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A framework proposal on business model for sustainability performance: Creating value to competitive advantage and to global sustainable development

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Proposta de framework sobre modelos de negócios para desempenho de sustentabilidade: Criando valor para vantagem competitiva e para desenvolvimento sustentável global

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Às minhas sobrinhas Larissa e Carolina, com muito amor,
por um mundo cada dia mais repleto de belezas.

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Wisdom is the abstract of the past, but beauty is the promise of the future.

Oliver Wendell Holmes

ABSTRACT

Organizations, as other societal actors, play a relevant role in tackling sustainable development (SD) challenges. Thus, corporate sustainability can be seen as the contribution of an organization to global SD. Corporate sustainability is a multi-dimensional concept, according to which organizations' decisions consider (1) economic, environmental and social goals, synergies and trade-offs; (2) corporate stakeholders including investors, employees, customers, natural environment, community amongst others; and (3) short, medium and also long term impact for current and future generations. Environmental and social initiatives are many times isolated efforts and it is not always clear how they are incorporated into organizational systems. Therefore, the concept of sustainable business model (SBM) has been emerging as an interesting body of knowledge to address the challenge of fostering organization's contribution to SD, by promoting sustainable value exchange between organizations and their stakeholders, and by converting social and environmental restrictions into business opportunities and corporate sustainability performance (CSP). Following this lead, the general objective of this thesis is to propose a framework for integration of sustainability principles into business models aligned with corporate sustainability performance goals. More specifically, this research aims to (1) analyse how the integration of sustainability principles into business can be coordinated with CSP systems; (2) identify the main elements that integrate sustainability principles into organization’s business model; and (3) to identify context factors that affect SBM configurations. To do so, the first phase of the thesis includes research initiation and preliminary conceptual framework, obtained from a systematic literature review. Next, the second phase is composed by initial field research for preparation of framework development, including preliminary case studies and secondary data analysis (anecdotic cases). Finally, the third phase converges previous research stages and core case studies towards proposing a conceptual framework for SBM aiming for CSP. With this, the research indicates that there is not a threshold to delimit whether a certain organization has a SBM or not. Rather, the thesis argues that SBM is a perspective from which organizations can be critically analysed in the context of global sustainable development. From a SBM perspective, profit is not the only performance criteria, but a more holistic approach of CSP is highlighted, assessing sustainable value exchange with corporate

stakeholders. This framework indicates, amongst other issues, that sustainability demands reflection on business purpose from a problem-solving and system-level perspective, in other words, on the reason of existence of the organization to contribute to sustainable development. From the conceptual framework, a practical tool was developed for academics and practitioners named the Sustainable Value Exchange Matrix (SVEM), providing a step-by-step guideline for a critical analysis of the organization from the SBM perspective. For future studies, the research indicates the need to further investigate SBM from a axiological approach, seeking to better understand tacit dynamics and motivations connected to people's moral values and believes that, in turn, emerge in decisions and actions aligned with sustainability.

Keywords: sustainable business model, corporate sustainability performance, sustainable development goals, competitive advantage, corporate sustainability, performance systems, Sustainable Value Exchange Matrix (SVEM),

RESUMO

Organizações, como outros atores sociais, têm papel relevante perante os desafios do desenvolvimento sustentável (DS). Assim, sustentabilidade corporativa pode ser vista como sendo a contribuição da organização para o DS global. Sustentabilidade corporativa é um conceito multidimensional, de acordo com o qual as decisões nas organizações consideram: (1) objetivos sinergias e *trade-offs* econômicos, ambientais e sociais; (2) *stakeholders* corporativos, incluindo investidores, colaboradores, clientes, ambiente, natural, comunidade, etc.; e (3) impactos de curto, médio e longo prazo para gerações atuais e futuras. Muitas das diversas iniciativas ambientais e sociais das empresas ainda são esforços isolados e não é claro como eles se integram aos sistemas organizacionais. Por isso, o conceito de modelo de negócio sustentável vem surgindo como um corpo de conhecimento interessante para abordar o desafio de promover a contribuição das organizações ao desenvolvimento sustentável global, ao promover troca de valor sustentável entre organizações e *stakeholders*, e ao transformar restrições ambientais e sociais em oportunidade de negócio. Assim, o objetivo geral da tese é propor um *framework* para integração de princípios de sustentabilidade em modelos de negócios alinhados a objetivos de desempenho de sustentabilidade corporativa. Mais especificamente, a pesquisa busca: (1) analisar como a integração dos princípios de sustentabilidade no negócio pode ser coordenada com sistemas de desempenho; (2) identificar os principais elementos que integram os princípios de sustentabilidade corporativa ao modelo de negócios organizacionais; e (3) identificar fatores contextuais que afetam as configurações de modelos de negócios sustentáveis. Para isso, a primeira fase da tese inclui a iniciação da pesquisa e quadro teórico inicial, obtido por meio de revisão sistemática da literatura. Em seguida, a segunda fase aborda pesquisas de campo iniciais para preparação para o desenvolvimento do framework, incluindo estudos de casos preliminares e análise de dados secundários (casos anedóticos). Finalmente, a terceira fase converge as fases anteriores de pesquisa e estudos de casos principais no sentido de propor um *framework* conceitual para modelos de negócios sustentáveis almejando desempenho de sustentabilidade. Com isso, a pesquisa indica que não existe limite claro para indicar se uma organização possui ou não um modelo de negócio sustentável. Assim, a tese argumenta que modelos de negócio sustentável pode ser visto como uma perspectiva a partir da qual as organizações

podem ser analisadas criticamente no contexto do desenvolvimento sustentável global. A partir da perspectiva de modelo de negócio sustentável, lucro não é o indicador de desempenho predominante, mas uma abordagem mais holística de desempenho é evidenciada, avaliando a troca de valor sustentável com os *stakeholders*. O *framework* proposto indica, entre outros aspectos, que sustentabilidade demanda reflexão sobre o propósito do negócio a partir de uma perspective de resolução de problema e de visão sistêmica, ou seja, sobre a razão da existência de organizações para contribuir para o desenvolvimento sustentável. A partir do *framework* conceitual proposto, uma ferramenta prática foi desenvolvida para academia e organizações, chamada Matriz de Troca de Valor Sustentável (*Sustainable Value Exchange Matrix*, SVEM), oferencendo um guia passo-a-passo para analisar criticamente uma organizações sobre a lógica do modelo de negócios sustentável. Para estudos futuros, a pesquisa indica a necessidade de investigar modelos de negócios sustentáveis a partir de uma abordagem axiológica, buscando compreender dinâmicas e motivações implícitas, ligadas aos valores morais e crenças das pessoas, a partir dos quais decisões e ações alinhadas com a sustentabilidade podem surgir.

Palavras-chave*: modelos de negócios sustentáveis, desempenho de sustentabilidade corporativa, objetivos do desenvolvimento sustentável; sustentabilidade corporativa, sistemas de desempenho, Sustainable Value Exchange Matrix (SVEM).*

FIGURES

TABLES

ABREVIATIONS

B2B	-	Business-to-business
B2C	-	Business-to-consumer
BMC	-	Business Model Canvas
CSP	-	Corporate sustainability performance
DJSI	-	Dow Jones Sustainability Index
EurOMA	-	European Operations Management Association
GO	-	General objective
ISO	-	International Standard Association
MBV	-	Market-based view
PMS	-	Performance measurement system
RBV	-	Resource-based view
SBM	-	Sustainable business model
SD	-	Sustainable development
SDG	-	Sustainable development goal
SO	-	Specific objective
SLR	-	Systematic literature review
SVEM	-	Sustainable Value Exchange Matrix
TBL	-	Triple bottom line

CONTENT

PART I - INTEGRATIVE THESIS OVERVIEW

1 INTRODUCTION

Natural resources limitations given mankind levels of depletion has been pointed out by the scientific community for decades (HARDIN, 1968; MEADOWS et al., 1972). However, efforts performed so far were still not enough (MEADOWS; RANDERS; MEADOWS, 2004). The sustainable development (SD) concept came as an attempt to engage different societal actors (including governments, corporations and civil society) towards a common goal. This concept encompasses the idea of satisfying current needs without harming future generations' ability to satisfy their own needs (WCED, 1987). SD has been shown to be a transdisciplinary and complex challenge (SCHALTEGGER; BECKMANN; HANSEN, 2013), demanding the development and implementation of both incremental and radical innovations and structural changes (HOPWOOD; MELLOR; O'BRIEN, 2005; SCHALTEGGER; WAGNER, 2011).

Based on previous Millennium Goals, the United Nations proposed in 2015 seventeen sustainable development goals (SDG's) to be achieved by 2030, encompassing the following themes: no poverty; no hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work & economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities & communities; responsible consumption & production; climate action; life below water; life on land; peace, justice & strong institutions; and partnerships for the goals (UNITED NATIONS, 2015). Besides, the literature indicates that, despite its strong approximation to environmental challenges, SD is an anthropocentric concept (BOLIS; MORIOKA; SZNELWAR, 2014). In other words, SD has to do with guaranteeing and promoting well-being of society, rather than purely aiming at natural resources conservation.

Although SD is used mostly to address challenges in the macro-level, it also depends on the contributions of the corporate level (GARRIGA; MELÉ, 2004). In this sense, corporate sustainability can be seen as the contribution of an organization to global SD. Enlarging business success criteria, from financially-driven towards sustainability and multidimensional performance indicators, leads to challenges for organizations with increased complexities (MARREWIJK; HARDJONO, 2003; VAN KERKHOFF, 2014). For instance, companies aligned with sustainability goals are pushed to consider value creation and also avoidance of value destruction not only in the firm-level, but rather in a system perspective (ROOME; LOUCHE, 2016). Thus, organizations are challenged to make decisions not only analyzing firm-level outcomes, but considering also the system level in which the organization is embedded (BANSAL; DESJARDINE, 2014). Accordingly, the term value also calls for a broader meaning and new metrics, since the conventional ones based on monetary values are not sufficient anymore (ROOME; LOUCHE, 2016). However, defining adequate economic, environmental and social indicators, but also gathering input data for them and also systematically using them to make decisions is still challenging for organizations (MORIOKA; CARVALHO, 2016a; SEARCY, 2014).

1.1 Justification

The literature has been evolving on technicalities related to sustainability but there is a lack on more strategic perspective (BRONES; CARVALHO, 2015). Besides, it indicates that publications about the corporate sustainability integration have been focused on specific issues or are still too theoretical (ENGERT; RAUTER; BAUMGARTNER, 2016). Besides, there are various voluntary sustainability initiatives to address social and environmental issues within organizations (LOZANO, 2012). Despite their potential contribution to corporate sustainability, these initiatives are many times only isolated efforts and it is not always clear how they integrate into organizational systems (LOZANO, 2012). The translation of sustainability guidelines into practice is still limited, even for companies recognized as sustainability leader (BOLIS; BRUNORO; SZNELWAR, 2016).

One possible approach to support a more systematic integration of sustainability into organizations is the sustainable business model (SBM) concept (BOONS; LÜDEKE-FREUND, 2013), since it brings emphasis on sustainability innovations as business opportunities, affecting sustainable value exchange with stakeholders. SBM logic

extends organizations towards aiming not only at financial performance but at sustainability performance in a broader sense. Therefore, it seeks to shift the notion of corporate sustainability from environmental and social restrictions and legislation compliance into strategic business opportunities (BELZ; BINDER, 2015).

The most disseminated approach to address business model is the one known as the Business Model Canvas, BMC (OSTERWALDER; PIGNEUR, 2010). It is composed by nine building blocks: value proposition, customer segment, customer relationship, distribution channel, key partners, key activities and key resources, cost structure and revenue model. These blocks were defined based on four business model dimensions: product, customer interface, infrastructure management and financial aspects (OSTERWALDER; PIGNEUR; TUCCI, 2005). This approach presents benefits, since it is easy to be understood and can be applied as a brainstorming tool or as an artefact to support discussion about business innovation. However, its application in the context of corporate sustainability is limited, since it tends to be an approach oriented to maximize mainly financial performance and mainly focused on customer satisfaction (BOCKEN et al., 2013).

An interesting attempt to promote corporate sustainability integration into business models is presented by SBM archetypes, derived from social, organizational and technological innovations for sustainability (BOCKEN et al., 2014), provoking impact on companies' offerings and/or business processes towards improving corporate sustainability performance (CSP). This publication is based on academic and gray literature review and is the first attempt to bring SBM in a more practical framework. Besides, it is an attempt to enlarge SBM opportunities, going beyond recycling businesses. However, further developments are needed, since the SBM archetypes are not exclusive from each other, which may generate confusion to distinguish between them and consequent limited application (MORIOKA; CARVALHO, 2015). This indicates research opportunities for further investigation on SBM configurations, combining both solid conceptual background and primary empirical evidence.

Given previous indications that performance systems have potential to influence actions and decisions towards a certain expected result (HAUSER; KATZ, 1998), CSP can support SBM discussions, as it is a literature relatively more mature (MORIOKA; CARVALHO, 2016a; SEARCY, 2012). CSP systems calls for a broader set of measures that need to address sustainability performance over time (BANSAL;

DESJARDINE, 2014), since the information available for decision-making process is crucial to how organizations face challenges of sustainable development (SCHNEIDER, 2014). Thus, the literature indicates that there is still opportunity of further investigating a CSP approach that is more systematically integrated into organizations.

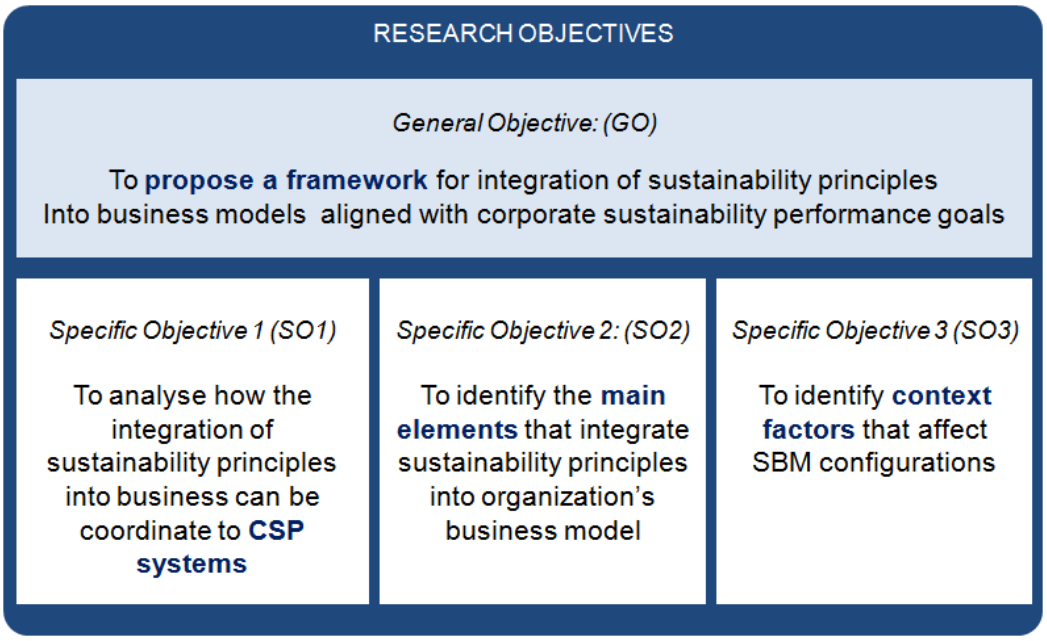
Given the fact that the literature on SBM is still relatively young (BOONS; LÜDEKE-FREUND, 2013), it is worth noting that there is a need for further empirical investigations on the strategic relevance of corporate sustainability as part of organizations' business models (ENGERT; RAUTER; BAUMGARTNER, 2016). Some of the previous researches on SBM were performed in a specific industrial sector, such as energy (MATOS; SILVESTRE, 2013; RICHTER, 2012, 2013), or hotel/tourism (MIHALIČ et al., 2012; SCHEEPENS; VOGTLÄNDER; BREZET, 2016). Meanwhile, others attempt to categorize different SBM innovations with no specific sector (BOCKEN et al., 2014) and to adapt BMC to sustainability context (FRANÇA et al., 2016; JOYCE; PAQUIN, 2016). Other authors address SBM as strongly sustainable business models challenging the for-profit business paradigm (UPWARD; JONES, 2016) and as normative business models embedding institutional normative orientations (values) into business decisions (RANDLES; LAASCH, 2016). These publications provide initial indications, but at the same time point out the need for further investigations on how sustainability principles can be integrated into business models towards CSP goals.

1.2 Research objectives

Previous researches pointed out gaps on SBM and CSP literatures in the context of corporate sustainability. The first is interested in business models innovations that enable SD. Meanwhile, the second is interested in expanding the paradigm of performance from a narrow financial one to a broad, complex and sustainability-oriented one to translate the SBM vision and cascade down into the organization. This thesis aims to address a combination of these research streams. In this sense, the thesis research question that arises is: how can sustainability principles be integrated into sustainable business models aligned with corporate sustainability performance goals? To answer this questions, the **general objective (GO) of this thesis is to propose a framework for integration of sustainability principles Into business models aligned with corporate sustainability performance goals**.

The GO is deployed into the following specific objectives (SO): SO1 is to analyse how the integration of sustainability principles into business can be coordinated to CSP systems; SO2 is to identify the main elements that integrate sustainability principles into organization's business model; and SO3 is to identify contextual factors that affects SBM configurations. Figure 1 illustrates the GO and SO's.

Figure 1 - Research general and specific objectives.



1.3 Thesis structure

This is an article-based thesis format. It was divided into two parts: I - Integrative thesis overview and II - Thesis' papers. Part I of this document is dedicated to present and discuss the integration of each publication towards addressing the research objectives of the thesis. Following this lead, Part I is composed of five sections. This first section brings the context of the research, alongside with justification, research objectives and structure of the present document. Section 2 presents a brief delimitation of the main concepts used to build the thesis, structured into four sub-sections: corporate sustainability and SDG's, context factors, corporate sustainability performance (CSP), sustainable business models (SBM). Section 3 follows describing the thesis' research method, composed mainly by a systematic literature review and case studies. Section 4 presents how the main results from each paper integrate to each other towards addressing the thesis objectives. Next, Section 5 closes Part 1 by providing the main research conclusions, limitations and indications for future studies. As one can see, the main structure of the thesis is a

traditional one. However, this structure is composed by arguments that retrieve the papers and, when suitable, respective sections and paragraphs, in order to develop an integrative discussion amongst the individual papers. Further content of each publication can be consulted in its specific section.

This thesis is based on seven papers (listed in Table 1 and presented in Part II from Section 6 to 12). From the seven publications used in this thesis, two of them (#P1 and #P2) were published in the Journal of Cleaner Production in the special issue called "The Integration of Corporate Sustainability Assessment, Management Accounting, Control, and Reporting" (MORIOKA; CARVALHO, 2016a, 2016b); #P3 was presented in 2015 during the 22nd EurOMA (European Operations Management Association) Conference (MORIOKA; CARVALHO, 2015); #P4 was presented in 2015 during the 13th GCSM (Global Conference of Sustainable Manufacturing) (MORIOKA; EVANS; CARVALHO, 2016); #P5 is waiting for reviewer assignment in the journal Organization & Environment for the special issue named "Creating value for stakeholders: Mechanisms, measurement, and performance implications"; #P6 had the abstract accepted and the full paper is submitted to the Journal of Cleaner Production in the special volume called "Embracing the variety of sustainable business models: Social entrepreneurship, corporate intrapreneurship, creativity, innovation, and other approaches to sustainability challenges"; and finally #P7 is ready for submission.

Table 1 - Publications used as basis for the thesis.
** Note: 1 Production Engineering (University of São Paulo); 2 Institute for Manufacturing (University of Cambridge)*

#	Journal / Conference	Special issue title	Paper title	Method	Objective	Authors
#1	Journal of Cleaner Production (2016, published)	"The Integration of Corporate Sustainability Assessment, Management Accounting, Control, and Reporting"	A systematic literature review towards a conceptual framework for integrating sustainability performance into business	Systematic literature review	GO, SO1, SO2, SO3	Morioka[1] Carvalho[1]
#2	Journal of Cleaner Production (2016, published)	"The Integration of Corporate Sustainability Assessment, Management Accounting, Control, and Reporting"	Measuring sustainability in practice: exploring the integration of sustainability into corporate performance systems in Brazilian case studies	Case studies	SO1	Morioka[1] Carvalho[1]
#3	EurOMA Conference (2015)	*(Not applicable)*	Exploring sustainable business models archetypes in Brazilian case studies	Case studies	SO2	Morioka[1] Carvalho[1]
#4	Global conference on sustainable manufacturing (2015)	*(Not applicable)*	Sustainable business model innovation: exploring evidences in sustainability reporting	Secondary data analysis	GO, SO1, SO2	Morioka Evans Carvalho
#5	Organization & Environment (manuscript waiting for reviewer selection)	"Creating value for stakeholders: Mechanisms, Measurement, and Performance Implications"	Combining business model and performance systems: a Two-Lenses Model (2LM) to unfold value creation to multiple stakeholders	Case studies	GO, SO1, SO2	Morioka[1] Holgado[2] Evans[2] Carvalho[1]
#6	Journal of Cleaner Production (abstract accepted, manuscript submitted)	"Embracing the variety of sustainable business models: Social entrepreneurship, corporate intrapreneurship, creativity, innovation, and other approaches to sustainability challenges"	Transforming sustainability challenges into competitive advantage: Multiple case studies kaleidoscope converging into sustainable business models	Case studies	GO, SO2, SO3	Morioka[1] Bolis[1] Evans[2] Carvalho[1]
#7	(Ready for submission)	*(Not applicable)*	Clarifying what we are talking about using the Sustainable Value Exchange Matrix (SVEM): A visual map to reflect on business models towards sustainability performance	Systematic literature review + Face validation	GO, SO1, SO2, SO3	Morioka[1] Bolis[1] Carvalho[1]

2 DELIMITATION OF THE MAIN CONCEPTS

This section begins articulating the thesis papers by bringing an overview of the main concepts addressed by this research: (i) corporate sustainability principles and sustainable development goals; (ii) context factors for sustainability; (iii) sustainable business models; and (iv) corporate sustainability performance.

2.1 Corporate sustainability principles and sustainable development goals

As argued by #P1 (Section 6.4.1, Paragraphs 1 and 2) and by #P6 (Section 11.2, Paragraph 1), corporate sustainability is a multi-dimensional concept and, thus, defining specific principles can support operationalizing this concept. The considered principles include that: (1) companies' decisions need to consider economic, environmental and social synergies and trade-offs (ELKINGTON, 1998), (2) according to their respective stakeholders including investors, employees, customers, natural environment, community amongst others (DYLLICK; HOCKERTS, 2002) and (3) considering short, medium and also long term impact (BANSAL; DESJARDINE, 2014) for current and future generations (WCED, 1987), e.g., the impact throughout the whole product lifecycle (ELLEN-MACARTHUR-FOUNDATION, 2013). These principles can serve as guidelines to address corporate sustainability. From these guidelines, it is expected that corporate sustainability represents the capacity of organizations to contribute to sustainable development.

In turn, as corporate sustainability, sustainable development is not an easy concept to delimit (BOLIS; MORIOKA; SZNELWAR, 2014). Thus, #P6 and #P7 use the United Nation's SDG's for 2030 as a way to make this concept more tangible when analysing organization's contribution to sustainable development. The seventeen goals, previously presented in Section 1, are associated with 169 targets (UNITED NATIONS, 2015). These goals aim to bring focus on efforts for policy making process (HÁK; JANOUŠKOVÁ; MOLDAN, 2016), but they can also be deployed to organizations. In this sense, SDG's can serve as a bridge between science development and policy making, towards more sustainable development in both country-specific and international context (UNITED NATIONS, 2015). Thus, although the SDG's has not yet been broadly explored by the literature on corporate sustainability, these goals seem to have potential to support further development in this area.

2.2 Context factors influence on corporate sustainability

The conducted systematic literature review presented in #P1 (Section 6.4.1, Paragraph 3) points out various context factors that affect the integration of sustainability principles into business. A similar research was conducted by Engert et al. (2016), who identified organizational influences, internal/external drivers, and supporting/hindering factors of integrating sustainability into business strategy. These issues identified by the authors (ENGERT; RAUTER; BAUMGARTNER, 2016) can be merged to the internal and external factors mentioned previously (#P1, Section 6.4.1, Paragraph 3). The literature points out internal factors such as strategic planning (KLASSEN; MCLAUGHLIN, 1996), corporate governance (COHEN et al., 2011; YONGVANICH; GUTHRIE, 2006), corporate structure (SIEBENHÜNER; ARNOLD, 2007), top management support (GROSVOLD; HOEJMOSE; ROEHRICH, 2014), change agents (SIEBENHÜNER; ARNOLD, 2007), commitment to ethics (WEAVER; TREVINO; COCHRAN, 1999), and organizational culture (values) (SIEBENHÜNER; ARNOLD, 2007; SUGITA; TAKAHASHI, 2015). Amongst external factors that affect the incorporation of corporate sustainability into business, #P1 (Section 6.4.1, Paragraph 3) indicates also issues such as natural environment and social general context (KOLK; MAUSER, 2002), legislation (GRIFFITH; BHUTTO, 2008; TAN et al., 2014), industry-specific competitive dynamics and market (GROSVOLD; HOEJMOSE; ROEHRICH, 2014; SIEBENHÜNER; ARNOLD, 2007), public opinion (SIEBENHÜNER; ARNOLD, 2007) and technology level (FAN; HO; FAN, 2014).

These context factors can affect business decisions for corporate sustainability. As argued by #P5 (Section 10.2.3), various theories explain the initiative to integrate (in lower or higher degree) sustainability principles into organizations (GARRIGA; MELÉ, 2004; LOZANO; CARPENTER; HUISINGH, 2015). These theories indicate that the introduction of environmental and social concerns that go beyond economic goals can be explained by legal obligations of a company as an entity inserted in a societal web, by the nature that explains existence of this company, and/or by the obligation it has towards its stakeholders (LOZANO; CARPENTER; HUISINGH, 2015). The literature argues that resource-based drivers (HART, 1995; KLASSEN; WHYBARK, 1999; RUSSO; FOUTS, 1997), institutional drivers (JENNINGS; ZANDBERGEN,

1995), and a combination of both approaches (BANSAL, 2005; OLIVER, 1997) have potential to motivate organizations to sustainability initiatives.

On the one side, from the resource-based view of the firm, sustainability is expected to contribute to corporate competitive advantage (BANSAL, 2005; HART, 1995), as pointed out by #P1 (Section 6.4.2, Paragraph 3) and further discussed by #P6 (Section 11.2.3 and Section 11.4.4, Paragraph 2 and 3). Competitive advantage associated with corporate sustainability can support organization's longevity, in order to guarantee that it keeps contributing to SD. Classical literature on strategy indicate that competitive advantage depends on valuable, rare, inimitable resources that are enabled by organization's policies and procedures (BARNEY, 1991). There are academic discussions on the potentials of corporate sustainability and corporate social responsibility to become strategic for the organization (ENGERT; RAUTER; BAUMGARTNER, 2016; GARRIGA; MELÉ, 2004; LOZANO; CARPENTER; HUISINGH, 2015). It is argued that, in order to improve competitive advantage from sustainability, *ad hoc* philanthropic actions are not enough, but rather corporate sustainability needs to be embedded into the organization (ENGERT; RAUTER; BAUMGARTNER, 2016). More about the integration of sustainability into business is further discussed, under the concept of SBM (Section 2.3).

On the other side, from the institutional theory perspective, organizations are expected to follow normative orientations, e.g., societal values (RANDLES; LAASCH, 2016). One aspect that can support company legitimacy is the company's pressure and motivation to contribute to SDG's, as explored by #P1 (Section 6.4.2, Paragraph 3) and #P6 (Section 11.2.3, Paragraph 1; and Section 11.4.4, Paragraph 1 and 3). Following this lead, #P1 (Section 6.4.2, Paragraph 3) indicates that CSP affects not only company's competitive advantage, but also its contribution to the seventeen SDGs proposed by United Nations (2015).

2.3 Sustainable business models: Exchanging value with stakeholders

Business model is a representation of the logic that companies use to engage their set of objects, concepts and relationships (OSTERWALDER; PIGNEUR; TUCCI, 2005). Traditional view of business models tends to be restricted in seeking short term goals and value only in terms of financial profit, failing in improving CSP. Aiming for sustainability performance demands new ways of proposing business, in which environmental depletion and social downside do not count as mere externalities, but

can even be sources of competitive advantage (PORTER; KRAMER, 2011) and business opportunity (BELZ; BINDER, 2015). Innovations for sustainability are necessary to enable and reinforce SBM (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013), also addressed as business models for sustainability (SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016). To enable the viability of these innovations in the market, companies face challenges in various levels: the organizational context regarding internal capacity, the inter-organizational challenge of collaboration and partnerships, and the societal levels related to systems changes (BOONS; LÜDEKE-FREUND, 2013).

The literature indicates various approaches on the definition of SBM concept. Table 2 provides a summary of these definitions. Accordingly, SBM uses sustainability as guidelines for business decision, aims to create value towards solving a sustainable challenge, and also serve as a logical structure to integrate internal and external aspects towards sustainability. Based on these approaches, SBM can be defined is a logic to organize business' value proposition, creation, delivery and capture to address sustainability goals by incorporating sustainability guidelines into decision-making process.

As a core concept for the present research, SBM concept was discussed by various papers composing this thesis (#P3, Section 8.2.2, #P4, Section 9.2.1, 9.2.2, 9.2.3; #P5, Section 10.2, Paragraph 1, Section 10.3.1; #P6, Section 11.2, and #P7, Section 12.4). #P3 (Section 8.2.2) delimitation of SBM concept is still close related to sustainability innovation and to business model innovation literature, this research explores SBM based on archetypes identified by Bocken et al. (2014), which are: maximise material and energy efficiency; create value from ‘waste’; substitute with renewable and natural processes; deliver functionality rather than ownership (servitization and product-service-system logic); adopt a stewardship role (using privilege position in the supply chain network to demand sustainable value creation by partners); encourage

Table 2 - SBM definitions.

Focus	SBM definition			Reference
Sustainability as decision guideline for SBM	Sustainable business model...	... is a model...	...where sustainability concepts shape the driving force of the firm and its decision making	(STUBBS; COCKLIN, 2008)
	Sustainable business models...	... follow a comprehen-sive sustainability logic...	... that integrates economic, ecological, and social considerations with regard to present and future generations	(SCHNEIDER, 2014)
SBM to create sustainable value and solve a sustainability challenge	We define, if it were to exist, that strongly sustainable business model...	... Is an organization that...	...only enabled strongly sustainable outcomes as one that creates positive environmental, social, and economic value, throughout its value network, thereby sustaining the possibility that human and other life can flourish on this planet forever	(UPWARD; JONES, 2016)
	A business model for sustainability...	... aims at...	... creating value for various stakeholders and the natural environment	(ABDELKAFI; TAUSCHER, 2016)
	Business model for sustainability...	...can be defined as supporting...	... voluntary, or mainly voluntary, activities which solve or moderate social and/or environmental problems	(SCHALTEGGER et al., 2012)
	A business model for sustainability...	... helps describing, analyzing, managing, and communicating...	... (i) a company's sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries	(SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016)
SBM as integrator	Sustainable business models...	... can provide a link...	... between the firm and the system level.	(BOONS et al., 2013)
	Sustainable business models...	... can serve as a vehicle...	.... to coordinate technological and social innovations with system-level sustainability.	(BOCKEN et al., 2014)
	The core logic of a business model for sustainability...	... is built upon...	... creation of a reinforcing feedback loop between the created value to the customers, the value captured by the firm, and the value to the natural environment	(ABDELKAFI; TAUSCHER, 2016)

sufficiency (reduce demand for material goods); re-purpose the business for society/ environment (institutional role of the firm as focus of the business model); and develop scale-up solutions (enabled by societal and technological conditions to fast replicability/ growth of business). The advantage of these archetypes is that they summarize various new business model for sustainability approaches, such as

sustainability product service systems (CESCHIN, 2013; LEE et al., 2012), focus on bottom of the pyramid population (MATOS; SILVESTRE, 2013; YUNUS; MOINGEON; LEHMANN-ORTEGA, 2010), sharing economy (CHENG, 2016), circular economy (GEISSDOERFER; BOCKEN; HULTINK, 2016; LEWANDOWSKI, 2016), amongst many others. As argued in #P3 (Section 8.5), these archetypes can be seen as an interesting framework to bring a better understanding of SBM innovation, but there are still improvements to be expected with the complement of empirical data to this discussion, as expected by the present thesis.

Papers from this thesis (#P4, Section 9.2.1, 9.2.2, 9.2.3; #P5, Section 10.2, Paragraph 1, Section 10.3.1; #P6, Section 11.2, and #P7, Section 12.4) delimit SBM concept with high connection to Richardson's (2008) proposal for business model components: value proposition (product/service, customer segments and relationships); value creation & delivery system (key activities, resources, technologies, etc.); and value capture (cost structure and revenue streams). Although this publication is not referring specifically to SBM and has a more general approach, these three elements has been continuously used by SBM literature, as shown not only by the papers from this thesis, but also by other publications (BOCKEN et al., 2014; SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016; SHORT et al., 2014). Given its capacity be extended towards addressing sustainable value exchange with corporate stakeholders, this approach is an alternative to the Business Model Canvas, which is very disseminated in practice. In this sense, instead of using the building blocks proposed in the Business Model Canvas (OSTERWALDER; PIGNEUR; TUCCI, 2005), SBM is considered as the combination of three elements mentioned previously.

As further discussed by #P4 (Section 9.2.1, 9.2.2, 9.2.3), #P5 (Section 10.2, Paragraph 1, Section 10.3.1), #P6 (Section 11.2), and #P7 (Section 12.4), SBM is composed by sustainable value proposition, sustainable value creation and delivery system and sustainable value capture that are guided by corporate sustainability principles (presented by Section 2.1), e.g., aim to address corporate stakeholders for the short, medium and long term, while aiming social, environmental and economic goals.

As pointed out by #P6 (Section 11.2.1, Paragraph 3), recent publication has been further developing the notion of SBM, such as flourishing/strongly sustainable

business model (UPWARD; JONES, 2016), truly sustainable business models (DYLLICK; MUFF, 2016) and normative business model (RANDLES; LAASCH, 2016), but also as green business model (NAIR; PAULOSE, 2014), and triple layered BMC (JOYCE; PAQUIN, 2016). As BMC, these approaches are alternative to the three SBM elements used by the present thesis. The three elements, however, provide a more flexible approach on sustainable value exchange, which is the core approach for SBM used by the present thesis.

It is also interesting to note that this thesis focuses on SBM, which is different from business case for sustainability (SCHALTEGGER; LÜDEKE-FREUND; HANSEN, 2012). The latter develops arguments to assess a business viability; and from business plan, as this is the document to provide the business case arguments.

2.4 Corporate sustainability performance: Beyond TBL indicators

CSP concept was deeper discussed by #P1 (Section 6), #P2 (Section 7.2.2), #P4 (Section 9.2.4, Paragraph 1) and #P5 (Section 10.2, Paragraph 2; Section 3.2). The papers follow the idea that pressures related to sustainability and corporate social responsibility have been pushing organizations to include also non-financial metrics for decision-making process (BRYSON; LOMBARDI, 2009). The literature on corporate performance measurement systems (PMS) in general has been following this tendency, since the paradigm of corporate performance frameworks has been evolved over the last two decades from financial-focused to integrated measures, from operational to strategic approach, and broadening the set of stakeholders considered (MALEY, 2014).

The literature on CSP measurement, management and reporting is reasonably established (SEARCY, 2014). However, CSP body of knowledge is still predominantly related to environmental performance in a narrow sense of sustainable development (MORIOKA; CARVALHO, 2016a) or is yet superficial in addressing TBL challenges (MONEVA; ARCHEL; CORREA, 2006). The literature brings insights and recommendation regarding CSP discussions such as correlation between sustainability performance indicators (ENDRIKAT; GUENTHER; HOPPE, 2014), organizational practices to improve CSP (GADENNE et al., 2012), and motivations and challenges in accounting for social and environmental performance (YONGVANICH; GUTHRIE, 2006).

Besides, there are various guidelines to support CSP measurement, but also management and reporting, such as the GRI (Global Reporting Initiative) indicators, ESG (Economic, Social and Governance) indicators and the ISO (International Standard Association) for environmental issues (14000 family) and social issues (26000 family).

The broader mindset brought by the TBL concept, concerning social and environmental issues beyond financial ones, is interesting and still yet limited. There is a need for further evolution of the notion of sustainability performance beyond TBL indicators, as argued by #P1 (Section 6.5, Paragraph 4). Accordingly, #P2 (Section 7.5, Paragraph 2) indicates that the inclusion of social and environmental indicators into corporate performance measurement system can be helpful, but it does not guarantee that CSP is properly monitored, controlled and managed. This was perceived by this research, according to which corporate sustainability principles were not effectively integrated into the companies, despite the inclusion of social and environmental indicators into their performance systems (#P2, Section 7.5, Paragraph 2).

CSP system encompasses various aspects that are relevant for SBMs, as it represents company's priorities and principles (WOOD, 1991), includes in-house, management and external stakeholders performance indicators (KEEBLE; TOPIOL; BERKELEY, 2003), provides indication on organization's inputs, processes, outputs, outcomes and impacts (CLARK; COLLEGE; BRENNAN, 2012; LANNELONGUE; GONZALEZ-BENITO; GONZALEZ-BENITO, 2015; SCHULTZE; TROMMER, 2012), and provides transparency sustainability strategy implementation (ENGERT; BAUMGARTNER, 2016). In this sense, performance systems for sustainability need to be seamlessly integrated into organizations (SEARCY, 2012). #P4 (Section 9.4.2, Paragraph 1) and #P5 (Paragraph 2; Section 3.2) complement this discussion by using a well-disseminated PMS framework, called the Performance Prism (NEELY; ADAMS; CROWE, 2001) to indicate five performance dimensions applying them to sustainability. These dimensions include: stakeholders' satisfaction, strategic drivers, business processes, capabilities and stakeholders' contributions.

From the perspective that organizational CSP depends on the system-level (BANSAL; DESJARDINE, 2014), measuring sustainability demands considering aspects beyond organization's boundaries, including, for instance, also the context

and the supply chain to which the company belongs (SEARCY, 2014) and beyond them.

Retrieved from #P5 (Section 10.2), Table 3 brings an comparative summary between the SBM and CSP concepts. It highlights that both addresses organizations towards fostering their contribution to SD. Meanwhile, it also shows that they are two different and complementary approaches to corporate sustainability.

Table 3 - Delimitation of SBM and CSP concepts.

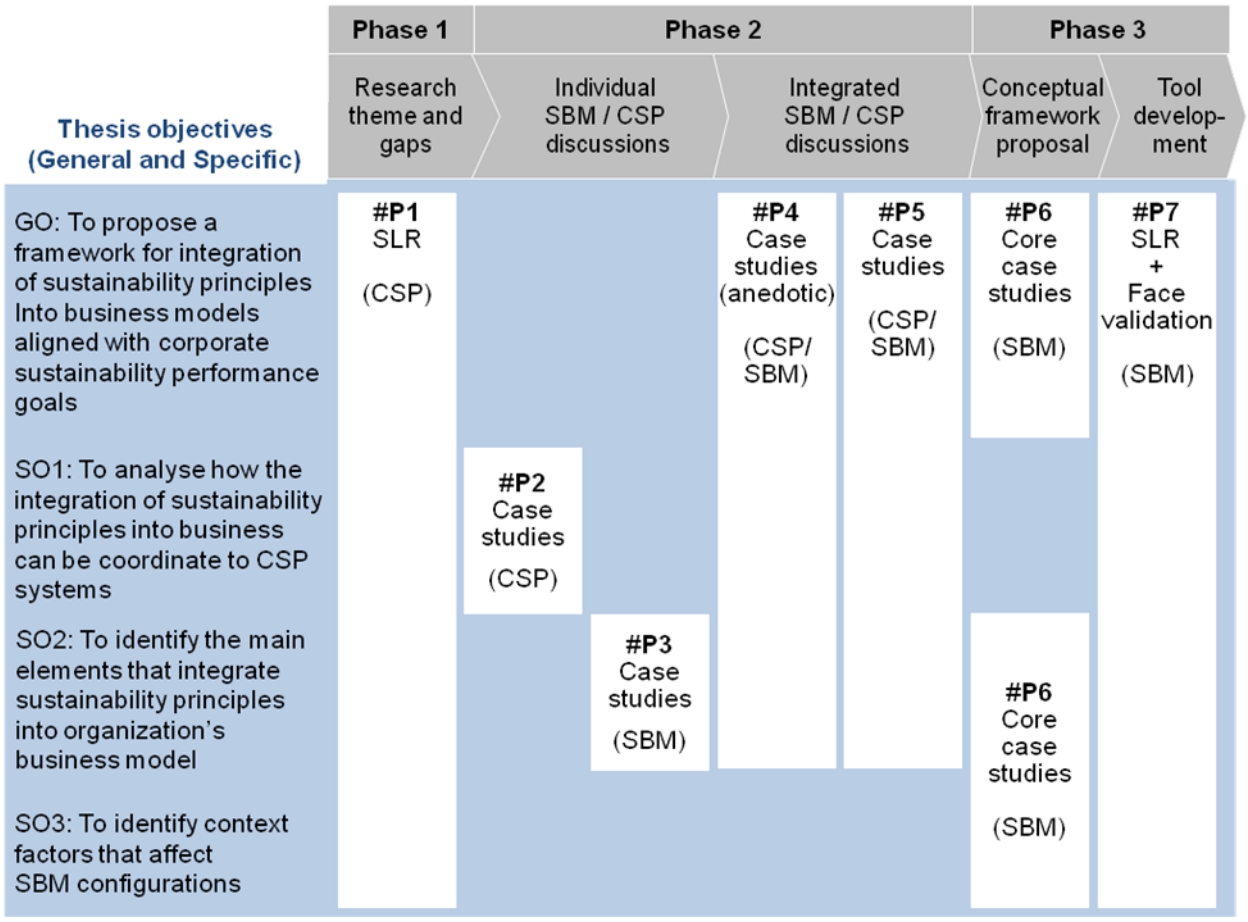
Aspect	**SBM lens**	**CSP lens**
Basic conceptual approaches	**Business model** (such as Osterwalder, Pigneur and Tucci, 2005; Richardson, 2008) +	**Performance** (such as Bititci et al., 2006; Kaplan and Norton, 2005; Neely, 2005) +
	Corporate sustainability Capacity of organizations to contribute to sustainable development, which includes concern related to the following principles: triple bottom line; multi-stakeholders interests and timeframes	
Unit of analysis	Organization	
Aim	To help organization's decisions become more sustainable	
Application	Representing the mechanism of how companies exchange sustainable value with stakeholders.	Representing the situation according the specific parameters, enabling to evaluate the gap between current and aimed situation
Main concepts	**Sustainable business models** Representation of an organization's mechanisms to exchange sustainable value with stakeholders **Sustainable value:** Set of benefits aligned with the principles of corporate sustainability **Sustainability innovation: I**mplementation of a new solution capable of improving sustainable value proposition, creation, delivery and capture	**Sustainability performance**: Efficiency or effectiveness of action (NEELY; GREGORY; PLATTS, 1995) that contributes to corporate sustainability **Sustainability performance indicator**: Quantification of sustainability performance, according to specific criteria, measurement unit and context **Sustainability performance measurement system**: Set of individual sustainability indicators, organized as a system according to a defined logic and connected to the organizational context (adapted from NEELY; GREGORY; PLATTS, 1995)
Orientation	Stakeholder-centred: Depends on the stakeholder (such as goals, needs, context, etc.)	Firm-centred: Regards on the company.
Cross-relation	Sustainability performance indicators are important to quantify sustainable value, in order to assess the gap between current and aimed sustainable value.	Knowing what is value for each stakeholders can be used as basis to set sustainability performance criteria and goals
Examples of dimensions / elements	- Value propositions; creation & delivery system; value captured (RICHARDSON, 2008) - Value proposition; customer interface; infrastructure management; financial aspects (OSTERWALDER; PIGNEUR; TUCCI, 2005)	- Prism: stakeholders' satisfaction and contribution; strategic drivers; business processes; capabilities (NEELY; ADAMS; CROWE, 2001) - Balanced scorecard: financial; customer; internal processes; and learning & growth perspectives (KAPLAN; NORTON, 1992)

Source: #P5 (Section 10.2).

3 RESEARCH APPROACH AND METHODS

To address the complexities of corporate sustainability research, van Kerkhoff (2014) proposes an integrative research framework for sustainability science. It encompasses the following principles: embrace uncertainty, engage stakeholders, be transdisciplinary, and have a learning orientation. In particular, transdisciplinary of research on sustainability in the management field can be addressed according to two dimensions: degree of interdisciplinarity (collaboration between disciplines and corporate functions) and degree of practice-academia collaboration (SCHALTEGGER; BECKMANN; HANSEN, 2013). With this in mind, the research methods were designed and implemented.

Figure 2 - Research phases.



The thesis research design is based on the integration of research approach and methods to achieve the research objectives. As illustrated by Figure 2, the thesis was developed in three phases: (1) research initiation with delimitation of the research theme, exploration of the key constructs and identification of the research gaps (#P1); (2) preparation for framework development, composed by individual

discussions about CSP (#P2) and SBM (#P3) separately and by combined research on CSP and SBM (#P4 and #P5); and (3) framework proposal, comprising a conceptual framework (#P6) and a practical tool (#P7). The research phases, respective papers and research objectives each paper aim to address are summarized in Figure 2.

The core research methods adopted are systematic literature review (SLR) and multiple case study, which were refined during the thesis evolution phases. The SLR differs from regular reviews, since they reduce chances of biased approach around a certain body of knowledge, by introducing a systematic, replicable and explicit method for literature analysis (KHAN et al., 2003; TRANFIELD; DENYER; SMART, 2003). The SLR was performed applying multi-methods including bibliometrics, content analysis and social network analysis, while following literature indications and recommendations from previous SLR's (CARVALHO; FLEURY; LOPES, 2013; DURIAU; REGER; PFARRER, 2007; SEURING, 2013). A computer-aid approach was also used, applying the software VOSviewer to support the network analysis (VAN ECK; WALTMAN, 2010).

Multiple case studies approach was also conducted to support thesis theory building, adopting recommendations of the literature (EISENHARDT, 1989; SIMMONS, 2009; YIN, 2010). It fits the present research because it allows the analysis of contemporary and complex situations in a holistic way and according to the context in which it occurs (YIN, 2010). In this sense, case studies provides an in-depth understanding of a specific topic (SIMMONS, 2009), which in the present research is the integration of sustainability principles into business models for more CSP. Main data sources were interviews with practitioners from companies engaged with corporate sustainability, which were triangulated with internal and public available documents. Content analysis of transcribed interviews were supported by the software MAXQDA using codes and classifications (KUCKARTZ, 2010).

Along with all phases, ethics concerning drives the research design, particularly considering the confidentiality of companies and interviewees. The data gathered through interviews were translated and validated with the respondents to avoid misinterpretation.

As illustrated by Figure 2, Phase 1 encompasses a SLR focused on CSP literature, resulting in #P1, which brought initial bridge between CSP systems and SBM. #P1

proposes an initial version of the conceptual framework to integrate sustainability into business, composed by three levels: corporate sustainability principles, sustainable business elements and context factors (#P1, Section 6.4). Besides, the paper indicates the need for further empirical investigation on the integration of sustainability into core business (#P1, Section 6.5). This first phase brings initial contributions to general and specific thesis objectives, which are further developed throughout the following phases.

Given the learning-orientation recommended for research on sustainability (VAN KERKHOFF, 2014), Phase 2 comprises preliminary field researches to gradually increase knowledge on SBM and CSP. Phase 2 initiated with case studies focused on CSP, published in #P2, and on SBM, presented in #P3. Both researches were based on case studies, aiming respectively to contribute to better understanding the integration of sustainability into corporate performance measurement systems for further indications to address SO1 and to investigate sustainable business models archetypes approach for preliminary contribution to SO2.

Still in Phase 2, #P4 and #P5 provides a combined articulation between SBM and CSP, to follow refinements to address GO, SO1 and SO2 . Both papers use the same framework, which in #P5 was named as Two-Lenses Model, 2LM (#P4, Section 4.2.4; #P5, Section 10.3.3). It is composed by a CSP lens based on the performance prism including strategic drivers, business processes, capabilities, stakeholders' satisfaction and contributions (NEELY; ADAMS; CROWE, 2001) and by a SBM lens considering value proposition; value creation and delivery system; and value capture (RICHARDSON, 2008) applied for sustainable value exchange with stakeholders.

While #P4 analyses sustainability disclosures of four DJSI sustainability leaders using the 2LM, #P5 highlights its capacity to unfold innovation opportunities for more SBM by applying it as a tool for discussing SBM elements with interviewees from two case studies. Thus, the 2LM brings preparation for the development of a tool that can be used jointly between academics and practitioners to discuss SBM. Both studies found contributions of 2LM, such as providing interesting discussions on both stakeholders' satisfaction and contributions (#P4, Section 9.5); enables an overview of the organization's business model associated with performance dimensions (#P4, Section 9.5); and provides a structured way to critically analyse business models

towards sustainability innovations.(#P5, Section 10.7). However, limitations of the 2LM was also perceived by #4 and #5, such as the increased difficulty to visualize the nodes and relationships with each new information added to the framework (#P4, Section 9.5) and that the sustainable development challenges were not explicitly brought into the 2LM process (#P5, Section 10.7).

It is worth noting that while #P2, #P3 and #P5 were based on primary data collection (mainly interviews), #P4 chose another data source (annual and sustainability disclosures) for analysing companies resulting in anedotic cases. Both data collection procedures present complementary advantages. On the one hand, interviews can be customized according to the research and the interviewee, clarifying the core issues under investigation. On the other hand, despite the absence of interviews, secondary data analysis enables investigating the sustainability leaders, even without engaging personal contact with these companies. Analysing companies using secondary data was also used by previous research on SBM (ABDELKAFI; TAUSCHER, 2016; HUTCHINSON; SINGH; WALKER, 2012).

Based on refinements from Phase 1 and Phase 2, Phase 3 is dedicated to propose a conceptual framework (#P6, Section 11.5). This framework was deployed into a practical tool (#P7, Section 5.2). Even though #P6 and #P7 have similar literature background and are derived from practically the same data collection process, the research aim and, consequently, data analysis and results of each paper differ from each other. #P6 was concerned with converging data from the case studies content, e.g., data about the companies' business models. Combining an evolution from Phase 1 (#P1) and Phase 2 (#P3, #P4 and #P5), #P6 proposes the thesis conceptual framework indicated by GO, by exploring SBM elements (SO2) and context factors (SO3). Meanwhile, #P7 was mainly dedicated to discuss the process used during the interview as a way to engage discussions about SBM's. For this, #P7 (Section 12.2) applies not only SLR to converge into initial tool proposal, but also data analysis from qualitative interviews for face validation towards developing the revised version of the tool named Sustainable Value Exchange (SVEM). Qualitative interviews was also input for previous research on SBM, such as Joyce and Paquin (2016). Given the difference of data analysis focus between #P6 and #P7, the resulting frameworks are connected to each other, but have different visual representations.

Phases 1, 2 and 3 described above constitutes the thesis research method as a whole. Table 4 summarizes the research method of each paper, including aspects such as paper aim, main data sources, selection criteria and justification of chosen method.

Table 4 - Research method for each paper.

Method	Research aim	Data sources	Selection criteria	Justification
#P1: Systematic literature review (CSP)	To propose a framework to integrate sustainability into business towards improving CSP	261 Papers	ISI Web of Science and Scopus. Search strings: (1) title: sustainability, "sustainable development", environmental or social; (2) title/keyword/abstract: corporate*, compan*,firm*, organization*, ,industry* or business*;(3) title:performance; (4) title: measure*,manag*,control*,report*,disclosure* or account*.	Large number of papers about sustainability performance: need for less biased literature analysis
#P2: Case studies (CSP)	To investigate the integration of sustainability into corporate performance measurement systems	4 Cases 14 interviews Internal and external documents	(1) Strategic relevance of sustainability(external documentation and sustainability reports); (2) Relevance in the sector (3) existence of a formal area of sustainability; (4) organizations from different economic sectors; and (5) access to internal documents and stakeholders pertinent to the research	Better understanding of sustainability performance systems embedded organizational context
#P3: Case studies (SBM)	To analyse sustainable business models archetypes framework in practice	5 Companies 16 Interviews Internal, external documents	(1) Strategic and explicit importance of sustainability, (2) relevance in their sector (large firms) and (4) different industrial sector	Search for better understanding of SBM archetypes in practice
#P4: Secondary data analysis	To propose a framework for the assessment of CSP, seeking to identify opportunities for innovations towards SBM.	4 Companies Sustainability reports Websites DJSI report	(1) Industry leaders according to 2014 Dow Jones Sustainability Index (DJSI); (2) Balance between 2 manufacturers and 2 service providers; (3) Companies connected in terms of supply network (producers/retailers)	Available secondary data to enable analysing DJSI leaders in terms of the proposed framework
#P5: Case studies (CSP+SBM)	To investigate how CSP systems' approach can contribute to sustainability innovations for more SBM's	4 Companies 2 Interviews	(1) Company's concerned with social and/or environmental goals and not only with financial return; (2) Lower level of organizational complexity (SME's); (3) diversified industrial sectors	Interviews to analyse the proposed tool (2LM) during interviews with interviewee engagement
#P6: Core case studies	To propose a theory and practice-based framework to support SBM perspective of organizations aligned with sustainability performance goals	11 Companies 12 Interviews	(1) Explicit concern to social and/or environmental issues in both in the short and long term; (2) Incorporation of this concern into company's value proposition; (3) Broad variety of business models aligned to sustainability	Investigation of SBM in practice, which is a complex social phenomenon
#P7: Systematic literature review	To propose a visual SBM framework to help academics and practitioners discuss SBM's, based on theory analysis and practice-oriented application.	79 Papers	ISI Web of Science and Scopus. (1) In title, abstract or keyword: sustainable business model*" OR "business model* for sustainability" OR "sustainability business model*"	Need to delimit the SBM body of knowledge with focus on frameworks
Face validation		12 Companies 13 Interviews	(1) Practitioners in for profit organizations engaged with sustainability purposes, verified by corporate websites, other public available documents, and during the interviews	Application of proposed framework, practitioners' engagement and perceptions

4 RESEARCH RESULTS

Research results emerge from the publications themselves and from the interaction among them, as delineated in the research methods. The contributions of each publication are summarized in Table 5. This chapter discusses how the individual results from each paper can be combined towards addressing the thesis' objectives. Particular attention is devoted to the core objective, which was to propose a framework for integration of sustainability principles Into business models aligned with corporate sustainability performance goals.

