competence.
- The top-management's desired shift towards a more service-oriented business model, and the implications thereof for business as well as sustainability, do not seem clear to all employees and partners in the value network, and the customers are not used to this kind of business model (they are used to owning their light installations).

Generally, the culture of selling product-service systems is not embedded in the organizations. The mind-sets of the organizations and the whole value network are currently focused on direct sales

and transactions of physical products. The above challenges imply a need for a shift in mind-sets, management routines and incentives, stronger connections between units within and between the organizations, competence development, and more communication between units and organizations.

Some examples of current assets in relation to the vision are that Aura Light:

- Has a strong light competence and is perceived as a light expert, bringing smarter solutions and peace of mind to customers.
- Has strong personalized customer relations allowing for thorough identification of customer issues and needs, and, in combination with its smaller size, a possibility to be faster to market.
- Has experience of customizing solutions directly with customers.
- Has high quality products that are suitable for being part of a PSS offer.
- Is being perceived as a technology benchmark in the market.

The design group was identified a key unit that can play a major role in the exploration of a new set-up of the business model and value network. For example, designers can inform procurers about potential opportunities to drive innovation and generally much of the sustainability impacts throughout product life-cycles are determined in the early phases of product (and service) development (Hallstedt, 2008; Ny, 2009; Bratt, 2014). This insight was strengthened among all participants and this constitutes an important general result captured in the *design* template. Given the importance of the design group, we present some examples of outcomes of the value network mapping and analysis captured in the other templates from the perspective of the design group. Regarding the *production* stage, designers gained insights about flows of materials that are currently emitted from the production systems and are systematically accumulating in the ecosystem. Regarding the *distribution stage,* designers noticed how the one-way material flows are currently designed, and how the value network is not optimized regarding logistics (e.g., regarding location of manufacturing). Insights gained from the *use stage* were mainly related to the negative impact of non-renewable energy use to power the light installations. From the *end of life* stage, designers gained insights on, e.g., limitations in the current LED recycling program that Aura Light has joined. Overall, the highest sustainability impact occurs during the use stage if the customers use fossil fuel based electricity, which Aura Light has no means to influence with the current business model (users buying the electricity), besides using as energy efficient LEDs as possible in the products.

From the sustainability analysis, based on the mapped flows and other gathered data, a list of socio-ecological sustainability issues was generated, covering all product life stages (Chai, 2013). Examples of issues are the use of some substances in the LEDs associated with risks of systematic increases in concentrations in nature with the current weaknesses in the LED recycling program (e.g., some rare metals and phosphates), fossil transportation fuels and the associated systematic increase in concentration of carbon dioxide in the atmosphere, and some difficulties to audit social conditions in all tiers of the supply chain. Some of these issues are currently being investigated further.

4.1.3. C STEP

Activities: Based on the identified challenges and assets in the B step and the gap to the vision, the same participants used some creativity and problem solving techniques to develop and list possible solutions. In this step, the only constraints considered were those implied by the sustainability principles of the FSSD.

Firstly, the tool context mapping (Carleton et al., 2011) was used to capture some broad themes that the participants came to think of when considering the identified gap as well as perceptions of general emergent technologies and business models in the lighting business area. The participants then used brainstorming techniques (Amabile, 1997; Kelley, 2001, 2007) to generate more specific possible solutions and to prototype new business models (Osterwalder and Pigneur, 2010), using the BMC to capture and integrate the solution ideas and to present the prototyped business models to get feedback and support for prioritization.

Outcomes: The broad themes that surfaced during the context mapping were: selling light as a service (LaaS); sustainable PSS; energy performance contracting (EPC); personalized energy houses and smart sustainable grids, influencing legislation, and linking renewable energy to the business model.

