5th INTERNATIONAL ONLINE CONFERENCE ON

New Business Models


1-2 July 2020

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Colophon

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Our Common Future
ROADMAPS FOR OUR FUTURE SOCIETY

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TNO
innovation for life

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Words of Welcome

Before you lie the proceedings of the New Business Models 2020 edition. This is the 5th edition in a row. After Toulouse (2016), Graz (2017), Sofia (2018) and Berlin (2019), this edition is taking place virtually at the Radboud University in the Netherlands. The outbreak of the devastating COVID19 pandemic has forced us to turn an almost organised, wonderful face to face event into an online, virtual happening.

For the last three months, we have been re-inventing ourselves, encountering questions and learning about technology that was in many respects new to us. But, in the end, and the enormous efforts of our great team, we have made it. As a result, we are facing a great - if not to say - wonderful lustrum edition of the conference.

You have the opportunity to experience over 70 online presentations, poster sessions, a staggering number of over 20 on-demand key-notes, two plenary sessions and all kinds of features to connect via chats, bulletin boards and what have you. We expect up to 300 attendees coming from over 30 different nations. There is more to see, attend and people to meet during two days than fit in the hours of the day.

Some key features we have included in the online environment are in order for participants to get the most out of the conference. As a special feature this conference has 56 virtual meeting rooms, called Round Tables. All conference participants may book a round table for up to 8 people. The Round Tables are intended to discuss plans, presentation or any other subject that is considered important with regards to the conference themes.

Furthermore, we have taken all steps needed to make sure participants can easily find their way. For this we have set up a ‘Finding your way’ guide, and provide participants with a central point, the event hub, from which they are able to access all parts of the conference with just one click. Finally, since there is
too much content for the two conference days, poster-sessions and invited keynotes are available on-demand. This allows for all to get a flavour of what is coming and watch each contribution at your own pace and liking.

We are very thrilled about this first virtual edition of the New Business Models conference and hope that in these days give ample time to study the set-up via the various pieces of content all contributors have to offer. Enjoy the posted material. Enjoy the presentations. If you have any questions do not hesitate to contact us, or the technical support team.

We wish you a great informative, exciting time. Enjoy on behalf of us and a great team that helped this conference bring to life. First and foremost, we express our gratitude for the support and trust provided by the Dutch National Research Organization for Fundamental Research (NWO) and the Dutch National Research Organization for Applied Research (TNO). Without their sponsorship, this conference would not have been possible. Next, in particular we like to give a Great Applause and warm Thank You to (in alphabetical order): Geanne van Arkel, Justus Bottenheft, Nusi Cornelissens, Korneel Hogendoorn, Moniek Kamm, HenkJan van Offeren and Arthur Wentzel. Besides we thank the technical staff of AVEX, iChair and Conftool for their platforms and technical support offered enabling the transition to a virtual conference.

Jan Jonker & Niels Faber

Chairs of the 5th edition of the New Business Models Conference, Radboud University Nijmegen – The Netherlands
Conference Organisation Team
Jan Jonker is professor of Sustainable Entrepreneurship at the Nijmegen School of Management at Radboud University Nijmegen (The Netherlands). In his home country he has been listed for seven years in a row among the Top-100 most influential ‘Green’ Dutch people. His research focuses on transformational trends in society, the development of (new) business models and how these developments are related to organizational change and societal transition. His approach is often based on crowd-thinking, which implies engaging with large groups of people in specific research projects in order to explore and possibly solve issues as a collective endeavor. As a consequence many people consider him a kind of ‘academic activist’, wanting to create change and to have impact. He did a TEDx in 2015 link and one in 2018 for de European Union on the central concepts he is working on. He is author of over 35 books among which three bestsellers on New Business Models in the last ten years. More and more he now focuses on a generation of business models that enable traction towards a more durable, more just society.
Dr Niels Faber  
Niels Faber has been an active researcher on social sustainability since 2002. Currently, he holds a position as assistant professor at the Centre of Sustainable Entrepreneurship of the University of Groningen, Campus Fryslân. Additionally, he holds positions as researcher at the Nijmegen School of Management (NSM), Radboud University Nijmegen, the Netherlands, and lecturer at the Hanze University of Applied Sciences in Groningen, the Netherlands. His current research focuses on two topics: (1) circular business models and (2) the implication of crypto-technology as enabler of common value (time, energy, mobility), peer-to-peer exchange amongst citizens. He has authored over 50 publications including books, chapters, scientific papers, and conference papers.
Conference Programme
Plenary Keynotes
Harry Garretsen: “The funding of academic research into new business models”