4.1 Thesis specific objectives

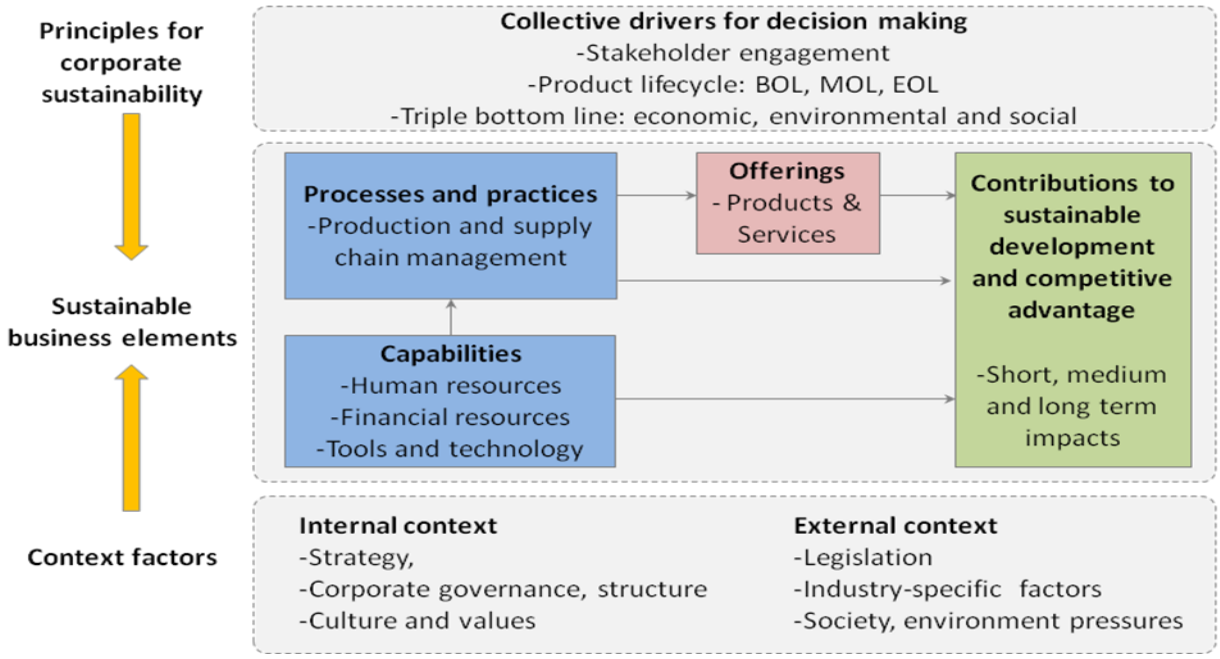
As mentioned in Section 1.2, the first specific objective is *SO1: to analyse how the integration of sustainability principles into business can be coordinated with CSP systems*. Mainly #P2, but also publications #P1, #P4, #P5 and #P7 corroborate to addressing this SO1.

This thesis shows evidence on the inclusion of sustainability indicators into systems measuring performance to assess aimed and current performance of individuals, of departments/areas, of project portfolio and, finally, of the whole corporation in terms of sustainability reporting (as further discussed by #P2, Section 7.4.3). Besides, the research points out that this translation of sustainability principles into performance indicators is affected by trade-offs between sustainability indicators, which, in turn, are influenced by whether a specific aspect is precondition, e.g., fundamental requirement for business existence (such as financial resources), by organization's past experience configuring its lessons learned, by business strategy and associated individual bonus, and by urgency from external pressures to address a certain issue. More about this is discussed in #P2 (Section 7.4.2).

Despite the use of social and environmental indicators into PMS, #P2 (Section 7.5, Paragraph 2) shows also that companies still struggle to integrate sustainability into core business, instead of considering sustainability solely as a parallel or supportive marketing issue. In this sense, the research thesis discusses also the content to be included in sustainability PMS. #P1 (Section 6.4) shows that there are sustainable business elements that can incorporate sustainability principles to improve CSP, including processes and practices, capabilities, offerings (products and services), as well as competitive advantage and contribution to sustainable development. Further about this framework is discussed in #P1 (Section 6.4) and it is shown in Figure 3.

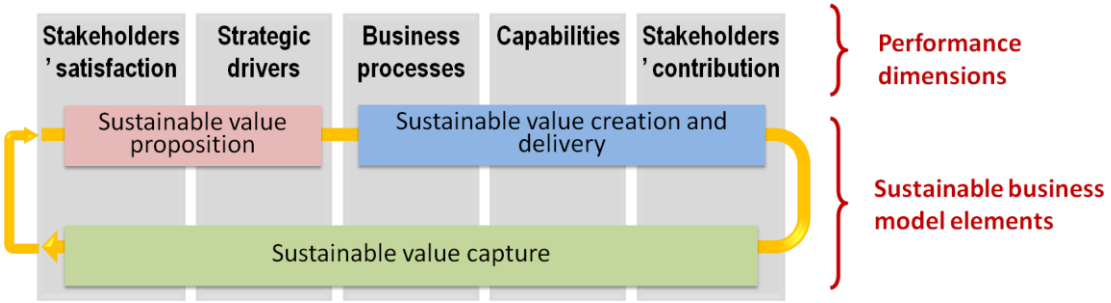
Papers #P4's (Section 9.2.4) and #P5's (Section 10.3.2) contribution to SO1 is aligned with this, including the previously mentioned processes and capabilities as performance dimensions, but complementing this with stakeholders' satisfaction, strategic drivers and stakeholders' contribution as performance dimensions for SBM's. In this sense, #P4 (Section 9.2.4) and #P5 (Section 10.3.2) address performance system framed as the Two-Lenses Model (Figure 4),

Figure 3 - Conceptual framework for integrating sustainability into business towards more SBM to improve CSP.



Source: #P1 (Section 6.4).

Figure 4 - Two-Lenses Model (2LM).



Source: Adapted #P4 and #P5.

Table 5 - Overview of publications' contributions.

Method	Main contributions
#P1: Systematic literature review (CSP)	Deeper understanding of CSP literature providing basis for SBM. Conceptual framework for integrating sustainability into business, composed by (i) principles for corporate sustainability, (ii) context factors; (iii) sustainable business elements (processes/practices, capabilities, offering and contributions). CSP literature serves as background to develop knowledge on SBM.
#P2: Case studies (CSP)	Sustainability indicators can be included into PMSs: (i) to assess a specific department, (ii) to evaluate an individual, (iii) to build sustainability performance and (iv) to assess a project or a portfolio. Despite the use of social and environmental indicators into PMS, companies still struggle to integrate sustainability into core business. Need to further investigate SBM as a concept to better understand the integration of sustainability into core business.
#P3: Case studies (SBM)	The archetypes proposed by the literature (BOCKEN et al., 2014) found some support from case studies' evidences, but they many times overlap each other. They are an interesting starting point to discuss SBM, but further studies are necessary to better understand the integration of sustainability into SBM elements.
#P4: Secondary data analysis	Performance prism dimensions of stakeholders' satisfaction, strategy, business processes, capabilities and stakeholders' contributions (NEELY; ADAMS; CROWE, 2001) support CSP assessment, when seeking to promote SBM. These dimensions can serve as initial basis to indentify the components of SBM elements.
#P5: Case studies (CSP+SBM)	Bridge between CSP and SBM. Both provide an overview of the organization and are complementary. While SBM lens focuses on showing the mechanisms to intensify sustainable value exchange; CSP lens applied to evaluate the gap between current and aimed situation of the company's actions and results. Proposal and initial testing of 2LM for sustainability innovation opportunity, providing a structured way to rethink business models towards sustainability innovations. Triggers for sustainability innovations opportunities: misalignment between performance dimensions and stakeholder satisfaction gap.
#P6: Core Case studies	SBM as complement and not opposite to business-as-usual. Aspects to integrate sustainability into organization's value creation and delivery system: (1) connection between business purpose and stakeholders' values and believes; (2) pro-active and clear approach on sustainability problem-solving; and (3) system-level changes for SBM's. Concept of cascaded sustainable value, resulting from a combination of corporate sustainability and systemic thinking. Proposal of the term coopetitive advantage, in substitution to competitive advantage.
#P7: Systematic literature review / Face validation	Overview of SBM literature: recent body of knowledge, dependent on publications from Journal of Cleaner Production, dominated by conceptual approaches and qualitative researches. The literature can be categorized by six approaches of SBM literature (1) types of SBM's, (2) SBM's components; (3) SBM's business processes, (4) SBM"s stakeholder, (5) sustainable business modelling, and (6) SBM life cycle stages Proposal of Sustainable Value Exchange Matrix (SVEM) to support reflections on business purpose and its deployment into the business model from a multi-stakeholder and from a value exchange perspective

The second specific objective, *SO2, is to identify the main elements that integrate sustainability principles into organization's business model.* Publications #P1, #P3, #P4, #P5, #P6, and #P7 are devoted to an in-depth understanding on how to integrate sustainability principles into business model and which are the core elements for more SBM's.

In particular, #P3 found empirical evidence that supported aspects related to the proposed archetypes framed according to the three SBM components: value proposition, value creation and delivery system, and value captured (RICHARDSON, 2008). These components have been used in the subsequent thesis papers (#P4, #P5, #P6, and #P7), following #P3's indication that it is an interesting starting point to discuss SBM and that further studies are still necessary to provide a deeper understanding of how to deploy sustainability into SBM elements (#P3, Section 8.5). Despite not having explicitly addressed these components, #P1's conceptual framework proposal (shown in Figure 3, and further discussed in Section 6.4.2, Paragraph 3) also has parallels to them. Evolving from results obtained with #P1's initial conceptual framework and the 2LM (Illustrated in Figure 4 and discussed in #P4, Section 9.2.4 and #P5, Section 10.3.3), publication #P6 (Section 11.4.1) proposes and #P7 (Section 12.5.2) reinforces that sustainable value proposition includes offerings (#P1, Section 6.4.2, #P6, Section 11.5), but also sustainability purposes, which can be represented according to stakeholders' satisfaction and strategic drivers (#P4, Section 9.2.1; and #P5, Section 10.3.1, Paragraph 1), and/or sustainability goals for short, medium and long term (#P6, Section 11.4.1; and #P7, Section 12.4.1 and Section 12.5.2).

Furthermore, this thesis considers that business processes (#P1, Section 6.4.2, Paragraph 1 and 2; #P4, Section 9.2.2, #P7, 12.4.2), capabilities (#P1, Section 6.4.2, Paragraph 1 and 2; #P4, Section 9.2.2) and stakeholders' contribution (#P4, Section 9.2.2) can be included into SBM's sustainable value creation and delivery system. #P6, however, sought to go beyond and builds a complementary view on these previous results, indicating SBM's value creation and delivery system is highly associated with axiological people-work alignment based on a set of moral values and believes, with problem-solving orientation and with systemic thinking (#P6, Section 12.4.2).

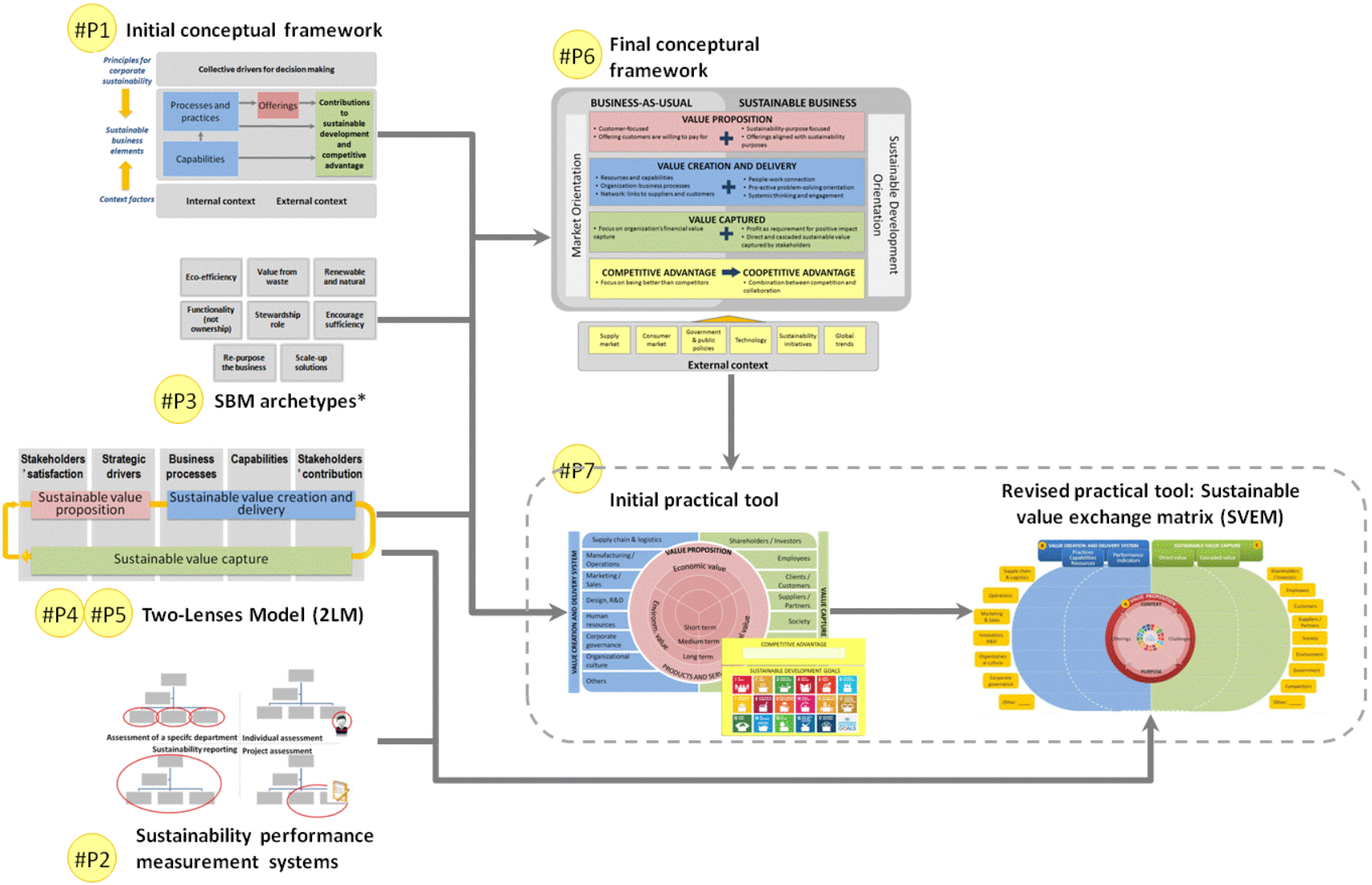
The last SBM element is related to sustainable value captured by various corporate stakeholders, including shareholders/investors, customers, employees, suppliers, environment, society, government, competitors and like-minded organizations, amongst others (#P7, Section 12.4.3, Paragraph 2).This was translated by the research in terms of both competitive advantage and contribution to sustainable development goals (#P1, Section 6.4.2, Paragraph 3; #P6, Section 11.4.4; #P7, Section 12.4.4, Paragraph 3). In fact, #P6 complements the idea of competitive advantage to coopetitive advantage, indicating that not only competing, but sometimes also cooperating with competitors can contribute to organization's longevity (more about coopetitive advantage in #P6, Section 11.5, Paragraph 5).

Addressing *SO3, which aimed to identify context factors that affect SBM configurations*, the following factors were found in the literature (#P1, Section 6.4.1, Paragraph 3) and confirmed by the case studies (#P6, Section 11. 4.5): natural environment and social general context (global trends), legislation (government affairs and public policy), industry-specific competitive dynamics (supply and consumer market) and technology level. Complementing previous literature, the core case studies also indicated sustainability initiatives (such as B-corporations and Ellen McArthur Foundation) as another relevant context factor (#P6, Section 11. 4.5). The relevance of context factors on SBM's was found crucial by #P7, which proposes to explicitly include it as input for understanding business purpose and, therefore, for defining sustainable value proposition.

4.2 Conceptual framework proposal

As indicated by Section 1.2, the thesis' *general objective was to propose a framework for integration of sustainability principles into business models aligned with corporate sustainability performance goals.* For this, Figure 5 shows an overview of the trajectory of how the ideas evolved from one paper to the other, achieving the proposed conceptual framework in #P6 (Section 11.5). This proposal was, in turn, further deployed into practical and visual tool (initial and revised versions), as discussed by #P7 (Section 12.4 and 12.5.2, respectively). The SBM elements proposed by the thesis follows the three elements from the literature. In Figure 5, they are colour coded, e.g., pink for value proposition, blue for value creation and delivery system, and green for value capture.

Figure 5 - Roadmap of papers and frameworks.
**Note: Based on Bocken et al. (2014). Colour coding: pink for value proposition, blue for value creation and delivery system, and green for value capture.*



The research instrument used in the core case studies #P6's has strong similarities with the questions that result on the initial visual tool presented in #P7's (Figure 7). Both publications were developed simultaneously and thus overlapping in some aspects. However, they show different lenses of the framework as a conceptual framework (#P6) and as a practical tool (#P7).

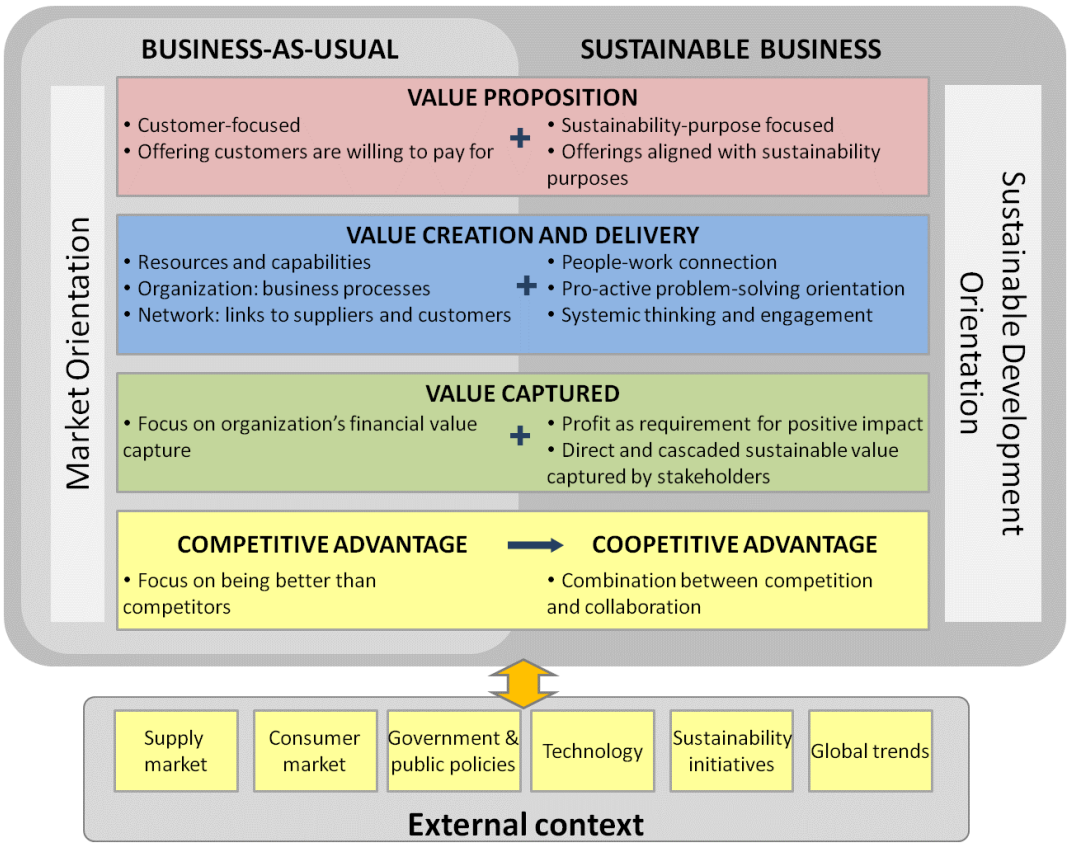
Evolving from previous papers (mainly #P1, #P3, #P4, #P5), #P6's core case studies led to the *final proposed conceptual framework*, combining previous knowledge with key aspects for SBM's that emerged from data analysis and interpretation. This framework brings refinements and contributions: (1) from #P1, which indicated the corporate sustainability principles as guidelines for more sustainable businesses, the combination of processes and capabilities to enable products and services, as they can contribute to sustainable development and to competitive advantage; (2) from #P3, which reinforced the three SBM elements (value proposition, value creation and delivery system, and value capture) as an interesting approach to support the diversity of mechanisms to configure SBM's; and (3) from #P4 and #P5, which explicitly addressed sustainable value proposition as a combination of stakeholders' satisfaction and strategic drivers, SBM's value creation and delivery system as a result from business processes, capabilities and stakeholders' contribution, and sustainable value captured as a combination of the impact of these five performance dimensions on corporate stakeholders.

Figure 6 shows the final conceptual framework proposed by this thesis to support the research GO, which is further discussed in #P6 (Section 11.5). The framework illustrates the idea of SBM as an evolution of traditional business models, instead of denying it. For instance, it indicates that customer satisfaction and associated revenue are still crucial for business success. This was also pointed out also by #P2's case studies, which indicated profit as one of the most relevant performance criteria, because it is a requirement for organization's activities (#P2, Section 7.4.2, Paragraph 1 and 2). Hence, for SBM's, revenue and profit, rather than being end goals, are means to provide financial resources, which in turn enable sustainable value creation, delivery and capture, e.g., enables business positive impact on stakeholders.

The final conceptual framework proposed (Figure 6) proposes also that sustainable value proposition includes two sides. One comprises the business purpose, e.g., the

reason of existence of an organization. For SBM's, this tend to be related to a problem faced by society or by the natural environment (#P6, Section 4.1 and Section 5, Paragraph 1). #P6 (Section 5, Paragraph 1) argues on the need for practitioners to reflect about business purpose from an axiological perspective, e.g., deriving from people's sets of values and believes in favour of a more sustainable development. SBM's purpose, therefore, depends on corporate stakeholders' satisfaction and firm's strategic drivers, as argued by #P4 and #P5 with the 2LM (Figure 4), and on SDG's, which can also serve as guidelines for defining business purpose (#P7, Section 12.5.2, Paragraph 4). On the other side of sustainable value proposition, the business purpose is deployed into products and services that address stakeholders' need towards sustainability performance (#P6, Section 4.1 and Section 5). Thus, sustainable value proposition for more SBM is about investigating how to satisfy customer, while addressing a sustainability challenge by satisfying also other corporate stakeholders.

Figure 6 - Final proposed conceptual framework.



Source: #P6 (Section 11.5).

Figure 6 highlights also that SBM's value creation and delivery system depends on organization's processes and capabilities (#P1, Section 6.4.2, Paragraph 1 and 2;

#P4, Section 9.2.2; and #P5, Section 10.3.1, Paragraph 2). Paper #P6 explores this business element deeper, finding evidence that reinforces the importance of people-work connection; pro-active problem-solving orientation; and systemic thinking and engagement. In this sense, the framework indicates the need for SBM's to build a bridge to achieve people engaged with the organization not only by functional value exchange, but also by sharing common values and believes (#P6, Section 4.2 and 5). Besides, #P6 (Section 4.2 and 5) also found evidence of a problem-solving orientation of efforts composing the value creation and delivery system. The idea behind this is that organizations are instruments for addressing a certain real need of their stakeholders, and SBM's are not about pushing a product or service to the market for exclusively profit reasons. Therefore, this connects directly to the business purpose of SBM's value proposition. The third critical aspect to guide SBM's value creation and delivery systems is the systemic thinking, including into decision making process not only immediate consequences, but also the cascaded effect for direct stakeholders in the short, medium and long term (#P6, Section 11.4.2 and 11.5). By addressing the organization's systemic network, it becomes relevant for organizations to actively engage stakeholders' contributions for value creation and delivery, as previously indicated by #P4 (Section 9.2.4, Paragraph 3) and #P5 (Section 10. 3.3, Paragraph 2).

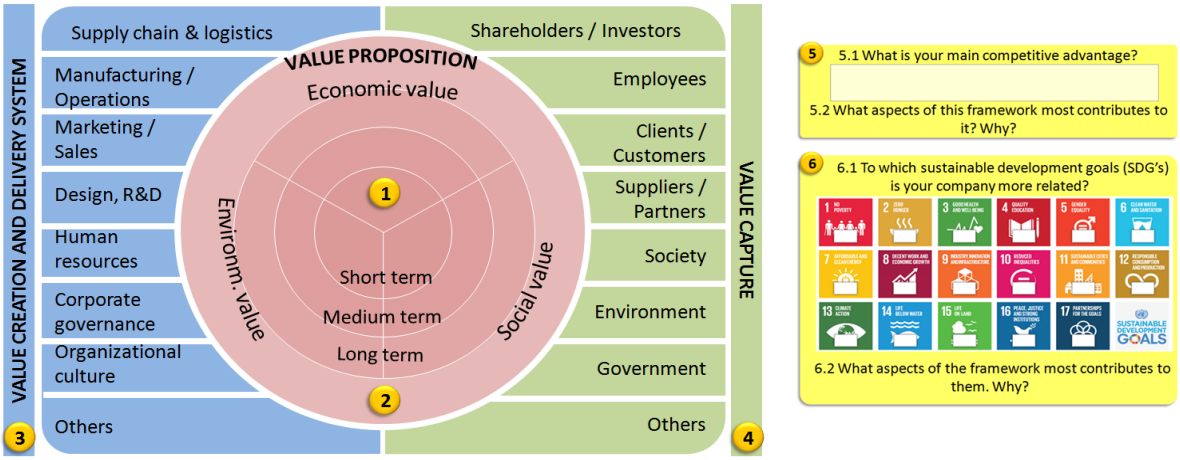
Following Figure 6, the proposed framework indicates also that the value capture enabled by SBM's includes not only providing balance between revenue streams and cost structure to enable business activities, but also enabling stakeholders to capture sustainable value created and delivered by the organization. #P6 (Section 10.4.3, Paragraph 3) indicates that this value captured by corporate stakeholder may transcend isolated financial transactions, enabling a value exchange based on shared axiological vision in terms of set of moral values and believes. Stakeholders that capture this axiological value tend to develop a long-term relationship with the organization, as indicated by #P6 (Section 10.4.3, Paragraph 3). Besides, #P6 (Section 10.4.3, Paragraph 4) explores also the concept of cascaded value capture, indicating that organization's direct stakeholders value capture can enable sustainable value capture by their own stakeholders. This concept has relation to the systemic thinking pointed out previously, since it promotes reflection about extended impacts of the focal organization.

As represented by the proposed SBM framework (Figure 6), this research brings indication that competitive advantage is still relevant to enable business survival in the market, but it can be expanded to coopetitive advantage. This concept indicates that both competition and cooperation with competitors may support organization's existence in a competitive market (more about this concept in #P6, Section 11.5, Paragraph 5). This retrieves that different organizations that may have common business purposes towards addressing a sustainability challenge, even if they are competitors, can find common goals which may be achieved in collaboration. Besides, systemic thinking can also explain collaboration with competitors and other stakeholders, as the need to engage various parts to address a complex issues related to SDG's.

As explicitly addressed by initial framework proposal from #P1 (Section 6.4), Figure 6 indicates that context factors also need to be taken into consideration in the context of SBM's. Retrieving SO3 discussed in Section 4.1, the factors identified by the core case studies are supply market, consumer market, government and public policies, technology, sustainability organized initiatives and global societal tendencies (#P6, Section 11.5, Paragraph 6). This paper also suggests a two-way relation, since these factors affect the SBM configuration and, at the same time, the SBM itself can also influence these context factors. This becomes even more viable through cooperation with competitors and other stakeholders, reinforcing the previous paragraph.

Towards building a bridge between the thesis' contribution for theory and for practice, it also encompasses a deployment of the conceptual framework (Figure 6) into a practical and visual tool developed by #P7. The tool's initial version represents SBM elements and aspects in each element, as shown in Figure 7. It was built from the SLR, evolving from discussions conducted by #P1, #P3, #P4 and #P5. More about the initial version can be seen in Section 12.4.

Figure 7 **- Initial tool version.**

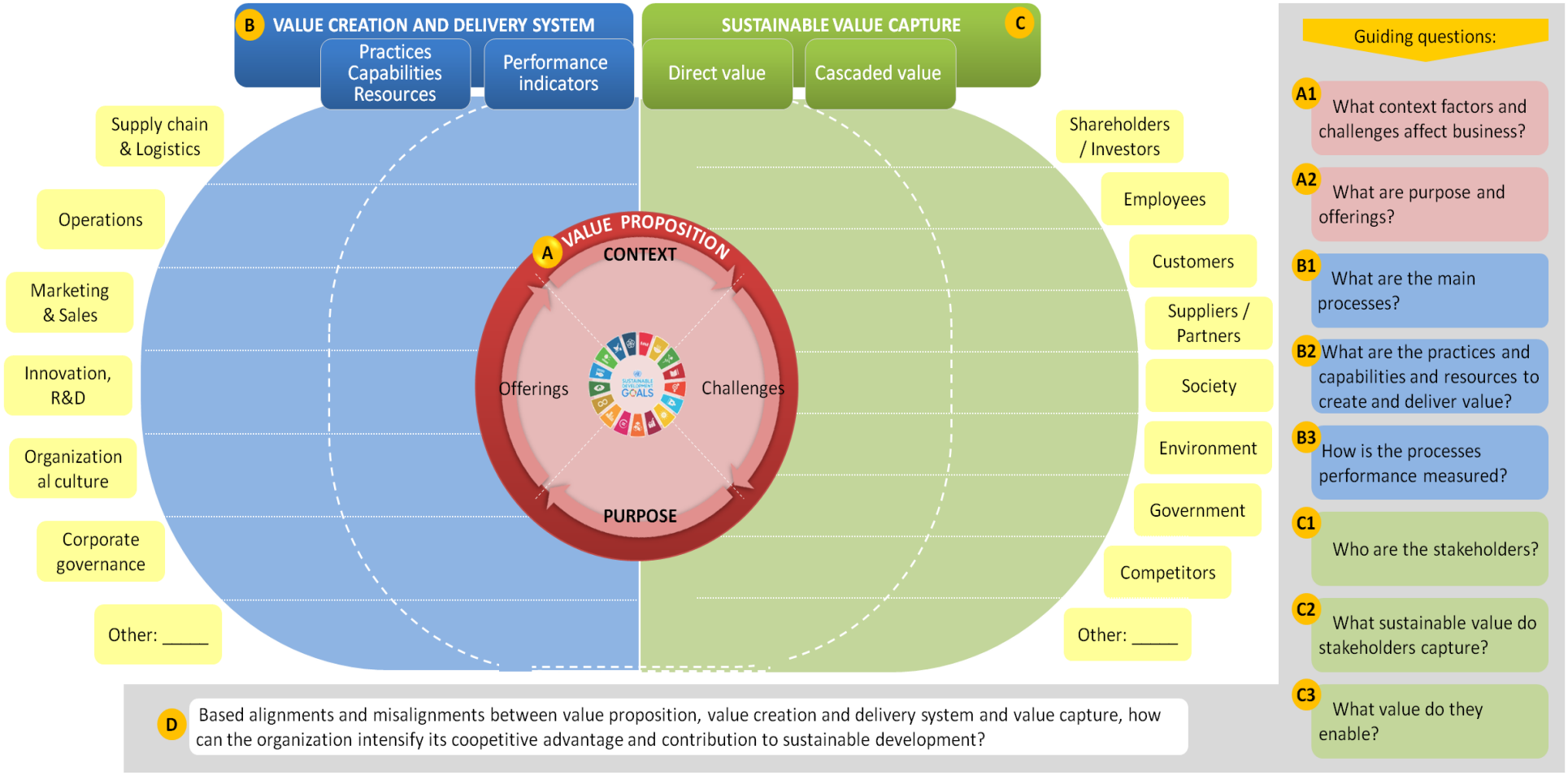


Source: #P7 (Section 12.4.4).

The initial tool version (Figure 7) was submitted to face validation using interviews with practitioners, deriving a tool called *Sustainable Value Exchange Matrix (SVEM)* (Figure 8). This tool converges the initial version (Figure 7), indications #P2 that sustainability PMS are relevant to enable more sustainable businesses, and lessons learned enabled by #P5's data collection process using a visual framework, the 2LM (#P5, Section 10.3.3). SVEM is a practical step-by-step tool to promote critical analysis of business models from the SBM perspective. Consequently, opportunities for improvement of CSP can eventually be derived. To support discussions on sustainable value proposition (Stage A), SVEM argues that it can be derived from delimiting the context in which the SDG's are inserted and defining the challenge (problem) the organizations is aiming to address. In turn, this challenge is deployed into business sustainability purpose and into products and services (offerings) to address the challenge indicated previously. The value creation and delivery system (Stage B) combines: (i) current operations to indicate the firms' main practices, capabilities and resources; (ii) innovation opportunities to give light to future perspective; and (iii) performance systems to delimit indicators to assess sustainability performance.

Next, sustainable value capture (Stage C) incorporates the typology of value indicated by the conceptual framework (#P6, Section 11.5, Paragraph 4), e.g., direct and cascaded value captured. Finally, Stage D is a critical analysis of the balance and alignment between previous stages. More about the final practical framework, SVEM, is found in #P7, Section 12.5.2).

Figure 8 - Tool proposal: Sustainable value exchange matrix (SVEM).



Source: #P7 (Section 12.5.2)

The present thesis argues that the final conceptual framework (Figure 6) and the tool (Figure 8) are complementary perspectives for representing SBM and for critically analysing organizations in the context of corporate sustainability. The first represent the core conceptual framework proposed by the present thesis and encompasses the main aspects and dimension together with their interrelationships. Meanwhile, SVEM (Figure 8) translates the core ideas from the conceptual framework into questions and gaps for organizations to reflect on in a visual and integrated tool for promoting discussion amongst core stakeholders. This represents an attempt to combine both theory and practice towards contributing to knowledge on SBM and CSP.

5 CONCLUSIONS, LIMITATIONS AND IMPLICATIONS

In brief, the PhD research sought to propose a framework for integration of sustainability principles into business models aligned with corporate sustainability performance goals. A multi-method research approach combined SLR, case studies and face validation with interviews to support the research objective. The aimed framework was presented in Figure 6 and further discussed in #P6 (Section 11.5).

With this framework, this research indicates also that there is not a threshold to delimit whether a certain organization has a SBM or not. Rather, the thesis argues that SBM is a perspective from which any organization can be critically analysed in the context of global sustainable development. From a SBM perspective, the proposed framework (Figure 6) indicates that profit is not the only performance criteria, but a more holistic approach of CSP is highlighted, assessing sustainable value exchange with corporate stakeholders. Components for the SBM perspective is summarized by the conceptual framework proposed by #P6 (Section 11.5, Figure 7). This framework indicates, amongst other issues, that sustainability demands reflection on business purpose from a problem-solving perspective, e.g., on the reason of existence of the organization to contribute to sustainable development. From this perspective, SBM archetypes, studied by #P3, can serve as guidelines for mechanisms to foster sustainable value creation, but not as role models to be followed and/or requirements to be filled. Thus, these are non-exhaustive innovative ideas on how to implement the business purpose for sustainable development.

Moreover, the proposed framework (shown in Figure 6 and further discussed by #P6) sought to combine aspects of SBM that address both above and underneath the visible surface. On the one side, it highlights issues above the surface, such as business processes (supply chain management, operations, marketing, etc.), offerings (products and services) and functional value captured by SBM's stakeholders. On the other side, the proposed framework also attempts to investigate bellow the visible surface, for instance, seeking to unfold further understanding of organization's purpose for SD and alignment between people and company's set of moral values and believes.

Besides the framework proposal, this thesis also contributes to further knowledge on the overlap between SBM and CSP approaches, indicating that research on one side has large potential to contribute to the other. For instance, papers mainly focused on

CSP indicated the need to go beyond isolated, philanthropic initiatives towards more systematic integration of sustainability into business, e.g., towards more SBM's (#P1, Section 6.5, Paragraph 4; #P2, Section 7.5, Paragraph 1). The most explicit interconnected discussion between SBM and CSP was built by #P5 (Section 10.2 and Section 10.3), and also discussed by #P4 (Section 9.2.4), indicating that they serve as complementary lenses to support organizations to intensify their contribution to sustainable development. #P5 (Section 10.2) indicate that, while SBM perspective is focused on maximizing sustainable value exchange with stakeholders, CSP perspective provides a systematic mechanism to assess this value exchange.

This thesis showed also that United Nations' SDG's can serve as interesting alternative to make sustainable development more tangible. Spreading this as a common language for academics, policy makers, non-governmental organizations and for-profit corporations may enable and foster further synergies between them. Thus, the thesis also points out the benefits of using this seventeen goals to develop studies on sustainable development in the various areas of research.

The research contribution of each paper separately is deeper discussed in Section 6.5 (#P1), Section 7.5 (#P2), Section 8.5 (#P3), Section 9.5 (#P4), Section 10.7 (#P5), Section 11.6 (#P6), and finally Section 12.6 (#P7). Based on these publications, this thesis was able to provide contributions mainly to the SBM body of knowledge, but also to the CSP literature.

5.1 Research limitations

It is important to note that the contributions presented above need to be considered in light of research limitations. First, SLR's (performed by #P1 and #P7) present limitations, since they are based on a paper sample obtained from a specific set of search strings for delimiting the paper sample. Even thought the strings sought representativeness of the body of knowledge, there is a trade-off between the number of papers (comprehensiveness of the sample) and depth of analysis from each paper towards synthesis and conclusions (#P1, Section 6.5, Paragraph 6). Second, case study method itself (used in #P2, #P3, #P4, #P5, #P6) also present limitations, since it is based on theoretical sampling and not necessarily represent the universe of organizations. By choosing companies to study that are more engaged with sustainability issues, the thesis results may find the need for adaptations to properly address other organizations. Besides, a third limitation connected to the

previous one is that the thesis is closer related to private and for-profit companies, given the emphasis of this type of organization as case studies. Thus, the results are more suitable for this kind of organizations.

Referring to limitations from the thesis as a whole, the forth limitation indicates that, as any research, this one is also not free from personal and moral values. This can be considered not only from the researcher point of view, but also from the interviewees and even the readers. For instance, interviewees tend to answer the questions following social norms and expectations. This can be more evident in researches on sustainability, since the "politically correct" aspects are usually the core issues under study. To reduce this bias, data collection from different sources and more concrete examples of general statements were fundamental to cross-analyse the evidences on each case study.

As another research limitation for the present thesis, it is also relevant to mention the time difference between the first and the last publications. This makes explicit the researcher's evolution of knowledge and maturity to argue about CSP and SBM issues over time. This means that, as expected, previous publications may provide less precise forms of expressing the core matters on SBM in each paper produced. To mitigate this, the present part of the thesis (Part I) seeks to bring these different contribution into a integrated logic and discussion, following the knowledge evolution (for example, as illustrated by Figure 5).

5.2 Implications for theory and future studies

Further studies using action-research as research method has potential to provide further understanding on the implementation challenges of SBM's using the components highlighted by the conceptual framework proposed by #P6 (Section 11.5, Figure 6). For this, SVEM (#P7, Section 12.5.2, Figure 8) can serve as tool to initiate further investigation of SBM in practice, from which deployments on improvement opportunities, e.g., research opportunities, can be derived. In this sense, this tool can be further tested in organizations with different levels of experience in sustainability. This has potential to provide further evolution for the tool and also changes for organizations under study.

The proposed conceptual framework (Figure 6) brings indication of the concept of coopetitive advantage, deriving from business longevity depending not only by competing, but also cooperating with competitors. This notion is still emergent and

can provide interesting research object for further investigations in corporate sustainability sphere. This is because it implies system-level perspective and changes towards solutions that incorporate aspects beyond organization's boundaries.

Moreover, context factors were raised by core case studies (#P6) and summarized by the proposed conceptual framework (Figure 6), but future studies can be applied to deepen the understanding on the conditions under which these factors affect SBM's performance. For this, quantitative survey research method can be applied for this investigation, as this method still has limited participation to investigate SBM (as pointed out by #P7's SLR).

Besides, the present research brought preliminary indication initial discussion of the strategic perspective to support SBM literature (Section 2.2). This brings future research opportunities towards deeper investigation on more systematic integration of sustainability into strategy design for SBM implementation, aiming CSP goals.

The thesis also challenges future studies to further combine the development of knowledge in corporate sustainability that is both above and underneath the visible surface. Further investigations on SBM and CSP are called to approximate to practice by providing a simplified (and yet not simplistic) notion of sustainable development complexities based on explicit and tangible aspects, and, at the same time, to provide basis for implicit and intangible aspects, as enablers for deeper and long term transition to more SBM. Thus, the present research indicates further investigations on people's set of values and believes providing an axiological approach on SBM, on business reason of existence in the context of sustainable development, amongst other issues. Coping with these both sides presents opportunities for future studies on SBM and CSP literature.

Moreover, the SLR's conducted by the thesis lay indication of opportunities for future research investigation on CSP (#P1) and SBM (#P7). #P1's SLR (Section 6.5, Paragraph 3) point out the challenge of investigating adequate indicators and system of indicators (CSP measurement), of planning and controlling practices to improve corporate contribution to sustainable development (CSP management) and of deeper understanding the benefits and challenges of using sustainability reports for legitimacy and improved performance (CSP reporting). Meanwhile #P7's SLR (Section 12.6, Paragraph 1) indicate for SBM literature the challenges of defining

adequate criteria to differentiate the various types of SBM's; of identifying SBM components; of managing business processes for sustainable value creation and delivery; of properly addressing stakeholders and their relations to SBM; of designing and developing SBM (sustainable business modelling); and of understanding SBM life cycle stages over time.

5.3 Implications for practice

To build the bridge between the proposed conceptual framework (#P6, Section 11.5, Figure 6) and practice, this research developed a tool called SVEM (#P7, Section 12.5.2, Figure 8) to be applied by practitioners. It consists of a visual diagram to be filled while providing discussions regarding business purpose, processes and organization's contribution to stakeholders in terms of sustainable value exchange. SVEM was developed to be applied to an organization as unit of analysis, but its application and be extended to a specific department or for even a project. By doing so, SVEM (#P7, Section 12.5.2, Figure 8) attempts to bring to surface tacit mechanisms and dynamics which lay behind tangible and functional transactions. With this, organizations can develop a more complex self-perception, which, in turn, can drive to more decisions towards improved CSP. In this sense, this study argues that SBM is a perspective for managing business rather than a fixed solution to be aimed by any organization. Thus, it seeks to embrace that SBM is not restricted to a certain selected group of organizations, but rather it virtually can be achieved by each organization.

Another implication to practice is the 2LM, as a tool to identify sustainability innovation opportunities (#P5, Section 10.3.3). By combining the performance prism (comprising five performance dimension: stakeholders' satisfaction, strategic drivers, processes, capabilities and stakeholders' contributions), and the SBM elements (value proposition, value creation and delivery system, and value capture), the process of analysing the organization from these two lenses indicated that the tool can support triggers to innovation opportunities: stakeholders' satisfaction and performance dimensions misalignments (#P5, Section 10.6). Thus, this research indicate that this tool can be used by organizations that aim to trigger innovation opportunities for a more SBM, by investigating gaps related to stakeholder satisfaction and to misalignment between performance dimensions (CSP and SBM).

These implications for practice are attempts to develop an adequate common language for academics' and practitioners' discussions around SBM and CSP, as they are concepts hard to delimit. Besides, the present research sought to provide applicable instruments for organizations to increase their positive impact and intensify their contribution to sustainable development, in particular, to SDG's.

In turn, the present thesis indicates that all businesses are called to be sustainable and there is no threshold to distinguish between sustainable and unsustainable businesses, but rather there is a continuum towards development and implementation of more sustainable solutions to contribute to sustainable development. The spread of sustainable business models is a change of paradigm in benefit of the society from a collective perspective, as mentioned by one of the interviewees from the core case studies (#P6): "it is not about my grandchildren, but other people's grand grandchildren".

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PART II - THESIS' PAPERS

6 #P1: A systematic literature review towards a conceptual framework for integrating sustainability performance into business

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Abstract

Several publications approach the subject of corporate sustainability performance, considering this background, the present research conducts a systematic literature review based on 261 papers towards a conceptual framework for integrating sustainability performance into business. Moreover, it aims at structuring the literature on corporate sustainability performance to highlight its main contributions and gaps. Data analysis initiates with a descriptive statistics of the sample, including yearly distribution, main journals, and most cited papers. It is followed by the delimitation of each sustainability performance approach of measurement, management and reporting and the cross analysis among them. Finally, a conceptual framework is proposed to address the integration of sustainability performance into business. This framework is composed by three levels. The first represents the principles for corporate sustainability to guide decision-making driven by collective values. The second level includes the core sustainable business elements, which are processes and practices, capabilities, offerings and contributions to sustainable development. At the third level, the context factors represent the internal and external aspects that affect the previous levels.

6.1 Introduction

Looking at the firm perspective, some author mention that “you cannot manage what you do not measure” (COOPER; EDGETT, 2008; EHRENFELD, 2008) and that “you are what you measure” (HAUSER; KATZ, 1998). In this sense, firms that claim to manage sustainable operations or to be sustainable should have a performance measurement system (PMS) that is able to measure sustainability performance. Despite the importance to build sustainability corporate image and promote sustainability external reporting, a still challenging approach on corporate sustainability is the development of management solutions to systematically follow the integration of sustainability in business strategy (GOND et al., 2012).

In a broader perspective, given the limitation of natural resources (MEADOWS et al., 1972; MEADOWS; RANDERS; MEADOWS, 2004), current production, and consumption paradigm needs urgent changes to enable global sustainable development. Sustainable development can be associated with the search for present development of which consequences do not compromise the future generation (WCED, 1987). Given that each actor in society has its role and responsibility in interfering in global sustainable development, corporate sustainability represents the contribution of organizations to global sustainable development challenges (ISO, 2009), such as natural resources depletion and poverty. In this sense, corporate sustainability objectives do not necessarily implies the pursuit of firm's survival over the years. This is aimed only if firm's activities are aligned with sustainable development, taking into consideration its obligations to the society on the institutional, organizational and individual levels (ORLITZKY; SWANSON, 2012). Several implication and challenges are associated with corporate sustainability, such as the need to consider internal and external stakeholders in firm's decisions (AGUDO-VALIENTE; GARCÉS-AYERBE; SALVADOR-FIGUERAS, 2015; FREEMAN, 1984, 2004), to address conflicts and synergies between environmental, social and economic pillars of sustainability as indicated by the triple bottom line concept (TBL) (ELKINGTON, 1997), to incentive a more moral value-based, axiological, approach of corporate sustainability (BOLIS; MORIOKA; SZNELWAR, 2014), to promote corporate social responsibility (CARROLL, 1991; KUDŁAK; LOW, 2015) and life cycle thinking (HEISKANEN, 2002; KAEZIG et al., 2011) within business. There are distinctive bodies of literature related to economic, environment

and social performance from different epistemological fields and it appears clear that there is a lack of integration among them. Lee (2012) highlights the growing number of sustainability reports, international regulations such as carbon emission reduction targets, and international standards and/or guidelines such as Social Accountability (the SA8000 standard) and the Dow Jones Sustainability Index (DJSI) (2008).

In this sense, firms are pressured by internal and external factors to improve their corporate sustainability performance (SP). Investors, policy makers stakeholders (YAKOVLEVA; SARKIS; SLOAN, 2012) and shareholders (LEE, 2012) are pressuring companies to consider sustainability performance more seriously. Expanding Yang et al. (2011) definition of environmental performance to SP, this term can be considered as the degree to which an organization improves its performance in respect to its global sustainable development responsibilities. To promote corporate sustainability performance means that sustainable development challenges must be incorporated into business (CRITTENDEN et al., 2011; SAVITZ; WEBER, 2006) through operational practices (LABUSCHAGNE; BRENT; VAN ERCK, 2005) and business strategy (FIGGE et al., 2002). Nevertheless, integrating sustainability into practice towards SP still represent a relevant gap in the literature (PARISI, 2013a) and a huge challenge for firms, to which the present research seeks to contribute.

Despite strong approximation, sustainability performance literature is not exactly the same as sustainability indicators literature. Even if the second is encompassed by the first and is fundamental in this discussion, SP goes beyond this and includes the challenges of performance measurement (how can firms assess SP?), performance management (how SP can the improved?) and sustainability reporting (how can firms account for their SP?). Previous literature reviews on sustainability performance have brought interesting insights for theory and practice. They address several aspects of sustainability performance, such as evolution of environmental management models (KOLK; MAUSER, 2002), environmental management accounting (SCHALTEGGER; GIBASSIER; ZVEZDOV, 2013), sustainability accounting (SCHALTEGGER; BURRITT, 2010), sustainability reporting (HAHN; KÜHNEN, 2013), and, finally, design and implementation of sustainability performance measurement systems (SEARCY, 2009, 2011). Moreover, the literature presents also meta-analysis of publications about the correlation between environmental management systems and

environmental performance (NAWROCKA; PARKER, 2009), between environmental performance and financial performance (ALBERTINI, 2013; GUENTHER; HOPPE, 2014), and between social disclosure, social performance and economic performance (ULLMANN, 1985). All these literature reviews bring relevant contributions, but the question that arises is: how do contributions of the literature on sustainability performance (SP) measurement, management and reporting interrelate with each other? And, going further, how does SP can be integrated into business towards corporate sustainability improvements? In this context, the paper aims at addressing these research questions, applying systematic literature review to extract the main contributions and gaps using a structured research method for analysing a 261 paper sample. Based on these results, a conceptual framework for the integration of SP into business was proposed.

6.2 Research methods

This research consists of a systematic literature review (SLR) about SP measurement, management, and reporting. Organized, transparent and replicable procedures were employed in this SLR, as recommended in the literature (LITTELL; CORCORAN; PILLAI, 2008), and carried out in three stages: planning the review; conducting the review; and reporting and dissemination (TRANFIELD; DENYER; SMART, 2003). Table 1 presents a summary of the main activities conducted in each stage. In the first stage, an exploratory literature overview on the main related constructs was conducted, such as corporate sustainability, sustainability performance, environmental management and TBL reporting. This was conducted in a non-structured way to build an initial perception of the research field, based on snowball logic (accessing references of references) and trial-and-error (testing combinations of keywords for filters in paper databases). An important result of this stage is the preliminary version of the research question. Another result is the definition of criteria for the filters used for the paper sample. This definition is crucial for the research, since it determines the quality of the results. In the planning stage, categories to frame the papers for data analysis were also defined. Three types of categorizations were initially chosen, based on the pillar of sustainability (social, environmental and economic) (ELKINGTON, 1997); on the research method; and on the approaches of SP (performance measurement, management and reporting). The limits for SP approaches were refined during data analysis and this result is

presented in the Section 3.2.1 (Delimiting the SP approaches). The last categorization used to build the proposed framework was developed throughout the data analysis step, since they emerged from the content of the papers.

The second stage pointed out by the Tranfield et al. (2003) represents the review itself, which initiated with the data collection. For this step, a sample of articles on sustainability performance was obtained by querying the ISI Web of Knowledge (Web of Science) and Scopus databases in June 2015. These databases were chosen given its comprehensiveness of papers including titles from Emerald, Elsevier, Springer, Willey, Taylor & Francis, JStor, among others. The following filters were used: (1) in the title: sustainability or "sustainable development" or environmental or social; (2) in the title or keyword or abstract: corporate* OR firm* OR organization* OR company* OR industry* OR business; (3) in the title: performance; (4) in the title: measure* OR manag* OR control* OR report* OR disclosure* OR account*. The symbol (*) has the function to include any variation on the terms searched. The first reading of the papers was restricted to title and abstract with the objective of excluding the papers without adherence to the present research and without available full paper. The final sample consists of with 261 papers.