Examples of more specific solution ideas that were generated during brainstorming and prototyping workshops are:

- Create a new financial model that removes the perceived high cost (initial investment) for the customers as well as the uncertainty of when to shift to a new technology, possibly by establishing a finance institute (Aura Finance[2]) and including upgrading options in the offers. The new model should improve the cash-flow for the customers and Aura Light and remove the lighting installation from the balance sheet.
- Create remote control of the installations to be able to cut light delivery if the customer does not pay.
- Advance the sustainability agenda further, and thereby differentiation to competitors, by offering solutions that even more contribute to human development and reduced ecological impacts, e.g., through advanced control engineering and adaption of light intensity, light color, etc., to varying needs among customers, and through further assessment and dematerialization and substitution of the substances that surfaced as potentially problematic in the B-list.
- Assess and develop the competence and set of methods and tools for integration of sustainability considerations in product development, business development, procurement, sales and other processes, and for parallel development of physical products and services.
- Develop new needfinding tool(s) and involve the design group more in needfinding and sales work.
- Promote multi-stakeholder cooperation, integrating costumers and key partners more in the innovation process, to achieve more customized and unique sustainable PSS offers – total solutions that are also harder for competitors to replicate and that can help differentiate Aura Light from competitors that are strong on the product level.
- Identify key stakeholders and partners and consider acquiring some key partners for effective capacity building with respect to sustainable PSS solutions.
- Assess employees' knowledge and understanding of, and dedication to, the company's vision and strategy and especially the focus on the key terms *sustainable* and *solutions.*
- Re-emphasize the vision and point out the direction towards sustainable PSS provision through intensified internal communication ('president's speech', newsletters, group meetings, etc.) and clarify implications for the everyday work of all.
- Align management and reporting structures and routines, human resource development, and incentives with the new sustainable PSS ambition (shifting from a product oriented to a service-oriented company).

[2] This finance body has now been established, however, under another (longer legal) name. For simplicity, it is called Aura Finance in this paper.

- Recruit personnel with a solid education in strategic sustainable development in combination with PSS innovation.
- Update and perform education of all employees to a basic level in strategic sustainable development, educate key people in the design group, business development group, procurement function and sales force further in sustainable PSS innovation.
- Develop a trainee program for new recruits with strategic sustainable development and sustainable PSS innovation included.
- Develop an educational module for partners and external audiences (some of those might also later become customers).
- Strengthen the design group and design function and its connectivity to other groups and functions in the organization by making design a core function and by securing strong connectivity especially to business development, procurement, needfinding, sales, service partners and auditing.
- Develop competence and capacity in the design group to work with the whole value network to develop LaaS offers, by e.g., considering options for taking back schemes, design for longevity, design for re-use in manufacture, design for material recovery, design for closed loop business models, design to improve the fixtures serviceability enabling replacement of individual components to reduce maintenance costs and enable recycling of parts instead of the entire fixture in order to reduce raw material consumption and increase product lifetime, etc.
- Develop competence and capacity in the business development group and sales force to identify and engage with the 'right' decision makers among potential customers. Possibly widen the value proposition to regional collaboration for sustainable energy systems and sustainable and safe cities.
- Promote creation of new value from existing (sometimes stranded) customer assets such as light poles by adding functions, e.g., for traffic monitoring and personal safety, for charging electrical vehicles, etc., as part of the total solution.
- Take full responsibilities for all fixtures and installations including reusing fixtures after upgrading them to minimize resource use and sustainability impacts.

Various business model prototypes were generated. An example, including a new financial model, is shown in Fig. 5.

4.1.4. D STEP

Activities: The participants had workshops and meetings, and discussed by other means, prioritizations of the possible solutions and prototyped business models of the C-list, using the strategic guidelines of the FSSD. The top-management of Aura Light, and ultimately the CEO, made the final decisions.