Harry Garretsen graduated in 1987 with honours in Economics from the University of Groningen (RUG). Four years later he received his PhD from the same university with a thesis on John Maynard Keynes and modern macroeconomics. He then worked for the Dutch National Bank and, simultaneously, was an economics professor at the Radboud University in Nijmegen and Utrecht University. In 2008 he returned to the University of Groningen and has held the chair of International Economics and Business since then. From 2011 to 2016 he was dean of the Economics and Business Administration Faculty in Groningen. Since 2015 he is director of the Centre of Expertise ‘In the LEAD’ at the same faculty, studying the effectiveness of leadership with insights from economists, psychologists and management academics.

He has always actively engaged in economic policy and policy advice. He was deputy- Crown member of the Social Economic Council (SER) between 2002-2014 and was a member of the Advisory Board and an academic partner of the National Planning Bureau (CPB). He acquired management experience as dean and as member of the Supervisory Board of the Social Housing Guarantee Fund (WSW). Currently he is a member of the Bank Council, the advisory board of the Dutch National Bank. As of February 2019, he is appointed as a board member for the Social Sciences and Humanities domain at the Dutch Research Council (NWO). During the New Business Models Conference in 2020, he will address his keynote in his capacity as NWO board member.
Marinke Wijngaard: ‘The need for collaborative business models in context of innovation for societal challenges.’

Affiliation: Managing Director, Circular Economy & Environment at TNO

Marinke has twenty-five years of experience at the interface of innovation, sustainability and business. With passion she leads TNOs unit Circular Economy & Environment, aiming to accelerate the transition to a sustainable circular world. She is closely involved in numerous innovation agendas and in creating public-private partnerships in circular innovation initiatives. Her experience covers jobs in R&D management, leading the DSM Analytic Centre for Materials and the DSM Biotechnology Centre. She holds an academic degree in chemical engineering from the Technical University of Eindhoven (NL), combined with education in business management.

Abstract: Marinke will briefly shed a light on the innovation contributions of TNO to several transitions. A view on the societal needs for transition, also brings a focus on the many upcoming European calls such as the Green Deal and also the numerous national agendas. She openly questions how we can and probably should improve upon the efficacy of how we try deal with transitions. She will confront contemporary transition approaches and highlight the overlap, need and opportunity of collaborative business modelling to further the progress in transitions. With an aim to further the national transition capability, she pleads for stronger collaboration of academia and practice on this topic.
Invited Keynotes
**Pieter Jelle Beers:** ‘Radical incrementalism: New business models and sustainability transitions’

**Affiliation:** Professor of New Business Models for Agrifood Transition, HAS University of Applied Sciences Den Bosch, (The Netherlands) Senior Researcher Dutch Research Institute for Transitions Erasmus University of Rotterdam (The Netherlands)

**Abstract:** New business models have been widely touted for their promise of sustainability. However, conceptual approaches to new business models by and large fail to make connections with sustainability transitions. In this contribution, I draw upon the characteristics of sustainability transitions to introduce a transformative business model concept. Given that sustainability transitions are radically incremental processes, I propose that the innovative potential of business models is rooted in the extent to which they can influence their current institutional setting and that the radicalism of new business models can only be assessed in relation to the transition to which they might contribute.
Fenna Blomsma: ‘Circularity Thinking: systems design for circular product and business model (re)design’

Affiliation: University of Hamburg (Germany)

Abstract: Designing circular solutions is fundamentally different from designing for a linear economy. This is because of the resource feedback loops that exist, and the value chain dynamics that influence the degree to which actor interests are aligned with circularity. But how to take these things into account when innovating? This keynote gives a bird’s eye view of Circularity Thinking – and the steps, tools and approaches it consists of – which provides input for circular product and business model (re)design based on systems thinking for circular economy.
René Bohnsack: ‘Business Model Magic: Using business model pattern research and machine learning to empower anyone realizing their entrepreneurial dreams’

Affiliation: PhD, Associate Professor of Strategy and Innovation at Católica Lisbon School of Business & Economics Founder Business Model Design Lab Founder venturely.io