Throughout data analysis step, the content of the papers in the sample suffered a series of disaggregation (detailed data) followed by aggregation (data synthesis) processes. How to disaggregate, but most evidently how to aggregate data to address the trade-off between detail of information and easy of understanding was the main challenge of this step. At some occasions, trial-and-error was the solution for graphs, tables and diagrams to be a good representation of conclusions extracted from data. Data analysis initiated with the second round of readings, which included the full text, with focus on introduction, research method and conclusion section. At this step, the following data for each paper was extracted: TBL category, research method, performance approach, aim of the research, contributions, main concepts/constructs, recommendation for future studies and general comments (if necessary). These data were organized in electronic spreadsheet for coding, as performed by Westgaard and Winkel (2011). Following previous systematic reviews in the field of sustainability, descriptive statistics were conducted (HAHN; KÜHNEN, 2013; SCHALTEGGER; GIBASSIER; ZVEZDOV, 2013; SEURING; MÜLLER, 2008) and this included yearly distribution, most frequent journals, most cited papers,

distribution of papers according to the pillar of sustainability (economic, environmental and social) and to the SP approaches. The next step of data analysis was the brief description of content related to each SP approach (measurement, management and performance) and to the relation between them. Additionally, the papers discussed also about the integration of corporate SP into business which was synthesized in a conceptual framework. When references used by the papers of the sample contributed to the discussion of results, they were also included to support data analysis. The third stage of the research, the dissemination (TRANFIELD; DENYER; SMART, 2003), was conducted simultaneously to data analysis, since the process of writing the paper and organizing the results is helpful for the next step of data analysis.

Stage 1: Planning the review	Stage 2: Conducting the review	Stage 3: Reporting and dissemination
- Exploratory literature search on SP, development of ideas about the focus of review and discussion with other researchers - Proposal for preliminary research question - Definition of criteria for paper sample selection - Plan for data analysis (categories to frame the papers' data and content)	- Selection of studies: Initial paper sample based on criteria defined in previous stage - Data analysis (conducted in rounds, with specific results and recorded in an electronic spreadsheet): 1st) Title and abstract: Elimination of papers non-related to the research, resulting in a refined sample with 261 papers 2nd) Full paper, with focus on introduction, research method and conclusions: Classification of papers according to research method, pillar of sustainability (environmental, social and economic) and SP approaches (measurement, management and reporting) 3rd) Focused readings: Deeper content analysis about SP approaches and relation between them 4th) Focused reading: Deeper content analysis on the integration of SP into business - Data synthesis: Elaboration of tables and figures to illustrate the main conclusion of analysis.	- Initial draft of introduction section after about 20% of readings in the 2nd round. - Simultaneous data analysis and reporting elaboration with mutual benefits for both processes as deeper understanding of the sample was developed - Proposal of a conceptual framework

Table 1. Stages of research.
Source: Adapted from Tranfield et al.(2003) with inclusion of activities conducted in the present research.

6.3 Research results and discussions

This section is dedicated in describing the data obtained in the papers sample. After an overview of the paper sample, deeper discussions about the integration between SP measurement, management and reporting are presented.

6.3.1 General overview: Evolution of the literature and main topics

Descriptive statistics based on paper sample data were conducted, bringing an initial overview of the literature analyzed. Figure 1 brings the main journals that publish on sustainability performance. The Journal of Cleaner Production (JCP) and the Journal of Business Ethics (JBE) have evident prominence in the academic sphere, with respectively Journal Citation Report (JCR) impact factor of 3.844 and 1.326. Interestingly, Figure 1 shows many journals related to environmental issues, but also one with a broader scope, the International Journal of Production Economics.

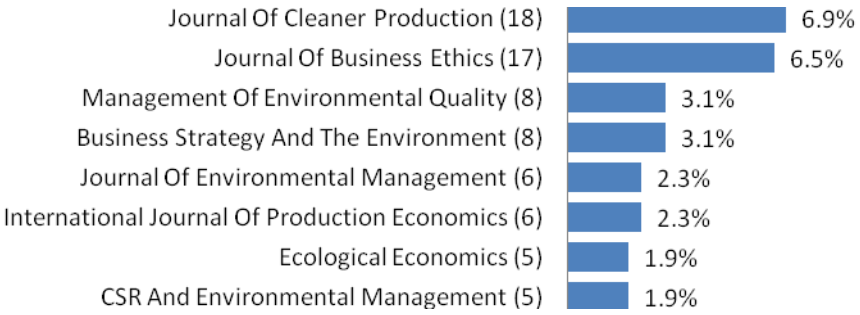


Figure 1. Main journals in percentage of the sample.
** Note: Numbers in brackets represent the quantity of papers in the sample.*

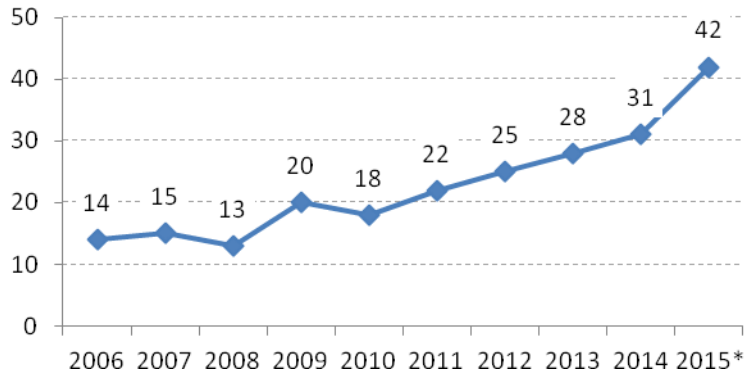


Figure 2. Yearly evolution.
** Note: 2015 data are estimated based on publication until June 2015.*

Figure 2 shows the yearly evolution of publications in the last 10 years. This period restriction from 2006 until 2015 was chosen to facilitate graphical representation. The number of papers for 2015 was estimated based on publications until June 2015 (21 papers). Before 2006, there were 54 publications (21% of the sample). The first published papers of the sample concern social responsibility and performance of business (FILIOS, 1983; KREPS, 1962; SPICER, 1978; STURDVANT; GINTER,

1977; ULLMANN, 1985). Interestingly, the tight connection between social and environmental issues are also not recent, since one of these pre-1990s paper addresses pollution control as indicator for social performance (SPICER, 1978).

	ISI		**Scopus**	
Authors (Year)	**TC total**	**TC/year**	**TC total**	**TC/year**
Klassen, McLaughlin (1996)	525	27.6	673	35.4
Ullman (1985)	346	11.5	*NA*	*NA*
Melnyk et al. (2003)	243	20.3	338	28.2
Weaver et al. (1999)	209	13.1	256	16.0
Vachon, Klassen (2008)	196	28.0	261	37.3
Al-Tuwaijri et al. (2004)	172	15.6	254	23.1
Tyteca (1996)	164	8.6	203	10.7
Clarkson et al. (2008)	164	23.4	240	34.3
Patten (2002)	145	11.2	214	16.5
Spicer (1978)	113	3.1	*NA*	*NA*
Montabon et al. (2007)	100	12.5	139	17.4
Darnall et al. (2008)	81	11.6	101	14.4
Yang et al. (2011)	71	17.8	111	27.8
Alvarez et al. (2001)	55	3.9	162	11.6
Brown, Deegan (1998)	*NA*	*NA*	212	12.5

Table 2. Most cited papers in terms of total citations (TC) and citation per year (TC/year).
** Note :Intensity of the gray colour is related to relevance in terms of citations .*

This past dominance of initial social focus was overcome by the intensification of an environmental approach of sustainability performance publications. Considering the most cited papers (Table 2), one can see that, with exception of Ullmann (1985) and Weaver et al.(1999), all other publications are focused on environmental performance. More specifically, many of them deal with the impact of environmental aspects on firm's financial performance (AL-TUWAIJRI; CHRISTENSEN; II, 2004; ALVAREZ et al., 2001; CLARKSON et al., 2008; DARNALL; HENRIQUES; SADORSKY, 2008; KLASSEN; MCLAUGHLIN, 1996; MELNYK; SROUFE; CALANTONE, 2003; MONTABON; SROUFE; NARASIMHAN, 2007; YANG; HONG; MODI, 2011), showing the emphasis of the literature to this concern. In the last 10 years, the prominence of environmental-focused publication in the sustainability performance literature has been intensively present, as shown in Figure 3. At the same time, attention in a more comprehensive approach of performance based on the TBL logic seems to be growing (Figure 3).

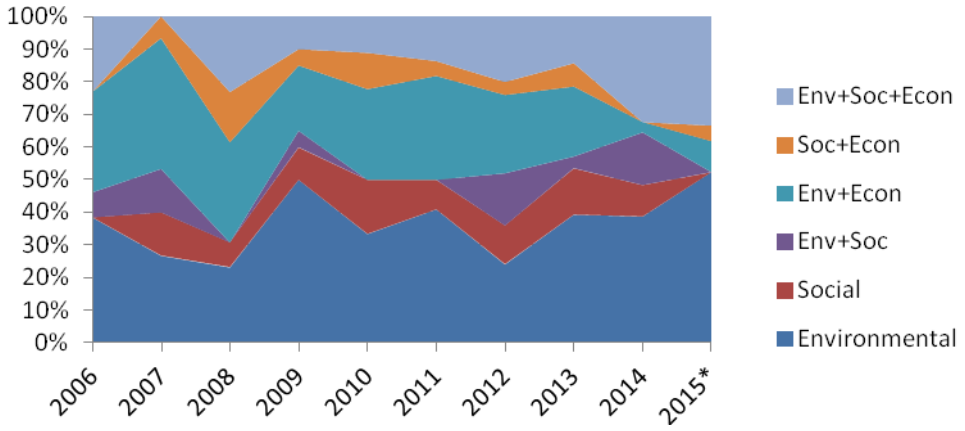


Figure 3 - Distribution between environmental, social and economic pillars of sustainability.

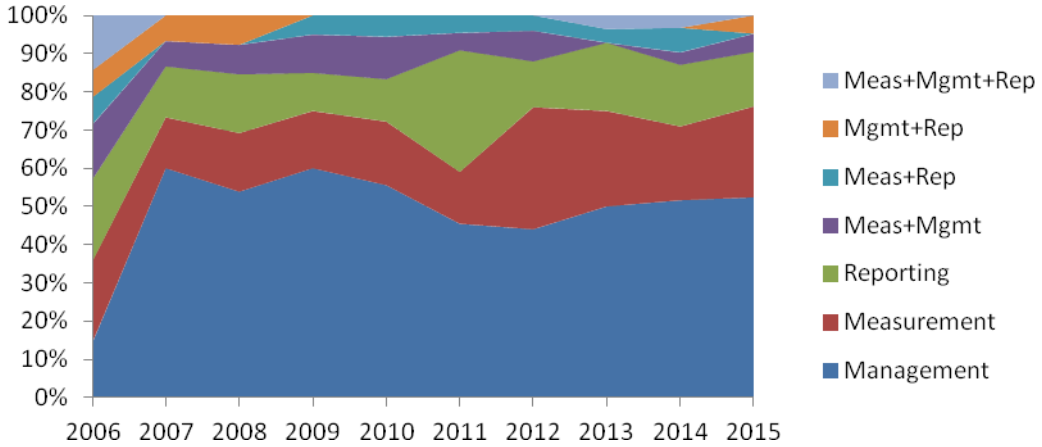


Figure 4 - Distribution between SP approaches: management, measurement and reporting.

Illustrating the distribution of publications according to which SP approach they address, Figure 4 shows that integrated discussions with more than one approach have still potential for further research, given their low percentage representation so far. Moreover, while SP management is predominant comparing to the other approaches (around 50% throughout the years), publications on SP measurement seem to be gaining space and the ones on SP reporting tends to remain still constantly present in the literature (see Figure 4). Combining the TBL categorization and the SP approaches, Table 3 brings the publications of the sample that explicitly aimed at investigating the correlation between sustainability pillars and SP approaches. It makes evident the interest of academia in the relation between

Table 3. List of example of publications focused on correlation between sustainability pillars and SP approaches.

		Measurement			Management			Reporting		
References	**Qtd**	**Env**	**Soc**	**Econ**	**Env**	**Soc**	**Econ**	**Env**	**Soc**	**Econ**
(ALVAREZ et al., 2001; CHEN; TANG; FELDMANN, 2015; GOMES et al., 2014; HUANG; SHIH, 2010; KLASSEN; MCLAUGHLIN, 1996; LANNELONGUE; GONZALEZ-BENITO; GONZALEZ-BENITO, 2015; LIN; LIU, 2011; LO; YEUNG; CHENG, 2012; MOLINA-AZORÍN et al., 2009; RENNINGS et al., 2006)	10			x	x					
(EARNHART, 2013; HENRIQUES; SADORSKY, 2013; HERTIN et al., 2008; NAWROCKA; PARKER, 2009; ROWLAND-JONES; PRYDE; CRESSER, 2005; SARKIS, 2006; SARKIS; DIJKSHOORN, 2007)	7	x			x					
(ANDERSEN; DAKOTA, 2011; ARAS; AYBARS; KUTLU, 2010; GARCIA-CASTRO; ARIN; CANELA, 2010; GUENTHER; HOPPE, 2014; LAAN; EES; WITTELOOSTUIJN, 2008; PARAST; ADAMS, 2012; STURDVANT; GINTER, 1977)	7		x	x						
ALBERTINI, 2013; CLAVER et al., 2007; JABBOUR et al., 2013; SUEYOSHI; GOTO, 2010)	4	x		x						
(CLARKSON; OVERELL; CHAPPLE, 2011; DAWKINS; FRAAS, 2011a, 2011b; HUGHES; ANDERSON; GOLDEN, 2001; LATRIDIS, 2013)	4	x						x		
(GADENNE et al., 2012; GROSVOLD; HOEJMOSE; ROEHRICH, 2014)	2	x	x	x	x	x	x			
(PIATTI, 2014; VURRO; PERRINI, 2011)	2		x						x	
(ARAVOSSIS; PANAYIOTOU; TSOUSI, 2008; DICKSON; ECKMAN, 2008)	2					x			x	
(HERBOHN; WALKER; LOO, 2014)	1	x	x	x				x	x	x
(WALKER; LOPATTA; KASPEREIT, 2014)	1	x	x	x						
(YANG, 2012)	1	x		x	x					
(YANG; HONG; MODI, 2011)	1	x		x	x					
(AL-TUWAIJRI; CHRISTENSEN; II, 2004)	1	x		x				x		
(ULLMANN, 1985)	1		x	x					x	
(SCHALTEGGER; SYNNESTVEDT, 2002)	1	x		x	x					
(GRANT; JONES; TRAUTNER, 2004)	1	x				x				
(CHANG, 2015)	1	x								x
(MENG; ZENG; TAM, 2013)	1			x				x		
(AKISIK; GAL, 2014; LI et al., 2013)	1			x					x	
(PEREIRA-MOLINER et al., 2012)	1				x		x			
(WONG, 2013)	1				x			x		

environmental management with environmental and financial performance, as well as the relation between social and economic performance.

Interestingly, Figure 5 shows the distribution of research method for each SP approach and for the sample, pointing out the predominance of papers presenting secondary data analysis and modelling. In these cases, data sources include sustainability disclosures of companies (as in Hughes et al., 2001), third parties publications such as Kinder, Lydenberg and Domini (KLD) reports (as in Dawkins and Fraas, 2011), corporate websites (as in Grosbois, 2012), amongst others. Additionally, this research method is specially chosen in publications about SP reporting. Focusing on papers about SP management, however, survey was chosen

as most frequent research method, which can be explained by the fact that these publications tend to include variables that many times are not available in existing data. The small proportion of case studies and action researches may show potential for future gaps, promoting deeper understanding of the research phenomenon (such as in and recommended by Mir and Rahaman, 2011).

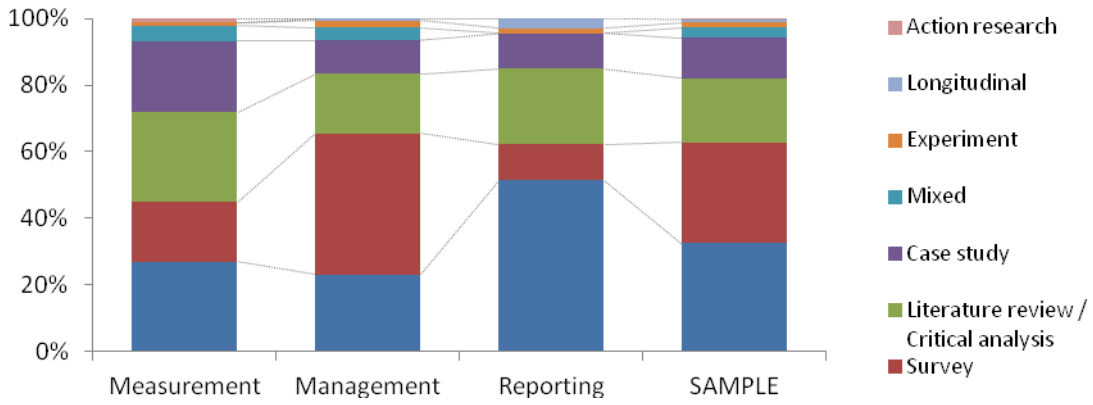


Figure 5 - Distribution of research methods according to SP approaches (management, measurement and reporting).

6.3.2 Main contributions of SP measurement, management and reporting literature

Delimiting the SP approaches

A brief discussion of SP measurement, management and reporting is presented in this section. The intension of this initial discussion is not to exhaust each theme, since they are rich, vast and non-trivial. Rather, the next paragraphs presents our delimitation on each of the three approach, before focusing on the integration of these elements. SP measurement focuses on challenges related to the definition of sustainability indicators, the set of indicators as a system with categories of indicators, the processes to design and implement SPMS and the assessment of performance *per se*. The challenge of measuring socio-environmental performance has been discussed over the years (KREPS, 1962; ORLITZKY; SWANSON, 2012; TYTECA, 1996) and is still open for discussion. One of the difficulties is that measuring social and environmental performance of business has to do with the firm's role in society (KREPS, 1962) and depends on a series of interconnected factors (BIANCHI; COSENZ; MARINKOVIĆ, 2015). A system of SP measurement may categorize its indicators in: principles/structure, input, process, output, outcome, impact (AGLE; KELLEY, 2001; CLARK; COLLEGE; BRENNAN, 2012; JUNG; KIM;

RHEE, 2001; SCHULTZE; TROMMER, 2012; WOOD, 1991) and conditions indicators (KOLK; MAUSER, 2002). The issue of measuring includes planning the system based on diagnosis of firm's situation, goals, and implementation context (MOORE; SMITH; NEWSOME, 2003; SEARCY, 2009), selection (KEEBLE; TOPIOL; BERKELEY, 2003) and use of indicators (SEARCY, 2012), and, finally, evolution/improvement of the systems of indicators (SEARCY, 2012). When defining performance indicators, firms need to consider several aspects, such as the purpose of that indicators (MOUCHAMPS, 2014), the unit of analysis (individuals, program, organization, set of organizations / institution) (MOUCHAMPS, 2014; ORLITZKY; SWANSON, 2012), the level in the organization (strategic or operational) (SCHULTZE; TROMMER, 2012). According to Schultze and Trommer (2012), environmental performance indicators should be both valid (closely related to environmental impacts, fully cover the construct and provide forward-looking information) and reliable (quantifiable, externally verifiable and directly comparable). It is also worth mentioning that firms need to critically analyse their performance measurement systems, assessing if they are appropriate for managing business or their function is solely to satisfy stakeholders' needs or pressures (CANNEVA; GUÉRIN-SCHNEIDER, 2011; MIR; RAHAMAN, 2011).

SP management encompasses practices to improve environmental and social performance. It is related to management systems, which can be supported by consolidated frameworks such as the European Eco-Management and Audit Scheme (EMAS) (EU, 2009), ISO1400 (ISO14006, 2011), OHSAS 18001 (OHSAS, 2007), SA8000 (SAI, 2001) and ISO26000 (ISO, 2009). In this sense, SP management can be associated with continuous improvement approach (DADDI et al., 2011; DAHLSTRÖM et al., 2003; MIHAILESCU; ZAHANAGIU; ISBASOIU, 2011), promoting activities to improve performance through PDCA (plan, do, check, act) cycles (for example, as in Iraldo et al., 2009). In general, this literature is mostly related to environmental performance management, promoting initiatives to prevent, mitigate or control negative environmental impacts and compliance with regulation (MIHAILESCU; ZAHANAGIU; ISBASOIU, 2011). From linear stage approach to more elaborate approaches, environmental management models have been evolving, leading to the discussion of different dimensions, such as the division between process and outcome measures, or leading and lagging indicators, and the internal

and external concerns for environmental management (KOLK; MAUSER, 2002). Many authors associate environmental management with quality management (FAN; HO; FAN, 2014; MOLINA-AZORÍN et al., 2009; SAM et al., 2009) and lean practices (HABIDIN; YUSOF, 2012; YANG; HONG; MODI, 2011), arguing that previous knowledge on these approaches contribute to success of sustainability practices.

The third approach is the SP reporting, discussing how the firm can communicates its CS performance by accounting for its responsibilities for economic, social and environmental positive and negative impacts in the form of an official report. Trends and opportunities on sustainability reporting was systematically addressed by Hahn and Kühnen (2013), which indicated the potential for future studies in key issues, such as regulation and governance, reporting quality and stakeholder perception. The literature point out factors that motivate firm towards sustainability reporting, such as to address an increasing demand for transparency (GROSBOIS, 2012), to enhance the corporation's reputation and brand image (MONSMA; BUCKLEY, 2004), to influence investor decisions (CORMIER; MAGNAN, 2010; LATRIDIS, 2013; MONSMA; BUCKLEY, 2004), to influence customers' decisions (MEIJER; SCHUYT, 2005), to react after negative media attention (ISLAM; DEEGAN, 2010) and to follow legal obligation in specific sectors. Standardization of sustainability reporting enables comparison between firms and the Global Reporting Initiative (GRI) seeks to promote this, by developing a framework based on TBL to enhance quality, rigor and utility of these publications (GRI, 2013). In this sense sustainability accounting systems can be developed from traditional financial approaches towards incorporating both internal and external stakeholders into consideration (PERRINI; TENCATI, 2006). As one can see, SP reporting is not exactly synonym to sustainability accounting, but many contributions for both approaches can be complementary.

Interaction between the approaches: how SP measurement, management and reporting contribute to each other

This section explores how the SP approaches contribute to each other, which is briefly summarized in Table 4. Regarding the relation between SP measurement and SP management, the literature argues that SP measurement is an important issue to enable adequate SP management (PEROTTO et al., 2008; TAM et al., 2006a), since it can provide sustainability performance indicators to plan action to improve performance (DE BURGOS-JIMÉNEZ; CANO-GUILLÉN; CÉSPEDES-LORENTE, 2002), to assess practices implementation (DE BURGOS-JIMÉNEZ; CANO-GUILLÉN; CÉSPEDES-LORENTE, 2002; JUNG; KIM; RHEE, 2001), to enable audit, monitoring (GROSVOLD; HOEJMOSE; ROEHRICH, 2014; TAM et al., 2006b) and control (PERRINI; TENCATI, 2006). Another important role of performance measurement is to enable the definition of objectives to be fulfilled by management processes towards sustainability outcomes (LUNDBERG; BALFORS; FOLKESON, 2009). This allows firms to identify most critical areas, define key performance indicators (KPIs) (DE BURGOS-JIMÉNEZ; CANO-GUILLÉN; CÉSPEDES-LORENTE, 2002) and efficiently distribute scarce resources (METCALF et al., 1995). It is worth noting that the choice of indicators is important and may even affect the investigation of whether environmental and financial performance are related, since the result positive or negative correlation depends on the measures chosen to assess performance (GUENTHER; HOPPE, 2014).

The literature on SP measurement and management also indicates that quantifiable measures tend to facilitate the alignment between environmental performance and strategy (PEREGO; HARTMANN, 2009). This evidence is aligned with studies that suggest that more objective measures can promote better environmental management, as driver for continuous improvement of environmental performance (DAHLSTRÖM et al., 2003). Hsu and Liu (2010) recommend the use of Balanced Scorecard (BSC) proposed by Kaplan and Norton (1992) as a map for both environmental evaluation and engaging proactive environmental management. In this sense, involving dominant stakeholders in defining sustainability indicators can be interesting but it needs to be conducted carefully, since they will have consequences in the priorities of action to be conducted by the firm (MIR; RAHAMAN, 2011). It is also worth noting that SP performance measurement system needs to be compatible

to the organization context, which also affects how SP management is conducted. For instance, specific studies have been conducted in measuring sustainability performance in organization such as in public sector (LUNDBERG; BALFORS; FOLKESON, 2009)l and social enterprises (MEADOWS; PIKE, 2010; STRAUB; KOOPMAN; MOSSEL, 2010). Additionally, the relation between SP measurement and management may also be presented in the form of SP management as one of the dimensions of SP measurement systems (XIE; HAYASE, 2007).

Focusing now on the relation between SP measurement and reporting, the literature suggests a close relation between them, since discussions about them may present indicators and frameworks/categorization of indicators. Some authors even propose frameworks for both measurement and reporting (STABEN; HEIN; KLUGE, 2010) and others present a compilation of several initiatives that propose performance indicators to be used for disclosure, as if measuring and reporting were the same challenge (HŘEBÍČEK et al., 2011). Despite eventually having common indicators, while SP measurement is focused on designing and implementing a corporate performance system to support firms in their decision making taking into consideration sustainable development (SEARCY, 2012), reporting has close relation with firms' responsibility to account for their actions. In other words, the objective of each approach is different and, at the same time, should be integrated, which can be facilitated by information technology (HŘEBÍČEK et al., 2011). In this sense, sustainability reporting guidelines, such as GRI, and accountability approaches can serve as input for elaborating an adequate SP measurement system for internal decision making (NG; NATHWANI, 2012). More specifically, SP reporting addresses how the performance assessed can be used to elaborate disclosure and communicate its performance (PERRINI; TENCATI, 2006; RODRIGUE; MAGNAN; BOULIANNE, 2013). The literature shows also that a broader reporting in terms of diversity and dissemination of stakeholders groups may be a significant evidence of better social performance (VURRO; PERRINI, 2011). In order to measure sustainability, it is also possible to develop an index, based on published data (HERBOHN; WALKER; LOO, 2014). Moreover, reporting can also be considered as one of the aspects to measure and assess SP, for example, together with SP reputation ratings and social audits measures (WU; KE-KE., 2009).

Finally, literature shows also that management and reporting of SP present close connection, as one can serve as input for the other. For instance, indicators related to social and environmental practices implementation can be included as part of the framework for reporting (MOORE; SMITH; NEWSOME, 2003). On the other hand, environmental accounting can serve as tool for management of SP (DUTTA; LAWSON; MARCINKO, 2013) and reporting can serve as data source to assess firm's practices (ARAVOSSIS; PANAYIOTOU; TSOUSI, 2008) and as a channel to promote diffusion of environmental innovations (RENNINGS et al., 2006). In this sense, firms can use sustainability reporting to seek for internal and external legitimacy, which in turn affects environmental management decisions (SCHAEFER, 2007). Open channel and communication with stakeholders is relevant to identify their needs and expectations (AGUDO-VALIENTE; GARCÉS-AYERBE; SALVADOR-FIGUERAS, 2015), which are necessary to better plan and implement practices for sustainability performance. Literature points out also the importance of deploying accountability for environmental performance into operational personnel towards environmental awareness throughout the firm (CHINANDER, 2001).

Table 4. Summary of the relations between corporate sustainability performance measurement , management and reporting.

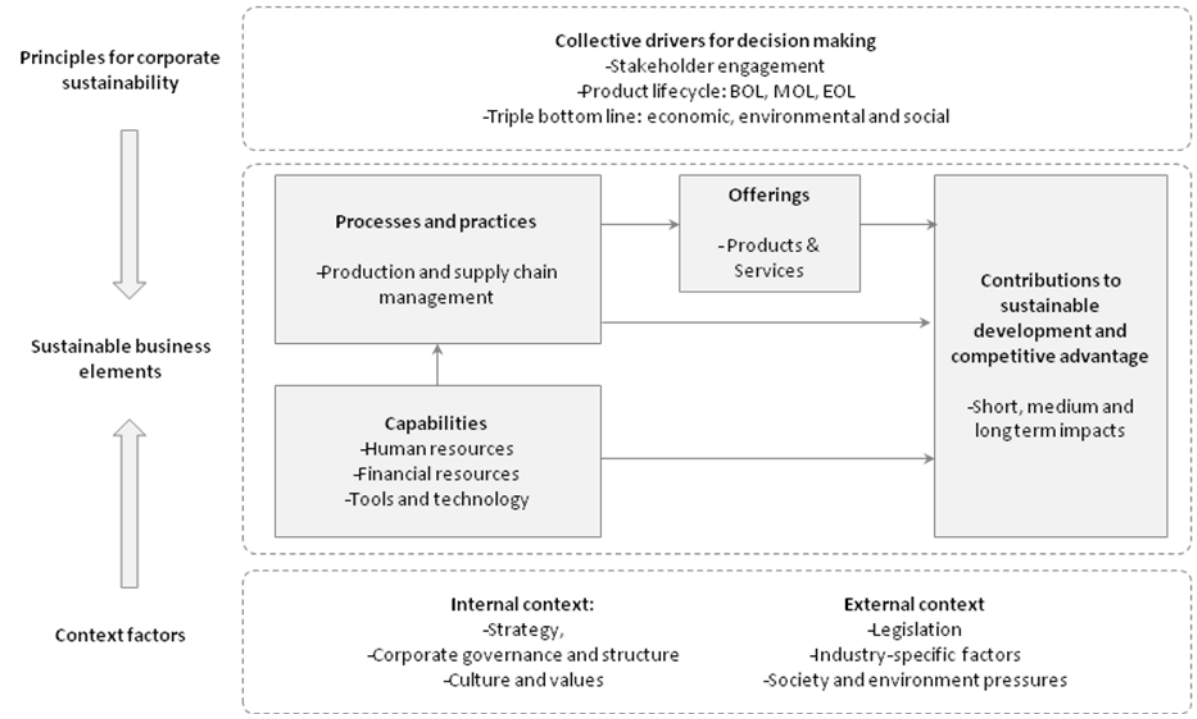
			... Are related with these SP approaches		
	Brief description		**MEASUREMENT**	**REPORTING**	**MANAGEMENT**
How these approaches...	**MEASURE-MENT**	Instrument for making SP tangible/explicit using performance indicators	-	Provides indicators for elaborating documents	Helps define objectives, plan and control practices for SP improvement
	REPORTING	One possible and relevant channel for legitimacy	Affects how and what SP is measured	-	Affects how and what practices are conducted
	MANAGE-MENT	Organized set of practices with aim on improving SP	Serves as input for assessing SP	Serves as input for elaborating documents to disclosure sustainability performance	-

6.4 Making sense of the literature

The various previous reviews related to corporate SP (GUENTHER; HOPPE, 2014; KLASSEN; MCLAUGHLIN, 1996; KOLK; MAUSER, 2002) shows that the body of knowledge is not new and, at the same time, still demands further research.

Analysing the literature on sustainability performance, it is worth noting that many of the studies are focused on the relationship between environmental and financial performance and the impact of practices on sustainability performance (see Table 4). As this body of knowledge evolved, the use of generic terms such as organizational performance have been expanded, including not only financial performance, but also environmental performance (such as in KIM et al., 2012). The most interesting evolution of the literature, however, is the intensification of interest in investigating how SP is integrated into business strategy and management in a general matter (EPSTEIN; ROY, 1998; HALL; WAGNER, 2012; SCHALTEGGER; WAGNER, 2006; ZOLLO; CENNAMO; NEUMANN, 2013) or with an specific focus, such as human resource (ARNAUD; WASIELESKI, 2014), supply chain management (SEURING, 2013) and quality management (PEREIRA-MOLINER et al., 2012). This suggests an increase of awareness that sustainability is no longer exclusive responsibilities of environmental, health and safety departments of the firm.

Figure 6 - Proposed framework for integrating sustainability performance into business.



Thus, after conducting a deeper analysis of the disaggregated (specific) data in the previous section (section 3), the present section justifies a structured way to aggregate data in a synthesis. This is presented in form of a framework for the integration of SP into business, as a way to improve firm's contribution to sustainable development. As shown in Figure 6, the framework is composed by three aspects:

principles for corporate sustainability, sustainable business elements and context factors.

6.4.1 Supportive aspects of integration: principles for corporate sustainability, context factors

The idea of having principles to guide corporate social performance measurement is not new (WOOD, 1991) and was introduced in the proposed framework to serve as guidelines for decisions towards more sustainable way of managing business (ZOLLO; CENNAMO; NEUMANN, 2013). They represent the need for a more collective motivation for decision making - instead of defending only individual interest - when aiming for sustainable development (BOLIS; MORIOKA; SZNELWAR, 2014). In this sense, the framework shows the importance of stakeholder engagement, including shareholders/investors, customers, suppliers, employees, community, government, environment, society, etc (DENTCHEV, 2007; GADENNE et al., 2012; PERRINI; TENCATI, 2006). Business decisions are proposed to be taken in order to satisfy their needs, inform them about firms' performance using reports and other communication instruments, and integrate them in making relevant decisions.

Global sustainable development also implies the life cycle approach, which implies the institutional responsibility of a firm not only for the beginning of life (BOL), but also middle of life (MOL), and end of life (EOL).. In this sense, product life cycle can be an interesting approach for managing sustainability performance (BALKAU; SONNEMANN, 2010), seeking the minimize negative impacts of a company on society and natural environment, but also to identify more comprehensive business models. The last principle identified in the literature is the triple bottom line (such as in Epstein et al., 2015), according to which, sustainability is achieved by simultaneously dealing with economic, environmental and social pillars (ELKINGTON, 1997).

Not only have the principles had an influence on the integration of SP into business, but also the context factors, including internal and external aspects. The internal context to facilitate promotion of SP includes integration of sustainability into strategic plans (KLASSEN; MCLAUGHLIN, 1996) to provide formal declaration of the importance of sustainability to the firm (MELNYK; SROUFE; CALANTONE, 2003); corporate governance (COHEN et al., 2011; YONGVANICH; GUTHRIE, 2006)

including formal organizational policy (GRIFFITH; BHUTTO, 2008), top management support (GROSVOLD; HOEJMOSE; ROEHRICH, 2014), and commitment to ethics (WEAVER; TREVINO; COCHRAN, 1999); and organizational culture (values) (SUGITA; TAKAHASHI, 2015). There are also external factors that affect corporate SP, including natural environment and social general context (KOLK; MAUSER, 2002), legislation (GRIFFITH; BHUTTO, 2008; TAN et al., 2014), industry-specific competitive dynamics (GROSVOLD; HOEJMOSE; ROEHRICH, 2014) and technology level (FAN; HO; FAN, 2014).

6.4.2 The core sustainable business elements

The central aspect of the framework is related to sustainable business elements and includes: (1) processes and practices, (2) capabilities, (3) offerings and (4) contributions. The literature shows that *processes and practices* may contribute to SP, when conducted according to the principles for corporate sustainability. They can be associated with sustainable supply chain (SEURING; MÜLLER, 2008), including practices both upstream and downstream, such as collaboration with suppliers (GROSVOLD; HOEJMOSE; ROEHRICH, 2014), strategic and operational information sharing (STEFANELLI; JABBOUR; JABBOUR, 2014; YOUN et al., 2013), joint planning and sustainability goal definition (VACHON; KLASSEN, 2008; WOLF, 2014), green purchasing (GENOVESE et al., 2013; HUMPHREYS; MCIVOR; CHAN, 2003; JABBOUR et al., 2014), customer cooperation for eco-design, cleaner production, packaging, etc. (CHAN et al., 2012; JABBOUR et al., 2014). Process and practices shown in the framework is also associated with production processes (SCHULTZE; TROMMER, 2012; TRUMPP et al., 2015), which can make use of quality management and lean manufacturing philosophy to enhance success in implementing environmental management (BENAVIDES-VELASCO; QUINTANA-GARCÍA; MARCHANTE-LARA, 2014; PEREIRA-MOLINER et al., 2012; YANG; HONG; MODI, 2011). Moreover, the literature points out the importance of risk management (SARKIS, 2006), since active risk management may have positive relation with environmental performance (DOBLER; LAJILI; ZÉGHAL, 2014).

The second sustainable business element is related to *capabilities* for corporate sustainability, encompassing financial resources as well as skilled, motivated human resources and aligned with the principles for sustainability for decision making (GROSVOLD; HOEJMOSE; ROEHRICH, 2014). This is related to adaptive capacity

of the firm (ZOLLO; CENNAMO; NEUMANN, 2013) and the whether the firm's leadership is capable of deploying changes in organizational culture to integrate sustainability into business (PEREIRA-MOLINER et al., 2012). IT (YONGVANICH; GUTHRIE, 2006) and corporate performance measurement system integrating SP (PERRINI; TENCATI, 2006) are also important capabilities for promoting integration between business and corporate sustainability. Still regarding the capabilities, sustainable development challenges demands also development of sustainable technologies (HILSON; VORST, 2002; KLASSEN; MCLAUGHLIN, 1996), demanding research and development of sustainable process (RENNINGS et al., 2006; THEYEL; THEYEL, 2000), product (RENNINGS et al., 2006) and organizational innovations (RENNINGS et al., 2006). Additionally, the literature points out also that knowledge on the following tools and concepts can also be helpful in promoting SP, such as life-cycle assessment (BRENT; C., 2005; TYTECA, 1996), analytic hierarchical process (AHP) (RUF; MURALIDHAR; PAUL, 1998), balanced scorecard (AGLE; KELLEY, 2001; HSU; LIU, 2010), modelling (CORBETT; PAN, 2002; HUMPHREYS; MCIVOR; CHAN, 2003), systems thinking (BIANCHI; COSENZ; MARINKOVIĆ, 2015; PARISI, 2013b; SEARCY; KARAPETROVIC; MCCARTNEY, 2008; YE et al., 2012; YUAN, 2012). The literature indicates also the influence of firm's maturity (previous experience with sustainability issues) on sustainability innovation (RENNINGS et al., 2006).

The next sustainable business element is represented by the firm's offering, including products and services. In this sense, integrating sustainability into business promotes firms towards innovative products (GADENNE et al., 2012) with reduced environmental burden (HUANG; WONG; YANG, 2014) and aiming for sustainable development. The last element of sustainable business relates to the contribution of the other elements to global sustainable development and, at the same time, to corporate competitive advantage. This represents the effort to promote sustainable value towards society well-being and environmental conservation, considering short, medium and long-term impacts. In this sense, sustainability reporting plays an important role in influencing perception and observability of outcomes (Chinander, 2001). For example, pollution reports may suggest more investments and reduced risks (Spicer, 1978). Another example is that the image of the company may also influence employees' reaction to organization's actions (Riordan et al., 1997).

6.5 Research conclusions, limitations and future studies

This research conducted a systematic literature review (SLR), aiming at investigating the contributions and interrelations between corporate sustainability performance (SP) approaches (measurement, management and reporting) and the integration of SP into business seeking to promote corporate contribution to global sustainable development and competitive advantage. Based on a sample with 261 papers, the research identifies the main contributions and gaps of this body of knowledge, providing also a framework for integrating corporate sustainability performance into business.

One of the research conclusions is the predominance of environmental performance publication comparing with social-focused ones, as shown in Table 2 (most cited papers) and Figure 3 (evolution of number of papers according to TBL pillars). Despite the increase of publications that discusses the three pillars of sustainability (not only environmental but also economic and social performance) observed in Figure 3, publications on social performance still represent relevant research opportunities. Future studies have potential in investigating how social performance can become more objective and tangible, which tends to contribute to better management of corporate sustainability practices (DAHLSTRÖM et al., 2003). Another conclusion presented by the present research is the potential for case studies and action researches, since they were used by only 12.3% and 0.4% of the analysed sample. These approaches are adequate to promote in-depth understanding of the research phenomenon (such as in and recommended by Mir and Rahaman, 2011).

By framing the sample into SP approaches of measurement, management and reporting, papers were grouped based on the challenge of investigating adequate indicators and system of indicators (measurement), of planning and controlling practices to contribute to SP (management) and of deeper understanding the benefits and challenges of using sustainability reports for legitimacy and improved performance (reporting). These approaches are interlinked, as shown in Table 3. Data analysis indicate that SP management tend to be predominant in comparison with the number of publication about SP measurement and reporting approaches and also suggests opportunities for future studies in the relation between the approaches shown in Table 3. Deeper understanding on how SP measurement, management

and reporting contribute to each other may provide effective and integrated solutions to improve corporate SP.

Considering that the fundamental reason for studying SP is to improve corporate sustainability, a framework for integrating SP into business, based on the assumption that this integration can promote firm's contribution to sustainable development and, at the same time, competitive advantage (Figure 6). This assumption can be tested by future studies using the conceptual framework proposed, which is composed by three aspects: (1) principles for corporate sustainability (promoting collective values to drive decision making), (2) context factors (composed by internal and external aspects) and (3) sustainable business elements (processes/practices, capabilities, offering and contributions). Considering this, the framework indicates that principles and factors influence sustainable business elements. This conceptual framework structures the main contributions collected in the paper sample and is a testable approach for future studies addressing the challenge of improving sustainability performance. Investigations on how SP is integrated into business strategy and management is not new (EPSTEIN; ROY, 1998; HALL; WAGNER, 2012; ZOLLO; CENNAMO; NEUMANN, 2013), but the proposed framework has the advantage of integrating sustainability as principles to guide decisions. This tends to be effective, since the integration of sustainability is not limited to the inclusion of social or environmental aspects into business, as previous attempts. Rather, the framework goes beyond TBL, including also stakeholder engagement and life cycle thinking as important elements for corporate sustainability. Moreover, the proposed framework integrates several business elements in the context of sustainable development, serving as a focus to seek opportunities to improve corporate SP.

This research seeks to contribute not only to SP literature, but also on the challenge of conducting a SLR. In this sense, the research method describes in detail the steps followed in this research. Despite previous publications presenting recommendation on how to conduct SLR (TRANFIELD; DENYER; SMART, 2003) and conducting SLR in the corporate sustainability field (HAHN; KÜHNEN, 2013; SCHALTEGGER; GIBASSIER; ZVEZDOV, 2013; SEURING; MÜLLER, 2008), the procedure to organize and extract conclusions from a vast availability of data still seems to demand further investigation. This challenge tends to be even more critical over the years, with the accelerated increase of a number of academic publications. SLR has,

in this context, the advantage of reducing biased literature reviews associated with the risk of limiting on papers of a specific tribe, when only references of references are consulted.

The research method and the field of study were sources of the main limitations of the study. Regarding the method, the critical step of selecting the paper sample is directly affected by the trade-off between the number of papers (comprehensiveness of the sample) and depth of analysis included in the present paper. Moreover, as any sample study, it is a representation of the whole population of papers on sustainability performance measurement, management and reporting. This is also related to the limitation related to the field of research, because the main term "performance" has a broad meaning and application in several knowledge areas, not only on organizational studies. By restricting the sample with the filter that this term had to be in the paper title, eventually, relevant papers may have been excluded. However, the idea was to make sure that the papers remaining in the sample were explicitly and primarily discussing sustainability, social and/or environmental performance. Another difficulty faced by the present research was the identification of the explicit contribution of the papers in the sample to future studies. Despite their interesting results, most of the papers in the sample fail in making explicit how their contributions connect with the body of knowledge and what are still the gaps that need to be investigated. Many indicate as a recommendation for future studies to redo the research and broaden the sample or include other industries. These are valid recommendations, but the papers miss the opportunity to make more interesting indications about the body of knowledge used as context for the research.

Despite these limitations, the research contributions of the present paper remain valid, synthesizing the literature on sustainability performance in a conceptual framework. Future studies are invited to further investigate one element (or more) of the framework, taking into consideration, at some extend, also the influence of the other elements presented. In this sense, we expect to promote academic research and practical solutions to integrate of sustainability into business, aiming at contributing to global sustainable development and also to corporate competitive advantage.

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7 #P2: Measuring sustainability in practice: Exploring the inclusion of sustainability into corporate performance systems in Brazilian case studies

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Abstract

Given the challenge of measuring corporate sustainability in practice, the aim of the present exploratory research is to investigate the incorporation of sustainability in corporate performance measurement systems, towards sustainability performance measurement system (SPMS). More specifically, the research seeks to explore the factors that affect the interaction between sustainability indicators regarding their relative priority for decision making and to investigate how firms include sustainability indicators into their corporate performance measurement systems. To address these objectives, cross-sector case studies were conducted in five firms located in Brazil. Data were collected based on semi-structured interviews and triangulated with published reports and internal documents. The results show four performance measurement systems that encompass sustainability indicators: (a) periodic performance measurement system of a specific area/department; (b) individual performance assessment; (c) sustainability reporting; and (d) project assessment. The paper value lies in bringing a structured view of integrating sustainability in a corporate performance measurement system, based on empirical evidence. However, further research is still needed to develop a more integrative and dynamic SPMS encompassing both leading and lagging indicators to better understand the priorities, interactions and tradeoffs between sustainability indicators.

Keywords: Corporate sustainability, Performance measurement system, Sustainability indicators, Tradeoffs, Case study.

7.1 Introduction

Given the limits of nature (HARDIN, 1968; HOLLING, 1986; MEADOWS et al., 1972) and the obligation to consider the needs of society (not only those of shareholders) (MARCUS; KURUCZ; COLBERT, 2010), without compromising economic dimension (ELKINGTON, 1997a), organizations are driven towards developing a more sustainable way of managing business. Several approaches to corporate sustainability have emerged to help companies face this challenge (SCHNEIDER, MEINS, 2012; LEE, 2012), particularly performance indices (Dow Jones Sustainability Index, 2008; Global Reporting Initiative – GRI, 2006) and international standards guidelines (Social Accountability – SA 8000; ISO 14000 and 26000). However, these approaches have been criticized as being merely recommendations (LEE, 2012), superficial rather than effective (FIGGE et al., 2002).

Considering that corporate performance measurement systems (PMSs), indicators and bonuses may affect their actions and decision-making (HAUSER; KATZ, 1998), any company aiming to be sustainable must develop a PMS that can incorporate sustainability performance measures, in a normatively desirable sustainable scenario (VERGRAGT; QUIST, 2011), creating a series of aligned consequences. Such a system may be useful to provide information for decision makers, to promote organizational learning and to encourage stakeholder engagement (VELEVA; ELLENBECKER, 2001). However, there is a lack of integration between sustainability performance indicators and strategic performance measurement systems (BRIASSOULIS, 2001, SCHNEIDER; MEINS, 2012). This integration is critical to incorporate sustainability into business (CRITTENDEN et al., 2011; SAVITZ; WEBER, 2006), aligning environmental and social objectives with business strategies (FIGGE et al., 2002a). A few strategic PMSs, such as sustainability balanced scorecards (BSCs), have been proposed (Epstein, 2008; Figge et al., 2002, Langfield-Smith et al., 2009), but the sustainability perspective is not widely used in BSCs (Tung et al., 2012).

In this context, the aim of the present exploratory research is to investigate the integration of sustainability into corporate performance measurement systems, towards a sustainability performance measurement system (SPMS). In this research the understanding of PMS is that it is not restricted to a list of indicators (Neely et al., 1995), but the interaction between them is also relevant for decision making in firms.

Accordingly, the specific objectives of the present exploratory research are twofold. The first research objective is to empirically explore the factors that affect the tradeoffs between sustainability indicators, influencing priority between them, concerning economics, social and environment dimensions. The second research objective is to investigate how firms include sustainability indicators in their corporate performance measurement systems. The relevance of this objective is justified by the challenge to consider not only the economic indicators, but also to integrate environmental and social ones in the performance systems that are currently being used by firms.

With the research objectives in mind, cross-sector case studies were conducted at five firms operating in the areas of agribusiness, capital goods, engineering design, cosmetics, and chemical/petrochemical products. Data were collected based on semi-structured interviews with managers from the sustainability area and other areas relevant to each business, making a total of fifteen interviews. Based on a broad sense of sustainability, the present paper is not restricted to initiatives with environmental goals, also encompassing initiatives with social benefits. Moreover, since the research focuses on corporate performance measurement systems, the intention was to build a general picture of how the firms measure their TBL performance, in order to manage their business. Therefore, the paper is not focused on a specific product or on industrial operations, but on performance measurement for management decision making.

7.2 Literature review

7.2.1 Challenges of corporate sustainability

The triple bottom line concept (TBL) proposed by Elkington (1997) considers that a sustainable firm has to take into account the interrelationship between the three pillars (economic, environmental and social) in its decision making process. Underpinned by a comprehensive literature review, Bolis et al. (2014b) go beyond TBL and highlight the importance of an axiological perspective of sustainable development, translated into moral and ethical values that incorporate collective drivers (instead of solely individual interests) in decision-making processes. Thus, sustainability should be disseminated in every business process throughout the organization. Several publications deal with the incorporation of sustainability in

specific aspects of business, such as innovation (MORIOKA; SAITO; YABAR, 2006; NIDUMOLU; PRAHALAD; RANGASWAMI, 2009), supply chain management (RAO; HOLT, 2005; VACHON; KLASSEN, 2008), operations management (ANGELL; KLASSEN, 1999; JIMÉNEZ; LORENTE, 2001; KLEINDORFER; SINGHAL; VAN WASSENHOVE, 2005), product development (NIELSEN; WENZEL, 2002; THIERRY et al., 1995), integrated management systems (GONZALEZ-BENITO; GONZALEZ-BENITO, 2005; JORGENSEN, 2008), project management/ecodesign (BRONES; CARVALHO; ZANCUL, 2014; BRONES; CARVALHO, 2014) and ergonomics (BOLIS; BRUNORO; SZNELWAR, 2014). The integration and coordination of business processes aligned with sustainability is fundamental to achieve effective results and can be enabled by a solid strategy aligned with sustainability principles (CRITTENDEN et al., 2011; HUBBARD, 2009; PORTER; KRAMER, 2006) and an adequate sustainability performance measurement system (AZAPAGIC, 2004; FIGGE; HAHN, 2004; LABUSCHAGNE; BRENT; VAN ERCK, 2005; VELEVA; ELLENBECKER, 2001). Thus, there is still challenge to corporate sustainability regarding the integration of sustainability into the business strategy (GOND et al., 2012).

The inclusion of internal and external stakeholders needs, constraints and influences leads to a link between corporate sustainability and stakeholder theory (EPSTEIN; WIDENER, 2011; HILLMAN; KEIM, 2001; PELOZA; SHANG, 2011). The main idea of this theory is to consider the effects of decisions on other stakeholders and the potential impact that other stakeholders have on the decision-maker (FREEMAN, 1984). Lee (2012) claims that this context can force companies to consider sustainability more seriously. In some situations, the firm is able to obtain a win-win relationship between sustainability pillars, also known as sweet spots (SAVITZ; WEBER, 2007). Yet when this is not the case, organizations have to deal with tradeoffs, considering that resources are limited and priorities are to be defined. Tradeoffs can be seen as compromises made by managers, which cannot be eliminated (only overcome), depending on the resource and/or capability engagement (SILVEIRA; SLACK, 2001). Furthermore, the authors point out the aspect of sensitivity of tradeoffs, measuring the intensity with which one aspect impacts the other. When it comes to the sustainability objectives of firms, managers are confronted with several tradeoffs, since firms face the challenge of reconciling

different (and usually conflicting) interests in business management (AZAPAGIC; PERDAN, 2000).

Several authors have investigated the cause-and-effect relationship between aspects related to sustainability, and their findings indicate that environmental and social performance are not necessarily associated with economic performance. On the one hand, Dowell et al. (2000) found evidence that American firms under more stringent environmental regulations have higher market values. Accordingly, Rao and Holt (2005) found that the green supply chain management can be related with competitiveness and economic performance. Empirical evidence of a positive correlation between the social and economic pillars of sustainability is also discussed in the literature (CALLAN; THOMAS, 2009; VITEZIĆ, 2011). In their statistical research, Lo and Sheu (2007) found empirical evidence that corporate sustainability (regarding TBL performance) can be associated with market value. At the same time, López et al. (2007) found evidence of the negative short-term impact of CSR on the performance of firms listed in the Dow Jones Sustainability Index (DJSI), compared to firms listed in the Dow Jones Global Index (DJGI). This demonstrates that the relationship between socio-environmental initiatives is not always associated with economic performance. Furthermore, investments in environmental and social initiatives cannot always be related to economic rewards. Intangible aspects such as customer satisfaction, employee engagement, corporate image and reduced risks are relevant for firms (SAVITZ; WEBER, 2007), but are more difficult to quantify in terms of monetary value. The statistical analyses of the relationship between sustainability indicators tend to use control variables, which can influence these relationships. Some are pointed out as follows: firm’s size (CALLAN; THOMAS, 2009; DOWELL; HART; YEUNG, 2000; LO; SHEU, 2007), leverage (DOWELL; HART; YEUNG, 2000; LO; SHEU, 2007), profit and sales (LO; SHEU, 2007), investment level (CALLAN; THOMAS, 2009; LO; SHEU, 2007), research and development investments (CALLAN; THOMAS, 2009; DOWELL; HART; YEUNG, 2000), advertising intensity (CALLAN; THOMAS, 2009; DOWELL; HART; YEUNG, 2000), and multinationality (DOWELL; HART; YEUNG, 2000).