Outcomes: Some of the ideas and possible solutions of the C-list have already been realized or partly realized. An example is that all components of the new financial model, including Aura Finance, are in place and the model will be activated as soon as the first LaaS deal is set (targeted 2016). A company producing and selling luminaires (Zobra) has also been acquired and new agreements with several other partners have been established. Aura Light has also decided to invest further in research and development on methods and tools for integration of sustainability considerations in product development and business development and related processes (such as needfinding, procurement, etc.). Review and renewal of these processes has been initiated and will go on over the coming years. Further assessment of potentially problematic materials will also take place in the next year. The recommended recruitment has started to some extent but will be more pronounced in 2017–2018 for various reasons. Also in recruitment the (social) sustainability principles of the FSSD are considered, e.g., regarding impartiality. It is a decided target that all new employees should complete basic sustainability training. The more comprehensive education and capacity building are being discussed and will likely take place over several years. Involving the design group more in needfinding and sales has been initiated and will be further emphasized in the coming years. Aligning management and reporting structures and routines will take some time. Some re-organization has been done to facilitate the new sustainable PSS orientation but this will also go on over several years.

A few business model prototypes were tentatively selected (prioritized) for further modeling and simulation and one of these is briefly described below in relation to the BMC building blocks (see also Fig. 5).

The value proposition is lighting as a service (LaaS). The offer is a contract on a customized solution with possibilities for upgrading and at no upfront cost. The value proposition includes Aura Light's full responsibility for all fixtures and installations, designed to improve serviceability, enabling replacement of individual components, recycling of parts and reduction of raw material consumption. The **customer segments** includes European municipalities, industry, office and retail. Aura Light's international subsidiaries represent the main **channels** to reach the customers for sales and also to provide post purchase customer support. This includes maintenance, recovery, recycling and replacement of components. Co-creation of customized solutions, and education about sustainable production and consumption, personal assistance, and web-enabled service are the main support to promote **customer relationships**. To increase **revenue streams**, and reduce fluctuations, a new subsidiary is established, Aura Finance, as part of the new financial model. The owner of the streets, industry facility, office, etc., is seen as the main source for the revenue stream. Examples of **key resources**, necessary to make this business model work, are a sales force and original equipment manufacturers knowledgeable in sustainable PSS and Aura Light's design group having advanced product knowledge. Examples of **key activities** are needfinding, financial arrangements, installation, education, and maintenance. The ability to manage **key partners** throughout product life-cycle stages represents an essential aspect and significant strength for Aura Light. The **cost structure** aims to reflect the life-cycle costs and how they are distributed across the value network to create benefits for both the customers and Aura Light (such as improved cash-flow).

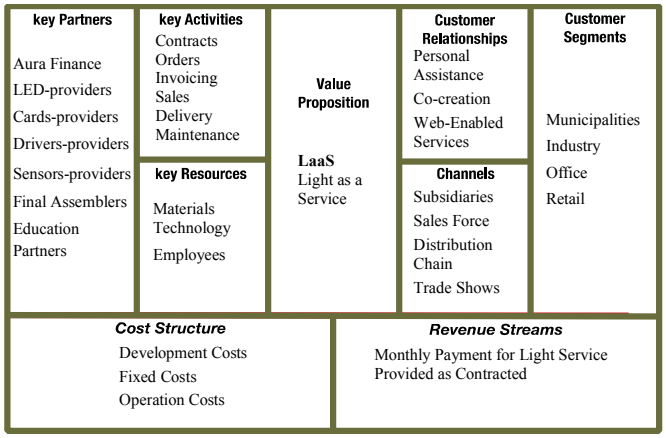

Fig. 5. Examples of elements of one of the prototyped business models.

4.2. Complementarity of the BMC and the FSSD

Based on the observed complementarity of the BMC and the FSSD, potentially generalizable findings are synthesized and

summarized in Table 1. The synthesis integrates observations from the case study with general questions, challenges and aspects from the literature on business model innovation and design for sustainability as, e.g., discussed in the introduction. Further discussion is provided in the Discussion and Conclusions sections below. The table is organized along the building blocks of the BMC as a means to highlight business model innovation and design dimensions. The building blocks 'revenue streams' and 'cost structure' have here been merged into 'financial model'.