Abstract: Can business models be automatically created? In his TEDx talk in 2018 René Bohnsack proclaimed that in the future entrepreneurs only need to describe their ideas to a computer and then an algorithm will create the business model for them. Since then the team of the Business Model Design Lab at Católica-Lisbon has worked hard to make this dream a reality. Now available in beta on venturely.io, in this talk René Bohnsack provides a peak behind the scenes, including the challenges they faced, the role of business model patterns, and what is next.
Frank Boons: ‘From sustainable business models to sustainable provision: How to get beyond the SBM retorics’

Affiliation: Professor of Innovation and Sustainability at The University of Manchester

Abstract: In practice and research alike, the concept of sustainable business models has transformed the way in which we think and argue about the way in which our practices of consumption and production can be made more socially and ecologically sustainable. In this keynote I offer a critical look at the business model concept and argue that (1) the concept is often used in a way that does not fully mobilize its potential, and (2) the limits of the concept may keep us from understanding the full range of options that are open to society for realizing sustainable production and consumption. I will argue that the perspective of sustainable provision needs to be at the basis of the research and practice of sustainable business models.

Affiliation: Founder Excess Materials Exchange (The Netherlands)

Abstract: The Excess Materials Exchange (EME), means serious business. They want to save the planet with maximum impact. And they want to prevent valuable materials from being wasted and destroyed. The chosen path to achieve all this? Running a dating site. In this talk Maayke tells you all about her dating adventures. You’ll end up with a whole new perspective on the concept of the circular economy and waste.
Rick Edgeman: ‘A New Business Model 400 Years, 8 Minutes and 46 Seconds in the Making’

Affiliation: guest editor Journal: Sustainability Professor & Chair – Management Department – Robbins College of Business & Entrepreneurship – Fort Hays State University

Abstract: Driven by 400 years of systemic racism and 8 minutes 46 seconds of recent police action, unrest in America is at levels unseen since the 1960’s Civil Rights Movement, with new policing models likely to emerge. A business model aimed at better aligning policing outcomes and their means of attainment with citizen expectations for equal justice and for assurance of their life and liberty is proposed. Value created is primarily social in nature so that the model anticipates collaboration of citizens, police, and civil authorities.
Jacob Eskildsen: ‘Job Performance in offline and online settings’

Affiliation: Aarhus University (Denmark)

Abstract: This key-note draw upon several different studies to explore the process of creating and sustaining job performance in a work team as well as the potential consequences of moving to a platform of high or low media richness to perform one’s tasks. Both organisational and emotional consequences of opportunities behaviour in such settings will be touched upon.
Niels Faber: ‘ORGANISING THE CIRCULAR ECONOMY – realising value preservation and inclusivity’

Affiliation: University of Groningen (the Netherlands)

Abstract: Organising the circular economy implies a transition towards an economy of value preservation. The actions needed at landscape, regime, and niche levels are not all clear. In this keynote I address this issue, addressing three related questions. What does the organisation of value preservation mean? At which level(s) does this need to be addressed? And, what resources (e.g., institutions, people, money) are needed to make this happen?
Karl Francken: ‘Connections are key to make circular business models a success’

Affiliation: Dept. Bio-engineering – University of Antwerp Research manager Sustainable Materials, VITO NV (Belgium)

Abstract: Circular business innovation is the process of combining one or more ways to create circular value with a strong value proposition. Because circularity has a focus on materials management, however, creating new connections throughout the value network is crucial to capture the circular value that is being created. Companies may be used to working with suppliers and customers, but they typically lack a view on the rest of the network and environment they operate in. For a circular business to be sustainable, it needs careful consideration and balancing of possible costs, benefits and impacts.

Building on learnings from our coaching activities for SME’s, this keynote will highlight that connectivity is the key to success in the transition to a circular business model. This should be interpreted both in a digital and a human way. Digital technologies for processes, products and platforms are key enablers for circular value creation, as well as delivery and capture. But also human interactions and exchange of expertise with financial, legal, insurance, logistics, business experts are necessary. Circular businesses are digitally-based but man-made.
Timber Haaker: ‘Do we need dedicated tooling for developing New Business Models?’

Affiliation: Saxion University of Applied Sciences (The Netherlands)

Abstract: Business model tooling has developed from methods based on generic business model ontologies and taxonomies to more specialised aids for business models in specific domains.