7.2.2 Sustainability performance measurement systems

The literature on PMS has been intensively discussed since the 1990s (NEELY, 2005). PMS can influence corporate results, since it directly impacts managers' actions and decisions (HAUSER; KATZ, 1998). PMS is more than a list of performance indicators, since it also requires an understanding of the cross-impacts between indicators themselves, as well as the consolidation of the infrastructure needed to acquire, collate, sort, analyze, interpret and disseminate data (BITITCI et al., 2000; NEELY, 1998). Indicators that are strictly financial do not suffice to evaluate a firm's performance and must be balanced (KAPLAN; NORTON, 1992), requiring a multidimensional framework that considers internal and external aspects (AZZONE; MASELLA; BERTELE, 1991; KEEGAN; EILER; JONES, 1989), leading (determinant) and lagging (outcome) indicators (FITZGERALD et al., 1991) and stakeholders needs/contributions (NEELY; ADAMS; CROWE, 2001). Furthermore, PMS must be linked to corporate vision, strategy (KAPLAN; NORTON, 1992; LYNCH; CROSS, 1991; NEELY; ADAMS; CROWE, 2001), capabilities and business processes (NEELY; ADAMS; CROWE, 2001).Companies aiming to be sustainable must face the challenge of incorporating sustainability into their corporate PMS, i.e., face the challenge of design SPMS. SPMS can be defined as the "system of indicators that, in the short and in the long term, provides the corporation with information necessary to assist in the management, control, planning and performance of its economic, environmental and social activities" (SEARCY, 2012, p. 240).

In this regard, the literature presents several frameworks for measuring sustainability in firms, which can be divided into three categories. The first category classifies sustainability indicators, encompassed by frameworks that generally focus on GRI indicators, which are based on the TBL pillars (such as Labuschagne et al., 2005; Schneider and Meins, 2012). Interesting contributions of these publications include the consideration of social initiatives in the institutional role of organizations (LABUSCHAGNE; BRENT; VAN ERCK, 2005) and the challenge to develop sector-specific indicators, characterized by a modular approach of sustainability indicators (AZAPAGIC; PERDAN, 2000). Moreover, Schneider and Meins (2012) propose two dimensions: (i) current sustainability performance (present approach) and (ii) sustainability governance (future tendency).

The second category of frameworks suggests a sequential process for SPMS (Table 1). These frameworks underscore the importance of continuous improvement (CHEN; CHIOU, 2008; CHEN; LIU; LEU, 2006), the need for coordination between initiatives (BALEZENTIS; BALEZENTIS, 2011), the possibility of using decision analysis (EROL; SENCER; SARI, 2011), and the need to systematically involve stakeholders (VALDES-VASQUEZ; KLOTZ, 2013).

Table 1 – Frameworks that suggests a sequential process for sustainability indicators.

Dimensions	Characteristics	Literature
Cyclic sequence of activities related to the planning, implementation and control of actions, based on management by results and according to sustainability criteria	Applied to environmental issues	Chen et al. (2006); Chen and Chiou (2008)
Open method of coordination for implementation of the strategy of the European Union - selection of goals according to clusters of countries - mutual learning (transfer of best practices) - definition of structural indicators suitable for supporting sustainable development - use of benchmarking to distribute support effectively (especially financial)	Focus on coordination for sustainable development	Balezentis and Balezentis (2011)
Multi-criteria framework based on fuzzy entropy and fuzzy multi-attribute utility (FMAUT): - Construction as an indicator set with respect to sustainable supply chain - Collecting data - Using fuzzy entropy to determine the weights of indicators - Employing FMAUT to measure sustainable supply chain performance - Alert management system for indicator analysis	Applied to supplier selection	Erol et al. (2011)
- Approach (stakeholder engagement, project considerations) - Assessment (health impact assessment, social impact assessment) - Desired results (sustainable outcomes, follow-up plans)	Focus on social sustainability in construction projects	Valdes-Valez and Klotz (2013)

The third category of frameworks focuses on cause and effect aspects for SPMS (Table 2). This literature discusses aspects that must be addressed to attain a given sustainability objective. Some of the literature is based on the framework proposed by the OECD (1993), which encompasses three type of indicators: pressure (how society is modifying the environment), state (status of the natural environment, based on qualitative and quantitative criteria) and response (how society is responding to pressures and state).

Table 2 – Frameworks of cause and effect aspects for sustainability management

Dimensions	Characteristics	Literature
PSR framework: Pressure, State and Response indicators	Used as basis by Lundberg et al. (2009) and Rudd (2004)	OECD (1993)
DPSIR framework: - Driver indicators - Pressure indicators - Impact indicators - State indicators - Response indicators	Based on the PSR framework	Smeets and Weterings (1999)
DSR-HNS framework: - Driving force indicators - State indicators (including human, nature and electric energy system) - Response indicators	Framework for Electric Energy Systems Based on the PSR framework	Meyar-Nami and Vaez-Zadeh (2012)
Three alternatives for adaptation of the BSC: - Integration of environmental and social aspects to the four original perspectives - Introduction of a fifth perspective related to non-market aspects - Deduction of a derived environmental and social scorecard	Based on BSC	Figge et al. (2002); Hubbard (2009) and Yongvanich and Guthrie (2006)
- Independent variable: firms DNA (ideology, capabilities, social engagement) - Dependent variable: performance management (social and financial performance) - Moderator variable: stakeholder involvement	Market-oriented	Crittenden et al. (2011)
- Characteristics (context, firm and supply chain) - Strategies (defensive and offensive) - Activities - Performance	Implementation of sustainability in supply networks from an innovation perspective	Van Bommel (2011)

Despite these efforts to propose frameworks, various gaps remain and companies still face the challenges of dealing with sustainability in business performance at a practical level. These frameworks still lack a comprehensive integration with strategic maps and value creation (SCHNEIDER; MEINS, 2012). Although the frameworks for sustainability measurement involve a few strategic approaches, such as sustainability Balanced Scorecards (BSCs) (EPSTEIN, 2008; FIGGE et al., 2002a), a recent survey revealed that the sustainability perspective is relatively little applied to BSCs (TUNG et al., 2012). This seems to indicate that sustainability is still measured as a system separate from that of corporate PMS.

7.3 Research methods

Given the lack of research body on SPMS, there is need for exploratory research to develop new insights (KARWAN; MARKLAND, 2006). We propose an exploratory case-based research, which is indicated as a contribution to theory building (EISENHARDT, 1989) and the most suitable research method to our objectives. To investigate the objectives, we present five multisectoral case studies.

7.3.1 Sample characterization

Eisenhardt (1989) suggests that selection criteria for the case studies should be well defined, considering the intentional choice of the case to be analyzed. Accordingly, the cases were selected based on the following criteria: (a) strategic relevance of sustainability, proven by means of external documentation such as mission, values, and sustainability reports; (b) high relevance of the company's performance (excellence in terms of actual business); (c) the existence of a formal area of sustainability: and (d) the organizations must operate in different economic sectors, in order to shed light on which sustainability issues transcend the sectoral contexts of the business ecosystem and those that are specific to it, acting as a moderator variable of the study, and (e) access to certain internal documents and to internal stakeholders pertinent to the research objective.

Based on these criteria and Eisenhardt's (1989) recommendation to use from four to ten cases, studies were conducted in five relevant companies located in Brazil, from different sectors. . A pilot case was developed aiming at improving the quality of the research instrument as suggested by the literature (EISENHARDT, 1989). This pilot case was conducted at AGRO, the Brazilian subsidiary of an American multinational company operating in the agribusiness sector. This case was instrumental in bringing the language and perceptions of the literature to the reality of companies. This allowed for a better access to relevant information from the interviewees for the exploratory cases. For confidentiality purposes, the firm's real name has been disguised. Table 3 describes the main characteristics of the four exploratory case studies.

Table 3 – Companies and areas interviewed

Company	Sector	Number of interviewees	Areas interviewed	B2B or B2C	Level of the GRI report (2012)
CAP	Capital goods	4	Sustainability HSE Quality Project Management Office	B2B	B
ENG	Engineering projects	3	Social Responsibility Management Systems HSE	B2B	A
CHEM	Chemical and petrochemical	4	Sustainability Social Responsibility Innovation Project Management Office HSE	B2C	A+
COSM	Cosmetics	3	Sustainability Management Systems Innovation (Ecodesign)	B2B	A+

7.3.2 Data collection and research instrument

The main data source instrument is a semi-structured questionnaire used to collect interviewees' perceptions. At least 3 interviews were conducted per case study, as recommended by Voss et al. (2002) in researches for which no person has the all the knowledge needed. Given their relevance to each case core business and to social and to environmental issues, the following areas were contacted throughout the case studies: Sustainability, HSE (Health, Safety and Environment), Management Systems, Social Responsibility, Project Management Office and Innovation (see Table 3). Each interview was recorded, transcribed and sent to the interviewee for validation, whenever possible, as suggested by the literature (VOSS; TSIKRIKTSIS; FROHLICH, 2002), and the interviewee's responses were triangulated from the other actors.

The interviews are structured into three main stages. The first is the discussion on the concept of corporate sustainability, aligning the understanding of the term between the interviewee and the interviewer. The second stage is focused on the tradeoffs between sustainability indicators. Using cards containing the sustainability indicators, most commonly found in the most widely used models of each of the three pillars of sustainability within the normative and Brazilian context (GRI, ISO 14000, ISO 26000, OHSAS 18000, the Brazilian Ethos Institute, and Social Audit), the

interviewees' task was to rank the indicators in terms of importance to their organization (not to their specific area). As for economic indicators, the most common ones were considered: net income, administrative expenses, and operating costs. Then, the next task consisted in assigning 170 points (in terms of importance) to the previously ranked 17 indicators, in order to obtain evidence about the relative importance (or distance) between the indicators. More relevant than the quantitative result itself, this stage is intended to serve as a basis to discuss the factors that influence the relative importance between the pillars of sustainability. The third stage of the interview is composed of questions that were directed to the description of corporate performance measurement systems, including main indicators, roles/responsibilities involved in the performance measurement system processes of planning, implementation and use (BOURNE et al., 2000). The interview led to what the firm is doing to incorporate the measurement of sustainability performance, including social and environmental indicators. Throughout the interview, challenges related to SPMS were also identified.

Seeking to preserve the rigor of the research, data should be collected from multiple sources, as suggested by the literature (FLYNN et al., 1990; VOSS; TSIKRIKTSIS; FROHLICH, 2002). An extensive review of archival data was performed. The key documents analysed were the following: published sustainability reports, internal documents with roles and responsibilities on sustainability, ISO14000 manual and related documents, OHSAS 18000 manual and related documents, company balanced scorecard or other performance measure system document, and company website. The document analysis was performed before interviews to facilitate the dialogue with interviewees, allowing identifying compatible language and jargon of the company, and particularly allowing the triangulation of interviewee’s response from the document analysis.

7.3.3 Data analysis

The interviews were analyzed qualitatively through iterative coding into the major theme formalized by the research objectives. Similarly, the document analysis was performed. As part of our coding and analysis process, the authors travelled back and forth between analysis, collection and extant studies, hence facilitating theory building (MILES; HUBERMAN, 1994). The rich datasets were summarized and written up as case reports in which the qualitative data were processed using

descriptive statements to create a bridge from the qualitative evidence to theory, the main aspects of which were codified (EISENHARDT; GRAEBNER, 2007; MILES; HUBERMAN, 1994).

In multiple cases, the analysis should explore similarities and differences across cases towards theoretical generalizations. For Ketokivi and Choi (2014) the essence of case research is the duality of being *situationally grounded* and seeking *a sense of generality*. Thus, in this research the qualitative data analysis began with a within-case analysis, exploring the uniqueness of each case study the context, followed by a cross-case analysis (MILES; HUBERMAN, 1994). The cross-case analysis was performed in three aspects aligned with research objectives as follows: sustainability performance measurement systems, moderating factors of the priorities of the indicators, and context of sustainability.

7.4 Results and discussion

This section presents and analyzes the main evidences collected in the case studies, discussing them based on the literature.

7.4.1 The context of the case studies

Three aspects of sustainability definition were identified in the case studies: long term survival, stakeholder management and alignment with business. Some statements to illustrate these aspects are shown in Table 4. The case studies show that the companies understand that sustainability has to do with surviving in the long term and, to achieve this, they must be able to conduct their business operations taking into account the needs and interests of various stakeholders (both internal and external). Although the companies operate in different sectors, they have a similar understanding about the concept of sustainability, one that is not restricted to the TBL concept (ELKINGTON, 1997b). While Table 4 brings illustrative statements that represent the aspects of the concept of sustainability for the case studies, Table 5 shows the deployment of identified aspects in each case study.

Table 4 – Aspects of sustainability in the cases under study

Aspects	Description	Examples of statement
Temporal	Reconcile short versus long-term challenges to the company's survival	*"[Sustainability] is meeting the needs of all stakeholders today and in the future"* (Manager of Social Responsibility – ENG) *"[Sustainability is acting] thus contributing to the company's survival and to a better world"* (HSE Engineer – CAP)
Stakeholders	Understand and integrate the needs and interests of the various stakeholders (internal and external)	*"[Sustainability] is meeting the needs of all stakeholders today and in the future"* (Leader of the Area of Social Corporate Responsibility – CHEM) *"Sustainability is about being responsible and playing collectively"* (Engineer of the Directorate of Management Systems – ENG) *"Dialogue with stakeholders to demonstrate the company's commitment, even if the actions have a medium to long-term result, is critical to the success of the process."* (Sustainable Development Manager - CHEM)
Business	Potentiate the actions of sustainability with the company's business and vice versa	*"Sustainability should not be an afterthought, but should be incorporated into the company's business."* (Manager of Social Responsibility – ENG) *"The goals [of sustainability] should be tied directly to the business in order to focus efforts."* (Manager of the Emissions Area - Sustainability Directorate – COSM)

Evidence from the field showed that corporate sustainability means not only to survive in the long run, but also to consider the needs and interests of the various stakeholders. This is aligned with the connection pointed out by the literature between corporate sustainability and stakeholder theory (EPSTEIN; WIDENER, 2011; HILLMAN; KEIM, 2001; PELOZA; SHANG, 2011) and shows that firms have the explicit effort to incorporate internal and external stakeholders needs in their business. This was evident not only in the interviews, but also in the sustainability reports promoted by the case studied. The main stakeholders pointed out by the firms' disclosures are shown in Table 5 (second line). Another stakeholder that does not appear as an explicit stakeholder in the discussion of sustainability, but is fundamental to the business survival, is the stockholder/shareholder.

Table 5 – Summary of the cases: context of sustainability.

Characteristic	CAP	ENG	COSM	CHEM
Temporal: Long-term survival	Support for the development of solutions to global megatrends	Strategic drivers include Social and environmental responsibility Awareness of the responsibility for the consequences of the implementation of their projects	Sustainability DNA since its foundation Use of Amazonian biodiversity Leadership in sustainability-related issues	20-20 vision of leadership in the sector. It consists of its strategic pillars and the goals for each pillar to be achieved until year 2020
Stakeholder: Consider the needs and interests of the various interested parties (internal and external)[1]	Employees Customers Suppliers and service providers Trade Unions and Class Associations Surrounding Community Society Academia NGOs	Employees Customers Suppliers and service providers Society NGOs	Employees Consultants Customers Suppliers Local institutions Representatives of the Amazonian community	Shareholders/ Investors Customers Community Suppliers Employees Academia Mass media Government NGOs
Business: Potentiate the actions of sustainability with the company's business and vice versa	Focus on promoting and improving its environmental portfolio Internal eco-efficiency (operating with a lower environmental impact) Philosophy of zero accidents	Incorporation of innovations in the project to reduce social and environmental impacts during the construction and operation of the planned project	Use of the Amazonian biodiversity High capillarity made possible by the team of consultants to disseminate the culture of sustainability among customers and society	Focus on sustainable chemistry (products and processes), including renewable raw material and chemical safety

Moreover, empirical evidence also shows that firms have the same perception as the literature (CRITTENDEN et al., 2011; HUBBARD, 2009; PORTER; KRAMER, 2006), confirming the importance of incorporating sustainability into business (and vice versa). The idea is that sustainability initiatives make sense to the organization only if they are aligned with its operations and strategies. For example, the Social Responsibility interviewee that belongs to ENG pointed out that they decided to reduce their investment on ballet presentations in theatres and, instead, intensify their financial support to initiatives directly related to education. He said that it is not that culture is not important, but more synergy and benefits are perceived from investing in enlightening the community about an important construction of theirs. Other examples from the case studies are the investment in technology and supplier development to produce products with higher energy efficiency (CAP) and the proximity to the academia for training skilled labour (CHEM). During the interviews, no clear distinction was identified between the terms sustainability and sustainable development.

7.4.2 Priority between sustainability indicators

In order to better understand the context of the case studies regarding sustainability issues, a brief dynamic related to the relative priority between sustainability indicators was conducted during the interviews. Figure 1 summarizes the relative weights of the responses given by the other interviewees. It should be kept in mind that the interviewees considered all the sustainability aspects important and that these data were collected based on individual perceptions and do not necessarily represent a formal position of the organization. This step enables one to perceive the distance between the indicators in terms of their importance to the organization as a whole. Note that the ethics issue was considered separately, as the most important factor (see Figure 1). This is followed by the relevance of net income, which is considered the minimum factor for the survival of the company operating ethically. The environmental issues were given an average or below average rating, with very similar values. It is also evident that the companies seek to distance themselves from specific political parties, but CHEM, in particular, understands its role in society influences public policies to ensure their greater strictness in preserving the environment and to favour society.

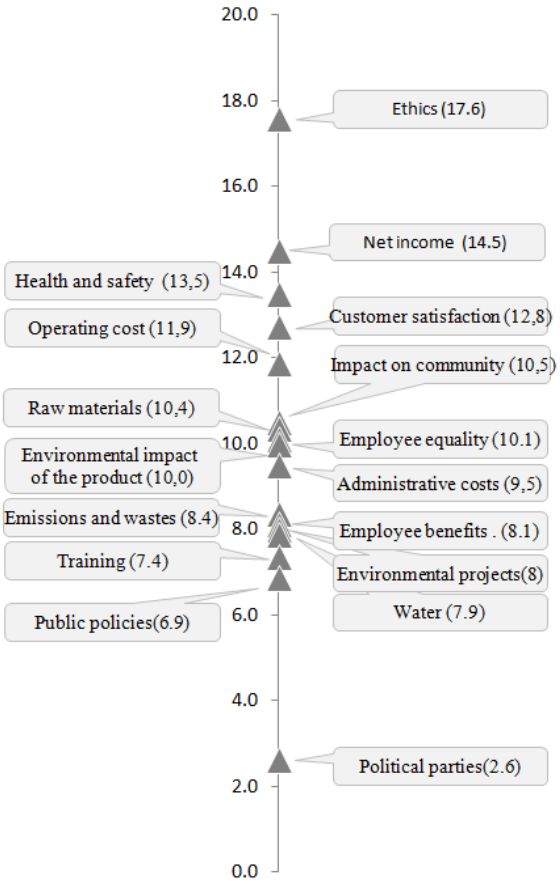

Figure 1 – Mean relative weight of sustainability indicators.
**Note: This data was collected based on individual perceptions and do not necessarily represent a formal position of the organization.*

Given the limited number of interviewees, and although it is interesting, the main objective of this phase of the study was not to obtain the quantitative result of the ranking, but rather to engage in a discussion with the companies about the factors that interfere whith this relative importance. Thus, the four moderating factors were identified, impacting the sensitivity of the tradeoffs (SILVEIRA; SLACK, 2001). Some statements to illustrate the above mentioned factors are presented in Table 6.

The first factor identified in the interviews that influences the sustainability tradeoffs is the precondition, representing that fundamental factors for operation are a priority in terms of the different goals towards corporate sustainability. One prerequisite for further operations of COSM is the increase of production in order to follow the firm's product demands. Hence, they have made efforts to build a new industrial field that is designed to promote industrial symbiosis. The literature (such as LO; SHEU, 2007) is aligned with the interviews (Figure 1), pointing out that sales and profit are also requirements for business survival and, therefore, influences the relationship

between sustainability indicators. Regarding the second factor identified in the case studies, it was verified that the past experience of the issue also influences sustainability tradeoffs, representing factors related to organizational culture and history. The better and more experienced the firm is in dealing with certain aspects, the more consolidated the subject is, resulting in more evidence of sustainability disclosure and management efforts. In the literature that discuss the relationship between sustainability indicators, no publications was found, indicating the presence of this factor.

Table 6 – Moderating factors of the priorities of the indicators

Moderating factors	Description	Examples of statements
Precondition	Fundamental factors for operation	*"Ethics is fundamental, nothing works without ethics."* (PMO Manager – CAP) *"We are concerned mainly about our employees, since the processes depend on them."* (Leader of the Quality Area – CAP) *"Health and safety are non-negotiable."* (PMO Manager – CAP) "Here one does not question whether it is a legal requirement or involves a risk to the employee, even if it ends up increasing the cost." (HSE Manager – ENG)
Past experience	Factors related to organizational culture and history	*"The environmental issue ranks higher, simply because it came before in [ENG], it is more entrenched."* (HSE Manager – ENG)
Corporate strategy and individual bonuses	Connection with strategy and bonuses	"*The first set of indicators corresponds to the indicators included in the bonus"* (Manager Area of Emissions – Office of Sustainability – COSM) *"We created the form [selection of innovation projects] according to what [CHEM] understands as sustainability,"* i.e., acting on the three strategic fronts listed in the sustainability report of CHEM. (Innovation PMO Specialist – CHEM)
Urgency	Factors that require more effort on the part of the organization and that vary over time	*"Well resolved matters do not need indicators."* (Engineer of the Board of Management Systems – ENG) *"Emissions and water consumption are not such a priority because they are matters already well dealt with at CHEM, [...] but they are vital for the company to evolve in other fields. If they reach a critical level, they may end up being as important as cost and income."* (Leader of the Area of Corporate Social Responsibility – CHEM) *"Employee equality is a topic that is not under critical discussion at this time. But one cannot set goals and we do not have stakeholders concerned with this issue."* (Social Responsibility Manager – ENG)

Corporate strategy and individual bonuses can also influence the priorities between sustainability issues. The strategic concern for sustainability issues is also present in the sustainability reports, corporate websites and other published documents of each case study. The strategic importance can be associated with advertising investments intensity, which was verified to influence the relationship between sustainability indicators by the literature (CALLAN; THOMAS, 2009; DOWELL; HART; YEUNG, 2000). For example, in ENG, eco-efficiency and technological solutions for society in their construction projects have been present since the foundation of the firm, since this guideline was declared in the foundation letter of the firm, making evident the strategic character of sustainable innovation. Moreover, the explicit strategy of CHEM of being the leader in the sustainable chemical industry also makes the solutions for sustainable chemistry fundamental priority for this firm. Lastly, urgency was also identified as a factor for sustainability tradeoffs, highlighting that internal or external temporal pressure can also modify the priorities for sustainability concerns. It is worth noting that multinationality (DOWELL; HART; YEUNG, 2000) and industrial sector (CALLAN; THOMAS, 2009; LO; SHEU, 2007) were also pointed out by the literature, but were not specifically found in the case studies.

Regarding this part of the research protocol, two interviewees (one from the Management Systems area in ENG and the other from the sustainability area are in CHEM) chose not to participate in the dynamic proposed by the interview to rank sustainability indicators according to priority. Both of them argued that the proposal of the research protocol made no sense, since all the indicators are important to the company and are related differently (not in order of relevance), for example, in terms of cause and consequence, such as the classification of leading and lagging indicators (Kaplan and Norton, 1996) or in terms of aggregation (strategic) and breakdown (operational). It is interesting to note that the two interviewees mentioned were in a position of supporting their respective firms in the promotion of corporate initiatives aligned with sustainability, based on a broad view of the firm and of sustainable development. Both cases were isolated within their respective organizations. The other interviewees of each case study showed no additional problem for conducting this part of the interview, as compared with the other case studies.

Interestingly, the interviewees who participated in this dynamic demonstrated difficulty in ranking the indicators, such that, in some cases, in the step of assigning relative weights, they ended up by modifying the ranking. This evidences that even the same person may not necessarily give only one answer and that it depends on the context. This result also reinforces the difficulty in understanding corporate sustainability in practice, including the difficulty in prioritizing and managing sustainability goals (such as EPSTEIN: WIDENER, 2011; GLAVIČ; LUKMAN, 2007) and context dependent (such as LOZANO, 2012; SEARCY, 2012).

7.4.3 Sustainability performance measurement systems

Based on the empirical evidence, we can see that there are efforts to measure sustainability performance systematically, but they are still incipient and have strong potential for further developments. Four performance measurement systems with sustainability traces were pointed out by the interviewees: PMS for a specific organizational area/department, employees' individual PMS (used as basis for periodic bonus), system of sustainability indicators for external communication (sustainability reports), and an initial project assessment system (applied early in the project life cycle). Table 7 describes the characteristics of the systems for each case. The four SPMS identified in the case studies that try to incorporate sustainability performance tend to be closer to the first category of frameworks pointed out in Section 2.2 (Sustainability performance measurement systems). This category does not emphase the cause and effect relationship between the indicator or is focused on sequential processes for managing sustainability indicators. Instead, this category highlights the classification of sustainability indicators, based on the TBL/GRI pillars (such as in Azapagic, 2004; Labuschagne et al., 2005; Schneider and Meins, 2012).

The system of performance assessment indicators for areas varies not only from one company to the other, but also from one area to another in the same company. This is because the way in which managers evaluate critical points in the progress of their areas' activities depends on the nature of their operations, since PMS depends directly on the business process (NEELY; ADAMS; CROWE, 2001). The literature also points out the importance of linking PMS and business strategy (KAPLAN; NORTON, 1992; LYNCH; CROSS, 1991; NEELY; ADAMS; CROWE, 2001). Accordingly, in the case studies, performance assessment of the areas is directly linked to strategic planning, including top-down deployed targets, which are

Table 7 – Summary of the cases: sustainability performance measurement systems.

System	CAP	ENG	COSM	CHEM
PMS for a specific organizational area	Deployment of corporate goals (*top down*) complemented with indicators specific to the area's activities Monthly follow-up meetings	Deployment of strategic drivers Strategic projects (multidisciplinary) for the promotion of discussions on sustainability in the company Upcoming challenges: proactive indicators (demonstrate the added value of innovative solutions that contribute to sustainability)	Corporative BSC including sustainability indicators Monthly follow-up meetings attended by the area of sustainability (encourage integrated and multidisciplinary discussions)	Periodic monitoring of the operation with the participation of the area of HSE and e de Sustainable Development Challenge: Develop social indicators that are reliable, measurable and possible to operationalize, translating the social impacts of the company
Employee's individual PMS	Criteria agreed upon between the leader and the led, based on the area's goals and the individual's specific activities	Criteria: customer satisfaction, safety, environment, climate research, financial results, sales, behavioral results (360 degree assessment) and specific performance of the area	Criteria inspired on indicators of the GRI report, on the strategic objectives of the BSC and on the specific evaluation system of the areas. Includes income, profits, reduction of the environmental impact of the product, customer satisfaction, climate research and health & safety	Depends on the actions and responsibilities of each individual Challenge: promote the dissemination of sustainability in all the positions of the company by means of specific indicators for the activities
System of sustainability indicators for external communication (sustainability reports)	Annual internal eco-efficiency report GRI report	GRI report: Challenge in classifying and organizing the indicators pertaining to more than one topic in the report	GRI report: Challenge in intercorrelating sustainability indicators to justify the company's performance	Constantly improved GRI report monitoring the growth in sustainability maturity Monthly internal reports sent to executives, summarizing the performance of production units and the status of improvement actions
Initial project assessment system	Promotion of projects that contribute to the company's environmental product portfolio	Business opportunity assessment tool based on the TBL	Development of processes to systematize the search for technologies that potentiate contributions to the environment and the community	A tool under development for new product designs A consolidated tool for assessing new ventures

complemented by goals specific to the nature of the area activity. For instance, the HSE area of the CAP case is more mature in terms of the culture of monitoring indicators and defining action plans. This is because its activities are tied directly to management and certification systems, which require the systematically monitoring critical matters at various manufacturing locations. Therefore, this area is qualified to assess its performance using a well structured tool (the BSC), holding regular meetings to address critical issues, including the company's indicators of health, safety and environment. In this case, the operation area itself is directly connected to the external environmental and social pillar of sustainability. On the other hand, in the case of the monthly performance assessments of an operations area of the COSM company, such as that of a particular product group, the area of sustainability also participates, stimulating integrated discussions among the areas. In this case, the result of productivity (which assesses the percentage of money to be sent to the consultant) is also discussed from the standpoint of the carbon emission target and freight cost.

The employees' individual performance system can also be considered fairly aligned with sustainability guidelines, incorporating indicators pertaining not only to the economic pillar, but also to the environmental pillar and the internal and external social pillar. This logic is aligned with the rationale pointed out by the literature (HAUSER; KATZ, 1998) that indicates that PMS can influence corporate results, due to its direct impact on managers' actions and decisions. For instance, the COSM system considers for employees' health and safety targets, customer satisfaction, organizational climate survey, and other goals. In other words, the employees are stimulated to seek not only financial goals, but also other goals related to the social and environmental sustainability pillars. A local community impact indicator is also being considered for certain job positions that deal with this issue at the CHEM company. The challenge, however, is to identify a suitable indicator to reflect this impact, and the company eventually only makes indirect assessments in terms of the efforts invested in this issue.

For external and internal communication, the companies in this study prepare annual reports based on GRI guidelines. These disclosures are aligned with the first category of SPMS (such as in AZAPAGIC, 2004; LABUSCHAGNE et al., 2005; SCHNEIDER; MEINS, 2012). That is because, as pointed out in the interviews of the

case studies, the sustainability reports are still incipient and do not provide an integrated view of the firm in terms of sustainability. Different TBL indicators are complied in the report, separated in chapters according to a specific theme, but it is hard to understand the cause-and-effect relationship between the indicators. Some of the indicators included in the report are already monitored regularly by the organization, but they may be added or calculated in different ways. Ideally, internal and external indicators should show the highest possible synergy, reducing rework and ensuring information consistency. However, this is not always possible or appropriate. Data collection is decentralized, highlighting the multidisciplinary challenge of issues concerning to sustainability. The interviewees also pointed out the complexity of the report, since a given indicator may be associated with more than one topic of the report. To exemplify, discussions about the environmental product portfolio are linked both to environmental impact reduction and to increases in company earnings.

Finally, initial project assessment measurement systems considering sustainability criteria were also identified in the field study. Given the strategic relevance of project portfolio (COOPER; EDGETT; KLEINSCHMIDT, 1999), firms that seek to incorporate sustainability in their strategy need to be concerned with the projects they choose to invest in. Each case of this study has its own way of dealing with this issue. CAP focuses on the choice of projects that foster its green portfolio. ENG, on the other hand, has a tool based on the TBL logic, which has been undergoing improvements in recent years, to evaluate customer proposals and to contribute to commercial negotiations. COSM has an area that focuses on the development of technologies even before they become products, based on the logic of eco-design. Lastly, CHEM has an area of corporate innovation that is under approval to deploy a form in addition to that of business and technical information, comprising indicators aimed at its long-term vision as a leader in sustainable chemistry. Thus, companies assess their efforts, seeking to evaluate not only their financial return but also the environmental and social impacts of their activities.

7.5 Conclusions and limitations

By investigating the incorporation of sustainability into corporate performance measurement systems, towards a sustainability performance measurement system

(SPMS), the research provides several contributions to both theory and practice. One of the research contributions is related to the delimitation of the concept of sustainability. Although a number of publications present interesting debates on the concept (such as Bolis et al., 2014; Hopwood et al., 2005; Lozano, 2008), its definition is still not completely clear (GLAVIČ; LUKMAN, 2007; LINDSEY, 2011) and the understanding of different authors can even be ambiguous (GLAVIČ; LUKMAN, 2007). Addressing this issue, the research found evidence of alignment between the literature and a practical approach to sustainability. The case studies pointed out three main aspects related to the concept. The first is the issue of time frame, dealing with short-term vs. long-term challenges towards the company survival. This temporal aspect is also explicitly discussed by the literature such as in the World Commission on Environment and Development (1987) and Lozano (2008). The second aspect of sustainability identified in the case studies is the relevance of managing relationships with stakeholders, understanding and integrating the stakeholders' needs and values (also discussed for example in Perrini and Tencati, 2006; Sprengel and Busch, 2011). The third aspect reinforces the integration of sustainability into the firm's core business (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013). The alignment of understanding between academics and practitioners is an interesting evidence, reinforcing the validity of the academic view of sustainability and confirming a broader view of practitioners that sustainability is more than philanthropic initiatives.

Another important contribution for both scholars and practitioners is the discussion on how sustainability can be inserted into corporate measurement systems. There have been some discussions on incorporating sustainability into the firm's balanced scorecard (FIGGE et al., 2002a, 2002b; HAHN; WAGNER, 2001). The present research provides an alternative and more incremental recommendation for firms towards SPMS by incorporating sustainability indicators in their current PMS. The case studies conducted show four possibilities to do so: PMS for a specific organizational area/department, employee's individual PMS (used as basis for annual bonus), system of sustainability indicators for external communication (sustainability reports), and initial project assessment system. The cases indicated that each of these systems incorporated environmental and social indicators to their original financial driven performance criteria. The evidences collected show specific indicators such as water consumption, carbon emission, employee satisfaction and

impact on the local community inserted in the above mentioned systems. However, this attempt is still incipient, since social and environmental indicators are being monitored, but the interactions (synergies or tradeoffs) between indicators are not explicit or assessed.

This interaction between indicators was also explored by the present paper, providing further understanding of the relative importance degree between sustainability indicators. The research shows evidence of factors that influence the priority amongst sustainability indicators. The cases show that the perception of the relative importance involves not only the business strategy (a factor that, to a certain extent, is controllable by companies), but also the requirements to enable firm's operation (such as revenue), the organization’s maturity (history) in dealing with a given subject, and the urgency and pressure to solve specific problems. The relevance of academic research and formal official statement of firms regarding priorities between sustainability indicators and the firms understanding of the concept is that it can avoid misunderstanding between employees of the same company and promote synergies, since sustainability drivers for decision making are the same throughout the firm.

The main research indicates the need and the relevance for future researches focusing on the development of an integrative and dynamic SPMS encompassing more active (leading) indicators, i.e., that represent proactive efforts to boost profitability, reduce environmental impacts, and augment social benefits, to be added to the reactive (lagging) indicators. The dynamic and integrative aspect of PMS has been discussed by the corporate performance literature (BITITCI et al., 2000; NEELY et al., 2000) and also by the sustainability performance literature (FIGGE et al., 2002a; HUBBARD, 2009; MEYAR-NAIMI; VAEZ-ZADEH, 2012). The present research complements this literature by evidencing the incorporation of sustainability indicators into the four performance systems already present in firms. It can thus serve as a first step to develop a more comprehensive SPMS in practice. In this sense, further studies are invited to address this challenge to enable the incorporation of sustainability into firms ' core businesses.

One limitation of this study stems from the challenge of structuring the literature on sustainability performance, which is still relatively immature and dispersed. The research is also limited by the number of companies studied. Moreover, despite the

triangulation of data collected in the field, the interviewee's perception influences the outcome of the study. This fact deserves special attention because the sustainability theme is still undergoing a structuring process (in both theory and practice), generating greater dependence on a more personal value judgment in the responses of the interviewees, and on the image the company wishes to project to the general public. With the exception of indicators published in the sustainability report, another limitation of this study was the access to sustainability indicators of the internal systems restricted by the companies. Another limitation concerns to the methodological approach of the case study. This approach may limit the generalization of the findings, considering the Brazilian scenario and the specific organizational context. Despite the research limitations, its contribution to both theory and practice are relevant, as previously discussed in the section. Research in the area of corporate sustainability is important to prevent sustainability from becoming a "mass grave, where everything fits in", as pointed out by one of the interviewees of the case study.

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8 #P3: Exploring Sustainable Business Models Archetypes in Brazilian Case Studies

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Abstract

Seeking to incorporate sustainability into firm's core activities, sustainable business models archetypes can be proposed to provide better understanding of the opportunities for corporate sustainability. In this context, the research objective is to investigate these archetypes in practice. Case studies were conducted in five firms located in Brazil, showing that firms can present prominence of one archetype, but are not limited to one and the archetype can vary depending on different market strategies of specific product/service line. Research shows also that archetypes are not mutually exclusive and can sometimes be overlapping, limiting the contribution of this approach.

Keywords: corporate sustainability, business model, sustainable business model, case study

8.1 Introduction

The main challenge of sustainable development is to preserve the Earth so that the next generations are still able to fulfil their needs (WCED, 1987). Global sustainable development, however, depends on several players and their complex interrelationships (LOORBACH, 2010; VAN KERKHOFF, 2014). In this context, firms have their role to contribute to global sustainable development, making evident the need for practical and effective management solutions for corporate sustainability. This idea is often associated with the triple bottom line (TBL) concept, encompassing tensions and synergies between economic, environmental and social aspects (ELKINGTON, 1997) However, sustainability initiatives tend to be voluntary (LOZANO, 2012) and firms need to find win-win relations between sustainability challenges and their businesses (ELKINGTON, 1994; SAVITZ; WEBER, 2007).

Porter and Kramer (2011) propose the use of new lens to understand business logic, one that goes beyond only financial benefits. The authors argue on the idea of shared value creation, seeking the promotion of solutions that are able to create economic value and, at the same time, address needs and challenges of society (PORTER; KRAMER, 2011). This basic idea can also be discussed as sustainable value creation (HART; MILSTEIN, 2003).

To promote corporate sustainability and shared value, investments in more sustainable products and technologies are important, but not enough due to the need of new business models to support financial and market viability of these innovations (GIROTRA; NETESSINE, 2013). At the same time, sustainable business model (SBM) has potential to promote innovation that is aligned with sustainable development, incorporating social, economic and environmental dimensions in business planning (BOCKEN et al., 2013). Bocken et al. (2014) propose eight SBM archetypes, analyzing several examples and grouping them by mechanisms and solutions. They are: maximise material and energy efficiency; create value from ‘waste’; substitute with renewable and natural processes; deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency; re-purpose the business for society/ environment; and develop scale-up solutions. These archetypes support the understanding of value proposition, value creation & delivery and value capture (BOCKEN et al., 2014; RICHARDSON, 2008), making explicit possible challenges and opportunities for business management innovations.

In this context, the objective of the paper is to investigate sustainable business models archetypes in practice. Case studies were conducted in five firms located in Brazil, gathering empirical evidences and structuring them according to SBM archetypes. The firms belong to the following sector: engineering in construction sector (EC), environmental solutions (ES), chemicals & petrochemicals (CP), technological solutions (TS) and consumer goods (CG).

8.2 Main concepts

8.2.1 Shared value and innovation for sustainability

There are several drivers that have impact on sustainable development, including the accelerated material consumption and pollution/waste generation, the intense proliferation and interconnection of civil society stakeholders, the emerging

technologies with potential for disruptive solutions, and the increase of population, poverty and social inequalities (HART; MILSTEIN, 2003). So, sustainability challenges can be seen as entrepreneurial innovation opportunities to address the associated uncertainties, investigate new solutions and engage the needed resources to implement these developments (YORK; VENKATARAMAN, 2010).

Firms can explore entrepreneurial solution transforming idealistic values into economic value, promoting simultaneously long-term benefits for society and environment (DIXON; CLIFFORD, 2007). Following this logic, the present paper considers the sustainable value, those advantages and benefits that are aligned with sustainable development. In other words, sustainable value seeks to promote economic, environmental and social values considering present and future consequences. Connected to this discussion, Porter and Kramer (2011) suggest that the next generation in Capitalism is dependent on innovations resulting from firms' shared value creation, focused on the connection between societal and economic progress. Incorporating the social mission in corporate culture and innovation, firms enable this shared value creation (PFITZER; BOCKSTETTE; STAMP, 2013). The basic logic behind the shared value is not necessarily recent and was discussed, for example by Elkington (1994) as the win-win-win relationships. The author argues on the challenge for firms to build positive benefits simultaneously for the company, the customers and the environment. These positive relationships can also be addressed as sweet spots among the pillars of sustainability, creating business opportunities (SAVITZ; WEBER, 2007).

In this sense, sustainable innovation seeks to promote win-win relations between economic business performance and global sustainable development (BOONS et al., 2013). In order to promote innovation for sustainability, the organizational capabilities go beyond those needed for innovation with solely competitive reasons (VAN KLEEF; ROOME, 2007). The needed capabilities are in the fields of systemic thinking, learning, integrating, developing alternative models and methods, networking and building coalitions that span diverse groups (VAN KLEEF; ROOME, 2007). The challenge to seek new solutions aligned with corporate sustainability brings evidence to the need for dynamic capabilities, dealing with new technologies, markets, environmental conditions, regulation, etc. (SEEBODE; JEANRENAUD; BESSANT, 2012).

8.2.2 Sustainable business model innovation

According to Osterwalder, Pigneur and Tucci (2005, p. 5), business model is "a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm". With the intensification of concerns related to sustainable development, sustainable business models need to be modified or remodelled (SCHALTEGGER; LÜDEKE-FREUND; HANSEN, 2012). So, discussions on SBM innovation are gaining relevance for practitioners and academics (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013), seeking to create value for customer and, at the same time, for society (SCHALTEGGER; LÜDEKE-FREUND; HANSEN, 2012) and for natural environment (BOCKEN et al., 2014). Considering this purpose, SBM is able to provide coordination between social and technological innovations, that aim to contribute to corporate sustainability (BOCKEN et al., 2014). In this sense, the literature proposes the promotion of innovation to enable the integration between enterprise excellence and corporate sustainability, resulting in responsible competitiveness (EDGEMAN; ESKILDSEN, 2014).

With increased strategic relevance of environmental and social issues, firms need to innovate their business models (SCHALTEGGER; LÜDEKE-FREUND; HANSEN, 2012). In this sense, business model innovations for sustainability are defined as: "innovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organisation and its value-network create, deliver value and capture value or change their value propositions" (Bocken et al., 2014, p. 44). Based on the possible strategies towards firm's stakeholders (CLARKSON, 1995), Schaltegger, Freund and Hansen (2012) proposes three types of SBM innovation: defensive, accommodative and proactive.

There are several elements to be considered in business model literature, as collated by Osterwalder, Pigneur and Tucci (2005), who propose nine business model building blocks grouped in four pillars. Based on previous publications, the author propose a correspondence between the elements considered so far in the literature and their proposition. The resulting elements for business models according to the authors are: product (value proposition), customer interface (target customer, distribution channel and relationship), infrastructure management (value

configuration, core competency and partner network), and financial aspects (cost structure, revenue model). Alternatively, Girotra and Netessine (2013) use the 4Ws framework to identify SBM innovations, encompassing the following aspects that need to be addressed: what (scope of the decision), when (time-related decisions), who (set of decision makers), why (incentives and alignment). The combination of alternatives for each dimension generates triggers for SBM innovations (GIROTRA; NETESSINE, 2013). Another compilation of business model elements is proposed by Richardson (2008) and involves three main elements: value proposition (product/service, customer segments and relationships); value creation & delivery system (key activities, resources, technologies, etc.); and value capture (cost structure and revenue streams). The different points of view of the literature show that there is no unique general solution to structure business models. But the elements help creating a common language to discuss this subject (OSTERWALDER; PIGNEUR; TUCCI, 2005). As Bocken et al. (2014) in their review on SBM, the present paper uses the approach proposed by Richardson's (2008) three elements: value proposition, value creation & delivery, and value capture.

Based on this logic, Bocken et al. (2014) propose eight SBM archetypes that resulted from the compilation and analysis of several examples of sustainability innovation and grouping them by mechanisms and solutions. Bringing similar business logic in the same category, it is be possible to have a deeper understanding of each groups of innovations for sustainability and, as a consequence, have more focused and effective contribution for each archetype. The archetypes are: (1) maximise material and energy efficiency; (2) create value from ‘waste’; (3) substitute with renewable and natural processes; (4) deliver functionality rather than ownership (servitization logic); (5) adopt a stewardship role (using privilege position in the supply chain network to demand sustainable value creation by partners); (6) encourage sufficiency (reduce demand for material goods); (7) re-purpose the business for society/ environment (institutional role of the firm as focus of the business model); (8) develop scale-up solutions (enabled by societal and technological conditions to fast replicability/growth of business).

The eight SBM archetypes listed above can still be classified in these three categories, proposed by Wirtz (2013): technological (1, 2, 3), organizational (4, 5, 6) and strategy-oriented (7, 8) (BOCKEN et al., 2014). The archetypes have the

advantage to deploy SBM in practical transformation mechanisms to promote corporate sustainability (BOCKEN et al., 2014). Moreover, the author note that the firms are not restricted to only one archetype to enable SBM innovation, since it can be resulting from a combination of more than one archetype.

8.3 Research method

Given that the paper objective to investigate sustainable business models archetypes in practice, the research method consists of multi-sector case studies in five firms situated in Brazil. The firms were chosen based on explicit criteria, as recommended by the literature (EISENHARDT, 1989). The choice criteria for the firms are: strategic and explicit importance of sustainability, relevance in their sector (large firms) and different industrial sector. This last criterion is relevant due to the still more exploratory (rather than confirmatory) research field, so that relevant and interesting empirical data are still dispersed. The case studies sectors are the following: environmental solutions (ES), consumer goods (CG), engineering in construction sector (EC), chemicals & petrochemicals (CP), and technological solutions (TS).

Data collected is qualitative and was obtained in interviews, internal documents, direct observation, published documents and corporate websites. The data collected used to build the case studies are based on different evidence sources, aiming to bring a more complete view of each case study and more solid conclusions (EISENHARDT, 1989). The semi-structured interviews encompass open-ended questions (Voss et al., 2002) to obtain the interviewee’s perception on their firms' sustainable business models.

The interviewees are part of areas that are related to sustainability issues (health & safety, environment, social responsibility) or to management systems. This choice is based on the fact that these areas tend to have a more holistic view of the firm and also promote discussions related to TBL approach. Data collected was analysed and structured according to the SBM archetypes proposed by Bocken et al. (2014), encompassing value proposition, value creation & delivery and value capture.

8.4 Results of the case studies

The present section presents the main evidence collected in the case studies, bringing the main discussions derived from this data. Initially, there is a brief description of the case studies context regarding corporate sustainability. Following, a discussion on the archetypes of SBM is conducted.

8.4.1 Overview of the case studies

As mentioned earlier, the case studies belong to different industrial sectors, including engineering in construction sector (EC), environmental solutions (ES), chemicals & petrochemicals (CP), technological solutions (TS) and consumer goods (CG). The point of view about corporate sustainability is relatively similar among the case studies, since all annual reports include TBL aspects and explicitly consider internal and external stakeholders. More than reducing negative social and environmental impacts, firms such as CG and TS propose to create and promote benefits for society and environmental associated with the survival of their respective business in the long term. One of the interviewees in Management Systems Department of EC summarizes: “sustainability is about being responsible and playing collectively”. The firms studied also understand the importance to incorporate sustainability into business, instead of considering it as an additional effort disaggregated from the core activities of the firm. As pointed out by the one of the Manager of Sustainability in CG: “The goals [of sustainability] should be tied directly to the business in order to focus efforts”. Following, a brief description of each case study is presented, highlighting respective corporate sustainability aspects.

EC is a large company focused on services related to infrastructure and industrial engineering project development and management. The firm's clients are important players in Brazilian industrial sector. The firm developed internally a sustainability assessment tool to evaluate the client's demands before it is even a closed contract. It results in a brief and general diagnosis of the potential sustainability risks, serving as one of the inputs used to build a proposition to be negotiated with the client. Initially, the tool encompassed economic and environmental aspects, but social indicator were also later incorporated. The tool enables the firm to identify opportunities to build more sophisticated propositions, incorporating innovative solutions to reduce negative social and environmental impact in the client's project.

The business ES is based on treatment of waste generated by residential areas or by industry. The firm manages landfill sites to waste disposal and facilities to recover waste, transforming it to be useful for other industries. Under this business logic, ES's revenue depends on the manufactures' concerns and actions regarding the industries' waste disposal.

CP is a large player in the chemical and petrochemical sector, with most of activities related to manufacture plastic from petroleum based inputs. Using the firm's capabilities towards innovation through research and development, CP seeks to reduce its dependency on a non-renewable raw material.

Among many other strategies, TS's business unit on medical equipment commercialize the functionality, instead of the ownership of their products. The contract may include services such as repair/maintenance, supply of the inputs consumed by the equipment and disposal of the product in the end of life. This business model enables the firm to build a long term and continuous relationship with the customer.

CG manufactures cosmetics and counts with independent representatives to enable direct sales throughout Brazil. The firm has specific product lines that use native materials in the production process, such as those collected by local communities in the Amazon region. So, the firm builds its image around its concern with biodiversity and direct contact with people.

8.4.2 Sustainable business model archetypes in the case studies

Data collected bring interesting insights, indentifying different archetypes among the five case studies. All cases have evidence that were adherent to one of the eight SBM archetypes proposed by Bocken et al. (2014). The case studies namely EC, ES, CP, TS, and CG were framed, respectively, as maximize material and energy efficiency; create value from ‘waste’; substitute with renewable and natural processes; deliver functionality rather than ownership; adopt a stewardship role. These SBM were build based on market opportunities and internal strategic pressures and influences. Table 1 shows a brief description for each case study regarding value proposition, creation & delivery and capture.

Table 1. SBM for the case studies.

	Value proposition	**Value creation & delivery**	**Value capture**
Main aspects	*Products/Services, customer segments and relationships*	*Key activities, resources, channels, partners, technology*	*Cost /Revenue streams*
- EC - Maximise material and energy efficiency	Infrastructure solutions to key-sectors of the Brazilian economy.	Pre-evaluation of the project considering TBL indicators. Development of projects that incorporate innovation to reduce environmental and social burdens during the construction and use phases	Price politic depending on the level of sustainability innovation incorporated in the project
- ES - Create value from 'waste'	Treatment/destination of waste, recovery and valorization of metal residues, reverse logistics of electronics, and environmental consulting (soil/water/air)	Activities, partnerships, infrastructure and innovation investments in solutions to promote adequate destination to waste	Revenue from the waste of cities and industries
- CP - Substitute with renewable and natural processes	Search for new renewable raw material to reduce firm's dependency on petroleum	Investment in technology and partnerships with local suppliers of agricultural materials to enable solutions with renewable sources. Participation in political discussions to adequate environmental regulations for this sector.	Future revenue depends on enabling sustainable viability in the use of renewable materials as inputs for production.
- TS - Deliver functionality rather than ownership	Focus on solutions for global megatrends, selling services, instead of the ownership of the physical product.	Focus on research and development to promote innovative solutions for industries and urban infrastructure, including open innovation.	The customer does not own the equipment, but pay for the function offered by the physical product
- CG - Adopt a stewardship role	Cosmetic products for everyday life	Decentralized direct sales force close to the customer. Investment and support to small local suppliers for specific inputs for production. Systematic investment in eco-design.	Label differentiation as role model for sustainable firm

It is interesting to note how each case study is innovating to better explore their shared value with stakeholders. EC win-win business logic is that it is of their interest to sell projects with more sustainable innovation, because they aggregate more value to itself, reduce potential risk and negative impacts of their clients' operations and implement environmental and social solutions in the long run. Meanwhile, ES is interested in making their clients more environmental conscious in order to expand its market. CP is concerned with the supply of raw material for their manufacturing sites in the long run, so it is seeking alternative sources that can be maintained over time.

For this, it need to invest in innovative solutions with sustainable viability. The medical equipment business unit of TS is pushed to optimize the product throughout its life cycle, including use and disposal/recycle. Adding this value to its service, the firm build long term relationship with the client, who tend to have more durable and reliable equipment. Although the abovementioned cases imply that the focal firm's need to influence its direct partners (suppliers and clients), CG's archetype "adopting stewardship role" is the one that demands stronger capabilities to influence the firm's partners. The firm maintain strong investments in marketing to show the product value to their customers and, at the same time, promote direct support to local communities responsible for the extraction of specific raw materials.

8.5 Discussion and conclusion

The proposed eight archetypes are an interesting start point to support sustainable innovation for the SBM of each case study. However, some adjustments to this theoretical approach is still necessary. For example, the value capture of EC is not derived from cost reduction and compliance (BOCKEN et al., 2014), but rather the firm seeks to increase project value (and therefore service price) with introduction of innovative solutions to maximize material and energy efficiency for its clients' operations. Moreover, the paper brings evidence that the SBM cannot always be general for the whole firm, since different market strategies can be conducted for specific product/service line. This was the case for the TS firm, for example.

The cases show also that the SBM can present one predominant archetype, but they are not exclusive to each other, as already pointed out by Bocken et al. (2014). The archetypes are all interconnected to one another and the distinction between them is not always trivial. For example, EC's archetype of "maximise material and energy efficiency" of their clients engineering projects can be directed related to other two archetypes (create value from waste and substitute with renewable and natural processes). That is because the solutions for more eco-efficient projects can be derived from innovation of the value of waste or the use of renewable materials. Another kind of interrelationship between the archetypes can be temporal. That is because, for instance, CG that can be nowadays considered as the archetype "adopt a stewardship role", have a strong history of financial and human investment in the search for solutions that maximise material and energy efficiency and value the potential of natural and renewable raw materials. This evidences indicate that,

although the SBM archetypes proposed by Bocken et al. (2014) are an interesting initial framework for understanding SBM innovation, there are still improvements to be expected with the complement of empirical data to this discussion.

Regarding the research limitation, it is worth mentioning the number of cases studied, which is not sufficient to encompass the eight SMB archetypes (BOCKEN et al., 2014). Furthermore, as many other researches on corporate sustainability based on semi-structured interview, the data collected during the interviews are biased by the fact that the interviewees, as part of the firm, tend to want to build the image of a sustainable firm. Even if it is not voluntary, the interviewees may have brought more details in aspects aligned on sustainable development and less on other aspects.