5. Discussion

Today's classic business model development paradigm, as a whole and as captured in the BMC, is incomplete (Upward and Jones, 2016). This would appear obvious when today's biggest challenge to business is considered, i.e., society is not currently ecologically and socially sustainable — including all facets of civilization such as business itself. However, using only the BMC might result in business models that are identified as 'successful' regardless of their large-scale or long-term impacts on society at large. From a business point of view this implies, e.g., that classic business model development as captured by the BMC does not ensure businesses that are globally scalable. Without the addition of sustainability principles and guidelines for how an organization can support sustainable development while strengthening its own competitiveness, businesses will run into emerging limitations from today's unsustainable development and also risk being outcompeted by businesses that more skillfully navigate the necessary and accelerating shift towards global sustainability. Therefore, in this paper we have explored the specific question: How can the FSSD support business model innovation and design for strategic sustainable development?

The approach presented in this paper, combining the BMC and the FSSD, provides guidance for avoiding such limitations and for capturing business opportunities associated with the development of an organization's vision, strategy and business models in support of strategic sustainable development (as outlined in Table 1). Conversely, though well thought-through from a strategic sustainability point of view, we have also shown that the FSSD can be enhanced as regards its business perspective. It was possible to find sites of the FSSD where the BMC blocks could complete the FSSD and sharpen the FSSD system mapping for business-model development of sustainable businesses. Our analysis also shows that language, scope, limitations and presentation technique differ in some aspects, e.g., revenue streams and cost structure in the BMC are in the FSSD described as return on investments with the scope going beyond only financial revenue streams and costs (Willard, 2012). The BMC adds business specificity, assuring that essential business-model aspects are not forgotten, and provides a means for realization of novel sustainability strategies. The BMC also adds a means for being visual and creative in mapping the extended enterprise, and to generate business-oriented solutions for related

Table 1
Examples of complementarity of the BMC and the FSSD.

BMC block	BMC/FSSD complementarity
Customer segments	The whole-system perspective and the sustainability lens of the FSSD can spur and enable the organization to reach out at larger groups of stakeholders along the life cycles and expanded value networks. This, in turn, can lead to that some of those stakeholders later become customers (more and more diverse revenue streams). The 'users and use phase' dimension added through sustainability analyzes can help to identify material flows and information exchanged by the stakeholders. Need-finding processes can be strengthened with the sustainability focus and are likely to generate new insights, strategies and actions. The global market is naturally considered as part of the segmentation. Customer wants can also become a better reflection of user needs and their relation to fundamental human needs. Conversely, the BMC can help bring about a more refined analysis of the system level of the FSSD, by assisting the exploration of customer segments more in detail.
Value proposition	The FSSD can add inspiration and guidance for the creation of sustainability-informed value propositions. For example, it can help the organization differentiate sustainability-promoting from unsustainability-promoting value propositions, via mapping of information, energy and material flows related to the considered specific value propositions throughout the value network and through assessment against the sustainability principles. It can also stimulate and inform innovation of novel value propositions with sustainability benefits embedded throughout the value network as a result of an understanding of the funnel-metaphor and how customer wants will likely change in a more and more sustainability-driven market. This should help to create of a *dynamic* view on value creation. Conversely, the BMC provides a template that can support exploration of the more near-term and classical business-case opportunities within the expanded sustainability-informed value case.
Channels	The global and comprehensive sustainability perspective of the FSSD can help expand the organization's view on potential touchpoints and useful partnerships. The changes in channels needed to work with sustainability-promoting product-service systems can also become clearer (e.g., new types of partnerships and new types of messaging). Conversely, the BMC can assist in the exploration of distribution channels more in detail.
Customers relationships	The FSSD can guide information and education for sustainability-promoting behavior change in the value network, including customers and users. It can also help the organization to be cognizant about the value of trust in the customer relations and guide trust building processes. Conversely, the BMC can clarify that customer relationships can function as strategic opportunities to optimize the business for a sustainability-promoting value proposition.
Revenue streams and cost structure (financial model)	Through, e.g., the funnel-metaphor and the D-step of the ABCD-procedure, the FSSD can help the organization understand not only current financial aspects of different solutions, but the dynamic, strategic implications of sustainability related *changes* of revenue opportunities and drivers of costs that will likely happen over time. Conversely, the BMC adds specificity and can assure that essential common revenue and cost types are not forgotten.
Key resources	The FSSD can help expand the organization's view on key resources and prompt more specific questions on not only current but also future resource availability, sustainability impacts of different resources, and other risks and opportunities related to the dynamics of the funnel. Conversely, the BMC can help clarify and categorize key resources that are essential to a company and that should all be explored when developing strategic plans towards the sustainability-framed vision.
Key activities	The strategic plan established through the FSSD-work can directly inform key activities and how they will likely change over time. The FSSD can also help the organization identify and use appropriate supplementary tools and other forms of support. Conversely, the BMC can aid ideation of possible activities and assure that essential common activities are considered.
Key partners	The FSSD can help expand the organization's view on suitable partners and spur ideas for wider partnerships, including non-traditional partnerships with, e.g., municipalities and other public institutions. It can also guide the creation and facilitation of multi-stakeholder collaboration, and through this, identification of new business opportunities. The FSSD may serve as an effective shared mental model for stakeholder networks to work together with product-service systems. Conversely, the BMC adds specificity and can help structure the partnership creation process.