In this talk we review several approaches to the design of business model tooling and consider whether we need dedicated tools for developing New Business Models. What could be missing in current tools? We look at some ideas that could support the design of new business models and consider how they may be applied in practice.
Jan Jonker: “Shaping transition through collective business modelling”

Affiliation: Chair Sustainable entrepreneurship, Nijmegen School of Management, Radboud University (The Netherlands)

Abstract: Society and the economy face an increasing number of wicked problems. The challenge is to shape a new form of Commons between society, business and government. We need to work on transitions that enable collective value creation between citizens, business and government. This keynote brings to the fore the idea of using the process of collective business modelling as a carrier for economic and societal transition.

The challenge is to link the processes of collective business modelling in specific domains with dedicated transition-pathways. However, how to combine those two processes in order to create more effectiveness remains an intriguing and challenging task. Still, this is deemed necessary if we want to contribute more effectively to today’s transition challenges.
Florian Lüdeke-Freund: ‘What Types of Sustainable Business Models Do we Already Have?’

Affiliation: Professor for Corporate Sustainability, ESCP Business School Berlin & Founder of www.sustainablebusinessmodel.org

Abstract: Patterns are widely used to support the solution of various design challenges. Our research deals with the potential of patterns to support sustainable business model (SBM) design. We are presenting an overview of 45 SBM patterns that can be used to design better businesses. Inspired by the work of Gassmann and many others, we selected only those patterns that have the potential to contribute to sustainable development and to maintain and create value in ecological, social, and economic terms. The centrepiece of our research is a collection of 45 SBM patterns. It addresses three essential questions: What types of sustainable business models do we already have? What solutions do they offer to recurring ecological, social, and economic problems? And how can we best describe these solutions to maximize their usefulness? In this presentation, the research leading to our collection of 45 SBM patterns is explained.
Christian Nielsen: “What characterizes the best business model implementors? (Kickass Companies)"

Affiliation: Head of Department of Business and Management, Aalborg University Business School

Abstract: Picking out a novel business model with strong sustainability attributes is not a guarantee for success (in whatever dimension you wish to measure success; but that is a different story altogether). Instead, the winners are the companies that excel at implementing business models and executing the strategies around them. Through the study of 903 companies, we identify six factors that make a difference: 1. Leadership and managerial ambitions, 2. Customer focus, 3. Companies focused on being excellent in some aspect, 4. Interdependence with strategic partners and internally, 5. Adaptability and scalability, 6. Using KPIs for motivation and learning.
Lars Jacob Tynes Pedersen & Sveinung Jorgensen: ‘Will your next office be an oil rig?’

Affiliation: Associate Professors, sustainability adventurers, and co-heads of the Centre for Sustainable Business at NHH Norwegian School of Economics.

Abstract: The circular economy requires upcycling of resources within and between industries. Two large industries with comprehensive resource usage footprints are 1) the oil energy and maritime industry and 2) the construction industry. This keynote introduces our ongoing work in a large research project, #recomX, which aims to bridge these two industries by developing a circular-economic ecosystem. Specifically, the project investigates how discarded oil and gas installations like oil rigs and large ships can be upcycled or recommissioned into new construction materials (e.g. facades and other materials for office buildings and other real estate). We thus investigate the entire circular value chain from oil rigs and ships to building materials, and what kinds of business models and ecosystems can help companies create value in a circular-economic ecosystem (e.g. “…as a service”-models, etc.). The project is a collaboration between architects, designers, companies in the oil and gas industry, lawyers, a finance institution and researchers. The purpose is to design new business models, develop new products and services, test prototypes and develop the groundwork for greener and a more circular economy growing from the ashes of the oil economy.
Kim Poldner: ‘Futureproof business models for the fashion industry’

Affiliation: The Hague University of Applied Sciences (The Netherlands)

Abstract: Can Covid-19 be seen as a catalyst for change in the fashion industry? Or does it only disclose the well-known issues underlying textile supply chains for which we urgently need to come up with novel business models? This talk will focus on the problems in fashion and how the corona crisis is leading to a Darwinian shakeout with an expected 30% bankruptcies by the end of 2020. Opportunities for business model innovation are captured by focusing on three trends: The Age of the Amateur, Digital fashion and Resilient Supply Chains.
Romana Rauter: ‘ASSESSING THE IMPACT OF SUSTAINABLE BUSINESS MODELS: Is it only a matter of system boundaries and methods applied?’