Further researches are challenged to develop the adequate criteria to evaluate SBM, facilitating the conduction of critical analysis of the actual business and its alignment with sustainable development. SBM can be an important management tool to support and structure innovations for sustainability, promoting *de facto* positive benefit for the firm and its direct (such as shareholders, clients, suppliers) and indirect (such as natural environment, society, government) stakeholders. Solution that are able to promote shared value creation (PORTER; KRAMER, 2011), win-win-win situations (ELKINGTON, 1994) and sweet spots (SAVITZ; WEBER, 2007) are interesting standpoints for corporate sustainability. However, firms are then challenged to go beyond these solutions, since firm-centred and individual mindset can turn out to be insufficient before sustainable development challenges, which demand collective and long term drivers for business decisions (BOLIS; MORIOKA; SZNELWAR, 2014).

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9 #P4: Sustainable business model innovation: exploring evidences in sustainability reporting

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Abstract

In order to incorporate sustainability into business, firms need to go beyond voluntary social and environmental initiatives. Sustainable business model (SBM) can support managers to better understand how it can contribute to global sustainable development through firm's value proposition and including methods of value creation, delivery and capture. In this sense, opportunities to innovations in firms' SBM can be derived from the assessment of their business model using corporate sustainability as dominant paradigm. So, a comprehensive and integrative performance measurement framework for SBM is proposed to support the identification of sustainability innovations. In this context, the purpose of this paper is to explore the contributions and limitations of the proposed framework. The methodological approach chosen is secondary data analysis, by using content analysis to extract evidences from sources such as corporate websites, annual and sustainability reports of four industry group leaders according to Dow Jones Sustainability Indices in 2014. Two of them belong to consumer goods manufacturing and the others are retailers.

9.1 Introduction

Current configuration of societal actors and their interaction are failing to guarantee a sustainable use of natural resources. The indication of this critical situation is not recent (MEADOWS et al., 1972) and still not enough effort and results to global sustainable development is put in practice (MEADOWS; RANDERS; MEADOWS, 2004). One of the actors responsible for this situation are the firms, which can count on technological and financial capacity (ELKINGTON, 1997) and, at the same time, carry a institutional role (LABUSCHAGNE; BRENT; VAN ERCK, 2005) to contribute

to global sustainable development. So, despite controversies in the definition of sustainability and sustainable development (BOLIS; MORIOKA; SZNELWAR, 2014), the use of the term corporate sustainability is referred as this capacity of firms to contribute to global sustainable development and all the challenges regarding economic, social and environmental interconnections together with short, medium and long term aligned and conflicting demands.

The literature has been indicating opportunities for competitive advantage with corporate social responsibility initiatives (PORTER; KRAMER, 2006). In particular, there are opportunities for firms by promoting shared values, in which the success of the firm is directly connected to society progress (PORTER; KRAMER, 2011). In this context, innovation is fundamental to make firms move beyond traditional models towards sustainable business models (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013).

So, firms face the challenge of incorporating sustainability into their business, seeking to contribute to global sustainable development. This conducts to the research objective of the paper, which is to propose and discuss a framework for the assessment of corporate sustainability performance, seeking to identify opportunities for innovations towards sustainable business models. It was built based on a performance measurement system framework called performance prism, that encompasses five dimensions: stakeholders' satisfaction, strategic drivers, business processes, capabilities and stakeholders' contributions (NEELY; ADAMS; CROWE, 2001). This is one of many examples that indicates the importance of revisiting consolidated literature with the lens of sustainable development challenges, bringing tested concepts and solutions to support corporate sustainability.

In order to address this research objective, content analysis of secondary sources was chosen as research method. This approach was chosen, given the relevance of communicating activities and results related to corporate sustainability (AZAPAGIC, 2003). The research conducts content analysis to extract evidences from sources such as corporate websites, annual and sustainability reports of four industry group leaders according to Dow Jones Sustainability Indices (DJSI) in 2014. Two of them belong to consumer goods manufacturing and the others are retailers.

9.2 Theoretical background

Considering that model is a simplification of reality with a specific purpose, SBM can represent a simplification of the logic that firms use to engage their set of objects, concepts and relationships (OSTERWALDER; PIGNEUR; TUCCI, 2005) to contribute to global sustainable development. One possible way to understand business models is using the elements proposed by Richardson (2008), which involves three main elements: value proposition (product/service, customer segments and relationships); value creation & delivery system (key activities, resources, technologies, etc.); and value capture (cost structure / revenue streams).

Current business models, restricted in seeking short term and revenue centred value, are failing in promoting corporate sustainability. This situation demands new ways of doing business, in which environmental depletion and social downside does not count as mere externalities (PORTER; KRAMER, 2011; SHUM; YAM, 2011). Innovations to enable and reinforce SBM are necessary to develop and implement solutions embedded in business to reduce firm's negative impact on society and environment and to promote social, environmental and economic benefits for internal and external stakeholders (BOCKEN et al., 2014).

In summary, the concept of SBM innovation encompasses the challenge of *innovating* (developing and implementing new solutions for products, processes, marketing and/or organization), in order to improve *corporate sustainability performance* (firm's contribution to global sustainable development), that is embedded in firm's core *business model* (firm's configuration to propose, create, deliver and capture value).

The publications on sustainability measurement and accounting have been contributing with several TBL indicators and frameworks (GRI, 2013; SCHALTEGGER; BURRITT, 2010; VELEVA; ELLENBECKER, 2001). Moreover, research on investigating the positive or negative correlation between TBL indicators have been conducted, for example in (CALLAN; THOMAS, 2009; DOWELL; HART; YEUNG, 2000; LACKMANN; ERNSTBERGER; STICH, 2012), but they are many times inconclusive or too limited in terms of number of variable considered (MCWILLIAMS; SIEGEL, 2000; WANG et al., 2011).

Given the need for a dynamic sustainability measurement framework to enable a critical analysis of SBM with the logic of leading and lagging indicators (KAPLAN;

NORTON, 1992), a comprehensive and integrative performance measurement framework for SBM is proposed combining the performance prism (NEELY; ADAMS; CROWE, 2001) with the business models elements of value proposition, value creation & delivery and value capture (RICHARDSON, 2008) using the corporate sustainability lens. Sub-section 2.1, 2.2 and 2.3 are dedicated to further discuss about the stages of sustainable value process and sub-section 2.4 summarizes this arguments with the description of the proposed framework.

9.2.1 Sustainable value proposition

In the context of SBM, value proposition refers to stakeholders beyond the "classical" customer, such as in (OSTERWALDER; PIGNEUR; TUCCI, 2005), or investors/shareholders. However, in the discussion on the proposition of *sustainable* value, firms are pushed to consider also other stakeholders such as employees, trade associations, suppliers, governments, non-governmental organisations, communities (DONALDSON; PRESTON, 1995), but also environment and society (ELKINGTON, 1997). Under this logic, firms can be considered successful if their supporting companies and infrastructure around it are also performing successfully (PORTER; KRAMER, 2011).

This reinforces the contribution of stakeholder theory (CLARKSON, 1995; DONALDSON; PRESTON, 1995; FREEMAN, 1984, 2004) to corporate sustainability challenges, as discussed for example in (MATOS; SILVESTRE, 2013; PERRINI; TENCATI, 2006). Combining the fact that value proposition is what the firm has to offer (RICHARDSON, 2008) and the stakeholder theory, firm's sustainable value proposition is elaborated based on internal and external stakeholders' needs and wants. Nevertheless, aligning stakeholders' objectives is not always trivial, since they can be also conflicting (MATOS; SILVESTRE, 2013). So the challenge is to find ways to do business at creating benefits for the firm itself, but also for the firm's stakeholders, seeking to satisfy them in the short term, but also in the long term. This mutual benefits can be referred by the literature as shared values (PORTER; KRAMER, 2011), win-win solutions (ELKINGTON, 1994) or sweet spots (SAVITZ; WEBER, 2007). Despite specific aspects for each concept, they have in common the potential firms have to contribute to sustainable development, when making decisions considering not only economic, but also environmental and social impacts.

In order to incorporate this logic into business, firms need to define strategic drivers to orient their decisions on how to satisfy their internal and external stakeholders. In this context, firms can count on technological, social and/or organisational innovations in the way they do business (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013). So, sustainability strategies can propose new products and markets (HALL; WAGNER, 2012; PORTER; KRAMER, 2011), redefine productivity in the value chain (HALL; WAGNER, 2012; PORTER; KRAMER, 2011), build new collaborative value chain (PORTER; KRAMER, 2011), etc.

Relating the sustainable value proposition SBM element to performance prism framework, two dimensions emerge as relevant. The first is the stakeholders' satisfaction performance dimension, making explicit and systematic the consideration of stakeholders beyond shareholders and customers in the sustainable value proposition. The second dimension serves to indicate the strategic drivers towards corporate sustainability, emphasizing the main corporate objectives to implement win-win solutions to satisfy firm's stakeholders.

9.2.2 Sustainable value creation and delivery

In the phase of sustainable value creation and deliver, the main aspects to put the value proposition into practice is considered (RICHARDSON, 2008). This element of SBM encompasses business processes, such as Porter's (1985) primary activities (inbound logistics, production, outbound logistics, marketing and sales, services) and secondary activities (firm infrastructure, human resource management, information and communication technology, procurement) (RICHARDSON, 2008). Focusing on sustainable value creation and delivery, the management of business processes should consider not only economic, but also social and environmental drivers (ELKINGTON, 1994) for decision making.

In order to enable these processes, the firm can count on its tangible and intangible capabilities and resources. Companies are pushed to develop specific capabilities and resources, such as capability to innovate firm's business model (ILES; MARTIN, 2013; VAN KLEEF; ROOME, 2007), technologies to enable sustainable products and processes (DE MEDEIROS; RIBEIRO; CORTIMIGLIA, 2014; ESSLINGER, 2011), responsible/sustainable leadership (KANTABUTRA, 2005; SZÉKELY; KNIRSCH, 2005), reputation of corporate sustainability (HALME; KORPELA, 2013), amongst others. Van Kleef and Roome (2007) complied from the literature several specific

capabilities needed to enable innovation for sustainability: system thinking; learning; integration between business, society and environment; development of alternative dynamic business models; networking; and collaboration building (VAN KLEEF; ROOME, 2007).

Given the emphasis for stakeholder management in the sustainable value proposition element of SBM, an important capability to be managed and developed is the network and alliance capability. This includes collaboration and cooperation towards bridging business interests with imperatives for community development (ARORA; ALI KAZMI, 2012), with partners for research and development cooperation (HALL; WAGNER, 2012; HALME; KORPELA, 2013) and with suppliers (RICHTER, 2013). That is because the complex nature of sustainability challenges demands firms to engage the different stakeholders towards integrative solutions with consideration of multi-objectives (MATOS; SILVESTRE, 2013). In this context, a mix of top-down and bottom up mechanisms can be useful to overcome collaboration and coordination challenges (MATOS; SILVESTRE, 2013).

As discussed in this sub-section, structured assessment of sustainable value creation and delivery can count with the other performance dimensions of the prism framework: business processes, capabilities and stakeholder contribution. That is because the composition of these three dimensions build the way firms are put their value proposition in practice. A critical analysis of each of these dimensions as well as the interaction between them have potential to identify opportunities for improvement of sustainability performance or for reducing economic, environmental and social risks.

9.2.3 Sustainable value capture

Value proposition, creation and delivery do not guarantee successful business, if the firm does not capture this value (RICHARDSON, 2008). Traditional literature on business model points this element as cost structure and revenue streams (BOCKEN et al., 2014; TEECE, 2010). In the context of corporate sustainability, economic results are not enough to ensure sustainable value capture. That is because sustainable development is about collective axiological objectives (BOLIS; MORIOKA; SZNELWAR, 2014), in other words, is about realizing value for the firms and its internal and external stakeholders, considering not only short term impacts, but also long term consequences (WCED, 1987).

Under this logic, TBL performance indicators such as those proposed by Global Reporting Initiative (GRI) are an attempt to measure economic, environmental and social impacts of firms (GRI, 2013). For example, the investments in eco-efficiency enables value capture for the firm (reducing expenses with production inputs such as raw material, energy and water), for the environment (reducing depletion and promoting conservation of natural resources) and for the society (reducing heath problems due to less pollution and emissions) (BOCKEN et al., 2014). Despite its importance and contribution, sustainability indicators have also relevant limitations. While measuring water consumption reduction and energy saving may be relatively an objective process, assessing impacts of a firm on society may be subjective. For example, it is challenging to assess the contribution of the fast food companies to the increasing population suffering from obesity, since several other influences play their role in this scenario.

One important aspect to ensure sustainable value capture is to properly communicate firms impacts. An appropriate dissemination of sustainability performance of a firm may influence consumer decision (MEIJER; SCHUYT, 2005). In this sense, sustainability reporting can be an important instrument to make explicit the benefits for firm's stakeholders. Moreover, sustainability reporting can reduce information asymmetry in the stock market, mainly for environmental technical reports (CORMIER; MAGNAN, 2010).

Assessing not only the value currently captured, but also firm's sustainable value missed and destroyed can also provide interesting insights to innovations for SBM (BOCKEN et al., 2013). These types of value are still not well approach by the literature, but are important concepts. They represent the value that the firms could capture, but are not currently doing it, and indicate if firm's activities are adverse to stakeholder value.

9.2.4 Conceptual framework

Based on the literature discussed, the present research proposes a dynamic framework for measuring sustainability performance of SBM, making explicit the relationship between indicators. With a critical analysis of current SBM, firms can find opportunities for innovation towards sustainable solutions for their business. The framework is composed by two layers, as shown in Fig. 1. The first is a well-disseminated performance measurement system approach called performance prism

(NEELY; ADAMS; CROWE, 2001; NEELY et al., 2000). The authors propose five performance dimensions: stakeholders' satisfaction, strategic drivers, business processes, capabilities and stakeholders' contributions. The main questions represented by each dimension is summarized in Table 1. One relevant aspects of measuring performance is the possibility to represent leading and lagging indicators (KAPLAN; NORTON, 1992). This is viable in the performance prism, since it enables the firm to go beyond having a list of performance indicators, as proposed for example by (GRI, 2013). The list is important for guidance, but are not enough, since synergies and tradeoffs between indicators are not represented. Addressing this issue, the performance prism present a logic between its dimensions, as represented in the questions of Table 1. As made evident, each question (expect the stakeholder satisfaction one) is dependent of another performance dimension.

The second layer is represented by the three elements of SBM namely sustainable value proposition, creation & delivery, and capture (BOCKEN et al., 2014). These elements were put in a cyclical representation, reinforcing the crossed impact between them and the need for constant innovation of SBM, with critical analysis of the way firms are planning and executing their sustainable value network.

As represented in Fig. 1, the definition of sustainable value proposition is closer related to firms sustainability performance on stakeholders' satisfaction and corporate strategic drivers. Both dimensions make explicit whose value the firm intends to promote and how. The other three dimensions focused by sustainable value creation & delivery are dedicated to what the firm is doing and with what (capabilities and contributions) it is making business in practice. The element of sustainable value capture is represented throughout the five performance dimensions, since it represents the impacts companies cause in each aspects of its business.

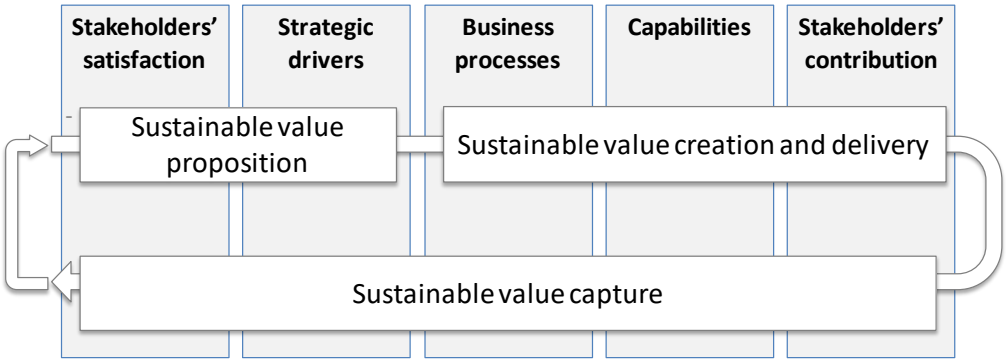


Figure 1 - Performance dimensions for sustainable business model.

Table 1 - Content of the performance dimensions.

Performance dimension	Main questions	SBM elements*		
		P	C&D	C
Stakeholders' satisfaction	Who are the important stakeholders and what do they want and need?	X		X
Strategic drivers	What are the strategies required to promote stakeholders' satisfaction?	X		X
Business processes	What are the processes (activities) are needed to deliver the strategies?		X	X
Capabilities	What are the capabilities required to put the processes in practice?		X	X
Stakeholders' contributions	What are the stakeholders' contributions to enable the business processes?		X	X

** Note: sustainable value proposition (P), creation & delivery (C&D), and capture (C).*

9.3 Research method

Aiming at assessing firms business models using sustainability performance dimensions, the research is based on analysis of secondary data as research method. This method was successfully used in previous publication in the context of corporate sustainability, such as (KOZLOWSKI; SEARCY; BARDECKI, 2015; NUNES; BENNETT, 2010).

Since SBM are still in its early stages in the literature and in practice, the first criteria to select firms to be analysed is high level of sustainability performance. This was assessed by the criteria of being indicated as industry leaders according to 2014 Dow Jones Sustainability Index (DJSI). This narrowed the research to 24 firms. Continuing to use intentional criteria to select the firms to be analysed (EISENHARDT, 1989), four firms were selected. Two are manufacturing firms and two are service providers. In order to make possible cross analysis another selection criteria was having a certain level of connection between the firms in terms of supply network. So, two manufactures of consumer goods and two retail firms were selected. Table 2 shows an overview of the firms selected.

Table 2. Firms selected for analysis

Firm	Sector - DJSI	Country	Type of industry
C1: Unilever	Food, Beverage & Tobacco	Netherlands/ UK	Manufacturing
C2: Kao Corp.	Household & Personal Products	Japan	Manufacturing
C3: Woolworths	Food & Staples Retailing	Australia	Service
C4: Lotte	Retailing	Republic of Korea	Service

Data sources include mainly the respective sustainability report and annual report. These publication represent the publication of firms' main activities and results for 2014. These data sources were complemented by corporate websites and DJSI report for each firm.

Data analysis and discussions initiates with general description of each firm (such as declared mission and vision). Following, a deeper discussion on the secondary data is conducted, based on the conceptual framework proposed by the present research. This phase encompassed the compilation of evidences for each performance dimensions, the assessment of the relationship between these evidences and the identification of opportunities to SBM innovation. Research conclusions are then made evident, highlighting the main contributions and limitations of the research.

9.4 Results and discussions

The present section presents the main results and discussions of the data collected structured according the proposed framework. It initiates with a brief overview of the firms (4.1) and follows with each firm's discussion (4.2, 4.3, 4.4 and 4.5).

9.4.1 Overview of the firms analysed

Given the importance to incorporate sustainability into business (BOCKEN et al., 2014; CRITTENDEN et al., 2011), it is expected that firm's strategy is also aligned with global sustainable development challenges. To analyse this alignment, Table 3 shows the comparison between the main aspects communicated by firms that delimit their strategy and sustainability approach. The evidence show that the firms tend to see strategic and sustainability challenges separated from each other, given the differences in their content. Some specific aspects of overlapping, however, are the reduction of environmental depletion and increase of positive social impact for C1; cooperation and inclusive business & diversity for C2; shareholder value for C3; cooperation, consumer driven and innovation for C4.

Table 3. Main highlights of each company's strategy (ST) and sustainability (SU) drivers.

	C1		C2		C3		C4	
	ST	SU	ST	SU	ST	SU	ST	SU
Cooperation			■	■		■	■	■
Consumer driven			■			■	■	■
Reduce enrionmental depletion	■	■		■				■
Employee development	■		■			■		■
Inclusive business and diversity		■	■	■		■		
Enlarge business, financial results	■				■			■
Increase positive socal impacts	■	■		■				■
Shareholder value					■	■		
Global perspective			■					■
Innovation							■	■
Brand management	■							
Observing things on-site			■					
Sustainable sourcing		■						
Communication			■					
Integrity				■				
Preparation for the future					■			
Quality orientation							■	
Open to challenge							■	
Efficiency								■

Figure 2 - Difference between firm's performance and the industry average. Scales used by DJSI are 0 (lower score) to 100 (higher score)

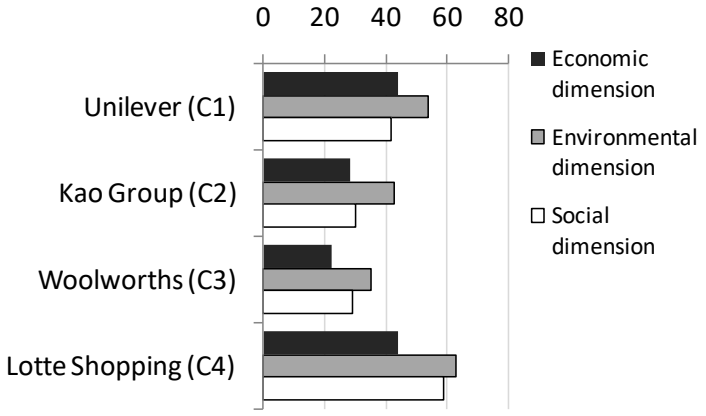
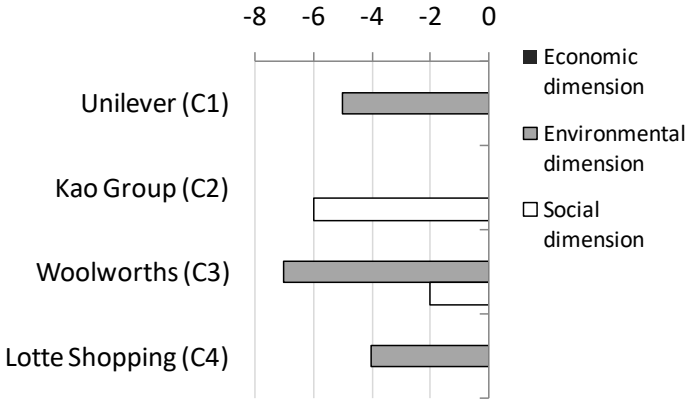


Figure 3 - Difference between firm's performance and the industry benchmark. Scales used by DJSI are 0 (lower score) to 100 (higher score).



The result of the firms' sustainability performance assessed by DJSI is compared with the average performance of the industry (Fig. 2) and the benchmark, e. g., the best within the industry (Fig. 3). As shown in Fig. 2, firms leaders tend to perform above industry average specially regarding environmental performance. Comparing with benchmark, Fig. 3 makes evident potential for improving environmental performance of C1, C3 and C4, while social performance seems to be the main potential for C2. It shows also that the industry leader in terms of sustainability performance are also leader (or are at the same level with other leaders) in terms of economic performance.

Further discussions on the firms regarding the performance dimensions of their respective SBM are conducted in the next sub-sections, with focus on new opportunities towards sustainability performance.

9.4.2 Unilever (C1)

The British–Dutch consumer goods producer Unilever is leader in the areas of food, refreshment and personal products. This industry is counting on the growing market of the emerging countries, tendency of products for health and wellness and opportunities for convenience food in developed countries. Despite several environmental initiatives, Unilever is still can improve its performance comparing with industry benchmark (Fig. 3).

Unilever's explicit strategic drivers belonging to Unilever Sustainable Living Plan (USLP) are: improving health and well being, reducing environmental impact, enhancing livelihoods, as explicit in Fig. 4. They serve as orientation for firm's innovations and marketing decisions. Although efficiency is not explicit in the firm's

strategy, it is mentioned throughout the report. Mainly, this is connected to employees' capabilities, with special mention to the logistics process. The document shows also the firm's effort to build a strong network, but no systematic initiatives to engage non-governmental organisations and customers are made explicit (Fig. 4).

9.4.3 Kao Corporation (C2)

The Japanese Kao Corporation is divided in two main segments: consumer products (beauty care business, human heath, fabric & home care) and chemical business. Kao's industry is characterized by high competitiveness, multi-brand strategies, with high expenses in marketing, brand management and communication. In specific for chemical business, the sector have been demanded for adaptation due to stricter regulation and control of the use of natural resources.

The firm's philosophy is named "Yoki-Monozukuri" and means "a strong commitment by all members to provide products and brands of excellent value for consumer satisfaction" (KAO-GROUP, 2014). Although this statement is focused on consumers, firms mission includes explicitly the firm's willingness to contribute to "the sustainability of the world". The firm's sustainability pillars are conservation, community and culture. Fig. 5 shows the evidences collected. Some interesting aspects are made explicit using the proposed framework. For instance, the firm sponsors and promotes social and environmental projects, but no engagement of communities in the core business processes is evident in the reports. Moreover, there is no explicit connection between environment and society satisfaction to firm's strategic drivers.

Additionally, the firm states it is reinforcing its relationship with suppliers of certificated raw material, but does not bring evidence of actively involving them in the search for environmental-conscious products and processes in the research and development (R&D) activity. This could be a possible opportunity for the firm. Another opportunity for improvement of the firm is on its view of product lifecycle. That is because, as shown in their report, they consider a linear vision of product life cycle, with no attempt to build retro-alimentation (reuse/ recycle) on the production system (p. 81).

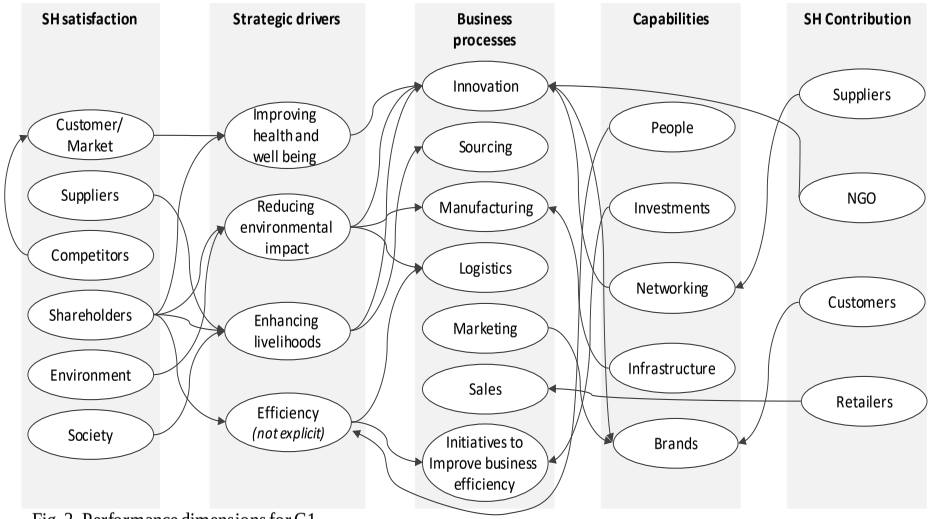


Fig. 3. Performance dimensions for C1.

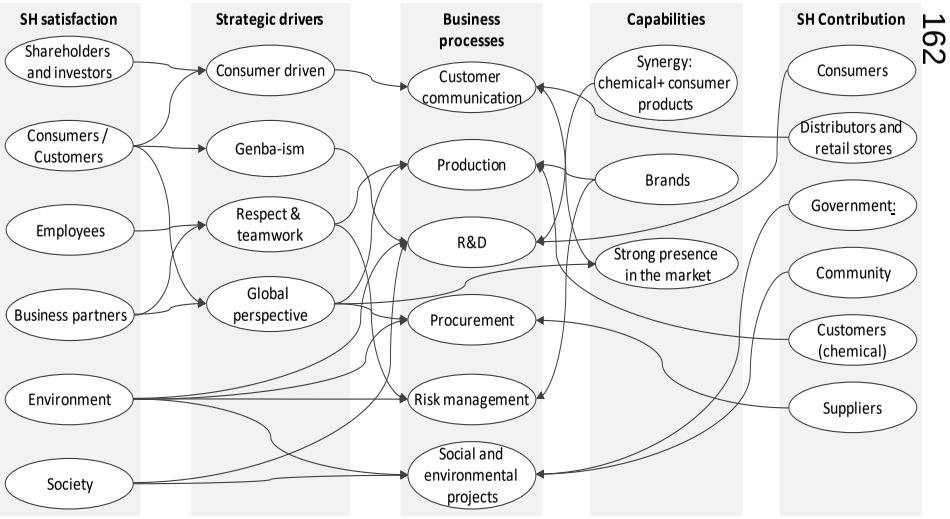


Fig. 4. Performance dimensions for C2.

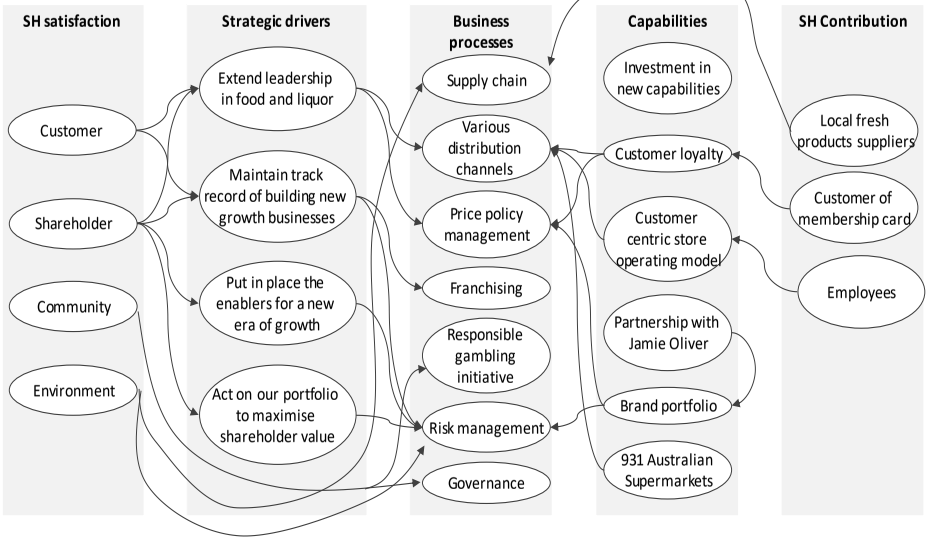


Fig. 4. Performance dimensions for C3.

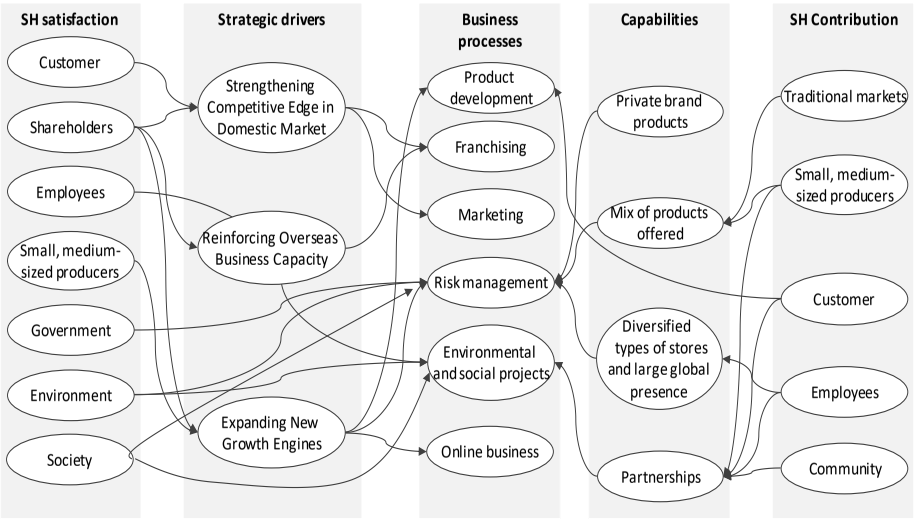


Fig. 5. Performance dimensions for C4.

9.4.4 Woolworths Ltd (C3)

Originally from Australia, Woolworths has strong presence in several segments: food, liquor, gas stations, general merchandise, home improvement, and hotel venues. The food and staples retailing sector to which it belongs is strongly affected by mergers & acquisitions and increasing offerings of private labels or store brands.

Woolworths seems to have the most potential to improve sustainability performance in comparison to the other firms analysed by the research. This can be deployed by Fig. 2 and Fig. 3, showing respectively, lower difference to the average of the industry and higher gap to the benchmark performance.

Fig. 6 shows firm's dimension performance and makes evident, for example, that satisfaction of community/society and natural environment is not explicitly contemplated in the strategic drivers for the firm. The emphasis of the report and of firm's strategic drivers tend to be more focused on firm's continuous growth in terms of sales and number of stores. Nevertheless, C3 disclosures interesting initiatives, such as improvements in the supply chain of fresh products and reduction of waste. This can cause environmental, health benefits and incentive of local production.

9.4.5 Lotte Shopping (C4)

Lotte Shopping is a Korean retail group, composed by four divisions: Lotte Department Store, Lotte Mart (discount store chain), Lotte Super (grocery) and Lotte Cinema. Evident relevant aspects of this sector are the need to develop new strategies and technologies for effective customer relationship management, the growing diversification of distribution channels and the capacity to manage global supply networks. Fig. 7 shows the main evidences collected structured according to the proposed framework.

One of the aspects that comes to the attention in Lotte's sustainability report is the apparent disconnection between three strategic/sustainability drivers put in evidence: (1) business strategy, including strengthening competitive edge in domestic market, reinforcing overseas business capacity and expanding new growth engines, (2) sustainability strategies developed through crises and opportunities, including competitiveness, new global markets, differentiated products, efficient operation and environmental degradation & resource scarcity; and finally (3) strategies for

sustainability management, including sustainable corporate culture, sustainable value creation and sustainable implementation.

Interesting about the firm's documents (annual and sustainability reports) is the emphasis in developing small and medium-sized merchants to provide local, fresh and healthy food. Furthermore, the firm claims to be engaged in win-win cooperation mainly with suppliers, customers and employees. Relevant processes communicated to firm's public are risk management and environmental/social projects, as relevant nodes in Fig. 7. The figure makes explicit the importance these two nodes to integrate stakeholders' satisfaction and firm's capabilities. It shows a possible improvement in rethinking the strategic drivers, as they are usually built as basis to connect corporate goals, activities and capabilities.

9.5 Conclusions

The research aimed at exploring the contributions and limitation of a comprehensive and integrative performance measurement framework for SBM used to support the identification of sustainability innovations. Based on secondary data, four sustainability leaders had their business models analyzed using the proposed framework.

The research shows that the performance prism dimensions of stakeholders' satisfaction, strategic drivers, business processes, capabilities and stakeholders' contributions (NEELY; ADAMS; CROWE, 2001) contribute the better assess the firms' business models, when seeking to promote sustainable value from the business. The framework shows the following benefits: structured organization of the information about firm's performance in the five dimensions; incentive to consider stakeholders beyond the traditionally included customers and shareholders; clear relation between the aspects contained in each dimension; deployment of the firms dimension performance into its business model, allowing it to rethink their sustainable value proposition, creation & delivery, and capture).

On the other hand, the framework presented also some limitations. For instance, there is an increased difficulty to visualize the nodes and relationships with each new information added to the framework. Additionally, specific nodes may have poor representation. For example, a node alone referred as "customer" admits different interpretations of their wants and needs, so its meaning should be complemented with the nodes it is connected to.

Regarding research limitations, an important one to be mentioned is the bias within the data collected, since they are mostly sourced by self declared statements. The data also gives a limited vision of the firms' performance, since many activities and results may be true to the organisation's reality, but were simply not reported or not well made explicit in the documents. Although the reality of the firm is broader and more complex than the documental evidences, the fact that the firm did not make explicit certain aspects of reality is already an evidence of low importance of such aspect or low clarity of its relevance to communicate.

Despite the limitation, the research bring interesting insights to both academics and practitioners. One of the research contribution is the incorporation of a well established performance measurement literature to promote solutions for new challenges of sustainability. Another relevant contribution is the proposed framework that can be used by firms to assess their business models and identify innovation opportunities. The research also enlarges the knowledge on both performance measurement literature with a specific application of its constructs and SBM literature with an additional tool to promote innovation for sustainability. Future research is invited to further test and improve the framework, deepening the knowledge on the contribution of each performance dimension to SBM and improving the understanding of the relationship between the aspects of each performance dimension.

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10 #P5: Combining business model and performance systems: a Two-Lenses Model (2LM) to unfold value creation to multiple stakeholders

Journal:	Organization & Environment
Authors:	Sandra N. Morioka, Maria Holgado, Steve Evans, Marly M. Carvalho
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Status:	Submitted

Abstract

Initial research has identified corporate sustainability performance and sustainable business models as separate methods of analysis that may have some utility in encouraging sustainability innovation and sustainable value creation to multiple stakeholders. This research investigates how analysing corporate sustainability performance (CSP) can support companies to identify innovations for sustainable business models (SBMs). We propose a step-by-step process called Two-Lenses Model (2LM). CSP lens encompasses strategic drivers, business processes, capabilities, stakeholders' satisfaction and contributions. SBM lens considers value proposition, creation and delivery system and value capture. The 2LM was conducted in case studies to bring empirical evidence from this theory-based proposition. Results show that analysing CSP dimensions has potential to trigger the identification of opportunities for SBMs through two mechanisms: misalignments between performance dimensions and gaps in stakeholder satisfaction. Further research opportunities lay on deepening into this findings and investigating the implementation process for the identified innovation opportunities.

Keywords: sustainable business model, sustainability performance, sustainability innovation, performance prism, corporate sustainability, value creation to stakeholders, sustainable development, transdisciplinary research, case study.

10.1 Introduction

Companies aiming not only to maximize profit, but also promoting social and environmental value is a compelling idea and many times hard to put into practice. Multiple approaches on sustainability and sustainable development exist without a common ground (BOLIS; MORIOKA; SZNELWAR, 2014; GLAVIČ; LUKMAN, 2007).

Still sustainability innovations remain unrealized in many cases and companies find difficult to innovate towards more sustainable business models (SBMs). Contributions to sustainable development challenges could bring improvements in business performance as argued by the concepts of shared value creation (PORTER; KRAMER, 2011), sweet spots (SAVITZ; WEBER, 2007) and win-win relations between social, environmental and economic aspects (ELKINGTON, 1994). Corporate sustainability has been defined in many ways. In the present paper, we consider three principles for corporate sustainability to delimit this concept. Sustainability at business level includes: (1) the triple bottom line approach regarding economic, environmental and social goals (ELKINGTON, 1998), (2) the consideration of internal and external stakeholders in companies' decisions (DYLLICK; HOCKERTS, 2002) and (3) the short, medium and also long term impacts for current and future generations (WCED, 1987). We consider that these three principles can support companies to improve their business models and advance towards sustainable development.

Innovations towards more SBMs can happen as a constant movement, considering a critical analysis of performance in terms of contributions to sustainable development. This is aligned with the fact that business models need to be in constant transformation and change process, given the changing socio-environmental context and configuration of sustainable development challenges (ROOME; LOUCHE, 2016). The design of business model alternatives, their communication, and their evaluation are core issues of the innovation process (Eurich et al., 2014). Sustainable value can be seen as the value created by business that drives both to shareholder value and to a more sustainable world (HART; MILSTEIN, 2003). These authors discussed that the pursuit of sustainable value occurs in the following three steps: diagnosis, opportunity assessment, and implementation. The diagnosis step, however, can be challenging for organizations aiming to become more sustainable, since they need to switch the paradigm from seeking solely financial benefits to pursuing also environmental and social goals in the long term. In this context, this paper aims at answering the following research question (RQ): How can a CSP systems' approach contribute to sustainability innovations for more SBMs?

We investigate this research question through a transdisciplinary approach. This complies with the approach for research on corporate sustainability suggested by

Schaltegger et al. (2013): transdisciplinarity in sustainability science is relevant due to the complexity and real-world aspect of the phenomena under study and it is to be achieved by combining different disciplines and practitioner sets of knowledge. Thus, we propose to analyse the RQ through two lenses - sustainable business model (SBM) and corporate sustainability performance (CSP) - and to engage practitioners in the research as experts in the field. These two lenses we chosen given their complementary contribution to sustainability. On the one hand, SBMs support the integration of sustainability into organizations, since it brings emphasis on sustainability innovations as business opportunities, affecting sustainable value exchange with stakeholders. However, this body of knowledge it still relatively recent (BOONS; LÜDEKE-FREUND, 2013) and still lacks on empirical evidence (ENGERT; RAUTER; BAUMGARTNER, 2016). To contribute to SBM literature, the CSP literature can be an interesting approach, since it is relatively more mature (MORIOKA; CARVALHO, 2016a; SEARCY, 2012) and performance systems have potential to influence corporate results given their direct impact on managers' actions and decisions (HAUSER; KATZ, 1998). This relation was previously explored by Morioka et al. (2016), showing that this combination of approaches can bring interesting contributions for theory and practice, enabling a structured organization of the information about company's performance (in the specific dimensions and its relations), incentivising the consideration of stakeholders beyond customers and shareholders, and promoting a critical analysis of the company based on business model elements. In doing so, a two-lenses model is proposed, based on the performance measurement system (PMS) framework called performance prism model (NEELY; ADAMS; CROWE, 2001) and three elements of business models - value proposition, creation and delivery system and value capture (RICHARDSON, 2008) - in the context of corporate sustainability. Presenting two case studies, this paper develops and applies a step-by-step process to support companies on the critical analysis of their current CSP and, based on this, instigate them towards the identification of innovation opportunities to promote SBM.

This paper is structured as follows: the literature review and analysis, combining SBM and CSP lenses are discussed in a broader sense in Section 2 and in a more focused approach on the concepts in Section 3, towards proposing the 2LM (Two-Lenses Model) as step-wise process. Following, Section 4 presents the

methodological approach for the present research based on two case studies. Section 4 follows with the main results obtained from the field research, which were discussed in Section 5. Brief concluding remarks are presented in Section 6.

10.2 Sustainable business models and corporate sustainability performance

This section presents the integration of two disciplinary views for sustainability. These lenses are brought by incorporating concepts within the research fields of SBMs and CSP. The first lens (SBM) is derived from the combination of business model and corporate sustainability concepts. The SBM concept is useful to help companies describe, analyse, manage and communicate its value proposition as well as the creation, delivery and capture of value (SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016), since it characterises firm's priorities, resources and activities. Therefore, SBM represents how companies exchange sustainable value with their stakeholders. In this sense, sustainable business models seek not only to promote financial results but also to maximize sustainable value, which can be considered as the economic, environmental and social benefits in the short, medium and long-term, specific for each corporate stakeholder. SBMs are concerned with making explicit the mechanisms which logically integrate company's goals, resources, processes, and stakeholders, aiming at promoting sustainable value. Different configurations of business models can be derived from social, organizational and technological innovations (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013), generating impact on companies' offerings and/or business processes towards improved corporate sustainability performance.

The second lens regards CSP, encompassing the concepts of corporate performance and corporate sustainability. Corporate performance has been argued to refer to the efficiency and effectiveness of business actions (NEELY; GREGORY; PLATTS, 1995). This definition implies the presence of goals (or parameters) to delimit what the company is aiming to achieve in an efficient and effective manner. In our context, the approach on CSP is related to corporate sustainability principles, e.g., to firm's contribution to global sustainable development. To ensure that contributions to corporate sustainability are efficient and effective, organizations need transparency on business decisions and activities, as well as metrics to evaluate and compare their impacts (DYLLICK; MUFF, 2016). Therefore, CSP lens can be used as an instrument to assess the firm's contribution to sustainable development. The

Table 1 - Delimitation of SBM and CSP concepts.

Aspect	**SUSTAINABLE BUSINESS MODEL LENS**	**CORPORATE SUSTAINABILITY PERFORMANCE LENS**
Basic conceptual approaches	**Business model** (such as Osterwalder, Pigneur and Tucci, 2005; Richardson, 2008) +	**Performance** (such as Bititci et al., 2006; Kaplan and Norton, 2005; Neely, 2005) +
	Corporate sustainability Capacity of organizations to contribute to sustainable development, which includes concern related to the following principles: triple bottom line (economic, environmental and social pillars); multi-stakeholders interests and timeframes (short, medium and long term)	
Unit of analysis	Organization	
Aim	To help companies make decisions that can contribute to businesses become more sustainable, e.g., to intensify organizations' contribution to sustainable development	
Application	Representing the mechanism of how companies exchange sustainable value with stakeholders.	Representing the situation according the specific parameters, enabling to evaluate the gap between current and aimed situation
Main concepts	Sustainable business models Representation of an organization's mechanisms to exchange sustainable value with stakeholders Sustainable value Set of benefits aligned with the principles of corporate sustainability Sustainability innovation Implementation of a new solution capable of improving sustainable value proposition, creation, delivery and capture	Sustainability performance Efficiency or effectiveness of action (NEELY; GREGORY; PLATTS, 1995) that contributes to corporate sustainability Sustainability performance indicator Quantification of sustainability performance, according to specific criteria, measurement unit and context Sustainability performance measurement system Set of individual sustainability indicators, organized as a system according to a defined logic and connected to the organizational context (adapted from NEELY; GREGORY; PLATTS, 1995)
Orientation	Stakeholder-centred Depends on the stakeholder (such as goals, needs, context, etc.)	Firm-centred Regards on the company.
Cross-relation	Sustainability performance indicators are important to quantify sustainable value, in order to assess the gap between current and aimed sustainable value.	Knowing what is value for each stakeholders can be used as basis to set sustainability performance criteria and goals
Examples of dimensions / elements	- Value propositions; creation & delivery system; value captured (RICHARDSON, 2008) - Value proposition; customer interface; infrastructure management; financial aspects (OSTERWALDER; PIGNEUR; TUCCI, 2005)	- Prism: stakeholders' satisfaction; strategic drivers; business processes; capabilities; and stakeholders' contributions (NEELY; ADAMS; CROWE, 2001) - Balanced scorecard: financial; customer; internal processes; and learning & growth perspectives (KAPLAN; NORTON, 1992)

literature on CSP have been growing fast in the past decade, addressing the challenges of assessing, improving and reporting CSP (MORIOKA; CARVALHO,

2016a). This lens has been also discussed as environmental, social or sustainability accounting (SCHALTEGGER; BURRITT, 2010) and disclosure (HAHN; KÜHNEN, 2013). Previous proposals of sustainability indicators and frameworks are available, such as the Global Reporting Initiative (GRI) indicators based on the triple bottom line approach (GRI, 2013); and the Environmental, Social and Governance (ESG) indicators (Kocmanová and Šimberová, 2014). Combining sustainability indicators under a specific logic given by their particular organizational context, companies can develop sustainability performance measurement systems (SMPS) (MORIOKA; CARVALHO, 2016b; SEARCY, 2012). SMPS can support companies in planning and control their business activities (SEARCY, 2012). Reviewing several frameworks for performance measurement systems (PMSs), Yadav, Sushil and Sagar (2013) pointed out that classical PMSs (such as Balanced Scorecard and Performance Prism) have been evolved over time, including gradually more CSP issues. Examples are the use of Balanced Scorecard (EPSTEIN; WISNER, 2001; FIGGE et al., 2002) and the Performance Prism (SHAW; GRANT; MANGAN, 2010) in the corporate sustainability context. Table 1 summarizes the main aspects of the two conceptual lenses combined in this research. Bringing their own theoretical backgrounds, the combination of SBM and CSP can be useful to intensify organizations' contribution to global sustainable development.

10.3 From a conceptual framework to a process-based approach

This section describes the dimensions considered within the two lenses into the unified conceptual framework and presents our proposed step-by-step process to support the identification of opportunities for sustainability innovations.

10.3.1 Exchanging sustainable value with stakeholders: Sustainable business models

The first lens is represented in the conceptual framework by three elements of business models: value proposition, value creation and delivery system, and value capture (RICHARDSON, 2008). Following, we discuss each business model element in the context of corporate sustainability. The value proposition refers to the company's offerings which are shaped as individual products or services or as bundles of products and services (OSTERWALDER; PIGNEUR; TUCCI, 2005). Den Ouden (2012, p. 118) includes the understanding of the primary users and buyers, their needs and aspirations, the solution offered and the analysis of alternatives and differentiators of the solution as part of the value proposition. From a corporate

sustainability perspective, the value proposition includes initiatives that create long term value for all stakeholders (STUBBS; COCKLIN, 2008). A sustainable value proposition defines what economic, environmental and social value the company expects to deliver to its stakeholders, providing benefits to satisfy their specific needs or desires.

The value creation and delivery system comprises the firm's resources, capabilities and inter-organizational network (RICHARDSON, 2008), which need to be organized and coordinated within firm's primary and secondary activities (PORTER, 1985). Several initiatives can be implemented by the company to promote the integration of sustainability into operations and production, management and strategy, organizational systems, marketing and procurement, assessment and communication (LOZANO, 2012). This includes various approaches, such as cleaner production, design-for-environment, eco-efficiency, environmental and social accounting, ethical investment, among many others (GLAVIČ; LUKMAN, 2007; LOZANO, 2012). The challenge for companies is, therefore, to additionally consider social and environmental issues, both short and long term consequences and also all stakeholders' wants and needs into their daily business activities. The third and last element is the value capture, which may also be addressed as value appropriation (GHEZZI; CORTIMIGLIA; FRANK, 2015). Traditional business model approaches tend to restrict this business element to financial aspects, seeking to evaluate firm's cost structure and revenue model (OSTERWALDER; PIGNEUR; TUCCI, 2005). SBMs include this approach but extends its scope to include also other forms of non-economic value captured. In this sense, a sustainable value capture includes how the company "captures economic value while maintaining or regenerating natural, social and economic capital beyond its organizational boundaries" (SCHALTEGGER, HANSEN and LUDEKE-FREUND, 2015, p. 4).

10.3.2 Assessing sustainable value: Sustainability performance dimensions

One of many PMS frameworks discussed in the literature is the performance prism model, which is composed by five interconnected performance dimensions: stakeholders' satisfaction, strategic drivers, business processes, capabilities, and stakeholders' contributions (NEELY; ADAMS; CROWE, 2001). This approach has the advantage of presenting logical interconnected performance dimensions, being comprehensive and flexible, enabling implicit fact come to the surface and

addressing directly firm's stakeholders (NEELY; ADAMS; CROWE, 2001). In the present paper, we apply this framework in the context of corporate sustainability, considering its multi-stakeholder approach. Next, we present a brief discussion of each performance dimension from the perspective of corporate sustainability.

The first dimension has to do with (1) *stakeholders' satisfaction*. The literature has been using stakeholder theory to justify arguments about corporate sustainability (such as Matos and Silvestre, 2013; Perrini and Tencati, 2006). By considering stakeholders when assessing corporate sustainability performance, companies are challenged to find solutions in the way that they manage business that are able to promote benefits not only for the firm itself, but also for internal and external stakeholders. The literature refers to this combined benefit as shared value (PORTER; KRAMER, 2011), win-win solutions (ELKINGTON, 1994) or sweet spots (SAVITZ; WEBER, 2007). Despite being different concepts with different backgrounds, they all intend to highlight the potential business opportunities that companies have to contribute to sustainable development, when making decisions considering not only economic, but also environmental and social impacts.

The second performance dimension refers to (2) *strategic drivers*, which have to do with firm's purpose, mission and corporate values. Therefore, they orient decisions on how to satisfy firm's internal and external stakeholders. Sustainability strategies can propose new products and markets (HALL; WAGNER, 2012; PORTER; KRAMER, 2011), redefine productivity in the value chain (HALL; WAGNER, 2012; PORTER; KRAMER, 2011), build new collaborative value chain (PORTER; KRAMER, 2011), etc. Strategic choices for sustainability have direct impact on how companies conduct their (3) *business processes*, which is the third performance dimension. Sustainability aspects can be integrated into the management of both primary activities (inbound logistics, production, outbound logistics, marketing and sales, services) and secondary activities (firm infrastructure, human resource management, information and communication technology, procurement) (EPSTEIN; ROY, 1998; LOZANO, 2012). Organizations can implement sustainability initiatives into many business processes, promoting sustainable supply chain management (CARTER; ROGERS, 2008; SEURING et al., 2008), eco-design (BRONES; CARVALHO, 2015; LUTTROPP; LAGERSTEDT, 2006), sustainable operations management (KLEINDORFER; SINGHAL; VAN WASSENHOVE, 2005),

sustainability reporting (BROWN; DEEGAN, 1998; HAHN; KÜHNEN, 2013), sustainable work design and ergonomics (BOLIS; BRUNORO; SZNELWAR, 2014) among others.