sustainability challenges.

Using the combined FSSD-BMC approach, the case company Aura Light was able to transform its vision and strategy from that of a classic product-sales business to a product-service enterprise, with sustainable LaaS as its new value proposition. This included re-visioning all aspects of the business from expanded partnerships required for a product-service providing business to product design to finance to value definition. However, a general challenge for this study was the lack of direct contact with all types of stakeholders that should be involved in multi-stakeholder collaboration within the developing arena of business model innovation and design for strategic sustainable development. Creative thinking and innovation require involvement and commitment of the full value network (Rohrbeck et al., 2013). Also, the utilization of a variety of supplementary tools, methods and concepts does create a set of variables embedded within the results presented. Thus, the presented approach and others like it will benefit from more case studies for testing and feedback for further improvement and validation.

The results of this study largely align with those of Upward and Jones (2016), who develop a general ontology for strongly sustainable business models and (Kurucz et al., 2016). Our study also provides a real-world case example. The results support the idea that business models should, in general, express their purpose and vision in terms of sustainability as described by Stubbs and Cocklin (2008). The strategic dimension of sustainability proposed in this study addresses questions by Baumgartner and Korhonen (2010) related to the slow progress in sustainable business-model development and their proposition that there is a need for a process for clarifying the connection between strategic thinking and sustainability. The study is also consistent with the need pointed out by Zott and Amit (2010) for new research on the relationship between strategy and structure and on the boundaries of firms, as well as the importance of taking a systems perspective when working with business models. We found that the combination of the FSSD and the BMC-informed business model development process led to extended planning perspectives and horizons with respect to, e.g., key resources (e.g., the product design group reframed as a business-design group and sustainability-informed resource requirements and options), value-definition (e.g., new ideas on where value can be developed within a broader service-based business model), and key partners and operations (e.g., broader definition of useful and necessary operational partnerships and stakeholder relationship development). The integration between sustainability and a competitive strategy (i.e., a hybrid strategy) based on the offering of LaaS through the sales of lighting product-service systems is also aligned with the assertion of Baumgartner and Ebner (2010) that hybrid strategies can be beneficial for society in general and for the company and customer, but requires a business ready and willing to undertake efforts that match competitive requirements *and* sustainability requirements. Also, Aura Light's general business success from a strong sustainability focus provides support for the assertion of Osterwalder and Pigneur (2011) that social and environmental purposes do not have to be inherently sacrificed for profits or vice versa.