Affiliation: Assistant Professor University of Graz (Austria)

Abstract: The creation and diffusion of sustainable business models (SBM) is a timely topic of increasing interest given the various ways that sustainable business models can lead to improved economic, social and environmental performance. The assessment of SBMs, however, is a subject matter that has not yet been fully clarified. I will present normative propositions to stimulate the ongoing debates about the impacts of SBMs, and to guide future research in this field.
Michel Schuurman: ‘New Societal Business Models’

Affiliation: MVO Nederland (The Netherlands)

Abstract: New Business Models (NBM’s) have been on the rise in recent years. Whether it’s circular business models such as take-back schemes, incorporating other values such as natural capital or using sharing principles; in almost all cases there is also a societal benefit. Yet in the business model of nations (executed by our governments) these benefits are mostly ignored and even hindered. Taxation on labour is high and on consumption and resources low so the take-make-waste economy is favoured. VAT is raised – again – on refurbished goods and the societal benefits of working with people with a distance to our labour market are not valued in the labour taxes. All these things make working with NBM’s an uphill battle. In this keynote Michel Schuurman will highlight these system failures and suggest ways to address them effectively.
Hans Stegeman: ‘Uncovering sustainable business models; practical applications from Finance’

Affiliation: Triodos Investment Management (The Netherlands)

Abstract: There is a burgeoning literature on sustainable, new or circular business models. But what if your investment strategy is to invest in them? How do you decide if a business model is sustainable enough to qualify for you strategy? And when not? Uncovering sustainable business models is at the core of sustainable finance. And it is not an academic or blueprint exercise: reality is more grey to discover the different shades of green investment.

Identifying these business models, engaging with them for transitional impact and showing the impact to clients are important ways finance can contribute towards a sustainability transition.
Susan Sweet: ‘Transforming to a circular fashion system’

Affiliation: Associate Professor Stockholm School of Economics, Sweden. Research manager of the Mistra Future Fashion program

Abstract: This keynote will present and discuss research findings based on an eight years long cross-disciplinary research program, Mistra Future Fashion. The program had a vision to enable a systemic change of the fashion industry and society. Working with over 50 stakeholder partners and in four different but integrated research themes, researchers addressed the circularity and sustainability of fashion from fibre to fibre, farmer to user and, from a linearity to circularity.
Arnold Tukker: ‘Business models for a resource-efficient and circular economy’

Affiliation: Scientific director and professor of Industrial Ecology, Leiden University, Institute of Environmental Sciences, Senior scientist, Netherlands Organisation for Applied Scientific Research, den Haag (The Netherlands)

Abstract: Since the 1990s, Product Service Systems (PSS) have been heralded as one of the most effective business model concepts for a resource-efficient, circular economy. Starting as a European concept, we see that PSS is now a concept used in a wide range of science fields and regions (Asia now produces more papers than Europe). PSS diffusion is however slow. For consumers, having control over things, artifacts, and life has high value. PSS are often less accessible, or have less intangible value, than the competing product. PSS suppliers take more responsibilities and risks for the use stage. To conclude, businesses under certain conditions can move to circular PSS since it makes business sense. It is however also clear that such changes not always pay off, and that policy incentives such as shifting taxes from labor to materials are essential to realise a circular economy.
Ralph Turm: ‘Business Model (Re-)Design for Resilience & Regeneration’

Affiliation: r3.0

Abstract: In this keynote r3.0 Managing Director Ralph Thurm looks at the often relative and context-free way in which Sustainable Business Models are designed. Is a circular business model actually sustainable? What if it is just based on inputs, and output/outcome related steering without applying thresholds and allocations to truly assess that the actual or planned performance is ‘in context’. What does r3.0 offer to ensure sustainable business model creation to stay within the carrying capacities and fair shares? Lastly, the keynote will address the need for education at all levels to embrace what’s necessary learning to ensure Resilience & Regeneration. A great way to explore the complementarity of r3.0 and many other initiatives that go deep on a second step, but forgot to finish a basic first step to allow for sustainable business models to thrive.
Ilka Weissbrod: ‘Fast learning for radical business model innovation’

Affiliation: Centre for Sustainability Management (CSM) Leuphana University Lüneburg (Germany)