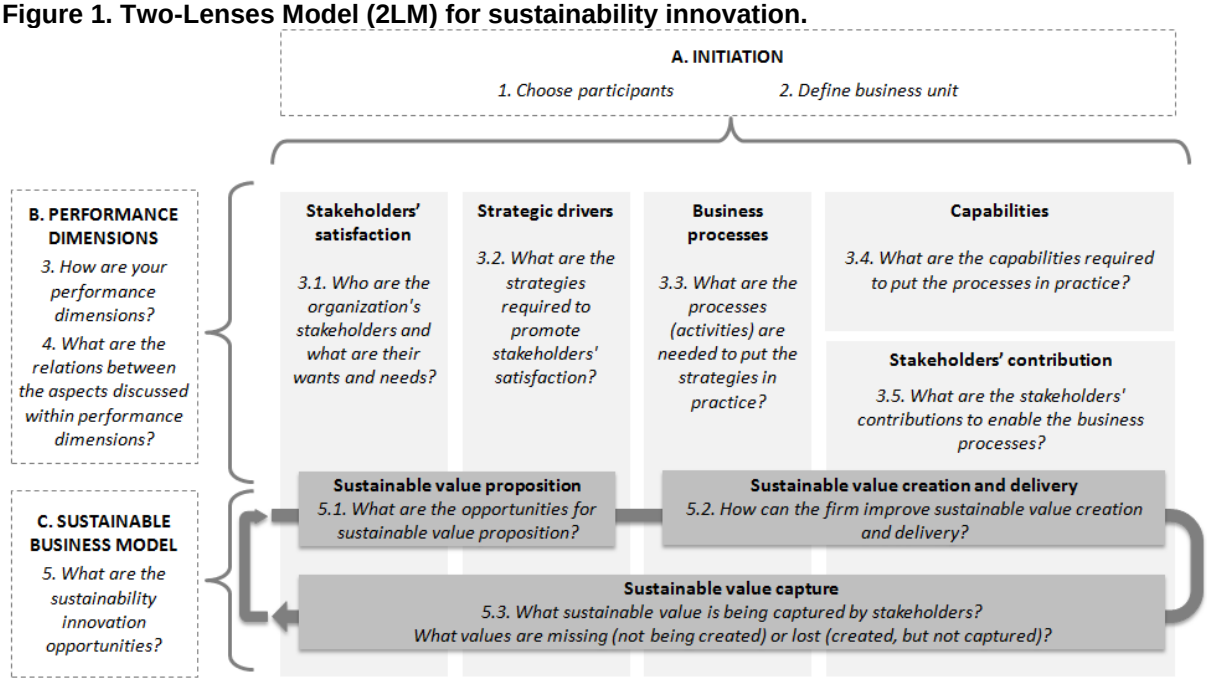
The next performance dimension, (4) *capabilities*, considers a combination of people, practices, technology and infrastructure (NEELY; ADAMS; CROWE, 2001). The literature discusses capabilities that companies need to develop, when aiming to be more sustainable. In this sense, knowledge and technology on environmental solutions for products (RENNINGS et al., 2006) and processes (RENNINGS et al., 2006; THEYEL; THEYEL, 2000), as well as skilled human resources motivated by sustainability-oriented leadership (MOLINA-AZORÍN et al., 2009) are relevant to improve sustainability performance. Moreover, firm's capabilities towards corporate sustainability performance includes several aspects, such as systemic thinking (SEARCY; KARAPETROVIC; MCCARTNEY, 2008; VAN KLEEF; ROOME, 2007), capabilities for learning and developing (MOLINA-AZORÍN et al., 2009); capabilities for integrating business, environmental and social issues (MOLINA-AZORÍN et al., 2009); change management capabilities (MOLINA-AZORÍN et al., 2009; WONG, 2013; ZOLLO; CENNAMO; NEUMANN, 2013); and networking capabilities (VAN KLEEF; ROOME, 2007).

This last capability is related to (5) *stakeholders' contribution*. The literature suggests that the complex nature of sustainability challenges demands firms to engage different stakeholders towards integrative solutions with consideration of multi-objectives (MATOS; SILVESTRE, 2013). Stakeholders have then a dual role in corporate sustainability; as target to understand their needs and desires in order to provide value to them and as means to contribute towards the co-creation of value together with the firm. Stakeholders' contribution can appear in different ways, for instance, bridging business interests with imperatives for community development (ARORA; ALI KAZMI, 2012), and promoting partnerships with external stakeholders for research and development cooperation (HALL; WAGNER, 2012; HALME; KORPELA, 2013), such as with suppliers, customers, regulators and communities (BERNING; VENTER, 2015; HART; MILSTEIN, 2003; RICHTER, 2013).

10.3.3 Process approach of the conceptual framework: The Two-Lenses Model for Sustainability Innovation

Building upon the theoretical foundations discussed previously, we propose a Two-Lenses Model (2LM) to support the identification of sustainability innovation opportunities based on CSP and SBM approaches. By incorporating a process approach into the conceptual framework, the step-by-step process of 2LM is illustrated in Figure 1. The proposed sequence to apply 2LM initiates with defining participants and the unit of analysis (business unit), followed by questions related to five performance dimensions and by questions related to sustainability opportunities focused on value proposition, value creation and delivery system and value capture.

Figure 1. Two-Lenses Model (2LM) for sustainability innovation.



As represented in Figure 1, the definition of sustainable value proposition is closer related to firm's sustainability performance dimension focused on stakeholders' satisfaction and corporate strategic drivers. This is because these dimensions make explicit its priorities regarding its stakeholders and respective value that the company is seeking to promote. The following three performance dimensions are focused on how the firm intends to create and deliver the proposed sustainable value, integrating capabilities and stakeholders' contributions into firm's business processes. The SBM element of sustainable value capture is represented throughout the five performance dimensions, because each performance dimensions promotes value that is expected to be captured when SBM are put into practice.

10.4 Research methods

We present evidence from two case studies. The starting point for case research is the construction of a conceptual framework to explain the general constructs and their relationships, as suggested by the literature (Voss et al. 2002, Carvalho, 2014). Thus, the 2LM was structured based on a literature review in a transdisciplinary perspective, in which different perspectives were brought together as outlined in sections 2 and 3. Field research was performed as an attempt to put 2LM in practice, as described following.

10.4.1 Case selection

Two cases were selected according to theoretical sampling logic (rather than random or stratified), since we used intentional criteria to define the organizations to be studied (EISENHARDT; GRAEBNER, 2007). Three main selection criteria were used. The first is that the company should be concerned with social and/or environmental goals and not only with financial return. Evidence of this was collected in the companies' websites and during the interview. The second selection criterion is low level of organizational complexity, e.g., smaller companies were chosen. Since this was the first application of the framework with primary data, we aimed to reduce the difficulty of using the tool by choosing smaller companies with a relatively more controlled set of variables and interrelations, and also an easier access to top management. The third selection criterion is related to the final set of companies, since we aimed for diversified types of companies to enable the exploration of the tool in different scenarios.

Company 1 (C1) is a medium company with a fair trade signature and counts with suppliers and customers in different countries to commercialize mainly coffee, but also cocoa powder and tea. On the other hand, Company 2 (C2) is a capital goods manufacturer that designs and manufactures specialized machines with innovative and customized solutions.

10.4.2 Research instrument and data collection

The data were collected from multiple sources of evidence besides the interviews (YIN, 2009). To prepare the interviews, companies firms' website were analyzed. For the interviews, a visual representation of the 2LM (Figure 1) and the questions for the interview was brought in an A2 size sheet. The answers were written in post-its and

directly attached to the A2 alongside with the interview performed directly by the researchers with interviewees.

Following 2LM, the first activity was the definition of participants (Part A). For the present paper, we defined as requirement that the interviewee had deep knowledge of the company, not only on his or her own area of responsibility, but on different aspects of their respective companies. Interviews were performed with the Head of Supply Chain & Procurement in C1 and with the CEO of C2. Notes from discussions with top managers interviewed were also made during the primary data collection.

After defining business unit with the interviewee, questions were made regarding their respective performance dimensions (Part B - questions 3.1 to 3.5 of Figure 1). Following, a reflection on each performance dimension was instigated, seeking to unfold sustainability innovation opportunities for the companies' business models (Part C - questions 5.1 to 5.3 of Figure 1). Given the expected interrelation between performance dimensions of the prim model (NEELY; ADAMS; CROWE, 2001), one of the discussions during conduction of Part C was about these relations and possible misalignments between dimensions. These may be source of value destroyed and, by tackling this, business opportunities may be derived (GIROTRA; NETESSINE, 2013).

10.5 Research results: Cases' overview and identified innovation opportunities

This section describes the results achieved in the case studies from the application of 2LM to identify sustainability innovation opportunities.

10.5.1 Case study 1 (C1)

C1 is an ethical hot drinks brand certified as a Fairtrade mark, commercializing mainly coffee, but also tea and hot chocolate. This mid-sized company fosters small growers in different countries, not only buying from them, but also by sharing with them profit, involving them in strategic decision making and promoting knowledge exchange and technological advances to be applied to their production activities.

The needs and wants of these stakeholders are taken into consideration by C1: investors, board of shareholders, board of directors, consumers, customer (retailers, export, food service), cooperatives of farmers, farmers, employees, manufacturing partners, foundation, distributors, competitors, environment and society. They also *contribute* to C1 activities in various ways, such as engagement in social and

environmental initiatives, quality service delivery of manufacturing and logistics, provision of human and financial resources. The firm considers three key *strategic drivers*: focus on the growers, the integration of environmental action into business and transparency in all their business activities.

Regarding the *business processes* dimension, C1 points out the following core processes: selection of growers & procurement, quality management, roasting & packaging, stock management, selling, marketing, and community building. The latter represents the emerging distribution channel the firm is building to commercialize high quality, customized coffee. The supporting and complementary processes are: transport of raw material and finished goods, campaigning, research & development, strategic planning, and capacity building of growers. The latter relates to periodic events organized to promote networking between growers and technical specialists in the field of coffee, tea and cocoa, aiming at improving the growing process of the farmers. Regarding C1's capabilities, it was mentioned the capacity to identify small growers to become new partners, together with building and fostering the relationship with them. This allows the firm to have access to a broad range of growers, with a direct and transparent bond. Another important capability developed by C1 is the marketing and selling skill to manage the relationship with customers and consumers. This is directly linked to one of the most important asset of the firm, which is its brand.

One identified opportunity from applying 2LM is related to the misalignment between capability and business process performance dimensions. On the one hand, the firm has great capability on fair trade procurement process, including knowledge and processes on managing transparency in the supply chain and a broad network of small growers. This is currently used by the company to supply its own products. However, during the interview using the 2LM, it was mentioned that more value could be created from this capability, including new business opportunities, e.g. by providing services to support other companies on how to manage supply chain according to fair trade guidelines. This service could be offered both to providers of others non-coffee products and to competitors alike. As consequence, a potential secondary positive effect would be an increased stability in production volume for growers, thus, impacting positively their operations planning.

Other business opportunities were derived from alternatives to increase stakeholders' satisfaction. One example of this is the potential expansion into the food sector to provide their B2B customers, e.g. coffee shops, with more integrated solutions. This may be achieved by broadening product mix with inclusion of offerings such as food, coffee machinery, stock management service of consumable goods etc. These demands broadening C1's capabilities and business processes with direct impact of firm's system of value creation and delivery, since new offerings would be part of value proposition.

10.5.2 Case study 2 (C2)

C2 is small-sized capital goods provider, family owned, which design and manufacture equipments with high innovative content. C2 is not exclusively driven by financial results. On top of that, its owner seeks to create social value, such as the satisfaction of working in challenging tasks towards innovative solutions, the opportunity to provide income for another employee and the satisfaction of continuing the family's legacy. Regarding the *stakeholders' satisfaction* dimensions, it is interesting to note the importance to satisfy the employees' needs, given the firm's dependency on them. This is ensured not only by financial recognition (salary), but also the satisfaction to overcome technical challenges of the clients, to constantly push towards creativity and innovation, to be able to conduct from idea to physical solution, amongst others. According to the interviewee, the type of machinery produced is very low energy demanding and produces low level of waste. Therefore, environmental aspects are not considered critical in the firm's operations.

The firm does not have formally stated *strategic drivers*. However, strategic priorities were pointed out by owner: ensure high quality and innovation for products and services, growth to increase to number of employees and cultivate partnerships with clients and suppliers. These three aspects were mentioned many times during the interview, reinforcing their importance to C2. About the *business processes* dimension, it includes research of engineering solutions, product design, manufacturing, procurement, customer relation, after sales services, finance amongst others. The most relevant *capabilities* for the firm are creativity, technical capacity and market knowledge. They are fundamental to guarantee the C2's competitive advantage and client satisfaction. The last performance dimension is related to the

stakeholders' contributions. These are very aligned with the aspects highlighted so far, with special focus on employees and partnerships with clients and suppliers.

One misalignment identified is regarding firm's technical knowledge that is not yet explored towards eco-efficiency services. By addressing this misalignment between firm's capability and business process, C2 may increase its value proposition with additional services, by focusing on increasing value creation and delivery from this knowledge. On the stakeholders' satisfaction innovation trigger, C2 has the opportunity to promote network building with other micro and family owned companies, given their very particular set of conditions and situations. Possible informal meeting may contribute to more value creation from past experience sharing, since lessons learned in one organization could be used in another one.

10.6 Discussions: Unfolding sustainability innovation opportunities

Based on data collected, the analysis of performance dimensions enabled the identification of innovation opportunities to improve sustainable value exchange with stakeholders. These opportunities are a combination between novelty in terms of relationship with stakeholders and of access to capability for the innovation. The first aspect represents whether the stakeholders is currently being addressed by the firm or not and whether the relation with the firm remains the same or will be further developed. The second aspect indicates whether the sustainability opportunity demands current capabilities or new ones need to be developed. Table 2 shows examples of innovation opportunities from the case studies considering these aspects. It indicates also the primary element of the business model that changes by implementing the innovation.

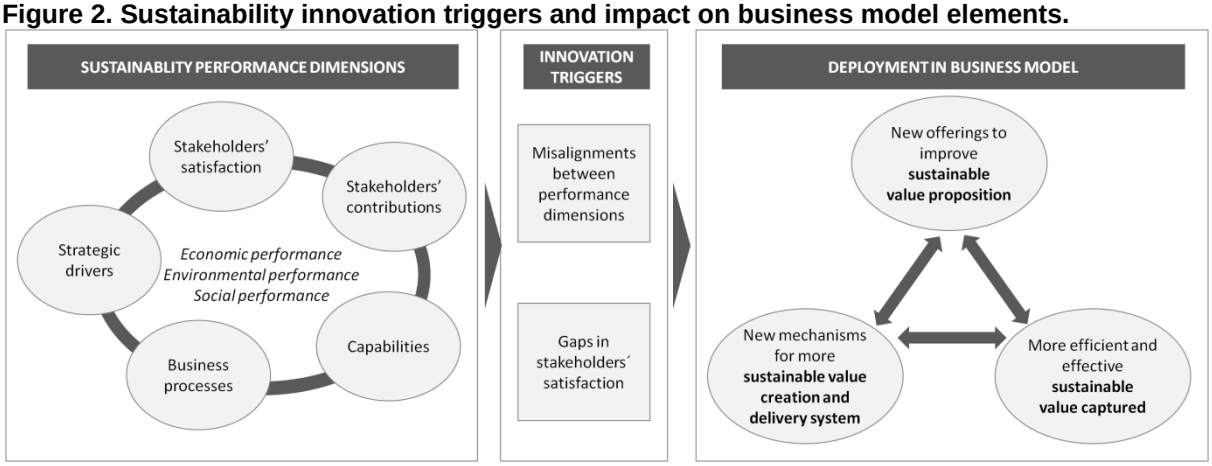
During the conduction of the 2LM, two internal triggers to identify the sustainability innovation opportunities were identified: the misalignment between sustainability performance dimensions and the gaps in stakeholders' satisfaction. The first trigger is based on verifying whether a particular performance dimension is aligned with the others. This includes possible guiding questions such as: (1) Are business process and capabilities performed to deliver the strategy? (2) Are stakeholders' contributions enough to enable business processes? (3) Do firm's capabilities suffice to put the firm's strategic drivers into practice?

Table 2. Innovation opportunities to increase sustainable value exchange with stakeholders.
**Note: VP=Value proposition; VD=Value creation & delivery system; VC=Value Capture; C1=Case 1; C2=Case 2.*

	Current relations with stakeholders	**New relations with current stakeholders**	**New stakeholders**
Existing Capabilities	Deepener relationship with customers and strengthen brand with Coffee Club members (VC, C1)	Commercialize procurement service of fair trade products and of design of transparent supply chains (VP, C1) Add services on eco-efficiency solutions for equipment (VP, C2) Foster partnership with suppliers for risk sharing (deadline to client) (VD, C2)	Network building for knowledge exchange (VC, C2)
New Capabilities	Reduce environmental impact of packaging with more research and development (VC, C1)	Develop a broader offering for the food service customer segment (VP, C1)	Open a coffee shop branded by C1 (VP, C1)

Misalignments inefficiencies between actors in the supply chain were previously pointed out by the literature as potential issues to unlock business model innovation (GIROTRA; NETESSINE, 2013). Our research complements these authors by showing empirical evidence of internal misalignments (rather than inter-organisational ones) can also provide insights for business models innovation. For instance, exploring new ways to convert firm's capability into value can be a source of competitive advantage (CARAYANNIS; SINDAKIS; WALTER, 2015; TYLER; CHIVAKA, 2011). Aligned to this, we found empirical evidence that business opportunities can be identified from internal misalignments between capabilities and business process performance dimensions. For example, C1 has the potential to explore its capabilities on transparent supply chain management by implementing new business processes to provide services in this area. In turn, C2's technical capabilities and innovation skills can be further used for promoting more eco-efficient services.

Figure 2. Sustainability innovation triggers and impact on business model elements.



The second internal trigger for more sustainable business models is focused on the stakeholders' satisfaction performance dimensions, seeking to reveal stakeholders' wants and needs that are not being satisfied by the company and reflecting on the reason for dissatisfaction. The literature suggests the involvement and engagement of users to derive opportunities to generate new ideas for sustainable business innovations (CHO; LEE, 2015). Besides, different approaches may be defined to address the various corporate stakeholders, including reinforcement strategies for supportive stakeholders, stabilization strategy for passive stakeholders (when passive communication is considered sufficient), or containment strategy for stakeholders with potential to obstruct business operations (BANERJEE; BONNEFOUS, 2011). To foster interaction with users, C1 identified the opportunity to intensify relations with members of their exclusive club, as well as to enlarge solutions for service customer segment. By doing this, the company may gather knowledge and experience to open its own coffee shop, thus, getting ready for a value chain vertical integration. It is worth noting that corporate sustainability is about satisfying not only customers and shareholders but also other stakeholders (such as employees, communities, pressure groups, etc.) (DYLLICK; HOCKERTS, 2002). In this sense, for C2, it is fundamental to promote employees´ satisfaction, which may be fostered by building a network with other family-owned companies to share experience and lessons learned. As pointed out previously in the literature, there are business opportunities in exploring social and ecological problems associated with stakeholders´ of the organization (BELZ; BINDER, 2015). A sustainable business is expected to have a positive effect not only to a specific niche but rather to the market in general and to society (SCHALTEGGER; WAGNER, 2011).

Both literature analysis and case studies converge in the dynamics of the two lenses of CSP and SBM. Figure 2 illustrates this. The present research found insights that the critical analysis of the company's CSP dimensions can be used as a trigger for innovation opportunities for more sustainable business models. These triggers tend to identify opportunities for more sustainable business models, exploring new offerings to improve sustainable value proposition; identifying new mechanisms for more sustainable value creation and delivery system; and fostering positive impact with more efficient and effective sustainable value capture. Independently from which trigger the opportunity is derived, the research shows also that the business innovation opportunities can be primarily closer related to one element of the business model (value propositions, creation and delivery system or value capture). In turn, this innovation implicates in changes also in the other elements, since they are directly interconnected.

10.7 Conclusions

This research has three main contributions. First, it shows that integration of two previously separate conceptual models is both feasible and shows utility in the given context, namely CSP and SBM. We bridge these lenses. CSP and SBM lenses have in common the fact that they both can be used to frame an overview of the company, supporting them to help make decisions towards making business more sustainable. The main difference between the lenses lays on what this overview emphasizes. While SBM lens focuses on showing the mechanisms (using sustainability innovations) to intensify sustainable value proposition, creation, delivery, and capture; CSP lens is adequate to evaluate the gap between current and aimed situation of the company's actions and results. Thus, CSP is closer related to evaluation criteria, indicators and parameters. With these different approaches, we argue that both lenses are complementary and contribute to each other.

Secondly, the research shows that the two conceptual models of CSP and SBM can be operationalised together. In this research that is shown through the tool called 2LM for sustainability innovation opportunity. It seeks to help companies discuss sustainability throughout their corporate performance dimensions. In particular, the tool found interesting implications, since it provides a structured way to rethink business models towards sustainability innovations. The proposed tool that can be further investigated by academic research but also be applied by practitioners that

find relevance in discussing sustainability integrated into their performance dimensions.

Third, the research contributes also with the identification of two triggers for sustainability innovations opportunities, which were identified during the application of the 2LM. They are: misalignment between performance dimensions and stakeholder satisfaction gap. The performance dimensions used in the present research were: stakeholders' satisfaction, strategic drivers, business processes, capabilities, and stakeholders' contributions. These trigger can be further explored by academics and managers that seek to promote sustainability innovation opportunities.

Despite its contributions, the research presents also some limitations. Regarding the research method, the number of companies and participants during the 2LM is limited. Another limitation is on the 2LM itself, since there is a trade-off between the level of detail and the easiness to comprehend a whole overview of the information in only one figure. Still on the 2LM itself, the implementation of the model in the case studies showed also that the sustainable development challenges were not explicitly brought by the process. Another limitation of the model is that it tends to focus on sources of ideas for sustainability innovation that are based on internal issues (company´s performance dimensions) and/or on the internal perception of stakeholders´ wants and needs. The limitations on the 2LM call for future studies to evolving the tool to include explicitly the sustainable development challenges and the active participation of external stakeholders. Finally, the model is also limited due to absence of issues related to organizational culture and values, which are particularly relevant for strategic decisions in the corporate sustainability context (MULLER; VERMEULEN; GLASBERGEN, 2012).

The implications of the present research can be addressed for both academics and practitioners. For academics, we contribute to knowledge on how to use CSP as trigger for sustainability innovations towards more SBM. This calls for further investigation on how to integrate sustainability into business models, not only to identify innovation opportunities, but also to promote competitive advantage and contribution to global sustainable development. Besides, solely the identification of innovation opportunities is not enough to ensure improvement in CSP. Therefore, further researches need to be conducted on the challenge of implementing these

innovation opportunities, of deploying the implications into the business model e of dealing with possible tensions created by these changes. For practitioners, this research presents the 2LM, which can be used as an artefact in a workshop to help organizations unfold sustainability innovations. By promoting the use of this tool, we seek to foster the discussion of corporate sustainability, CSP, SBM and sustainability innovation within organizations.

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11 #P6: Transforming sustainability challenges into competitive advantage: Multiple case studies kaleidoscope converging into sustainable business models

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Abstract

Recent tendency has been pushing organizations to rethink their role in society and making organization reflect that profit may not be the only and foremost important business performance criteria. Thus recent literature has been exploring the sustainable business models (SBM's), to support integration of sustainability into business. This research aims advance in this body of knowledge and proposes a theory and practice-based framework to address organizations towards more SBM, making explicit main elements to align business to sustainability performance goals. To support the argument that there is no unique solution for SBM, this research performs a multiple case studies in eleven organizations from diverse sectors, situated in Brazil and in the United Kingdom. Results show that SBM should not by an attempt to deny business-as-usual perspective, but rather it seeks to complement this view, by adding a more axiological and systemic approach. Besides, three convergent aspects to integrate sustainability into SBM's value creation and delivery system were identified: (1) the connection between business purpose and employees' values and believes; (2) the pro-active and clear approach on sustainability problem-solving; and (3) the need for system-level changes to enable successful SBM's. This systemic thinking is highlighted by the concept emerged from the research, the cascaded sustainable value captured, representing that, as SBM's are part of a value network, value delivered by the organizations is captured not only by stakeholders with direct contact, but this is also deployed to stakeholders of focal company's stakeholders. This distinction is not always trivial for companies, so the proposed concept can support advances in SBM discussions. Further studies are

called to the challenge of making explicit that SBM's are not only companies that directly addresses a specific social and/or environmental problem, but rather is an emerging paradigm on how to manage efficient businesses in any sector to add positive value to the globe.

11.1 Introduction

Recent tendency has been pushing organizations to rethink their role in society and making organization reflect that profit may not be the only and foremost important business performance criteria. It is reinforced by the fact that global sustainable development and future generations depends also on companies' current decisions and actions. Companies' efforts are expected to be combined to other societal actors (governments, civil society, etc.) towards the seventeen Sustainable Development Goals (SDG's) for 2030 proposed by the United Nations, in substitution to the Millennium Goals (UNITED-NATIONS, 2015). External and internal motivations has been pushing companies to improve their corporate sustainability performance, in other words, their contribution to global sustainable development. These motivations can be explained by various theories, including institutional theory, resource-based view of the firm to increase competitive advantage, stakeholder theory, amongst many others (CONNELLY; KETCHEN JR.; SLATER, 2011; ENGERT; RAUTER; BAUMGARTNER, 2016; LOZANO; CARPENTER; HUISINGH, 2015).

In this sense, sustainable business models (SBM's) attempt to go beyond isolated social and environmental initiatives and systematically integrate sustainability into business (BOCKEN et al., 2014; BOONS; LÜDEKE-FREUND, 2013), in which corporate sustainability concepts shape decision making processes (STUBBS; COCKLIN, 2008). Exploring SBM means converting sustainable development challenges into business opportunities (BELZ; BINDER, 2015). Thus, pressures from legislations related to sustainability tend to be seen by corporations not as obstacles, but rather as incentives for them to play an active role in global sustainable development (SNEIRSON, 2009).

Non-sustainability oriented business model has been addressed by several publications and the most disseminated in practice is the Business Model Canvas (BMC), composed by nine building blocks: value proposition, customer segment, customer relationship, distribution channel, key partners, key activities and key resources, cost structure and revenue model (OSTERWALDER; PIGNEUR, 2010;

OSTERWALDER; PIGNEUR; TUCCI, 2005). This approach has the advantage to provide an overview of the company with a relatively small number of elements, which can be easily understood. SBM literature, on the other hand, is still theoretical (RANDLES; LAASCH, 2016) or is too embedded in the financial-driven paradigm, even though they include, at some extend, social and environmental concerns in business model discussions (HART; MILSTEIN, 2003; RICHTER, 2013; STUBBS; COCKLIN, 2008). One attempt to provide a large variety of SBM's combining theory and practice are the eight SBM's archetypes (BOCKEN et al., 2014), enlarging the perception of SBM possibilities. However, this literature still lacks empirical primary data source, since the archetypes were developed from academic and gray literature. Besides, the literature points out also that research about strategically integrating sustainability into business is still mainly theoretical or addresses specific aspects of corporate sustainability (ENGERT; RAUTER; BAUMGARTNER, 2016). Therefore, there is a need for further theoretical and empirical research on SBM's various approaches, challenges and contributions (DENTCHEV et al., 2015). Given the described context, this research aims to propose a theory and practice-based framework to support SBM perspective of organizations aligned with sustainability performance goals. To do so, we combine the discussion based on literature analysis and eleven case studies conducted in two countries (Brazil and United Kingdom).

The paper is structured in six sections, starting with the present one describing the research context and objective (Section 1). Next, Section 2 brings the literature background, encompassing delimiting corporate sustainability principles, the main SBM elements, and the context factors that affect the integration of corporate sustainability principles into SBM. Section 3 described the research method resulting from companies inserted in a variety of fields. The results are presented in the next encompassing an overview of each case study followed by data analysis in terms of value proposition, value creation and delivery system and value captured (Section 4). Combining field data and the literature background, we bring in Section 5 the research discussions, arriving at a theory-practice based framework for integration of sustainability into organizations towards more SBM. Concluding remarks, research limitations and indication for future research are discussed in Section 6.

11.2 Literature background

The present research considers that corporate sustainability can be translated into the following principles (as followed by Morioka and Carvalho, 2016a): (i) multiple objectives including economic, but also environmental and social goals (ELKINGTON, 1998); (ii) a proactive engagement with organizations' various stakeholders (DYLLICK; HOCKERTS, 2002), such as shareholders/investors, customers, suppliers, employees, community, government, environment, society, amongst others (DENTCHEV, 2007; GADENNE et al., 2012; PERRINI; TENCATI, 2006); and (iii) a broad view of the impacts for the short, medium and long term, in order to consider current and future generations (BANSAL; DESJARDINE, 2014; WCED, 1987). Defining corporate sustainability principles can be used as guidelines for decisions conducted by organizations, giving a more tangible and, yet, holistic approach of corporate sustainability to analyse the integration of sustainability into business. By following these principles, decisions tend to be less individual and short term-oriented and more aligned with collective values and motivations, according to the axiological view of global sustainable development (BOLIS; MORIOKA; SZNELWAR, 2014). This section is dedicated in delimiting the main aspects on how these principles can be systematically integrated into businesses for more SBM.

11.2.1 Sustainable business model concept and sustainable business innovation

SBM can be defined in various ways, including as a narrative of sustainability practices, a description of characteristics, a list of conditions, a representation of processes, a description at firm or system-level (Stubbs and Cocklin, 2008). Schaltegger et al. (2016a) highlight the application of the concept, indicating that a SBM can support organization to describe, analyse, manage and communicate its value proposition, how it creates and delivers this value and the economic, social and environmental value captured. Retrieving also that business models connect corporate strategy to day-to-day activities (RAUTER; JONKER; BAUMGARTNER, 2015), our work definition is that SBM is a representation of business elements, their interrelations and the systemic context that enable sustainable value exchange with stakeholders towards corporate sustainability performance, translating and providing feedback between corporate strategy and operations.

Financially-oriented paradigm of value can be easily represented in monetary measures. SBM are challenged to create and deliver not only financial value, but

rather a so called sustainable value. For some, this concept is still tight related to financial shareholder value, achieved by addressing sustainable development challenges (HART; MILSTEIN, 2003), or is about translating social and environmental indicators in monetary cost analysis (ANG; VAN PASSEL, 2010; FIGGE; HAHN, 2004). However, we argue that SBM can deliver a sustainable value that goes beyond this approach. It has to do with the organization's capacity to create satisfaction given a certain stakeholder need and also to destroy by not meeting this level of satisfaction, as briefly discussed by Upward and Jones (2015). Thus, sustainable value can be seen the delimitation of a economic, environmental and/or social need for current and future generations that, when it is met, provokes satisfaction of the corresponding stakeholder. In other words, sustainable value is relative to each stakeholder and is aligned with sustainability principles presented earlier in the section.

Variations of the term SBM (BOCKEN et al., 2014; BOONS et al., 2013; BOONS; LÜDEKE-FREUND, 2013) have been also used, such as business model for sustainability (SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016), sustainability business model (STUBBS; COCKLIN, 2008), flourishing/strongly sustainable business model (UPWARD; JONES, 2016), truly sustainable business models (DYLLICK; MUFF, 2016) and also as normative business model (RANDLES; LAASCH, 2016). Despite specific nuances that differentiate these concepts, the present research uses the term SBM to represent the common idea of these concepts of a business model that systematically integrates corporate sustainability.

Given sustainable development challenges, business-as-usual and traditional business models paradigm tends to be insufficient. This calls for new ways of perceiving and performing business. A set of interesting concepts and logics have been explored by the literature with potential to promote organization to contribute to global sustainable development. For instance, business models focused on solving problems of the bottom-of-the-pyramid (BOP) population (YUNUS; MOINGEON; LEHMANN-ORTEGA, 2010), on enabling resource closed-loops by circular economy (BOCKEN; BAKKER; PAUW, 2016; WITJES; LOZANO, 2016), on promoting the culture of sharing economy (CHENG, 2016), on exploring sustainability performance from product-service-systems, PSS, (BOO et al., 2016; CATULLI, 2012; HANNON; FOXON; GALE, 2015), on fostering value from industrial ecology and industrial

symbiosis (SHORT et al., 2014) and on promoting new ventures as sustainable start-ups (BOCKEN, 2015). The SBM archetypes bring an variety of opportunities for organizations to innovate their business logics (BOCKEN et al., 2014). The archetypes include: maximise material and energy efficiency; create value from ‘waste’; substitute with renewable and natural processes; deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency; re-purpose the business for society/ environment; and develop scale-up solutions. These innovations towards more SBM can be derived into elements to support critical analysis and improve understanding. This is performed in Section 2.3.

11.2.2 Sustainable business model elements

Following previous research (BOCKEN et al., 2014; MORIOKA; EVANS; CARVALHO, 2016; SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016; SCHALTEGGER; LU DEKE-FREUND; HANSEN, 2016), we consider a business model as a combination of three main components: value proposition (product/service, customer segments and relationships); value creation & delivery system (key activities, resources, technologies, etc.); and value capture (cost structure and revenue streams) (RICHARDSON, 2008). These elements of business model was first proposed for traditional approach rather than a sustainability one (RICHARDSON, 2008). However, this approach has been successfully used for SBM and, besides, a value-based approach tends to provide a more concrete definition of a business model (CARAYANNIS; SINDAKIS; WALTER, 2015).

The first SBM element considered is the value proposition. It is directly associated to company's offerings, e.g., its products and services (OSTERWALDER; PIGNEUR, 2010). But more than that, the value proposition is the main foundation of SBM conceptualization and implementation, since it represents the organization's economic, environmental and social added value (CARAYANNIS; SINDAKIS; WALTER, 2015). Therefore, defining a sound value proposition is fundamental for organization's existence, survival and prosperity (CARAYANNIS; SINDAKIS; WALTER, 2015). As mentioned before, addressing the triple bottom line, TBL, economic, environmental and social goals only makes sense, when considering not only the short term, but also the medium and long term dimensions (LOZANO, 2008). Yet, the long term dimension for SBM tends to go beyond the timeframe for strategy

planning, but rather it implies considering also generations still to come (BANSAL; DESJARDINE, 2014; WCED, 1987).

The second business model element is the value creation and delivery system. It comprises the firm's resources, capabilities and inter-organizational network, having strong connection with generating competitive advantage (RICHARDSON, 2008). Initiatives for sustainability may be conducted in different areas of the organization, such as operations and production, management and strategy, organizational systems, marketing and procurement, assessment and communication (LOZANO, 2012). However, these initiatives need to be integrated into organization's systems (LOZANO, 2012) and organizations are invited to incorporate sustainability principles into their business processes and capabilities (MORIOKA; CARVALHO, 2016a). Thus, companies can implement sustainability initiatives towards promoting sustainable supply chain management (CARTER; ROGERS, 2008; SEURING et al., 2008), eco-design (BRONES; CARVALHO, 2015; LUTTROPP; LAGERSTEDT, 2006), sustainable operations management (KLEINDORFER; SINGHAL; VAN WASSENHOVE, 2005), sustainability reporting (BROWN; DEEGAN, 1998; HAHN; KÜHNEN, 2013), sustainable work design and ergonomics (BOLIS; BRUNORO; SZNELWAR, 2014), amongst many others. This shows that organizations may use different mechanisms to implement their respective value creation and delivery systems to realize the value proposition.

The third component is the value capture, also known as value appropriation (GHEZZI; CORTIMIGLIA; FRANK, 2015). Traditional business model approaches tend to restrict this business element to financial aspects in terms of cost structure and revenue model (OSTERWALDER; PIGNEUR; TUCCI, 2005). SBM´s include other forms of non-monetary value capture. In this sense, the company seeks to capture economic value for itself and, at the same time, reduces depletion and/or increases natural, social and economic capital beyond its boundaries (SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016). To do so, various internal and external stakeholders need to be addressed by SBM, including not only customers and shareholders/investors, but also suppliers, employees, natural environment, society, etc (STUBBS; COCKLIN, 2008).

11.2.3 SBM expected outcomes and context

The literature points out various theories to justify the strategic approach for sustainability. We do not attempt to cover all of them, but further readings are suggested (BANSAL, 2005; CONNELLY; KETCHEN JR.; SLATER, 2011; ENGERT; RAUTER; BAUMGARTNER, 2016; GARRIGA; MELÉ, 2004; LOZANO; CARPENTER; HUISINGH, 2015). We use elements of the institutional theory, which indicates that companies are influenced by coercive, mimetic and normative pressures (DIMAGGIO; POWELL, 1983). United Nations' SDG's can be considered as a call for action to all societal actors, including the organizations. These seventeen goals can be influence organizations, since they can serve to inform regulators and governments towards new and/or improved legislations internalize externalities in corporations, they can provide guidance to pioneering organizations that will eventually be followed and/or they can bring discussion and eventually some level of agreement between actors' opinions on sustainability. Independently from which kind of pressure (coercive, mimetic or normative), the SDG's tend to have potential to influence organizations. Therefore, following the lead that corporate sustainability is associated with organizations' contribution to sustainable development, we propose that SBM are expected to be able to contribute to SDG's. Critiques on the seventeen goals proposed by the United Nations for 2015-2030, built from the Millennium goals, include the need for action-oriented guidelines for policy implementation (HÁK; JANOUŠKOVÁ; MOLDAN, 2016). SBM aligned with the SDG's, therefore, can be a way for corporations to participate positively to the goals.

Synergies between corporate goals and sustainability goals have been addressed by the literature in various forms over the years, such as win-win solutions (ELKINGTON, 1994), sweet spots (SAVITZ; WEBER, 2007), and shared value creation (PORTER; KRAMER, 2011). These concepts can be associated, at some extend, to resource-based view (RBV) of the firm, since the literature shows that by investing in resources and capabilities for corporate sustainability, companies tend to improve their competitive advantage (BANSAL, 2005). Initial discussions on the contribution of sustainability to competitive advantage were conducted by Hart (1995), under the proposal of a natural-resource based view of the firm. This link has been further explored by the literature, addressing the integration of corporate sustainability into strategic management (ENGERT; RAUTER; BAUMGARTNER,

2016). Alongside with other drivers (compliance, economic performance, social and environmental responsibility, innovation, risk and quality management, and reputation), competitive advantage has been shown as an important motivation for more integration of corporate sustainability into business (ENGERT; RAUTER; BAUMGARTNER, 2016).

The literature indicates also contextual variable that affects the integration of sustainability into business (ENGERT; RAUTER; BAUMGARTNER, 2016; MORIOKA; CARVALHO, 2016a). Amongst external factors that affect the incorporation of corporate sustainability into business, the literature points out issues such as natural environment and social general context (KOLK; MAUSER, 2002), legislation (GRIFFITH; BHUTTO, 2008; TAN et al., 2014), industry-specific competitive dynamics and market (GROSVOLD; HOEJMOSE; ROEHRICH, 2014; SIEBENHÜNER; ARNOLD, 2007), public opinion (SIEBENHÜNER; ARNOLD, 2007) and technology level (FAN; HO; FAN, 2014). The literature brings evidence, however, that not only external context influences business models, but SBM can also proactively influence institutional structures towards behaviour in favour of sustainability (PACHECO; DEAN; PAYNE, 2010). The authors identified that organizations with a sustainable entrepreneurship posture have conditions to alter and/or create norms, property rights, and government legislation to support better sustainability performance.

Table 1 summarizes the main constructs used in the present research to operationalize SBM, including sustainable value proposition, value creation and delivery system, value capture, competitive advantage, contribution to SGD's and SBM's context factors.

Table 1. Literature synthesis.

	Example of elements from the literature	Synthesis for SBM
Value proposition	Represents the expected economic, environmental and social value added by the organizations (CARAYANNIS; SINDAKIS; WALTER, 2015) Value proposition includes products and services (OSTERWALDER; PIGNEUR, 2010) Addresses short, medium and long term aspects of sustainability (BANSAL; DESJARDINE, 2014; LOZANO, 2008)	SBM's value proposition summarizes the organizations' meaning of existence in terms of the sustainable value it aims to create and deliver, includes offerings (products and services) and seeks to address short, medium and long term aspects
Value creation and delivery system	Firm's resources, capabilities and inter-organizational network (RICHARDSON, 2008) Sustainability initiatives can be incorporates into operations/production, management, strategy, organizational systems, marketing and procurement, assessment and communication (LOZANO, 2012). These initiatives include: sustainable supply chain management (CARTER; ROGERS, 2008; SEURING et al., 2008), eco-design (BRONES; CARVALHO, 2015; LUTTROPP; LAGERSTEDT, 2006), sustainable operations management (KLEINDORFER; SINGHAL; VAN WASSENHOVE, 2005), sustainability reporting (BROWN; DEEGAN, 1998; HAHN; KÜHNEN, 2013), sustainable work design and ergonomics (BOLIS; BRUNORO; SZNELWAR, 2014), amongst many others.	SBM's value creation and delivery system represents how the organization manages its resources, capabilities and partners to enable its sustainable value proposition
Value capture	Companies' value capture include cost structure and revenue model (OSTERWALDER; PIGNEUR; TUCCI, 2005) SBM's enable financial value captured by the organization, but also depletion and/or increases natural, social and economic capital beyond its boundaries (SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016).	Each stakeholder captures sustainable value created and delivered by the focal organization
Competitive advantage	There are win-win solutions (Elkington, 1994), sweet spots (Savitz and Weber, 2007), and shared value creation (Porter and Kramer, 2011), by exploring corporate sustainability to build competitive advantage SBM can be a strategic choice to increase competitive advantage (ENGERT; RAUTER; BAUMGARTNER, 2016)	SBM have potential to promote competitive advantage and, at the same time, contribution to SDG's
SDG's	Institutional theory (DIMAGGIO; POWELL, 1983) can serve to justify firms' engagement to sustainable development, given laws and regulations (coercive pressure), competitors imitation (mimetic pressure), or ethical motivations (normative pressures)	
Context factors	Factors include: Natural environment and social general context (KOLK; MAUSER, 2002), legislation (GRIFFITH; BHUTTO, 2008; TAN et al., 2014), industry-specific competitive dynamics and market (GROSVOLD; HOEJMOSE; ROEHRICH, 2014; SIEBENHÜNER; ARNOLD, 2007), public opinion (SIEBENHÜNER; ARNOLD, 2007) and technology level (FAN; HO; FAN, 2014).	The organization is a node of a complex system, so outside of its boundaries affects the inside.

11.3 Research method

Given the lack of empirical research on sustainability integration (ENGERT; RAUTER; BAUMGARTNER, 2016), case studies are an appropriate research

method to build theory combining previous publications and primary data collection about specific organizations. This method is indicated to be suitable for investigating complex social phenomena (YIN, 2010), which is one strong characteristic of sustainability issues (VAN KERKHOFF, 2014). Besides, case studies allows a holistic analysis of contemporary phenomenon in its specific context (YIN, 2010), bringing in-depth understanding of a specific topic (SIMMONS, 2009).

The steps for the core case studies follows the sequence proposed by the literature (EISENHARDT, 1989; SIMMONS, 2009) and are described following to ensure replicability and to increase research reliability (YIN, 2010). To get started, this research performed the literature analysis previously described, deriving research theoretical background.

11.3.1 Sampling and data collection

Multiple cases are chosen for theoretical reasons (Eisenhardt and Graebner, 2007); however, this kind of sampling is more complicated because the case selection relies on the contribution to theory development and in our case on the variety of SBM and the need for express their diversity.

Considering this research as a multiple-case study, specific criteria for selecting companies were defined. The core selection criteria were: explicit concern to social and/or environmental issues in both in the short and long term and incorporation of this concern into company's value proposition. These criteria were verified in the corporate websites and confirmed during interviews. As recommended by the literature, theoretical sampling is performed, rather than choosing a representative sample of cases (EISENHARDT; GRAEBNER, 2007). In particular, the present intention is to get a broad variety of business models aligned to sustainability that can shows a kaleidoscope of value proposition, creation and delivery towards a SD. Thus, sample provides a considerable diversity of business models, encompassing companies B2C (business-to-consumer) and B2B (business-to-business); service providers and manufacturers; small, medium and large organizations. Besides, data collection included two countries (United Kingdom-UK and Brazil). Number of employees was the main criteria for classifying the company size into: small (less than 10), medium (between 11 and 1.000) and large (more than 1.000). Table 6 shows an overview of the organizations that participated in this research.

Table 6 - Overview of selected organizations for case studies.

#	Case	B2B	B2C	Type	Size	Employees	Country
1	#A		X	Service	S	3	Brazil
2	#B	X		Services	S	4	UK
3	#C	X	X	Service	S	4	Brazil
4	#D	X	X	Service	S	4	Brazil
5	#E	X		Manufacturing	S	<10	UK
6	#F		X	Manufacturing	S	11	UK
7	#G		X	Services	M	14	UK
8	#H	X	X	Services	M	35	UK
9	#I		X	Services	M	50	Brazil
10	#J		X	Manufacturing	M	800	UK
11	#K	X		Manufacturing	L	>10.000	UK

The next step is crafting the instrument for data collection (EISENHARDT, 1989; SIMMONS, 2009). Multiple data collection strategies were performed by the present research, as recommended by the literature to ensure construct validity (YIN, 2010). Main data sources are semi-structured interviews, which were combined with analysis of documents published by the company itself or by third parties (grey literature).

The interviews were divided into two parts. The first was related to the business models elements (in terms of value proposition, value creation and delivery system and value capture) and context factors that affect the organizations, while the second part related these issues to two aspects: competitive advantage and contribution to SDG's. This research instrument was tested in a pilot interview with a researcher that took part of an academic project about SBM conducted in partnership with a large UK retailer. After this pilot, adjustments in some aspects were performed, such as the phasing of some questions to clarify the meaning. After defining the instrument for data collection, the next step was to enter the field (EISENHARDT, 1989; SIMMONS, 2009). For the interviews, the questions displayed visually in A3 size sheet form, as a illustrative diagram. This sheet was fulfilled, as the interview is conducted. This process was useful to get an overview of each company´s business model. Besides, it seeks also to promote further engagement of interviewee to the interview itself, as recommended by the principle of stakeholder engagement in the context of research in sustainability (VAN KERKHOFF, 2014). The interviews were recorded, once agreed by the interviewee, and transcribed for further analysis.

11.3.2 Data analysis

In multiple case studies, such ours with 11 cases, the researchers face the challenge of mitigating the bias through the triangulation of multiples data sources (Yin, 2010) and the tradeoff between “better stories vs. better theories” (EISENHARDT; GRAEBNER, 2007) and so the data analysis is driven to distinct propositions.

The content analysis was performed on the transcribed interviews that pass through the coding process, the analysis of content (frequency counts and cross-tabulations) and interpretation of results (DURIAU; REGER; PFARRER, 2007). A computer-aided approach was applied, using a software called MAXQDA (KUCKARTZ, 2010). This software was useful for coding and analyzing interview data, amongst other applications. This stage was fundamental to provide a deeper understanding of the data set collected, which enabled the aggregation of this data into the most relevant aspects underneath this variety of companies studied.

The coding of data followed the stages of the interviews and included six blocks of parameters, following Table 1 derived from literature background. It initiated with each SBM element (value proposition, value creation and delivery system and value captured) and, in sequence, the perception of contribution to competitive advantage and to SDG's. The last block is related to context aspects that affects business models, which was obtained from specific questions to the interviewee and also captured throughout the previous questions of the semi-structured interviews. Finally, a framework is proposed combining both case studies and literature analysis to represent the integration of sustainability into organizations towards more SBM.

11.4 Research results

Table 3 presents a brief overview of each organization studied, highlighting the main aspects on how they are aligned with corporate sustainability principles presented in Section 2. This supports the justification of case studies selection.

Table 3 - Overview of case studies and their alignment to corporate sustainability principles.

#	Triple bottom line goals	Stakeholders	Timeframe
#A	Promotion of community-based tourism that fosters local economic value generation, culture and nature	Development of local community to provide service with quality and security for the tourist	By incentivizing local culture can awake interest of young population, preventing it to fade with time
#B	Promotion of culture eco-efficiency and sustainability accountability by providing free web scalable tool for SME's to disclosure environmental performance. In the future: introduce social performance	Awaking SME's interested in increasing in environmental performance and eco-efficiency	Availability of information is the first step to enable that every financial transaction considers also environmental and social indicators.
#C	Financially viable business with purpose to awake young people's protagonism, entrepreneurship and problem-solving skills.	Showing private and public schools the importance of paying attention to education that complements traditional approaches	These students tend to have a more complete education and provide solutions for society
#D	Development and dissemination of knowledge and networking to enable successful businesses with social and/or environmental purposes.	Dissemination of culture on entrepreneurship and risk reduction to foster people's will to develop businesses with purpose	Preparation of businesses that aim to have a positive social and/or environmental impact
#E	Interior office design solutions with remanufactured furniture to foster local economy, create semi-skilled jobs and reduce material to landfill	Proactively talking and influencing to customers about the value of remanufactured goods	Preparation of current logistics and other industrial infrastructure on how to operate for the circular economy
#F	Design, manufacturing and sale of luxury accessories produced from end of life fire hoses	Promotion of culture of slow fashion amongst consumers of high living standards	Promotion of circular economy by repurposing material waste and fostering responsible consumption.
#G	Support with written materials, courses and networking people to find jobs that are more aligned with their personal values and aims	Provoking reflection on people by showing that there is an alternative way of working than traditional corporate jobs.	Expectation that happier people at work are more productive and propose themselves to solve problems more efficiently

Table 3 (cont.) - Overview of case studies and their alignment to corporate sustainability principles.

#	Triple bottom line goals	Stakeholders	Timeframe
#H	Retrieve people's connection to nature for innovation and entrepreneurship promotion through adventure activities, outdoor clothing, business courses, partnership with universities and schools, etc.	Reconnecting people affectively with nature and providing young students or business men and women the opportunity to be more sensible and more actively to solve problems	Promotion of people's environmental awareness and sensibility towards current and future generations
#I	Bike sharing service to improve people's quality of life as an environmental friendly alternative for urban transportation	Promotion of cycling culture in Brazil, where it is not traditional	Contribution to the vision that people should have alternatives for urban transportation that is not based on fossil fuel
#J	Development, production and sale of high quality and healthy food with ingredients from local, organic and trustworthy suppliers	Food representing care for people, enabling customers to save time from cooking for other activities, disseminating traditional and international tastes, employing vulnerable populations, as ex-convicts, etc.	Community development of local production sites, stores and suppliers to enable solid business today with #J, but also preparing them for other businesses
#K	Flat rolled aluminium with much higher recycled content, compared to other players, reducing carbon emission and mitigating price volatility of raw material from international market	High investment in technological innovation to ensure product quality and also in developing infrastructure (local collection centres) and environmental recycling awareness around the globe	Development of culture, industrial infrastructure and technology for aluminium recycling to enable further development of better solutions

11.4.1 Case studies' value proposition

Results show that the value proposition is composed by two levels, a tangible and an intangible one. The tangible level is represented by the products and services offered by the organization. Meanwhile, the intangible level of value proposition represents the business purpose, as a combination of, entrepreneurial dream and vision, uneasiness and personal values and believes. Data collection showed many times personal narratives and perceptions to build the company's value proposition in terms of economic, environmental and social value in the short, medium and long term.

In terms of economic, environmental and social value, the studied companies indicated their value proposition focused at one of the TBL pillars or at a combination of them. Some of the case studies expressed clear alignment to environmental goals

(#B, #K), while others found closer connection to social ones (#A, #C, #G, #J). As previously indicated by Belz and Binder (2015), a sustainable business opportunity can derive from an environmental problem, to which a social and economic solutions are added or, similarly, from a social problem, to which an environmental and economic solution are integrated. Some case studies are very clear on their TBL value proposition, such as #F, #E, #H, and #D. However, others are still based on two pillars, combining environmental or social goals with economic ones. They indicated, however, their intention to explore a TBL approach in the medium and long term.

When investigated about short, medium and long term dimensions of their value proposition, it was challenging for the companies to delimit their proposition for the next generation. In general, this question was interpreted as regarding their strategic outlook. They pointed out possibilities to improve delivery of value proposition with current products or by adding new ones. Examples of improvement of current products in the medium and long term include: expanding reports from environmental performance to include social aspects (#B), better resource efficiency in food delivery (#J), and expanding the impact to other countries (#G). The core idea of their value propositions remain as previously (respectively, providing scalable solution for sustainability reporting, providing high quality frozen food and promoting alignment between work activity and personal values and believes), but in an improved and expanded way. On the other hand, adding new products were also pointed out by organizations to improve value proposition in the longer run, such as entering the field of rail transportation as another alternative for sustainable urban mobility (#I), exploring other materials' end of life potentials (#F), and developing new solutions for promoting businesses with purpose according to context changes and demands (#D). Table 4 summarizes the discussion presented by this section.

Table 4 - Sustainable value proposition for case studies' SBM's.
(*) Note: Extracted from corporate websites, while the other evidences were from the interviews.

Aspects	Description	Example of evidence
Alignment to business-as-usual	Tangible level of value proposition as products and services	Case studies' products and services pointed out from the interviews are the translation of the companies' purpose
Intangible level of value proposition	Connected to entrepreneurial dream and vision, uneasiness and personal believes	"Our focus is that people can chose how to move from one place to the other..." (#I) "We want people to love what they do. This will make the world a better place " (#G) " This sounds like a cliché, but we want to make good practice a common sense" (#H)
TBL goals	Social purposes	Purpose of #A is to: "offer experience to individuals and communities reconnecting values and nearing realities"(*) Purpose of #C is to: "inspire a new way to think and transform the quality of education in our country" (Brazil) (*)
	Environmental purposes	Purpose of #B: "We're committed to removing the barriers to environmental management and to guiding as many companies as possible on their journey to building a greener business and supply chain" (*) "The whole purpose of the business is an environmental one" (#B)
	TBL synergies and inter-dependence	"We propose to bring to the world is to ally financial value creation with social and environmental value" (#D) "It [the TBL approach] is like a milk stool that is always going to fall down, if you’re missing one of your legs and no one’s ever going to be able to sit on it" (#F)
Long term perspective as strategic view to improve delivery of value proposition	With current offerings	Expanding reports from environmental performance to include social aspects (#B) Better resource efficiency in food delivery (#J) Expanding the impact to other countries (#G)
	By adding new offerings	Entering the field of rail transportation as another alternative for sustainable urban mobility (#I) Exploring other materials' end of life potentials (#F) Developing new solutions for promoting businesses with purpose according to context changes and demands (#D)

11.4.2 Value creation and delivery system

Despite the variety of value propositions, case studies provided common aspects regarding respective resources, capabilities and inter-organizational network. These are expected to encompass the companies' value creation and delivery systems (RICHARDSON, 2008). At this part of the interview, a set of corporate aspects were brought in advance to guide this question and enable cross-case analysis. These

aspects were: supply chain and logistics, operations, marketing and sales, research and development/ innovation/ design, corporate governance and organizational culture. It was open for the interviewee to add other processes that they found to be missing. Table 5 brings an overview of the three main aspects that were convergent from the case studies: people-work connection, problem-solving orientation and systemic thinking. These dimensions were mainly derived from the following parts of the interviews human resources, corporate governance and organizational culture for the first dimension; research and development, innovation and design for problem-solving orientation; and supply chain/logistics, operations and marketing for systemic thinking.