Finally, the FSSD-BMC approach also initially addresses questions and demands from various authors from the PSS field regarding the need for the development of support for sustainable PSS. Vasantha et al. (2012) concluded that the focus on sustainable PSS is not matched by support to achieve it. Tukker (2015) concluded that current research on PSS has mainly focused on improving (traditional) competitiveness, lacking explicit attention to sustainability. In this study, strategic sustainability thinking was injected into a PSS business model innovation and design process.

6. Conclusions

Our study shows that there are no contradictions in principle between the FSSD and the BMC. On the contrary, the FSSD adds essential aspects to each of the nine BMC blocks – highlighting how business, in general, will be heavily influenced by an increasingly sustainability-driven market in line with the FSSD funnel dynamics, and how backcasting from the sustainability principles can be applied to strategically address those dynamics. The BMC adds business specificity, assuring that essential business-model aspects are not forgotten, adds a means for being visual and creative, and generally provides a means for realization of novel sustainability strategies. We also conclude that the FSSD-BMC approach (as the FSSD itself) is seldom self-sufficient. Depending on the context it is necessary to supplement the FSSD-BMC approach with, e.g., methods and tools for ideation, value network mapping, life-cycle assessment, and modeling and simulation of technical solutions.

The combined FSSD-BMC approach (and, in extension in combination with today's standard business model development in general), highlights the great potential that exists for business, both individually and as a global institution, if a robust and systematic approach to sustainable development is layered into business-model development. The new approach to Business Model Innovation and Design for Strategic Sustainable Development highlights that for those business entrepreneurs, be it new businesses, or seeking to redesign a current business, a suite of classic business objectives is strengthened when sustainability is integrated as a primary value-creation aspect and operational framework. For example:

- *Scalability*: combination of the FSSD and the BMC allows for business models to avoid developing their businesses dependent on behaviors that are demonstrably unable to scale to a global level (e.g. failing to understand implications of relying on unsustainably managed natural resources and failing to take into account wide spread impacts across multiple socio-economic sectors of 'globally successful' business actions). Thus, without the integration of the FSSD, the 'holy grail' of globally transformative business becomes economically unsound.
- *Risk Avoidance*: similar to scalability, the integration of a strategic sustainability lens into the classic business model paradigm clarifies a number of previously invisible risks in the business model development process.
- *Investment Strategy*: the combination of highlighting new scalability issues and risks provides a more complete lens for the identification and development of strategic investment pathways, i.e., generating and prioritization actions into flexible platforms for sustainable business success, including potential resource requirements.
- *Partnerships and Social Integration*: the broadened and more realistic business landscape provided by the new approach highlights a suite of new potential partnerships, relationships, cooperative activities and integration across an enlarged group of social institutions that are increasingly important to business success.

The new approach to Business Model Innovation and Design for Strategic Sustainable Development also highlights the general value of bringing specific sectorial-development aspects to more general frameworks for sustainable development. While the FSSD brings critical information and guidance for sustainable development in any institutional context, by itself it does not provide *all* the information needed for the sustainable development of successful institutions in any given arena (e.g. business, government, NGO or

other emerging institutions). Having the combination of both overarching strategic guidance (e.g., the FSSD) and sector-specific needs and tools (e.g., the BMC and other support tools for business) is becoming increasingly important as all institutional sectors must evolve for sustainable development and new institutions must be developed.

Overall, the new approach to Business Model Innovation and Design for Strategic Sustainable Development clarifies the interplay between classical business model development and strategic sustainability thinking and highlights the opportunity for novel business model design for future sustainable success.

Acknowledgements

The authors are very grateful for all the efforts and valuable contributions of Aura Light International AB. Financial support from The Knowledge Foundation in Sweden Project name: The Model Driven Development and Decision Support Project – Blekinge Institute of Technology is also gratefully acknowledged.

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