One of the main aspect mentioned by the interviewees was the strong *people-work* connection, relating personal values and business purpose. This connection is reinforced by empowering employees to be protagonists, which can be associated with open, flexible and innovation-driven organizational culture. Even with wage being sometimes not the top one compared to the market, but at least in a minimum level to sustain living costs, the main motivation for companies' human resources is to believe in the purpose of the business (explicitly mentioned by #B, #D, #E, #I). From this motivation, the companies perceive employees' engagement, creativity and entrepreneurial approach to solve problems. As pointed out by #H and #K, it is critical that all employees are engaged with the cause, especially the ones with direct contact to clients. Therefore, associated management processes, such as attracting, retaining, training and developing people are critical for the cases studied. The companies also associated employees' engagement with shared responsibility for decision making (such as in #D, #F, #I), with family work environment (#F, #G) and with having fun at work (#B, #J). Data showed that organizational culture is also associated to the alignment between discourse and action. Also referred to with the expression "walk the talk", the companies indicated the need for transparency in every decision to ensure accountability of their action. That includes admitting bad decisions, as pointed out by #J.

Table 5. Sustainable value creation and delivery systems for case studies' SBM's.

Aspects	Description	Example of evidence
Alignment to business-as-usual	Companies organized in processes	Division in supply chain and logistics, operations, marketing and sales, research and development/ innovation/ design, corporate governance and organizational culture was well accepted during interviews both with service providers and manufacturers
People-work connection	Protagonist role of employees	"It is a hard market, so we need to be passionate about what we are doing" (#B) "The staff is really passionate and qualified" (#H) #J's "probably main areas of expertise is investment in personal development, excellent training and a culture of internal promotion and investment in people" "We [the employees] are taking over 51% of shares by the end of 2016. (...) It has to do with promoting employees' engagement for the long term" (#H)
	Organizational culture	Transparency, B-Corporation certification (#A, #B, #C, #F, #G, #H, #J) Family feeling (#J, #G, #F) Having fun at work (#B, #J) Responsibility and commitment (#I, #J, #H) Decentralized decision making process (#D, #G, #I)
	Alignment between employees' and corporate values	"Walk the talk" (#A, #G, #H) " We [*the employees*] share our love of nature" (#H) "We have strong alignments amongst our [*the employees'*] values" (#D) "If we don't have the sales guys into this boat, we will struggle" (#K) "The person do not need to have previous knowledge, the important is to have people engaged in the cause, we can train them in-house" (#I)
Proactive problem-solving orientation	Impact and outcome orientation	" Our job is to train people that can have the impact" (#H) "The industry is still training people to do the task and not the outcome. We need more outcome-based jobs" (#H)
	Companies' problem delimitation	Each case study pointed out its purpose, indicating the problem it aims to solve. This may be connected to community development (#A), reduction of carbon emission (#B, #K), education (#C, #H), entrepreneurship (#D, #G), landfill (#E, #F), urban mobility (#I) and food (#J).
	Technology and new product development	"We want to increase from a 30% recycled content to a 80% recycled content by 2020" by developing technology (#K) "We also have in our DNA to take another approach or view on things (...) We also need to have strong social entrepreneurship vein" (#B) "Need a new mindset (incremental not enough)" (#E)
Systemic thinking and engagement - Inter-dependence to...	... current and potential clients / users	"We need to show the appeal. (...) Cities do not see it [*bike sharing systems*] as something the municipalities need to subsidize" (#I) "Mostly, we are word of mouth", in contract with marketing costs (#G) "We are working with customers to deliver innovation in their products" (#K) "[*We need to have the*] ability to demonstrate quality on remanufacturing, education about remanufacturing" (#E)
	... suppliers/ partners	Vertical integration to guarantee all processes are aligned with company's values (#E, #F, #I, #J) Work with local and small suppliers and partners (#E, #G, #J) "We have developed a long term relationship with all our suppliers"(#J) "We do open book accounting with them [suppliers]" (#F) Also transactions with non-purpose-driven partners (#B, #I)
	... competitors	#H shares kayaks with their competitors, since it is an expensive good, which is used only during the season (activities located in Wales)
	... government	#C municipalities as clients for services in public schools Government representatives as partners of #H in discussions on public policy #I dependency on public subvention

Employees' engagement seems to be associated to high capability of companies related to pro-active *problem solving orientation*. The cases studied indicate the relevance of developing a work environment, where business processes enables people to constantly pursue, test and implement new and better solutions to create and deliver the value proposition. This can be associated with innovation capability, including development of new technologies internally or in partnership with other organizations. The ideas for these innovations come from the vision of an entrepreneur that needs to be deployed into a financially stable product (#H), from listening to the stakeholders (#C, #G, #D) and/or from trial-and-error logic to dynamically validate hypothesis (#D).

Inter-organizational network, as in the traditional business models, are critical in SBM's. Facing sustainability challenges, the need for *systemic thinking and engagement* was previously indicated by the literature (such as Hopwood et al., 2005) and reinforced by the case studies. Their success in terms of positive impact depends on the respective stakeholders' network as a complex system with various societal actors and interrelationships. Therefore, business aiming for sustainability are pushed to think beyond their border and provoke system-level changes. Being a hub of stakeholders is a critical issue for #D, whose competitive advantage lays in the capacity to articulate between different societal actors (local communities with social needs, large corporations, other social businesses, etc.), and for #H, which uses its network to find like-minded stakeholders to develop new activities together.

There is direct systemic inter-dependence between *customers* and focal companies. There are situation in which companies need to fostering social and environmental awareness in order to instigate market demand. That is the case, for example, of #B, #E, #F, #K. Partnership for technology development of low carbon aluminium for automotive applications has been conducted by #K, in the attempt to promote demand for this product. #E finds a relevant to foster communication skills to demonstrate product quality also when it is remanufactured, e.g., fostering education and culture about remanufacturing. #B knows that their role is to make environmental information available. But how companies and respective clients will use this information available is of smaller influence of #B.

Given high systemic dependence of *suppliers and partners*, vertical integration seems to be also an important to increase control of the processes towards

guaranteeing transparency and ethical behaviour throughout the value chain, ensuring margins in each stage, and delivering high quality end-products. #E, #F, #I, #J internalized responsibilities instead of outsourcing certain stages of their production and delivery processes. For instance, #Ifinds critical that the bicycles are robust for intense use and easy to repair, so they decided to manufacture these products in-house to extend the bicycle usage stage to its maximal level possible. Close partnership with small growers were mentioned by #J and development of local infrastructure in different countries for aluminium recovery was pointed out by #K. When relying a certain responsibility to other organizations, #H and #G find important to ensure that the set of values and believes of these partners are aligned and #J mentioned their long term and trustworthy relationship also with small suppliers. Despite this, some case studies mentioned they are many times supplied by companies with lower alignment to sustainability issues, such as #I's supplier for bicycle parts and #B's partner responsible for developing environmental data bases. Another relevant actor in the system-level is the government, which has been currently influenced by #H through participation in advisory for sustainability-based legislation development and by #C through direct contact while selling their services performed in public schools. Interestingly, the intension to increase influence on government processes and practices were mentioned during all interviews, at some extend.

The system level concern of case studies also included inter-dependence with *competitors* (#H shares kayaks with their competitors, since it is an expensive good, which is used only during the season, for activities located in Wales), and with *government* (#C municipalities as clients for services in public schools, government representatives as partners of #H in discussions on public policy and #I's dependency on public subvention).

11.4.3 Value capture

There are various stakeholders that capture value created by the case studies: shareholders/investors, clients, employees, suppliers/partners, society, environment, government, competitors, universities, like-minded organizations and indirect stakeholders. The last two are further explained, since they are not as straightforward as the others. Like-minded organizations represent those that share the same values and have aligned purposes for the world, even if they are not from the same market

or industry. Some of the companies studied are certified as a B-Corporation (#B, #J, #G, #F and #H), providing network that enables high level conversations about sustainability. The indirect stakeholders represent a person or a group of people that are impacted by one of the stakeholder directly affected by the focal organization, as consequence of interaction with the latter. In other words, these indirect stakeholders capture a cascaded value created by the organization.

In terms of financial value captured by the studied companies, revenue is seen as a requirement to enable the business viability, ensure positive impact and scale up the solution and its cascaded positive impacts. In other words, profit is an enabler for social and/or environmental purposes, rather than the ultimate goal for the company. As mentioned by both #H and #D, there is a need to combine high efficient business management skills with authentic dedication to a social and/or environmental cause. A variety of mechanisms were mentioned to be used by businesses to ensure this resource: compensation between offerings (a set of products and services are revenue source, so that others can be offered free of charge) (#B, #G); price policy according to people´s purchase power (#C); government-funded projects (#C, #H), crowdfunding (#G), awards for start-ups with purpose (#A, #B).

The value captured by the stakeholders varies in terms of the positive impact. On the one side, some stakeholders capture the same value as business-as-usual configurations would do, such as dividends for shareholders and revenue from purchasing inputs for business operation. However, there is a value captured by stakeholders that lays underneath a certain transaction. By promoting deeper engagement with suppliers, they might capture not only financial value, but also opportunity for development and higher awareness on environmental and social concerns. The same can happen with products and clients. #F's clients are not only buying a purse, as any other luxury purse, but rather they are buying a purpose-driven product from a material with previous valuable narrative. This is a more intangible value captured. Other examples are investors and clients capturing the radiation of social businesses (#B), employee feeling proud, motivated and aligned with company's values (#B, #D, #G, #F amongst others) and clients' satisfaction for using more sustainable products (#K, #F).

During the interviews, it was also perceived that the value captured by the focal organization can also vary in terms of type of value. There are partners that supply

the organization's demand and that is the only transaction, such as the database supplier of #B. However, in other cases, the company captures a more sustainable value, such as a commercial relationship based on trust and long term commitment (#A, #J), or knowledge exchange on specific matters that the partner is more familiar with (#D, #H). This two-way value exchange between focal company and stakeholder beyond a superficial financial-based transaction was also a relevant aspect of case studies' business models.

The value captured by companies' stakeholders can be either direct value, such as reduction of material to landfill (as #F and #K) and improved education for young people (as #H, #C), but also in terms of a *cascaded value*, e.g., the focal companies' stakeholders are enabled to create value to their respective stakeholders. For example, by pointing out the need for environmental performance improvement, #B's clients may foster the market for renewable energy solutions; people that participated in the training offered by #G and #D tend to have more chance to create successful businesses with social and environmental impact; or cars with #K's low carbon aluminium tend to consume less fuel given weight reduction, etc. The main convergent aspects from the case studies are summarized in Table 6.

11.4.4 Connecting competitive advantage to sustainable development goals

When asked about their respective company's contribution to SDG's, the interviewees found connection to the SBM elements, as described in Table 7. As one can see, the companies' relation to SDG's can be based on the value proposition, e. g., products and services are capable of contributing to one of the SDG's (even if it is in a small scale). The value creation and delivery system can also be connected to the goals, since decisions on how the business is conducted also have potential to generate sustainability benefits. For instance, by assuming the B-Corporation certification (such as #B, #F, #G, #H and #J), companies are expected to use certain guidelines to support decisions that maximize benefits for all stakeholders, rather than individual financial short term return. The value captured by all stakeholders is directly related to the value proposition and also to the value creation and delivery system. To avoid repeating the same aspects pointed out in the first two SBM elements columns, the third column of Table 7 indicates the cascaded value captured that are related to each SDG.

Table 6. Sustainable value captured for case studies' SBM's.

Main aspects	Description	Example of evidence
Alignment to business-as-usual	Revenue source from products	All case studies are for-profit organizations
	Traditional stakeholders	Shareholders and customers as relevant stakeholders by the case studies during interviews
Complementary aspects	Financial resource as a mean to achieve impact, rather than business goal	"Profit is like an enabler to help us sustain and grow our impact on people" (#G) "It is a for-profit organization, so if we do not sell (...), we do not pay rent or salary. We have to generate economic value to exist" (#D)
	Mechanisms to ensure financial resource beyond traditional revenue	Compensation between offerings (a set of products and services are revenue source, so that others can be offered free of charge (#B, #G) Price policy according to people´s purchase power (#C) Government-funded projects (#C, #H) Partnership between government and private initiatives (Crowdfunding (#G) Awards for start-ups with purpose (#A, #B)
	Other stakeholders to be addressed by the organization	Employees, suppliers/partners, society, environment, government, competitors, universities, like-minded organizations and indirect stakeholders were also pointed out as relevant stakeholders by the case studies during interviews
	Cascaded sustainable value	"If the company also changes [*due to environmental reporting and management culture],* its supply chain can also create market and be more competitive in the longer term, because they have less embedded externalities" (#B) "In the long term, we want to enable more people working for a common good" (#D) " By the time they leave school, they are confident and have an idea on ways to find solutions" (#H)

Table 7 - Examples of how SDG´s are embedded into SBM elements.

	SDG's	Value proposition	Value creation & delivery system	Value captured
1	**No poverty**		#J: Employment of vulnerable population	#D: Cascated value from social entrepreneurs fostered by offered courses #H: Training on land use to less fortunate people in local community
2	**No hunger**			#J: Donation of food produced above the necessary to local shelter
3	**Good health and well-being**	#J: Healthy frozen food as main product #G: Promoting alignment between personal values and work activity #E: Interior design to increase well being and productivity #H: Mainly from the adventure service		
4	**Quality education**	#H: Engagement with schools for do-learning	#J: High concern in people's development #F: Apprenticeship program	#G: Improvement of network members' level of education and potential to deploy this knowledge to their respective networks
5	**Gender equality**	#H: Adventure aligned also to profile of pregnant and female-only groups	#J, #F: gender equality amongst employees	
6	**Clean water, sanitation**	#B: Offering of easily accessible water footprint reports	#F: Treatment of water output from factory	
7	**Affordable and clean energy**		#H: Solar energy generation for the office #F: Investment in projects for renewable energy	
8	**Decent wok, economic growth**	#E: Promotion of semi-skilled job opportunities by offering remanufactured goods	#I, #J, #G, #F, #H: Good work conditions with opportunity for development	
9	**Industry innovation, and infra-structure**	#B: Nudging SMEs towards investment in environmental solutions #I, #F, #K, #E: Innovative offerings demands innovation from other stakeholders #G: Promotion of new entrepreneurial businesses with purpose in the market #H: Services related to foster business innovation and problem-solving expertise		#B: Expected improvement with increased environmental awareness

Table 7 (cont.) - Examples of how SDG´s are embedded into SBM elements.

	SDG's	Value proposition	Value creation & delivery system	Value captured
10	**Reduced inequalities**		#J: Employment of vulnerable population #D: Direct contact with low-income population as part of their offered courses	
11	**Sustainable cities and communities**	#I: Additional alternative for urban transportation #K: Various applications for low carbon aluminium (transportation, construction, etc.)	#E: Promotion of circular economy	#B, #H: Expected improvement with increased environmental awareness #G, #D, #C: Expected improvements with qualification and information on entrepreneurship
12	**Responsible consumption and production**	#B: Making environmental information available to improve purchase decisions #I: Sharing instead of owning a bicycle #F: Sustainable product (from recycled material and with longer usage stage)	#E, #F: Impact in increasing production aligned with circular economy	#B, #H: Expected improvement with increased environmental awareness #G, #D, #C: Expected improvements with qualification and information on entrepreneurship
13	**Climate action**	#B: Making environmental information available to improve purchase decisions	#E, #F, #K: Reduction of material to landfill	#B, #H: Expected improvement with increased environmental awareness #G, #D, #C: Expected improvements with qualification and information on entrepreneurship
14	**Life below water**	#B: Making environmental information available to improve purchase decisions	#J: Initiative with ethical fish sourcing #H: See is crucial to operate services related to adventure	
15	**Life on land**	#B: Making environmental information available to improve purchase decisions	#J: Partnership with small farmers for sustainable production #E, #F, #K: Reduction of material to landfill	
16	**Peace justice and strong institutions**			#J: Partnership with B-Corporations to increase influence of government #G: Expected contribution to governments with making information available #H: Current partnership with government level discussions
17	**Partnerships for the goals**	#D: Partnerships are critical to provide better networks for clients	#F: Partnership with societal representatives to enable material supply #H: Partnership to foster a resilient business	

The competitive advantage pointed out by the case studies depend, as expected, of the sector they are inserted in. Despite this, the most frequent competitive advantage amongst the case studies (#I, #J, #G, #F, #H and #K) has to do with being authentic to the environment and/or social cause, with strong DNA in believing in the organization, supported by a past aligned with the discourse. This means that their sustainability vein is not superficial, but rather it is embedded into the organizations, and that is their source of differentiation. The other competitive advantages mentioned include: network of contacts (#D, #H), employees (#H), innovative approach in solving problems (#B), family-atmosphere (#J), and knowledge (#D).

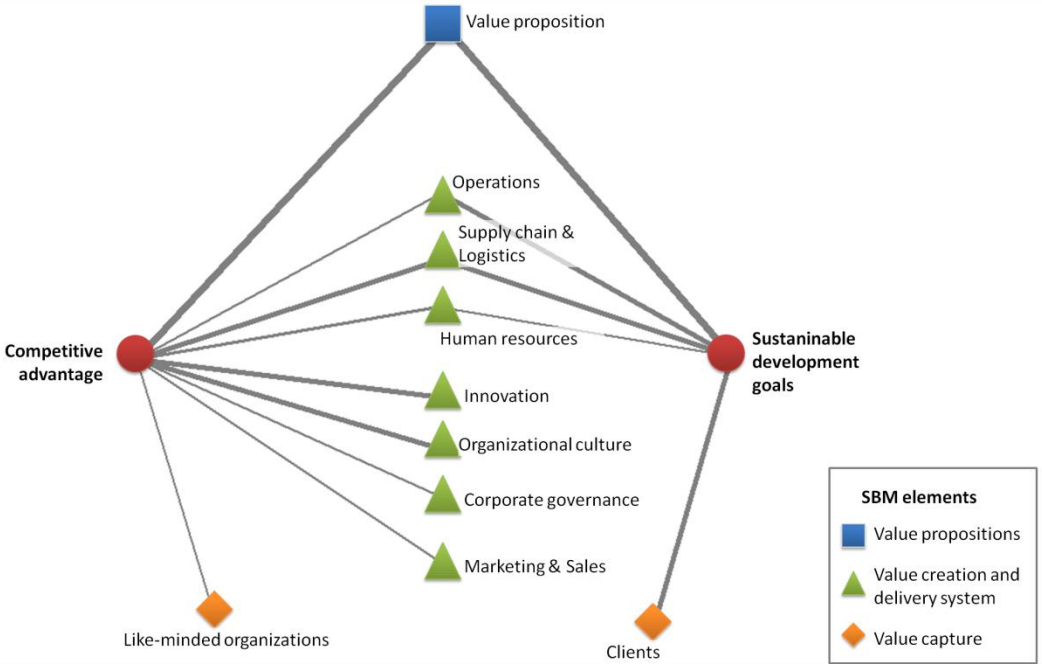


Figure 1. Connection between SGD's and competitive advantage through SBM elements.

The connection between contribution of companies to SDG's and their competitive advantage is analysed following. Figure 1 illustrates the perception of interviewees about which part of the SBM their companies' contribution to SDG's and to competitive advantage tend to be more related to. The connection between the nodes in Figure 1 represent that they were indicated as being related to both competitive advantage and contribution to SDG's by the same interviewee. Thicker lines represent that the relation was more frequently pointed out. It is interesting to note that the strongest connection between SDG's and competitive advantage is the value proposition, indicating the relevance in defining organization's purpose and offerings that can provide synergies between individual and collective goals. This synergy can also be fostered by managing operations, supply chain and human

resources towards sustainability. Other aspects seems also to contribute to corporations' competitive advantage, such as organizational culture, corporate governance, marketing & sales, innovation and like-minded organizations. Analysing the SDG's connections in Figure 1, it is interesting to note the high relevance of clients' value capture, indicating that the contribution to SDG's are so embedded into business that this contribution is performed by clients themselves capturing value.

11.4.5 External context variables

During data collection, various contextual aspects were pointed out to affect the business model. The first is the *material supply market*, which have large potential to affect business decisions. That is the case for #K, that found in the recycled material less risk of supply in the medium and long term, since most alumina from mining comes from one country (China). By deciding which material to work with, #F is critical, since it represents a strong commitment to ensure the best value is generated from it. On the other side of the value chain, the second relevant context factor is the potential *demand market*. Some of the organizations have clear view of their market potential, even if they are not able to reach it at the moment. For instance, #G is confident about the number of people around the globe that aims to align their believes to the work activities; and #B mentioned the number of SME's that so far do not provide environmental reports. Being comfortable market size and potential gives further confidence on the business model. The market size is also dependent on client's awareness and, therefore, their preferences for more sustainable solutions. #E and #K mentioned the need for intense marketing and sales effort to show the value of remanufactured and recycled products. This effort is needed given indifferent position to environmental solutions or even expectation of less quality associated with lower price of these products. The companies indicated that the presence of competitors increases market awareness and understanding of the solution proposed by the SBM and, consequently, can increase market demand (#D, #I). Explicit efforts to cooperate with competitors were mentioned by the case studies to enable and increase business positive impact (#D and #H).

Another crucial context factor is *government affairs and public policies*. Although some companies are able to influence them directly (as #H), this is not the case for most companies studied. However, legislation decisions can affect the market size, as mentioned by #B, which is starting stronger effort in the Indian market given new

legislation on investment in project with social and/or environmental impact. This factor can also come in form of subsidies that affects business viability. As pointed out by #I, all urban transportation alternative (cars, buses, trains, underground, cab, etc.) is at some extend subsidized by the government. In Brazil, there is not yet the culture that it belongs to public agents' role to support the bike sharing system. Therefore, their contribution to the dissemination of this practice is still very limited.

Case studies show also that *technology* is also an enabler of SBM, even if it is not enough to ensure business success. Technological innovation was mentioned to be crucial mainly for Nov, enabling low carbon application and high quality production process, and for #B, providing information technology to put their main product in the web and ensure scalability of their business.

Independent associations also seem to affect business models decisions. For instance, the Ellen MacArthur Foundation has been intensively campaigning for circular economy, promoting logics such as the remanufacturing and recycling. Business such as #E can be fostered by the dissemination of the importance of circular business models, as one possible alternative to tackle sustainability challenges. The B-Corporation network is another way of positively influencing SBM, since this certification reinforces the commitment of the organization in terms of governance, workers, environment and community. The network formed by businesses that think alike to exchange ideas, solutions and challenges was also found valuable by the case studies.

An interesting aspect that came during the interviews was the soft *boundaries between stakeholders and their role* to and within the organization as a collaborative network (rather than hierarchical relations). Some examples are: previous attendees of #G's courses can become supplier or vice-versa; #D's partners can be demanded to enable a certain project and demand #D's services for others, depending on the origin of the business contact; work colleagues can transform professional relations into friendship and family-type relations (#G, #H); and companies promoting cooperation with competitors, that can serve as partners for sustainability goals (#H, #D).

When discussing about context, it is expected a discussion about the difference of business models located in two different countries: United Kingdom and Brazil. Interestingly, data analysis shows that, despite different location, no significant

discrepancy in terms of companies' perception on the integration of sustainability into business was perceived. Legislation is the most critical issue regarding the country difference, but this discussion was covered in previously in this section, under the debate about the influence of government affairs and public policies on SBM.

11.5 Discussions: Framework proposal

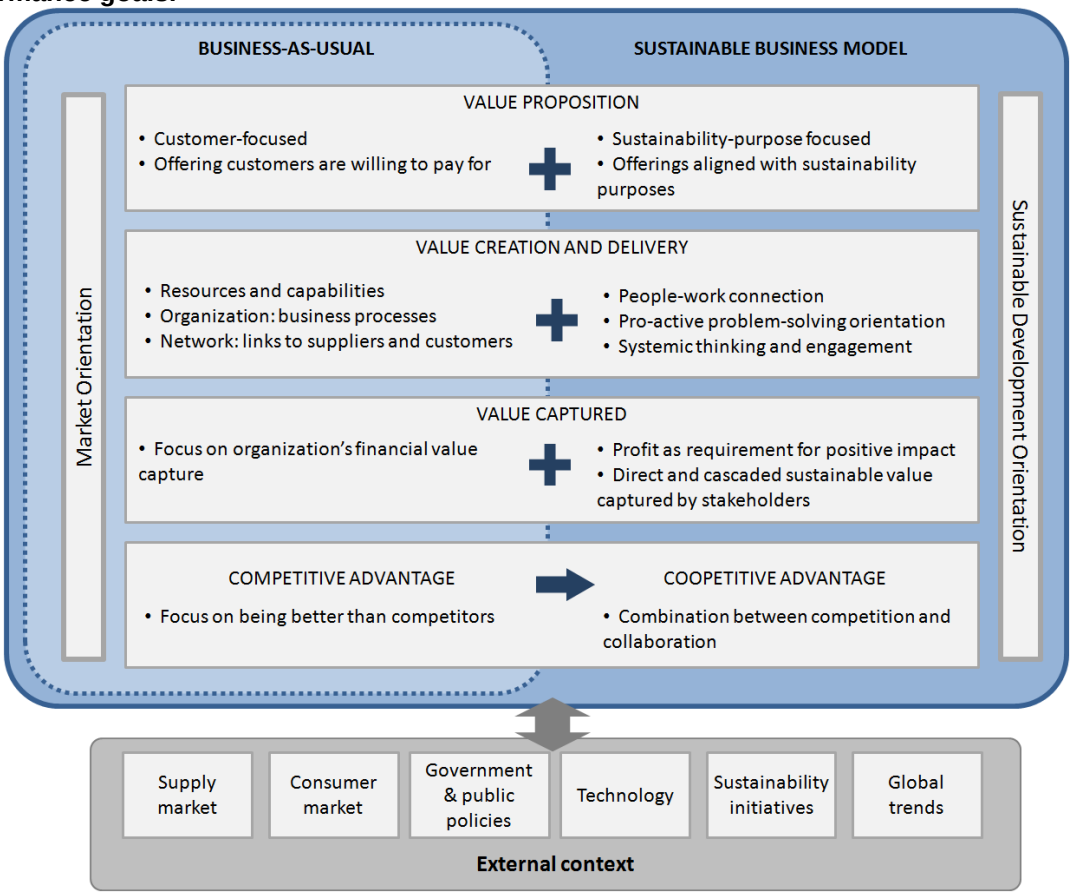
The combined discussion of case studies and literature analysis provide insights for SBM, as summarized in the proposed framework showed in Figure 2. Starting with the value proposition of SBM, the case studies shows the crucial relevance of this element to the business model, as previously noted by the literature (CARAYANNIS; SINDAKIS; WALTER, 2015). It represent the reason of existence of the organization (RICHARDSON, 2008). Thus, we propose that the basis of SBM's is the business purpose, which represents the intangible level of value proposition previously mentioned in Section 4.1. It represents the organization's vision and mission on how it understands it makes *difference to the world*. The B-Corporations translate this as aiming to be the best *for* the world, instead of being the best *of* the world. The sustainability purposes tend to come from an axiological and collective perspective, as noted by the case studies, reinforced in Table 4 and previous literature (BOLIS; MORIOKA; SZNELWAR, 2014). These purposes translate the set of moral values and believes embedded into organizational culture that guides the organization's decisions. The case studies found evidence that individual values of entrepreneurs in smaller companies tend to be decisive in terms of defining business purpose, corroborating with previous literature (SPENCE; GHERIB; BIWOLE, 2011). Case studies in larger companies pointed out to the same direction, since advisory board's and top management's personal vision also to influence organization's alignment to sustainability purposes, as mentioned by #K. By arguing this business purpose in a central position of a SBM, we corroborate with the normative business model proposed by Randles and Laasch (2016). To support companies defining the sustainability purpose of their SBM, organizations may find guidelines and influences in the SDG's, as shown by the present case studies (Section 4.4 and Table 7).

From this based business purpose based on moral values and believes, the other SBM's components are derived. This research is aligned with previous research (RAUTER; JONKER; BAUMGARTNER, 2015) and also found evidence that SBM do not completely denies traditional business-as-usual settings, but criticizes it with

adaptations and extensions. As represented in Figure 2, the business value proposition of business-as-usual need to extend its focus aiming not only customer satisfaction, but also other stakeholders. To make this business purpose tangible, SBM's are called to offer a set of products and services that the customers are willing to pay and, at the same time, considers sustainability aspects. There is more than one unique solution to cope with the business purpose and this can be volatile, demanding constant updates and validations in certain markets, as is the case of #D. Besides, the present research indicates the sustainable value proposition as key aspect also in promote synergy between company's contribution to SDG's and its competitive advantage, as shown previously (Table 7 and Figure 1).

Following Figure 2, to represent the main efforts of SBM's value creation and delivery, the present research found evidence to support the following dimension: people-work connection, pro-active problem solving, and systemic thinking and engagement, as presented in Section 4.3. These dimensions are interlinked and the SBM depends on the balance of all of them, since the lack of performance in one can ham the others. These dimensions were previously addressed by the literature, but in general, they are discussed separately. For instance, the problem-solving approach to sustainability identified in the case studies has been addressed by the sustainability entrepreneurship literature, pointing out the environmental and/or social problems call for solutions that can be developed into a TBL business opportunity (BELZ; BINDER, 2015).

Figure 2: Framework to support SBM perspective of organizations aligned with sustainability performance goals.



The sustainability purpose of SBM can address sustainable value capture by the organizations' direct and indirect stakeholders, as discussed in Section 4.3. Figure 2 represents that financial solidity is a requirement for business existence, also if they have sustainability orientation (MORIOKA; CARVALHO, 2016b). Yet, business-as-usual corporations are mainly focused on measuring financial profit and many times lack performance in term of sustainability goals. Under a system's perspective, the value captured by the stakeholders can also deploy into other indirect stakeholders, as pointed out by the case studies (Section 4.3). SBM should not be restricted to niche market, but rather it should address the mass market (SCHALTEGGER; WAGNER, 2011), intensifying business' direct and cascaded value. The net combination of the value captured by the stakeholders and the value that they contribute to the organization results can be simplified as the organizations' contribution to SDG's.

Figure 2 shows the term "coopetitive advantage", proposing an evolution of competitive advantage,. The research indicates that the term competitive advantage does not seem to match well SBM approach, since it implies that concurrency needs

to fail to enable business success. SBM's success is about solving a social and/or environmental problem and there are situations in which conjoint effort with competitors catalyses or enables the success of a certain sustainability solution (VOLSCHENK; UNGERER; SMIT, 2016). Çoopetition literature indicates the strategic benefit of cooperating with competitors (BRANDENBURGER; NALEBUFF, 1995; DAGNINO; ROCCO, 2009; RUSKO, 2011), but reviews on this concept failed in pointing out the need to further investigate this to tackle sustainability challenges (BENGTSSON; KOCK, 2014; WALLEY, 2007). However, recent literature (LUO; CHEN; WANG, 2016; RUSKO, 2011; VOLSCHENK; UNGERER; SMIT, 2016) and the present case studies support that coopetition concept has potential to contribute to SBM, since sustainability performance of one organization depends on the system in which it is inserted (BANSAL; DESJARDINE, 2014), and that includes the competitors' sustainability performance. Successful initiatives to collaborate with competitors were also pointed out by the case studies #D and #H. In summary, we propose that coopetitive advantage is critical to business survival and it implies a broader view of advantages derived from the combination of both competition and collaboration with competitors to develop and implement solutions for SDG's, as well as, support organization's existence in the market context.

Aligned with previous research (ENGERT; RAUTER; BAUMGARTNER, 2016; MORIOKA; CARVALHO, 2016a), the proposed framework indicate also contextual variables that affect businesses aiming sustainability goals. The most critical ones identified in the present research were: supply market, consumer market, government and public policies, technology, sustainability organized initiatives and global societal tendencies. We found evidence from the field study that these variables not only affects SBM's, but rather SBM's have also potential to develop an entrepreneurial posture to proactively influence their contexts to increase positive impact of business (PACHECO; DEAN; PAYNE, 2010; RANDLES; LAASCH, 2016)

In summary, the variety of SBM can be derived from decisions related to organization's sustainability purpose (which problem is the company aiming to solve?), to pro-active problem-solving (how are products and services designed and operationalized to address social and environmental challenges?), to people-work connection (how people's potentials can be developed in favour of business sustainability purpose?), and to systemic thinking and engaging (how does business

decisions affect within and outside organization's boundaries?), to organization's financial health (how does the revenue stream compensate expenses?), and to direct and cascaded sustainable value captured by stakeholders (what benefits does the organization enable to the stakeholders in a systemic sense?). This research found evidence also that these SBM's decisions are affected by and have potential to affect the organization's coopetitive advantage, the contribution to achieve SDG's and the contextual variables.

11.6 Concluding remarks

The present research studied SBM combining both literature analysis and case studies. Five main contributions are following described. The first is that we argue that SBM is not an attempt to deny business-as-usual perspective, but rather it seeks to complement this view, by adding a more axiological and systemic approach. Second, we bring empirical evidence with theoretical background of key aspects on how business can be more sustainable in practice. Thus, this research contributes to the SBM literature by identifying three crucial aspects to integrate sustainability into organization's value creation and delivery system, which are: (1) the connection between business purpose and employees' values and believes; (2) the pro-active and clear approach on sustainability problem-solving; and (3) the need for system-level changes to enable successful SBM's. The third contribution is on the concept of cascaded sustainable value, resulting from a combination of corporate sustainability and systemic thinking lenses over data analysis. It represents that, as SBM's are part of a value network, value delivered by the organizations is captured not only by stakeholders with direct contact, but this is also deployed to stakeholders of focal company's stakeholders. Considering that data collection process was successfully supported by United Nations' SDG's, the forth contribution is on the explicit use of these SDG's as a framework to critically analyse SBM's. The fifth and last contribution is on the proposal of the term coopetitive advantage, instead of competitive advantage. This can be justified by collected evidence of potential advantages derived from a combination of competition and cooperation with competitors. Besides, this term is more aligned with the epistemological complex concept of sustainable development, which per se is a embedded in the need for collaboration, since a system is sustainable only if all its nodes are in harmony. All these five research contributions are synthesized in Figure 2, as a theory and

practice-based framework to support SBM perspective of organizations aligned with sustainability performance goals (Figure 2).

Given its origin (eleven case studies from diverse sectors), this framework has the advantage to bring a certain level of tangibility and, at the same time, also flexibility to be applied in a large variety of industries This research provides indication that SBM is not restricted to specific situations, but rather the paradigm based on organization's purpose aligned with sustainability principles that can be applied independently of the organization size, country or offering.

Within research limitations, we point out that our framework is a static picture of the organization and do not open discussion on how it can or should evolve over time. It brings recommendations on aspects of SBM that are relevant, but do not explicitly provide an evolutionary guideline for organizations. This dynamic approach on SBM has been addressed by another approach of the literature, as SBM innovation or as sustainable business modelling (GEISSDOERFER; BOCKEN; HULTINK, 2016; GIROTRA; NETESSINE, 2013; ROOME; LOUCHE, 2016). Besides, there are other SBM mechanisms for value creation and delivery that were not addressed by the case studies, representing another research limitation. Even though we bring case studies aligned with circular economy (BOCKEN; BAKKER; PAUW, 2016), sharing economy (CHENG, 2016), social enterprise (GRASSL, 2012), they did not comprise logics such as product-service systems (CESCHIN, 2013) and bottom-of-the-pyramid solutions (YUNUS; MOINGEON; LEHMANN-ORTEGA, 2010).Additionally, it is relevant to mention the non-respondent bias. Even though this aspect is usually mentioned for quantitative studies, this also has influence in qualitative approaches. By agreeing to offer their time for the interviews, the companies show that they tend to be more keen in collaborating with non-commercial partners (in this case, the university). It is not possible to be sure, whether other non-successful contacts would also provide the same results as the ones shown in this paper. Therefore, research results need to be interpreted also in light of this research limitation.

For future studies, this study reinforces the need for more axiological approach to develop and implement solutions for sustainable development (BOLIS; MORIOKA; SZNELWAR, 2014), given the high emphasis at the alignment between the set of moral values and believes of the focal organization and the one of its stakeholders, with special attention to alignment with employees' values. This calls for more

engaged transdisciplinary approach of sustainability-related researches, as previously indicated by the literature (SCHALTEGGER; BECKMANN; HANSEN, 2013; VAN KERKHOFF, 2014). In particular, this research points out the need for further research from disciplines such sociology and psychology, since current positivits and pragmatic approach of business management and engineering paradigm seems to be limited to address the complexities of sustainability challenges. Future studies can validate the proposed framework with an action-research, further investigating the aspects of the proposed SBM framework in more detail. This has potential advance in the field of sustainable business modelling, e.g, into the process of evolving a SBM. In summary, further studies are called to the challenge of making explicit that SBM's are not only companies that directly addresses a specific social and/or environmental problem, but rather is an emerging paradigm on how to manage efficient businesses in any sector to add positive value to the globe.

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12 #P7: The Sustainable Value Exchange Matrix (SVEM): A visual tool for reflecting on business models towards sustainability

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Abstract

United Nations published in 2015 the Sustainable Development Goals (SDG's), comprising seventeen goals for 2030. Companies, as other societal actors, are called to contribute to achieving these goals. The contribution of organizations to sustainable development can be associated to the concept of corporate sustainability. This paper addresses sustainable business models (SBM's), as an attempt to systematically integrate corporate sustainability principles (including economic, environmental and social goals; multi-stakeholder perspective and long term outlook) into core business. However, understanding the mechanisms for this systematic integration is still challenging, given the complexity of sustainable development challenges. Thus, the research aims to propose a visual SBM framework in form of a tool to help academics and practitioners discuss about SBM's, based on solid theory analysis and practice-oriented application. To do so, we employ a multi-method approach encompassing a systematic literature review to ensure conceptual solidity for the proposed framework and thirteen qualitative interviews with practitioners for face validation of the tool. This paper proposed the Sustainable Value Exchange Matrix (SVEM), as a tool that can be used by academics and practitioners to provoke reflections and discussions about organization's reason of existence and deployment of this purpose into the business model from a multi-stakeholder and from a value exchange perspective.

Keywords: Sustainable business model, corporate sustainability, sustainable development, visual framework, Sustainable Value Exchange Matrix (SVEM).

12.1 Introduction

United Nations published in 2015 what they called the Sustainable Development Goals (SDG's), comprising seventeen goals for 2030 (UNITED-NATIONS, 2015),

namely no poverty; no hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work & economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities & communities; responsible consumption & production; climate action; life below water; life on land; peace, justice & strong institutions; and partnerships for the goals. These goals call for action various societal actors and corporations are also part of the solutions for sustainable development (SNEIRSON, 2009). Besides, they can serve as a tangible and common language to delimit sustainable development, which is often considered as a polysemic concept (BOLIS; MORIOKA; SZNELWAR, 2014).

The literature has been indicating that sustainability norms, laws and market pressures should not be considered as obstacles, but as potentials to encourage companies to engage in sustainable development (SNEIRSON, 2009). Despite voluntary sustainability initiatives, it is still challenging for organizations to integrate sustainability into organization's systems (LOZANO, 2012). Besides, recent and past publications indicate also that technological innovation can help sustainability, but it is not enough if people do not change their behaviour (HARDIN, 1968; HØGEVOLD, 2011). Therefore, sustainable development calls for different levels of change, including the ones that maintain societal paradigms and structure and others that proposes to transform and reform these structures (HOPWOOD; MELLOR; O'BRIEN, 2005). These deeper and more systemic changes have been showing itself to be necessary for sustainable development. Therefore, organizations' sustainability depends on the whole societal system to be sustainable (LAUKKANEN; PATALA, 2014).

In the organizational context, corporate sustainability concept can be deployed as the organization's capacity to contribute to sustainable development. For this, corporate sustainability principles can be defined to serve as guidelines for operationalizing this concept (MORIOKA; CARVALHO, 2016a). The first is that corporate sustainability is about addressing triple bottom line (TBL) goals, including economic, environmental and social performance (ELKINGTON, 1997). The second principle that can be considered is the multi-stakeholder perspective, according to which businesses address not only shareholder and customer satisfaction, but also other stakeholders such as society, natural environment and government (DYLLICK; HOCKERTS,

2002). Finally, the third principle highlights the need to conciliate short, medium and long term perspective (BANSAL; DESJARDINE, 2014) to ensure future generation's ability to satisfy their need (WCED, 1987).

Increasing demand for more sustainable consumption and production solutions has stimulated the development of various models, frameworks, roadmaps and recommendations for companies towards sustainability (JONKUTĖ; STANIŠKIS, 2016). In particular, this paper addresses sustainable business models (SBM's), as an attempt to systematically integrate sustainability principles (TBL goals, multi-stakeholder satisfaction and long term perspective) into core business. Despite interesting discussions about SBM, this literature is still recent (BOONS; LÜDEKE-FREUND, 2013) and there is a need to better understand the mechanisms behind it (DENTCHEV et al., 2015).

Given the practice oriented approach of business model literature, publications on SBM has also potential to support practical solutions for more sustainable organizations. There are previous published tools with tight connection between theory and practice. One is the value mapping tool (VMT), which supports brainstorming sections with practitioners to discuss sustainable value (captured, destroyed and opportunity) from a multi-stakeholder perspective (BOCKEN et al., 2013a; BOCKEN; RANA; SHORT, 2015). Besides, the literature also brings tools to support SBM innovation and design (FRANÇA et al., 2016) that combines the Framework for Strategic Sustainable Development, FSSD, (BROMAN; ROBÈRT, 2015) and the Business Model Canvas, BMC, (OSTERWALDER; PIGNEUR, 2010). Also with a broad view of the SBM, the strongly sustainable business model is, similarly, a multi-layered tool composed by formative propositions and instrumental principles (UPWARD; JONES, 2016). Additionally, combining TBL (ELKINGTON, 1997) and BMC (OSTERWALDER; PIGNEUR, 2010), a triple-layered BMC is proposed to support SBM design (JOYCE; PAQUIN, 2016). While the VMT is a visual and engaging tool, it does not addresses the SBM as a whole. At the same time, the other tools mentioned do provide a broader view of SBM, but their multidimensionality interferes in its synthesis capacity to represent a SBM in a visual framework. In this context, the present research seeks to address this trade-off between fair representation of a real business and synthesis capacity to enable critical analysis. Thus, the research aims to propose a visual SBM framework to help

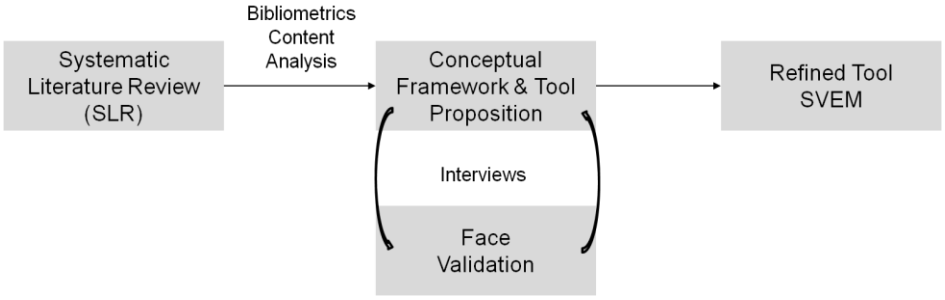
academics and practitioners discuss about SBM's, based on solid theory analysis and practice-oriented application. To do so, we employ a multi-method approach encompassing a systematic literature review to ensure conceptual solidity for the proposed framework and thirteen qualitative interviews with practitioners for face validation of the tool.

This paper is structured in six sections. This first summarizes the research context and objective, while Section 2 described and justifies the methodological choices of our mixed-method, clarifying how both research methods interlock to each other. Section 3 provides an overview and analysis of the SBM literature, based on an academic paper sample analysis of quantitative reference data and qualitative content analysis, following guidelines from Section 2. In sequence, Section 4 provides a transition between the systematic literature review and the interviews, by developing an initial visual framework from specific contributions of the literature to be used during interviews. Following Section 5 discusses the main results from the interviews, building a revised version of the framework named Sustainable Value Exchange Matrix (SVEM). Finally, Section 6 summarises the main research contributions, limitations and indications for future research.

12.2 Research methods

To achieve the aim of the paper, a multi-method approach was used, as summarized in Figure 1. An in-depth systematic literature review (SLR) was performed to identify the key dimensions and processes on SBM for modelling a conceptual framework embedded in a visual and interactive representation. The SLR was essential to bring the research background to provide a conceptual and theoretical basis. Systematic reviews identify, critically evaluate and integrate the academic contribution of relevant researches in a field of knowledge (BAUMEISTER; LEARY, 1997; BEM, 1995). This is why they permit to focus on a broader questions or a connection of many empirical finding on a specific issue (BAUMEISTER; LEARY, 1997). The result of this methodology is not a summary, but it is the formulation of a general conceptualizations (STERNBERG, 1991). The resulting Framework & Tool proposition was then submitted for executives for face validation, concerning both the dimensions and processes of the SBM and the visual tool itself. The final step was the revision and the proposition of SVEM tool.

Figure 1 – Research methodological flow.



12.2.1 Systematic literature review (SLR) and conceptual framing

The systematic literature review followed the five steps proposed by Khan et al. (2003). First step is framing questions for the review. For the present research, the aim is to propose a visual tool to support SBM critical analysis and discussions. For this reason, the SLR should identify the key dimensions and processes on SBM.

On the second step, the relevant body of work should be identified (KHAN et al., 2003). The sampling procedure was established by means of an articulated search in the Scopus and ISI Web of Science databases. This search was updated until 8 September 2016. The articles were selected based on the searching of the string: "sustainable business model*" OR "business model* for sustainability" OR "sustainability business model*". These strings needed to be present in the article title, abstract or keywords, with no restriction of time frame. The type of document selected for analysis was only article, reviews and articles in press because they are submitted to an structured peer-review process, following previous research based on SLR (CARVALHO; FLEURY; LOPES, 2013). A total of 235 publications were found, of which 18 were exclusively from ISI data base, 132 were exclusively from Scopus and 85 publications were found in both data bases.

In sequence, the third step aimed at assessing the quality of studies (KHAN et al., 2003). Selected studies was subjected to a more refined quality assessment. For the first filter, the abstracts of the publications were read. At this stage, publications were excluded from the sample, if: (i) SBM was not a central subject in the discussion, (ii) the paper addressed sustainability issues as related to longevity, instead of sustainable development, or (iii) the full text was not found. The literature sample was redefined with 123 publications. For the second filter, the full text of remaining publications were consulted. This phase enabled us to discard 44 publications for the

reason (i) and (ii) indicated previously. Thus, the final literature base consisted of 79 publications.

The forth step of the systematic literature review comprises summarizing the evidence (KHAN et al., 2003). This stage initiated with quantitative overview of the paper sample, including initial sample demographics, a journal co-citation network and a keyword network. These networks were developed with support of the software VOSviewer (VAN ECK; WALTMAN, 2010). This step provides a quantitative data analysis that brings an overview of the paper sample and its main characteristics.

The fifth step, which is dedicated to interpreting the findings (KHAN et al., 2003), was a core step given that the research aim is to propose a framework embedded in a visual tool. This step focus on the content analysis and framing (TAKEY; CARVALHO, 2016). As the content analysis allows analytical flexibility (DURIAU; REGER; PFARRER, 2007), the coding phase creates three codes' trees for methodological approaches, SBM dimensions and SBM processes. The content analysis was based on core concepts (WEBSTER; WATSON, 2002) performed in both visual and non-visual frameworks, categorizes and briefly described. The papers were classified into six categories of frameworks, when applicable. The framework typology emerged from similarities and evident distinctions between them. In this sense, an initial framework proposal was developed combining contributions of papers of the analysed sample and other references used by this sample, following a snow-ball logic.

12.2.2 Face validation and tool proposition

The SLR and conceptual framing served as input to the second part of the research method, the qualitative interviews. The interviews were performed aiming for face validation in terms of framework clarity and representativeness to measure the researched constructs (NETEMEYER; BEARDEN; SHARMA, 2003; VENKATRAMAN; GRANT, 1986). With the aim of testing and improving this framework, thirteen qualitative interviews with practitioners from twelve different organizations were performed. The selection criteria adopted were as follows. Interviewees must be inserted in for profit organizations engaged with sustainability purposes. This was verified by consulting corporate websites and other public available documents, and confirmed during the interviews. The interviewees were chosen also given their strategic position or their high involvement with sustainability,

social and/or environmental matters of their respective organization. Table 1 brings an overview of the interviews.

Table 1. Overview of the interviews.

Code	Company	B2B/B2C	Core product	Employees	Country
#1	#A	B2C	Community-based tourism	3	Brazil
#2	#B	B2B	Web-based Environmental reporting	4	UK
#3	#C	B2B/ B2C	Complementaru school education	4	Brazil
#4	#D	B2B/ B2C	Support for sustainable start-ups	4	Brazil
#5	#E	B2B	Remanufactured office furniture	<10	UK
#6	#F	B2C	Luxury accessories from fire hoses	11	UK
#7	#G	B2C	Support for work with purpose	14	UK
#8	#H	B2B/ B2C	Adventure and innovation as tool for qualification and education	35	UK
#9	#H	B2B/ B2C		35	UK
#10	#I	B2C	Bike sharing system	50	Brazil
#11	#J	B2C	Healthy and tasty frozen food	800	UK
#12	#K	B2B	Low carbon aluminium sheets	>10.000	UK
#13	#L	B2B/ B2C	Rubber and application	> 600	Brazil

The focus of the interviews research protocol was on both framework fields and visual representation. The application of this initial version of the framework brought interesting insights that served to propose a revised version of the visual framework, which was named Sustainable Value Exchange Matrix, SVEM.

Both approaches (systematic literature review and qualitative interviews) were found complementary to each other, bringing theoretical/conceptual perspective, combined with perceptions from practice towards supporting more SBM.

12.3 Overview and analysis of SBM literature

12.3.1 Sample demographics

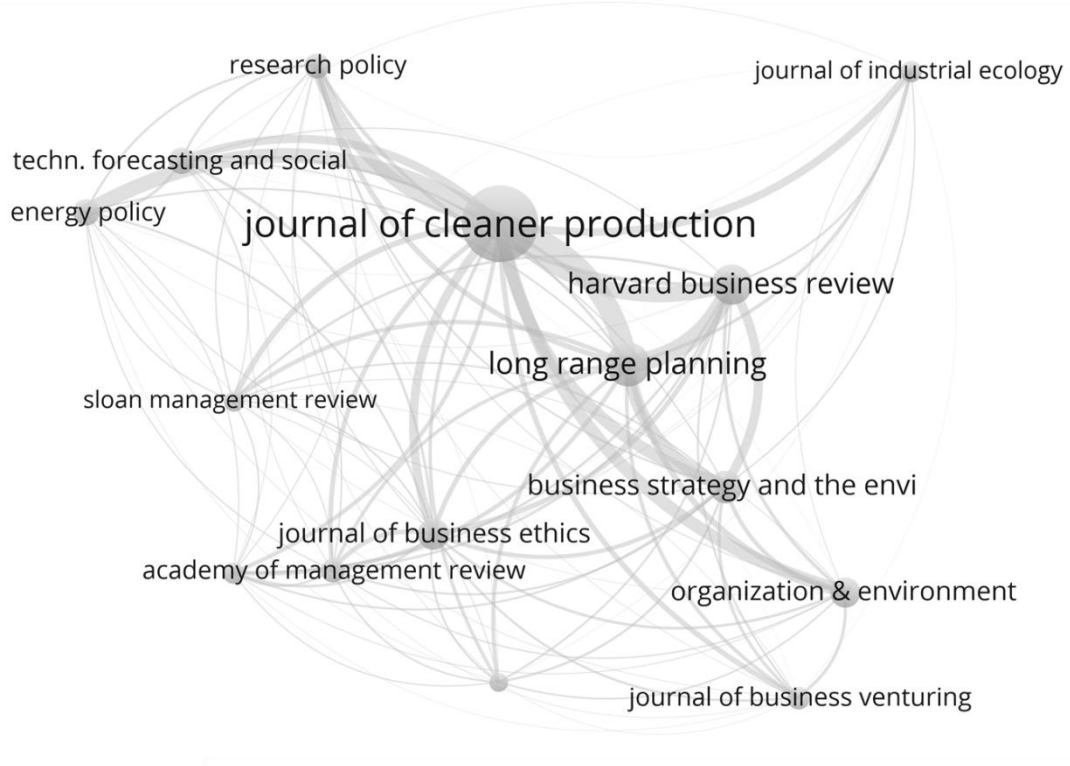
Initial descriptive statistics provide an overview of the paper sample used to analyse the SBM literature. This follows other reviews research in the corporate sustainability context (MORIOKA; CARVALHO, 2016a; SEURING; MÜLLER, 2008). This body of knowledge is still in its early stages, as also previously pointed out by the literature (BOONS; LÜDEKE-FREUND, 2013). In 2013, a special issue published by the Journal of Cleaner Production (BOONS et al., 2013) focused on "Sustainable innovation and business model" amplified the discussion on this topic. The approach on sustainable business model was still very dependent on innovation literature and brought an interesting call for researches to address sustainability more systematically embedded into organizations systems.

However, it was in 2016 that SBM literature has a considerable increased, with 23 articles, even considering that the publications included in the analysis are only until beginning of September 2016. In 2014 and 2015, only 12 papers were found in each year. In 2016, the Special Issue entitled "Business Models for Sustainability: Entrepreneurship, Innovation and Transformation" was published by Organization & Environment (volume 29, issue 1). This partially explains the large number of publications in the sample in 2016, since this special volume was composed by one editorial paper and six research papers.

The early stages of the analysed literature is reinforced by the lack of empirical data and scarce presence of quantitative studies within paper sample analysed. The research methods adopted in the surveyed papers' sample are exploratory, particularly case studies (30% of the paper sample) and literature review (30%). The other research methods from the paper sample include: Delphi method, interviews, secondary data analysis, workshops, longitudinal study, engaged scholarship, grounded theory, ethnographic study, etc. Most of the surveyed papers did not specified the research location and context (*53%).* Amongst the specified location stood out: European researches (28%), followed by Asian (8%) and Latin American ones (5%).

The core journals for the papers sample were identified through journal co-citation network as shown in Figure 2. The lines represent the co-citations of these sources by one paper from the sample and thicker lines indicate more frequent co-citation. The parameter used was that the source appears in the network, only if it was cited at least 16 times by the paper sample. This network shows the Journal of Cleaner Production in the centre as a multidisciplinary hub to connect journals with different backgrounds. Figure 2 also show the relevance of Harvard Business Review and Long Range Planning. On the left upper side of Figure 2, a closer connection between Technological Forecasting and Social Change, Research Policy and Energy Policy. On the right down side of Figure 2, the connection between journals of environment area frequently used together such as Business Strategy and the Environment, and Organization and Environment.

Figure 2 - Journal co-citation network.



12.3.2 SBM literature analysis

To understand the core research topics on SBM, the keyword network (see Figure 3) was performed. The parameter used was the co-citation of the keyword at least twice. The keyword network in Figure 3 suggests other three areas: innovation associated with aspects like sustainability, business model, system (top of the network); stakeholder and supply chain (right side); and solutions for the bottom of the pyramid (BOP) and emerging markets (on the left side). Interestingly, the keyword "strategy" seems closer related to BOP solutions, rather than to innovation or to supply chain management.

Figure 3 - Keywords network.

Figure 3 shows a large diversity of themes and subjects addressed by SBM literature, indicating that SBM can imply different approaches for different authors. Motivated by this indication and by the research objective focused on building a SBM framework to aggregate these various views, we direct the content analysis of the paper sample in terms of SBM framework categories. These emerged from organizing them in terms of emphasis and aims. In this sense, six types of frameworks were identified according to their characteristics: (1) SBM typologies (proposals of SBM classifications), (2) dimensions-based framework (representation of SBM in terms of building blocks); (3) business processes-oriented frameworks (representation of SBM in terms of their business processes), (4) stakeholder-oriented frameworks (representation of SBM in terms of their stakeholders), (5) sustainable business modelling (delimitation of processes for developing a SBM), and (6) SBM life cycle stages (delimitation of SBM evolution).These types of framework bring indications on different approaches for SBM literature.

The sample brought papers that propose *SBM typologies*, according to specific logics. The first logic is based on the degree of sustainability proactive engagement of the organization. Schaltegger et al. (2012) combined the classical stakeholder management approach and business posture towards sustainability to propose three classification of businesses: (1) defensive strategic management (protection of the current business model); (2) accommodative strategic management (experimentation within the current business model); and (3) proactive strategic management (business model redesign given a sustainable development challenge). Emerging from this approach, combined with other publications and case studies, Gauthier and

Gilomen (2016) found evidence of four types of BM transformations: business model as usual, business model adjustment, business model innovation, business model redesign. The authors identified that business transformations derive from changes in at least one of the following elements: value proposition customer interface, supply chain and financial model (GAUTHIER; GILOMEN, 2016).

The literature that proposes SBM classification can also be derived from the combination of a financial approach with a socio-environmental concern. In turn, Schneider (2014) proposes that there are two lenses for corporate sustainability: the sustainability logic and the market logic. While the first aims sustainable development by means of TBL performance, the second aims economic performance by means of social and environmental performance. Similar logic is followed by Contreras et al. (2015), who discusses a matrix combining the dimensions of financial goals (low/high) and social goals (low/high). The authors indicate that social businesses are concerned with both financial and social performance and are able to attract investors by going beyond philanthropic initiatives (CONTRERAS; MARCIALES; CASTRO, 2015). Moreover, Dees (1998) proposes a classification for social enterprises, ranging from purely philanthropy and pure commercial organizations. The authors proposes a continuum between these business types, which vary in terms of motive, methods and goals (social mission driven or market driven), as well as in terms of value captured by beneficiaries (free products/services or market price), capital source (donation and/or revenue), workforce type (volunteers or/and market wages), and relationship with suppliers (donation and/or market prices).

Another logic for SBM classification is by the predominant logic behind value exchange mechanisms. Bocken et al. (2014) propose eight SBM archetypes derived from technological, social and organizational business model innovation. This publication brings an broad view of various possibilities for aligning sustainability goals to business models. The archetypes are: maximise material and energy efficiency; create value from ‘waste’; substitute with renewable and natural processes; deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency; re-purpose the business for society/environment; and develop scale-up solutions.

The second type of SBM framework is *dimensions-based*, representing SBM in terms of building blocks. Various inspirations were used by the literature, such as the BMC

(LEWANDOWSKI, 2016), the TBL concept (MIHALIČ; ŽABKAR; CVELBAR, 2012; SVENSSON; WAGNER, 2015), a combination of BMC and TBL (JOYCE; PAQUIN, 2016), and the European Foundation for Quality Management (EFQM) Excellence Model (ARYANASL et al., 2016). By grouping the SBM elements indicated by the literature in terms of affinity, thirteen dimensions emerged: guidelines for business, value proposition, operations, supply chain & logistics, innovation, marketing, human resources, organizational culture, corporate governance, resources, partnerships, value capture and context. More details about these SBM dimensions can be seen in Table 2.

The third SBM framework type identified from the sample analysis encompass literature on business processes-oriented frameworks to represent SBM in terms of their *business processes*. For instance, Svensson and Wagner (2011) studied the food sector and propose that SBM is composed by the focal company from the food industry in the middle, with four satellites (value-adding suppliers, raw material production, transport & storage, and restaurants & offices), while the end customer is reached through restaurants and offices. Barber et al. (2012) see a business model for environmental purposes as a value cycle (instead of a chain, as the Porter's value chain). It combines processes involving marketing, design, operations and logistics before and after users' stage, returning back to the value cycle. Thus, this cycle is sequentially composed by value proposition, value creation, value consumption and value recovery, which is connected back to the value proposition (BARBER; BEACH; ZOLKIEWSKI, 2012). Dissanayake and Sinha (2013), on the other hand, combined a liner processes from the material flow perspective (raw material, material processing, product manufacture, consumer use and disposal) with processes for closing the loop: reusing, refashioning and recycling. Following the closed-loops potentials, Johannsdottir (2014) applies this approach for insurance providers, connecting strategic processes, business processes and environmental impacts. Another approach on SBM is to model business using system dynamics and computational simulations, as an attempt to address system complexities (DURAN-ENCALADA; PAUCAR-CACERES, 2011).

Table 2 - SBM dimensions from the literature.

Dimension	Elements from the literature	Reference	n
Guidelines for business	Acceptable, accessible, affordable, awareness	Esposito et al. (2012), Goyal et al. (2014)	2
	Biodiversity conservation	Mihalič et al. (2012)	1
	Concepts definition: business model, strongly sustainable firm, value, tri=profit	Upward and Jones (2016)	1
	Driving forces (internal guidelines for decision-making process)	Hutchinson et al. (2012)	1
	Environmentalism, resource efficiency	Aryanasl et al. (2016), Wells (2016)	2
	Longevity	Wells' (2016)	1
	Social entrepreneurship	Mohan and Potnis (2010)	1
	Validation	Upward and Jones (2016)	1
	Key sustainability and corporate social responsibility factors, reasons, challenges	Jabłoński (2016), Høgevold et al. (2014)	2
	Scalability	Esposito et al. (2012), Joyce and Paquin (2016), Goyal et al. (2014)	3
	Strategy	Aryanasl et al. (2016)	1
Value proposition	Product-service systems	Wells' (2016)	1
	Value proposition	Lewandowski (2016), Short et al. (2014), Joyce and Paquin (2016), Abdelkafi and Tauscher (2016)	4
	Value proposition focused on environment	Abdelkafi and Tauscher (2016)	1
	Value proposition measurable by ecological and/or social value, aligned with economic value	Boons and Lüdeke-Freund (2013)	1
	Focus on end-to-end solutions	Goyal et al. (2014)	1
Operations	Value creation	Wells' (2016), Short et al. (2014), Abdelkafi and Tauscher (2016)	3
	Processes, procedures, services, production, activities	Aryanasl et al. (2016), Joyce and Paquin (2016), Høgevold et al. (2014), Lewandowski (2016), Joyce and Paquin (2016)	5
	Retail practices	Hutchinson et al. (2012)	1
Supply chain & Logistics	Distribution channels, transportation	Joyce and Paquin (2016), Lewandowski (2016), Hutchinson et al. (2012)	3
	Suppliers, outsourcing, sustainable supply chain, ethical sourcing, purchasing policies	Joyce and Paquin (2016), Wells (2016), Boons and Lüdeke-Freund (2013), Hutchinson et al. (2012)	4
	Take-back systems	Lewandowski (2016)	1
Innovation	Design for circular value systems	Wells (2016)	1
	Open source innovation	Wells (2016)	1
	Operational innovation	Mohan and Potnis (2010)	1
	Information technology, technology integration	Mohan and Potnis (2010), Esposito et al. (2012)	2
	Learning by experiment and continuously testing assumptions	Esposito et al. (2012), Goyal et al. (2014)	2
Marketing	Customer focus on the poor	Mohan and Potnis (2010)	1
	Customer relation and segments	Lewandowski (2016), Joyce and Paquin (2016)	2
	Marketing	Mihalič et al. (2012)	1

Table 2 (cont.)- SBM dimensions from the literature.

Dimension	Elements from the literature	Reference	n
Human resources	Dynamic leadership, for sustainable business	Esposito et al. (2012), Aryanasl et al. (2016)	2
	Employees , people	Joyce and Paquin (2016), Aryanasl et al. (2016)	2
	Human capital management	Mohan and Potnis (2010), Mihalič et al. (2012)	2
	Work enrichment	Wells (2016)	1
	Key value-based management factors	Jabłoński (2016)	1
Culture	Cultural capabilities, flexible	Stubbs and Cocklin (2008), Esposito et al. (2012)	2
	Cultural capital, societal culture	Mihalič et al. (2012), Joyce and Paquin (2016)	2
Governance	Governance	Joyce and Paquin (2016), Jabłoński (2016)	2
	Structural internal capabilities	Stubbs and Cocklin (2008)	1
	Shareholder structure	Jabłoński (2016)	1
Resources	Integration/assets	Wells (2016)	1
	Natural resources	Mihalič et al. (2012)	1
	Key resources, materials, localization	Lewandowski (2016), Joyce and Paquin (2016), Jabłoński (2016), Wells (2016)	4
	Costs and revenues, financial viability	Joyce and Paquin (2016), Aryanasl et al. (2016) , Mihalič et al. (2012), Upward and Jones (2016), Jabłoński (2016)	5
	Fair distribution of economic costs and benefits	Boons and Lüdeke-Freund (2013)	1
Partnership	Partnerships, collaboration, engagement	Aryanasl et al. (2016), Lewandowski (2016), Joyce and Paquin (2016), Stubbs and Cocklin (2008), Wells (2016), Esposito et al. (2012), Jabłoński (2016), Goyal et al. (2014)	8
	Network dynamics, coordination, conflicts	Jabłoński (2016)	1
	Local skills building	Esposito et al. (2012)	1
Value capture	Value capture, Effects	Wells (2016), Short et al. (2014), Abdelkafi and Tauscher (2016), Høgevold et al. (2014)	4
	Use phase, users, end-of-life, functional value	Joyce and Paquin (2016)	1
	Environmental benefits and impacts	Joyce and Paquin (2016), Aryanasl et al. (2016)	2
	Social benefits and impacts, social relevance	Joyce and Paquin (2016), Aryanasl et al. (2016), Jabłoński (2016), Wells (2016)	4
Context	External context, natural environment	Short et al. (2014), Hutchinson et al. (2012)	2
	Boundaries	Høgevold et al. (2014), Upward and Jones (2016)	2
	Marketplace, society, local communities	Joyce and Paquin (2016), Hutchinson et al. (2012)	2
	Sustainable consumption, environm. education	Boons and Lüdeke-Freund (2013), Mihalič et al. (2012)	2
	Modelling social and environmental regeneration	Upward and Jones (2016)	1
	Power to change perception	Mihalič et al. (2012)	1
	Circularity adoption factors	Lewandowski (2016)	1

While the previous type of SBM frameworks are focused on business processes, the forth SBM framework type is *stakeholders-oriented*. Boo et al. (2016) represent variation of innovative business models to promote energy efficient buildings by illustrating the main stakeholders (clients which are responsible for construction, energy users, financial institution, energy service companies and utility) and the transactions between them. These variations are inspired by the PSS (Product-Service-System) logic, since fundamental for end users is the availability of energy and the ownership of tangible resources tends to have lower influence on this usage

stage (BOO et al., 2016). Jonkutė and Staniškis (2016) are more general in terms of stakeholder representation and illustrate four different stakeholders the core company, customers, other companies and other stakeholders. The authors represent material and information flow, the system's boundaries (including company and customers), showing the relations between them together with tools for sustainable production and consumption associate with manufacturing processes, products/services and communication with external stakeholders. From this model, the authors propose an algorithm to assess sustainability, tested using GRI indicators. Witjes and Lozano (2016) propose the framework called procurement and business model collaboration for circular economy (ProBiz4CE), highlighting the circular dynamic between suppliers' business model and procurers' business model, exchanging value and enabling material recovery by collaborating. It is worth noting that the papers aligned with this type of framework still have a relatively restricted approach on multi-stakeholder perspective, since they are mainly focused on customers. Besides, these publications seem to be limited to environmental practices.

The fifth SBM framework type is focused on publication discussing *sustainable business modelling*. Some of them provided a step-by-step process to be followed by organizations that seek to improve their business models towards sustainability performance. Others proposed tools to support one of the stages of business modelling. Table 3 summarizes these contributions in terms of diagnosis and critical analysis of current business models, planning the actions to improve SBM's and actions themselves. Interestingly, the only paper that made explicit the need to verify actual performance in comparison with expected planning was Svensson and Wagner (2011). Some publications were also more focused in specific contexts, such as low carbon business models (SVENSSON; WAGNER, 2011), third sector

Table 3. Summary of the main processes of sustainable business modelling.

General comments	Diagnosis	Planning	Action	Reference
Strong commitment to learning	Identifying: problem triggered, assumptions' questioned	Translating: new capabilities and knowledge applied to the context	Embedding: old business model substitution Sharing: new networks and communication to external stakeholders	Roome and Louche (2016)
Concept of territory from geography and industrial interpretations for more complex understanding of the organization's context	Analysis internal strategy considering its value constellation situated in a multi-layered and multi-stakeholders territory	Choose corporate objectives towards sustainability strategy	Deploy this strategy to product design and performance systems	Allais et al. (2015)
FSSD-BMC: Combination of ABCD-procedure from FSSD and BMC	Delimitation of core vision and mission from initial discussions on organization and sustainability Assessment of current business model from sustainability lens	Creative thinking and co-creation of solutions Definition of action plan with priorities		França et al. (2016)
Continuous improvement process for low carbon business models	Climate impact analysis	Impact exhibit	Continuous efficiency improvement Verification: Total carbon footprint	Svensson and Wagner (2011)
Proposal of a flowchart with twelve interconnected steps to support discussion and analysis of SBM in the third sector	Evaluation of organization's potentials Delimitation of core business concentration Understanding of context opportunities, threats and limitations	Decision about funding and financing strategies and definition of legal structure Definition on economic approach (growth/sustainability) and clarification of tax, legal advice Define fair salary and compensation	Facilitate access and open communication to beneficiaries and workforce Differentiation between for-profit and non-profit structure Develop internal capacity (staff expertise, board members, consultants and partners) Creation of unique set of products/services	Oyegoke (2014)
Integration of corporate social responsibility into corporate strategy	Identification of overlapping areas between business and society	Competitive advantage deployment Definition of CSR activities for competitive advantage and sustainability benefits;	Integration of CSR activities into business; Integration into corporate social agenda	Jhunjhunwala (2014)
Tool proposal based on LCA thinking for water tourism	Application of EVR for analysis of sustainable water recreation	Application of EVR design of sustainable water recreation	Application of EVR for implementation of sustainable water recreation	Scheepens et al. (2016)
Tool proposal	Value Mapping tool: identification of value destroyed, missed and opportunity from a multi-stakeholders perspective			Bocken et al. (2013) Bocken et al. (2015)
Tool proposal	Benchmarking using statistical process-monitoring theory for particular set of KPI's to define company's sustainability goals			Maltz et al. (2016)
Healthcare sector			Improvement dimensions for SBM: target activities and outcomes, clinical resources, organizational resources	Capezuti et al. (2013)

(OYEGOKE, 2014), water tourism (SCHEEPENS; VOGTLÄNDER; BREZET, 2016) and healthcare sector (CAPEZUTI et al., 2013).

At a more macro-level than the previous SBM framework type, the last approach of the literature addresses the evolution of *SBM's life cycle*. This was only briefly addressed by the literature, indicating a relevant gap for future researches. Initial attempts on discussing the evolution of sustainability concerns given the business lifecycle (early stages or mature companies) have been conducted by the literature, but further research is called to better understand this evolutionary dynamic (JABŁOŃSKI; JABŁOŃSKI, 2016). An indication on SBM evolution is discussed by Schaltegger et al. (2016b), who argue that sustainable entrepreneurship should not be restricted to niche situations, but rather it is to be developed for the mass market. Thus, they propose a framework to describe the evolutionary process of sustainable entrepreneurship, which can be performed by scalability (business growth), replicability, integrability (mergers and/or acquisitions) and imitability (mimicry). Despite these initial attempts, the literature has not systematically approached yet the different evolutionary stages of SBM's, from conceptualization, through development and consolidation until maturity or decline stages.

12.4 Initial framework proposal

Retrieving our research objective of proposing a visual framework of SBM to support reflections and discussions on how to introduce sustainability into business models, the present section seeks to provide an initial version deployed further content analysis of the paper sample. To provide an initial structure for this content analysis and for the framework, we follow papers from the analysed sample (BOCKEN et al., 2014; SCHALTEGGER; HANSEN; LÜDEKE-FREUND, 2016) and propose ourselves to use Richardson's (2008) business model components (value proposition, value creation and delivery system, and value capture). Although this publication is not focused on sustainability, it has shown to be flexible and, at the same time, be useful to delimit an organization's business model. It focuses on value exchange with clients and, in the context of SBM, this approach can be expanded towards sustainable value exchange with stakeholders. Following, we continue the content analysis of paper sample, by using this papers and eventually also their references to explore, if this initial attempt can be both consistent and adequate to frame SBM's discussions.

12.4.1 Sustainable value proposition

Following traditional business model literature (OSTERWALDER; PIGNEUR; TUCCI, 2005), products and services are part of SBM's value proposition. Therefore, firms face the challenge of developing offerings (products and services) that can, at the same time, create value for customers and contribute to global sustainable development (SELBERHERR, 2015). Besides, the value proposition also represents the reason of company's existence (RICHARDSON, 2008). Aligning business' goals to sustainability goals, its value proposition is also about the economic, social and environmental value that it aims to deliver, following the triple bottom line approach on sustainability (ELKINGTON, 1997). The concept of sustainability also implies that not only short, but also medium and specially long term perspectives are considered in decision making (BANSAL; DESJARDINE, 2014; LOZANO, 2008). The literature reinforces that economically viability is requirement for SBM (BOONS; LÜDEKE-FREUND, 2013; MORIOKA; CARVALHO, 2016b; SENGE; CARSTEDT, 2001), although it is not enough. Social and environmental goals are called to be core directions for SBM's decisions and actions. For instance, new business models have been explored to address needs of BOP population (GOYAL et al., 2014; KURIYAN; RAY; KAMMEN, 2008).

To support organizations defining their value proposition, it can be interesting to retrieve the principle of reflexivity, defined as the "the continuous consideration of the economic, ecological, and social aspects of corporate sustainability under explicit observation of particular assumptions, objectives and power of all organizational stakeholders" (SCHNEIDER, 2014, p. 531). This principle can support organization to critically analyse their role in society, which supports shaping the value proposition of SBM's. The value proposition, therefore, represents the dialog between business and society (BOONS; LÜDEKE-FREUND, 2013). However, identifying the "good cause" independent of cost concerns is still challenging for organizations (BIRKIN; POLESIE; LEWIS, 2009). Sustainability goals can arise with the organization or can they can be incorporated into business strategy over time (RAUTER; JONKER; BAUMGARTNER, 2015). Delimiting a business purpose though the value proposition is critical for SBM, since the incorporation of a sustainability mission into the company's strategy and values affects directly corporate behaviour, accountability and performance (SVENSSON; WAGNER, 2011).

12.4.2 SBM's value creation and delivery system

SBM's *value creation and delivery system* is composed by resources, capabilities and inter-organizational networks (RICHARDSON, 2008). To enable a more detailed understanding of this SBM element, it can be described according to more specific parts of the organization. To do so, we adapt the business processes identified by the second SBM framework category to delimit the main activities of the organization: supply chain & logistics, operations, marketing & sales, innovation (design, research & development), human resources, corporate governance and organizational culture. This approach has also inspirations from Porter's generic value chain (PORTER, 1985), following previous publications about corporate sustainability (LOZANO, 2012). In this sense, the proposed framework intends to promote reflection about the main resources, capabilities and partners needed to enable creation and delivery of sustainable value proposition. SBM depends on the integration between marketing, design, operations and logistics, as well high information exchange and integration with external organizations (BARBER; BEACH; ZOLKIEWSKI, 2012).

Even though the literature may provide deeper discussions on sustainable production than sustainable consumption (for the automotive industry, this was verified by Pallaro et al., 2015), the conciliation of both approaches are relevant for SBM's. The literature indicates various logics that can affect how SBM's create and deliver value, such as corporate social responsibility (CSR), win-win synergies between TBL pillars towards more SBM (DE ARAUJO VASCONCELOS; DA SILVA JUNIOR, 2016), business for the sharing economy (MCLOUGHLIN, 2009), and SBM based on product-service-system (PSS) thinking about solutions with better environmental performance (BOO et al., 2016; CATULLI, 2012),. Even without explicitly mentioning the term "circular economy", Dissanayake and Sinha (2013) point out potentials for business models in the fashion industry based on reuse, refashioning and recycling materials. Circular economy was explicitly addressed as a SBM by Lewandowski (2016).

In particular about *supply chain and logistics* of SBM's, it is worth mentioning that the literature indicates that Marks and Spencers realized more than a decade ago that their core environmental and social impact occurred not in their operations (employees' wage and transportation), but in its supply chains and during the use and disposal of its products after usage stage (BARRY, 2003). Thus, SBM are called

to engage partners towards more sustainable supply chain management (BOONS; LÜDEKE-FREUND, 2013; SEURING; MÜLLER, 2008), indicating great potentials for collaboration between producer and user, such as discussed by Lozano et al. (2014) to enable Chemical leasing business model. Recent literature indicates even benefits from cooperating with competitors, which is still challenging for SBM and requires active coordination of participants of this collaboration (SELBERHERR, 2015).

SBM's *operations* can also be critical to identify opportunities for SBM's. For instance, waste stream and emissions from core products can turn into inputs for production of secondary products. This has been explored by the British Sugar for around thirty years, establishing additional operations in areas such as animal feed, electricity, tomatoes, and bioethanol (SHORT et al., 2014). *Innovation* management, including research and development, product design, continuous improvement, etc., is critical for any business and, thus, also for SBM's. For example, technology development has potential to enable the combination of green and lean operations (TORIELLI et al., 2011). Organizational innovation and scalability to increase positive business impact has also been addressed by the literature (ESPOSITO; KAPOOR; GOYAL, 2012; JOYCE; PAQUIN, 2016; MOHAN; POTNIS, 2010). One way for organizations that aim to increase their positive impact is using franchising (ALUR; SCHOORMANS, 2011). The authors indicate that franchisee selection is crucial for this process, which can serve as a possible solution for public-private partnership for affordable healthcare services to BOP population. Besides, promoting co-developments with external stakeholders also tend to be crucial for SBM success, as investigated by the literature (GREGORATTI, 2009).

In terms of *marketing and sales*, the paper sample indicated the relevance to promote customer engagement towards sustainable consumption (BOONS; LÜDEKE-FREUND, 2013). This clear understanding of customers is relevant, for instance, about the adoption factors for circular economy, e.g., the organization needs to anticipate eventual barriers for adopting circular business models (LEWANDOWSKI, 2016). Another example is that, even though hoteliers claim to be concerned with implementing sustainability into their operations, they also tend not to want to disturb the guests' staying with this concern, leaving them with limited options for action, mainly focused on eco-efficient solutions (MALTZ; BI; BATEMAN, 2016).

The studied literature also indicates the need to properly address SBM's *human resources*, including engaging employees towards SBM's (ARYANASL et al., 2016; JOYCE; PAQUIN, 2016) and work enrichment (WELLS, 2016), as well as company leaders (RAUTER; JONKER; BAUMGARTNER, 2015), by provoking their orientation to create a sustainable business (ARYANASL et al., 2016). Kurucz et al. (2016) emphasize the relevance of a relational leadership to strategically integrate sustainability into core business, delimiting practices and capabilities needed at the five levels of Framework for Strategic Sustainable Development (FSSD): system, success, strategic guidelines, actions and tools (BROMAN; ROBÈRT, 2015).

Corporate governance and organizational culture have also been indicated by the paper sample as relevant aspect of SBM's value creation and delivery system. For instance, Sneirson (2009) indicate the need to have an corporate governance aligned with sustainability principles. The author mentions the B-Corporations' certification as one way to guide SBM's decisions through formal corporate governance. Besides, Stubbs and Cocklin (2008) highlight the need for SBM's both structural and cultural internal attributes.

12.4.3 Sustainable value captured by SBM's stakeholders

Business model last component included in the initial proposed framework is the value capture, which tend to consider the financial stream captured by the organization (OSTERWALDER; PIGNEUR; TUCCI, 2005; RICHARDSON, 2008). However, organizations aiming sustainability goals are challenge to extend this understanding, going towards business economic viability, while maintaining the social purpose in the centre of the business model (GOYAL et al., 2014). The financial model of SBM are challenged to enable appropriate economic costs and benefits distribution amongst corporate stakeholders (BOONS; LÜDEKE-FREUND, 2013). For sustainable start-ups, finding sustainable venture capital directly affects business success, especially by enabling an innovative business models, giving access to collaboration and certain networks, and if it is based on a strong financial return on investment (BOCKEN, 2015).

Moreover, internal and external stakeholders also need to be addressed by business decisions, not only including shareholders/investors and clients, but also employees, suppliers, society, environment, government etc. (DYLLICK; HOCKERTS, 2002). This multi-stakeholder approach for visual frameworks was also performed by the

Value Mapping Tool (BOCKEN; RANA; SHORT, 2015), which intends to promote discussions between participants engaged in applying this tool in term of value captured, destroyed, missed and opportunities. We follow this logic, since it broadens company's paradigm of focusing on shareholders and clients. The value captured by the stakeholders tends to be many times intangible. Thus, SBM face the challenge of measuring the value captured or destroyed by its existence. In particular, it is challenging to measure social impact of an organization (GOYAL et al., 2014).

12.4.4 Embedding the framework in a visual Tool

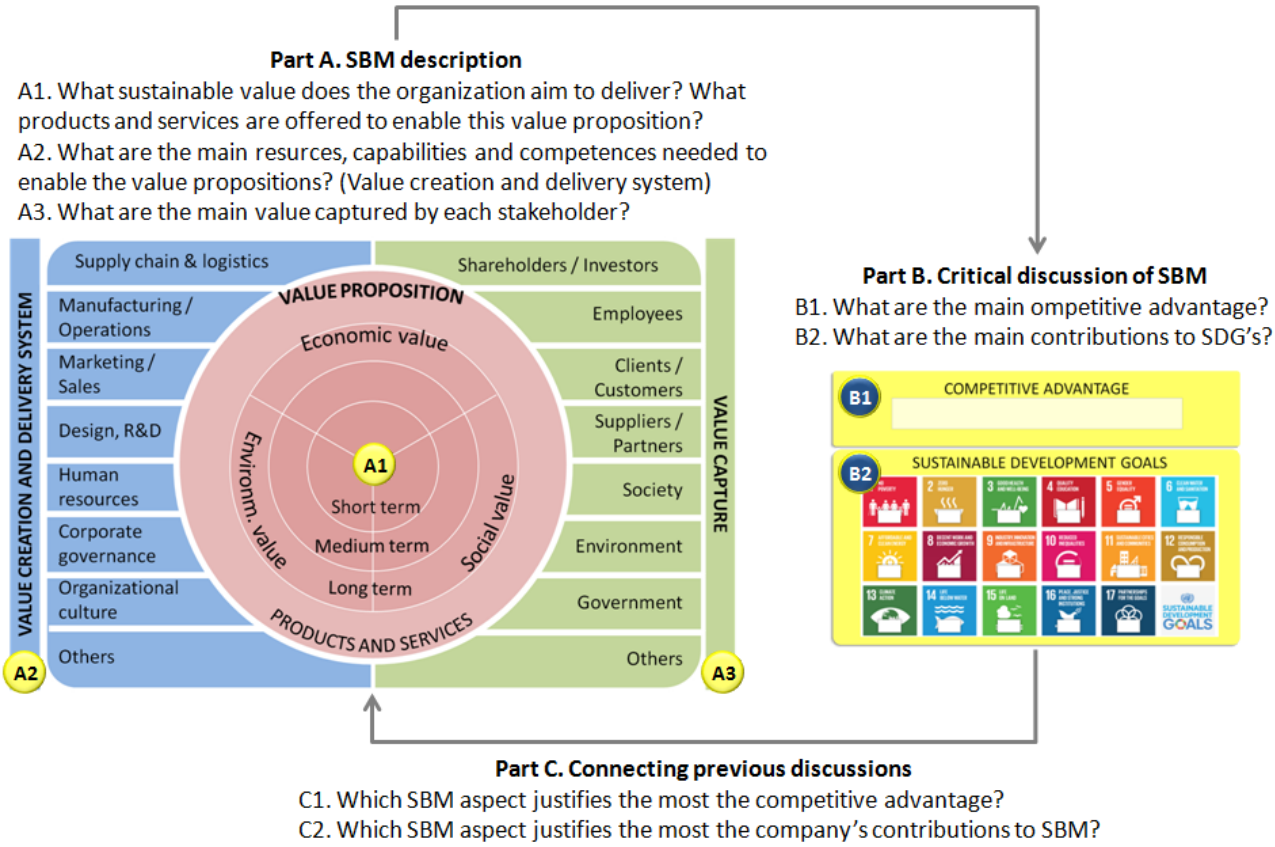
Before proposing the visual diagram to support the SBM framework, we retrieve to the SLR's paper sample and verify a large diversity of visual representations of associated processes, stages, elements or stakeholders in the context of SBM's. Amongst others, there are block diagrams (DISSANAYAKE; SINHA, 2013; RANDLES; LAASCH, 2016; SVENSSON; WAGNER, 2011), arrow diagrams (BARBER; BEACH; ZOLKIEWSKI, 2012; BIRKIN et al., 2009), two-dimension matrixes (HART; MILSTEIN, 2003), flowcharts (ALLAIS; REYES; ROUCOULES, 2015; OYEGOKE, 2014), ovals representations (HUTCHINSON; SINGH; WALKER, 2012; STUBBS; COCKLIN, 2008); co-centric geometrical forms (BOCKEN et al., 2013a; OYEGOKE, 2014), house-shaped form (MOHAN; POTNIS, 2010; TORIELLI et al., 2011), tables (BARBER; BEACH; ZOLKIEWSKI, 2012; HULTMAN et al., 2012; METTLER; EURICH, 2012), and hierarchical representation (BOCKEN et al., 2014). They all provide benefits and limitations, as expected. These previous proposals tend to be oriented to highlight concepts, rather than focused on providing a friendly interface. One exception if the value mapping tool (BOCKEN et al., 2013a), which was built for practitioners engagement through workshops.

From the six mentioned in Section 3.2, the proposed visual framework tends to be closer related to the second category of SBM framework, which highlights the SBM dimensions and building blocks. However, our proposal do not intend to be restricted to this type of framework. These business model elements of the proposed framework are built from the combination of inspirations of the third category of framework proposal, by making explicit the business processes, and the forth category, by elucidating organizational stakeholders for SBM's. Specific aspects that justifies this combination of categories in each SBM element (value propositions, value creation and delivery system and value capture) were discussed in previous

sections (4.1, 4.2 and 4.3). Based on previous research steps, we propose a visual representation of SBM elements (Figure 4, left side). The central emphasis is on value propositions, which directly affects how the other SBM elements are performed. Since this proposed visual tool aims to enable discussions with academics and practitioners, we also propose a sequence of questions to guide the discussion guided by the proposed framework. Stage A (1, 2 and 3) comprises questions about each SBM elements to provide description of the business, considering the sustainability principles (TBL goals; multi-stakeholders' perspective; and integration of short, medium and long term perspectives).

Because our aim is to instigate reflection, we propose that the initial discussion of SBM for a specific organization is complemented by Stage B, composed by a traditional and a sustainability-oriented approach. For the traditional approach (B1), the proposed framework includes a question for listing company's competitive advantage. These questions has potential to explicit whether sustainability goals contribute to business longevity in the market though competitive advantage, verifying the company's synergy to sustainable development. For the sustainability-oriented discussion, we propose to use the seventeen SGD's proposed by the United Nations (UNITED-NATIONS, 2015). This an interesting framework that the literature is still incipient in using, but has potential to make sustainable development concept more tangible making discussions around it more productive. For this part of the framework (B2), the discussion is about naming which goal or goals the company is contributing with more relevance. To close the framework application (Stage C), the discussion is led to retrieving previous answers (from Stage A), by reflecting how SBM elements and aspects of these elements contribute the most to competitive advantage and to SDG's. The idea of this stages sequence (A, B, and C), is that the moderator (also referred as the researcher in the present paper) fills two printed sheet (one for each part of Figure 4) throughout the process of conducting the questions and discussions.

Figure 4 - Initial framework proposal.



12.5 Discussions on qualitative interviews: Revising the framework proposal

12.5.1 Initial framework in practice: Strengths and weaknesses

As mentioned by the research method description (Section 2), the initial version of the visual framework was tested by thirteen interviews. The present section is dedicated to describe the main aspects of the process of conducting the tool. Following, the main strengths and weaknesses of the initial version of the framework are also presented.

The interviews followed the sequence shown in Figure 4. Five interviews were conducted via web, while the others (eight) were personally performed. These eight interviews were supported by printed versions of Figure 4, which were filled together with the interviewee, as the interview followed its sequence. The five interviews via web were supported by videoconference software which enabled sharing the researcher's screen with the interviewee displaying the images shown in Figure 4, while the framework was filled during stages A, B and C. In average, the interviews' duration was 78 minutes, considering that the shortest times were #5 (33 minutes) and #11 (38 minutes), while the longest were #1 (123 minutes) and #12 (116 minutes). Table 4 shows the duration of the interviews, divided into the duration of

each stage, indicating that, in average, A3 was the stage that took more time to be filled, while the combination of Stages B and C was the fastest part of the interview.

Table 4 - Duration of interviews. * Note: number of minutes (% total duration).

Interviewee	Stage A			Stages	Total
	A1	A2	A3	B + C	
#1	18	48	35	22	123
	15%	39%	28%	18%	100%
#2	15	8	10	10	43
	35%	19%	23%	23%	100%
#3	18	26	46	15	105
	17%	25%	44%	14%	100%
#4	15	25	26	20	86
	17%	29%	30%	23%	100%
#5	10	6	7	10	33
	30%	18%	21%	30%	100%
#6	10	17	21	8	56
	18%	30%	38%	14%	100%
#7	20	18	17	8	63
	32%	29%	27%	13%	100%
#8	15	36	25	12	88
	17%	41%	28%	14%	100%
#9	28	18	46	15	107
	26%	17%	43%	14%	100%
#10	25	25	16	13	79
	32%	32%	20%	16%	100%
#11	12	8	10	8	38
	32%	21%	26%	21%	100%
#12	45	31	32	8	116
	39%	27%	28%	7%	100%
Average	**19,3**	**22,2**	**24,3**	**12,4**	**78,1**
	25%	28%	31%	16%	100%

In average, the three phases of Stage A (A1, A2, A3) were balanced and promotes the main discussions (see Table 4). The Stages B + C, as expected promotes the synthesis and takes in average a half of the phases in Stage A.

The far most different interview was the one conducted with Company #L, corresponding to interview #13. Despite lasting 92 minutes, one of the interviewee found no meaning on the proposed framework and refused to follow the proposed stages and so we did not put it on the Table 4. Because they consider to be a very forward company in terms of how they conduct their business to contribute to the world, the proposed framework are not representative of what they do. Actually, they are septic about the possibility to embedded their process in a tool. Similar perspective was indicated towards the question about their value proposition (A1).

During the interview, non-structured questions were performed as attempt to perceive other ways of asking what value the company aim to add to the world. Some example of actions were described, but no convergent conclusions were achieved. For instance, the organization constantly reflects their role in society, challenging current market paradigm. Besides, they decision to terminate with a profitable product, erasers with licensed cartoon characters, which had higher financial margin, but provided only superficial value added, but did not mean necessarily that it erased better than traditional ones, and additionally stimulated children to increase eraser demand, even when it was not necessary. This interview shows that there is no universal framework to address SBM's, that there are situation which demand more preparation to start the conversation to enable the parties to have common language and understanding of concepts, and that there are cases in which interaction via web is not recommended given its impact on mutual understanding.

Based on all interviews, Table 5 summarizes the main strengths and weaknesses perceived during the tool application. As strengths, is it worth mentioning that the application of the tool enables to have an overview of the business models of each organization. Thus, the proposed framework can be applied with this aim. For instance, #2 mentioned that "it is always interesting to take a step back and see the bigger picture and drivers of the business", while #6 expressed that "something like this should be how we should represent [*name of the company*] communication strategy". Besides, it is supported by a multi-stakeholder perspective, making explicit each organizational stakeholder, not only shareholders and customers, but also employees, suppliers, society, environment, government, alongside other stakeholders the interviewee found relevant for its business model. Stakeholders added by the interviewees were competitors, universities, advisors and like-minded organizations (e.g., organizations that share the same corporate values and believes). Another contribution of the tool was the explicit discussion on the SDG's. This approach can support a common language on the meaning of action for sustainable development, so that organizations with ambition to contribute to a certain SDG can find connection with others addressing the same goals, even if they are situated in different industrial sectors or location. Additionally, during the application of the tool, the interviewee showed engaged to the questions, providing

them initial reflections from this overview perspective of the organization's business models, but also on specific aspects which they did not seem to reflect very often (such as listing their stakeholders, naming their competitive advantage, etc.).

Table 5 - Strengths and weaknesses of the initial proposed tool.

Strengths	Weaknesses
Enabled an overview of the business model Explicit multi-stakeholder perspective Explicit discussion on SDG's Engagement of interviewee and initial reflections	Unfit between company's perception of value proposition and visual representation Manufacturing-oriented framework Need for further clarifications (stages A3 and C) Overlapping: same arguments used for different questions No deep reflections Only one person participated in the discussion Need to further understand sustainable value capture

Despite interesting discussions enabled by the tool application, some improvement opportunities were also identified. First, although the interviewed companies had social and environmental purposes, some of the interviewees not necessarily found easy to frame their value proposition into the two dimensions (economic, environmental and social value; and the short medium and long term), as displayed by Figure 5. After asked according to these dimensions, the following perceptions were expressed: "I am just throwing things at you, I hope this is okay" (#7;)"I will do my best to follow the framework, but I will keep answering your questions and hope my answers will fill into your framework" (#2), "I will start talking a bit about the company and you see how this fits [*into de framework*]" (#10). Besides, the distinction on medium term was not easy. The interviewees mostly combined medium and short term or medium to long (when addressing some aspect that is not immediate). Another limitation of the framework is that it appears to be more oriented to manufacturing companies: "The framework is nice, but we are very weird to fit", as expressed by #4, which is a service-based small company.

The questions A3 (value captured by stakeholders) and C (relation of competitive advantage and SDG's to the SBM framework) were not all times straightforward for the interviewees. For A3, some of the interviewees started answering still focused on financial value captured by the shareholders (which was the first stakeholder addressed by this questions). As the stakeholders followed in sequence, they realized more about the different types of social and environmental value that their

stakeholders capture, and this questions became easier with very interesting perceptions. About question C, some respondents hesitated before giving an answer and further explanations and sometimes examples were necessary.

Conducting the interviews, it was also perceived that some arguments were repeated for different questions. At an extreme case, the interviewee might mention the social value proposition for the employees (A1), retrieve this when asked about human resources, corporate governance, and/or organizational culture comprised in A2, mention again during A3 describing the value captured by the employees, and, finally, comment on it as related to competitive advantage and to SDG's. Consistency of arguments is expected throughout the interview, but there is a need to pay attention to reduce repetition of arguments during the process. Another perceived shortcoming is that the tool was not able to provoke deep reflections on the interviewee. This may be justified by lack of initial introduction on important concepts to align the language and clarify concepts, and by lack of inspirations and stimuli coming from outside the organizations' boundaries. The last limitation was that only one person participated in each the interviews (with exception of #13). If more than people could join the application of the tool, further interesting discussions could have been unlocked by the tool.

12.5.2 The Sustainable Value Exchange Matrix (SVEM) proposal

The proposed visual framework was revised, deriving from reflection upon the initial version of the framework (Figure 4), taking into consideration the strengths and weaknesses discussion on previous version presented in Section 5.1. The main changes from the initial to the revised version are summarizes in Table 6.

Table 6 - Main changes.

Initial version	Critical analysis	Revised version
Value proposition composed by two dimensions TBL value and timeframe	Unfit between company's perception of value proposition and visual representation Not clear perception on the connection between SDG's and business model	Value proposition is composed by concatenated aspects, from general to specific: context, challenge to be addressed by the organization, business purpose and offerings Explicit consideration of SDG's in business context.
Value creation and delivery system: supply chain & logistics, operations, marketing, innovation, human resources, culture, governance	Manufacturing-oriented framework Overlapping: same arguments used for different questions	Substitution of the term "Manufacturing and Operations" to only "Operations" Better formulation of the question about value creation and delivery system. It is based on processes addressed in two levels: (1) practice, capabilities and resources; and (2) main performance indicators
Value captured by each stakeholder	Need to further understand sustainable value capture	Two layers of value captured: direct and cascaded for each stakeholder
Reflection on connecting competitive advantage and SDG's to SBM elements	Need for further clarification about this relation Coopetitive advantage concept rather than competitive advantage. It implies that the organization can support its longevity not only by having better performance as their competitors, but also by cooperation with them at some cases	The reflection stage referring to alignments and misalignments between sustainable value proposition, value creation and delivery system and value capture and if this balance if sufficient to support organization's longevity by coopetitive advantage and while contributing to sustainable development
Interview with one person	No deep reflection and single participant dynamic	Proposal of a set of practitioners participating in the discussion

Following, we describe the revised version of the initially proposed framework, which was named as Sustainable Value Exchange Matrix (SVEM) as shown in Figure 5. It was developed to provoke reflections about current and new business models and to support brainstorming for improvement opportunities to improve performance towards more SBM's. This tool seeks to promote the idea that any business can become more sustainable, since it can be applied for a large variety of organizations, independently from their experience with sustainability, size, type of offering (service or manufactured goods), profit orientation (for profit or non-profit organizations), etc.

To apply SVEM, it is necessary to define a business unit together with defining the people within and outside the organization that will take part of a workshop using SVEM. We recommend having people from different areas of the organization, as well as different hierarchical levels, as well as from external stakeholders to bring another perspective on the organization. Figure 5 brings an overview of the tool. As illustrated, it is divided in four stages: (A) Delimitation of business reason of existence; (B) Processes and performance system to support the creation and delivery of value proposition; (C) Stakeholders' value captured; and (D) Matrix critical analysis. Before the application of the tool, it is expected that the moderator provides initial introduction on key concepts (such as corporate sustainability, sustainable business model and sustainable value), brief description of SDG's and a set of concepts and cases to serve as inspirations for innovation. These may include examples of successful businesses aligned with PSS, sharing economy, circular economy, BOP, etc. The application of SVEM starts with delimitation of relevant contextual factors, from which more specific challenges can be derived (A1). These serve as input for delimiting business purpose, which is made tangible by organization's offerings, e.g., its products and services, (A2). After delimiting its main processes (B1), the participants are asked to point out the main practices, capabilities and resources needed for that process (B2), as well as performance indicators used to assess each process (B3).

Stage C starts with defining the main stakeholders. Following, C1 attempts to identify the main sustainable value captured by each stakeholder. For this, the moderator encourages the participants to consider not only functional value captured, which is the direct value captured from organization's products and processes, but also axiological value captured referring to a value captured which has a deeper connection between the organization's and the stakeholders' moral values and believes. This distinction between functional and axiological dichotomy was

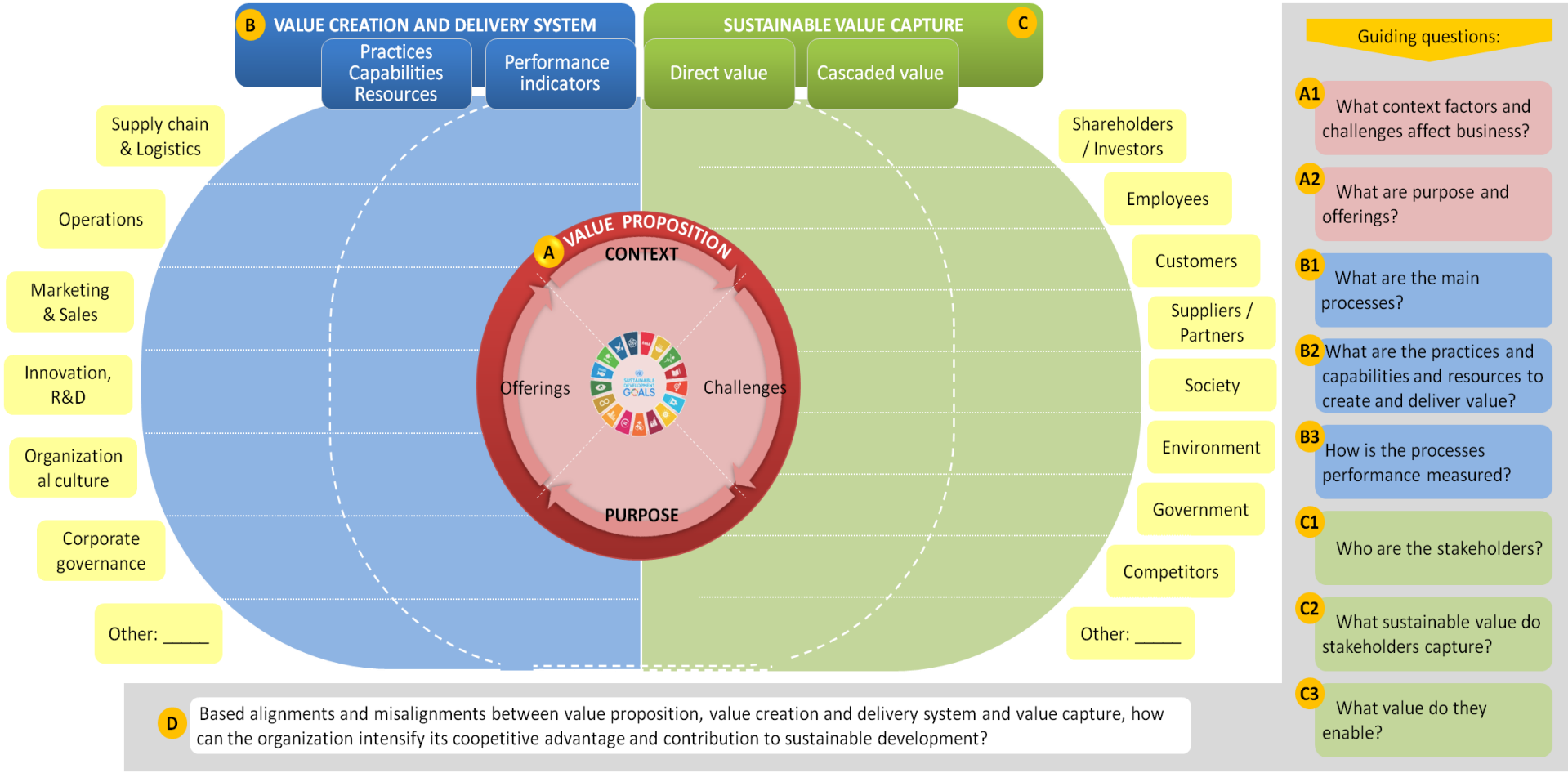


Figure 5 - Sustainable value exchange matrix (SVEM).

previously discussed by the literature conceptualizing sustainable development (BOLIS; MORIOKA; SZNELWAR, 2014). In sequence, C2 raises reflection on cascaded value, which is the value deployed by the focal organization's stakeholders to their own stakeholders. Stages A, B and C seek to promote a description about the main aspects that represent the organization, initiating some reflection while it is performed. This was a preparation for Stage D, which is intended to provoke deeper reflections by critically analysing about alignments and misalignments between sustainable value proposition, value creation and delivery system and value capture, reflecting whether this balance if sufficient to support organization's longevity by coopetitive advantage and while contributing to sustainable development. Coopetitive advantage implies the idea that the organization can support its longevity not only by having better performance as their competitors, but also by cooperation with them at some cases.

SVEM is initially proposed to be conducted in the form of workshops with a moderator to conduct the questions and reflections. However, it is not restricted to this, as organizations may be willing to experiment this tool on their own and this has also potentials. To support a self-standing application of the tool, the key questions are displayed also in Figure 6. With this tool, we intend also to argue that SBM is not a black and white distinction, but rather is a mindset on what business aspects are more relevant and how to connect each other.

12.6 Conclusions and limitations

The systematic literature review provided indications on the need for a more practice-oriented visual tool to support SBM's sustainability performance. This paper helps to narrow this gap by proposing the SVEM to help academics and practitioners discuss about SBM, based on solid theory analysis and practice-oriented application. The core research contribution is the proposal and revision of the Sustainable Value Exchange Matrix (SVEM), illustrated in Figure 5. Originated from both literature and practice, it is a tool that can be used by both academics and practitioners to provoke reflections and discussions about business reason of existence and deployment of business purpose into the business model from a multi-stakeholder and from a value exchange perspective. Despite these advantages, the matrix presents also limitations of application. For instance, it has greater potential with the presence of a moderator

to conduct the sequence of the tool, since it depends on concepts related to sustainable value that may not be trivial at first experience.

Besides SVEM, this research enabled also two other contributions. The first is the overview of SBM literature, indicating that this body of knowledge is a emergent one, mainly built on exploratory research (case studies and literature reviews). The second research contribution is the structuring of the ex-ant SBM frameworks literature in six categories, indicating the different research issues composing the SBM literature. The identified framework categories are: (1) SBM typologies (what criteria can be used to adequately differentiate the various types of SBM's?), (2) dimensions-based frameworks (what composes SBM?); (3) business processes-oriented frameworks (how can processes be organized to enable sustainable value creation and delivery?), (4) stakeholder-oriented frameworks (how do stakeholders affect SBM's?), (5) sustainable business modelling (how can SBM's be designed and improved?), and (6) SBM life cycle stages (how can SBM's maturity evolve over time?).

In a more general perspective, one of the research limitations that is worth mentioning is related to the difficulty in delimiting the concept of SBM. By restricting the search strings for delimiting the paper sample to explicitly using the term SBM and its variation, we end up excluding papers that addresses this challenge of integrating sustainability into core business, but did not explicitly used this term. This can be the case for introduction sustainability into strategy or into performance systems, since both are close related to business model configuration. However, opening to include more search strings would risk the validity and replicability of the research method, since there is no systematic guideline to include or exclude these concepts with possibly similar meanings. Another research limitation is regarding the rapidly growing number of publications, which directly affects the contributions of the paper sample. Still regarding the systematic literature review, another limitation is an operational one regarding Scopus database, since the classification of publications into articles and articles in press include not only academic articles, but also magazine articles were found (and excluded from the sample). As for the qualitative interviews, one limitation was the interviews performed via web, which bring limited subjective perceptions on the interview process. Besides, we finally propose SVEM, which, although has a theory and practice background, is still an untested tool.

Thus, future studies are invited to test SVEM in practice with both academics and practitioners to verify it capacity to provoke reflection, as expected. Besides, SVEM joins a growing group of researches concerned with approximating theory and practice towards developing applicable tools with conceptual background. This seems also to be a tendency for future researches, towards disseminating transdisciplinary knowledge and partnerships, as expected by the last SDG: partnership for the goals. Besides, it also presented as opportunity for future researches the sixth SBM framework type, bringing evidence on how SBM can evolve over time from a business model lifecycle perspective. Only few researches were found in this category. The present research is an attempt of promoting the sustainable development business paradigm and indicate that this is a very relevant research opportunity in the business model area and beyond.

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