Abstract: Experimentation has iterative learning at its core. The urgency of sustainability pressures means that business as usual is not an option and fast action is needed by firms to radically change the products and services at the heart of their business models. This is only possible through fast learning across all parts of the business model. In this keynote, Ilka Weissbrod shares insights from a EUR 1.1m UK project in which a consumer goods firm set out to “Create an Anti-business – if we were trying to kill our business model as an entrepreneur, what would we do?” Spoiler alert: the project did not succeed in creating this Anti-business. Ilka highlights what worked, what did not, and suggests ways to address fast learning challenges in order to enable radical business model innovation effectively. The suggestions are underpinned by further exciting empirical work with consumer goods firms in other countries.
Sjors Witjes: ‘Sustainability and business; learnings from practice and science’

Affiliation: Radboud Universiteit Nijmegen Assistant Professor at the Strategic Management group of Radboud University (The Netherlands), Extraordinary Professor of Corporate Sustainability Antioquia University (Colombia)

Abstract: The use of transdisciplinary approaches has enabled academic institutions to engage in organisations’ quest to enhance their contribution to the sustainable development of society. These collaborative approaches aimed at meaningful outcomes for science and practice let the researcher be at the heart of organisational change processes. In this keynote I will share learnings of applying transdisciplinary approaches in the light of the current climate and social crises.
Arthur ten Wolde: ‘New business models: from niche to mainstream’

Affiliation: Executive Director, Ecopreneur.eu

Abstract: Since 2013, there is growing support for a transition to new business models that are sustainable, circular and fair. New models bring obvious advantages to companies such as resilience, innovation, increased turnover and attracting the best staff. Representing 99% of European companies, SMEs play a crucial role in the transition to a circular economy. However, green SME start-ups and front-runners still represent only a minority of 3% of all SMEs. So what prevents mainstreaming? There are numerous barriers experienced by the 3,000 members of ‘ecopreneurs’. These barriers include the lack of demand for green and circular products and services, lack of transparency and access to funding and the complexity of circular design. Many of these barriers can be addressed at the regional or national level, but mainstreaming also requires radical EU policy changes.
Poster Sessions
Abstract

Supply Chain Purchasing Decisions Model: A Business Perspective

The need for new, sustainable and circular business models has been widely established and innovative options are being developed and put forward. While new companies partly start from scratch – partly, as they also are confronted with global supply chains for some input - existing companies start from what has been developed over the years. Transitioning from global supply chains to new models will be a process requiring several steps. The context within which an organization operates has a significant influence on how decisions are taken and sustainability approaches are chosen (Stål, H. & Hervé, C. 2018), and existing supply chains have their own contexts with their specific impacts at the different stages in the chain (Brunori et al., 2016). For a company wishing to improve its supply chain sustainability, it needs insights in which drivers at which stages of its existing supply chains are important. This paper focuses on the business perspective. In a separate paper, we focus on the same challenges but from a policy development perspective with the aim to support decision making of policy makers (abstract submitted to the 17th International Winelands Conference 15-17 April 2020, Stellenbosch, South Africa).

In this paper, we introduce a model which combines drivers in supply chain purchasing decisions. The drivers are presented as six main factors, made up of underlying sub factors, identified in several sources on supply chains, purchasing and sustainability (Puška et al., 2017; Thorlakson, 2018; Brunori et al., 2016; Villamil, C. & Hallstedt, S. I., 2018; Hesping, F., & Schiele, H., 2016; etc.). By combining all factors in one model, each factor is measured in relation to all other factors. The overall aim of the proposed research, is to develop a generic model of factors influencing purchasing decisions which can be used at different stages and even for different purchasing categories (Dabhikar et al. 2016) in a supply chain. In view of practical implementation, the model is presented as a visual which is easy to understand and to put into use in researching the value chain at different stages, from raw material to final waste stage (including re-use and recycle steps).

The model will support a company wishing to improve its overall supply chain sustainability by identifying which drivers are key at each stage. The model also allows for measuring a supply chain prior to and after the introduction of a certain measure, thus allowing for measuring effects in whole supply chains after the introduction of triggers or restrictions at a certain stage of a value chain.

At present, the model has been compiled based on literature review. In the next stage of the research, the factors will be verified and optimized in existing supply chains, to begin with the coffee chain. The model will be tested for purchasing decisions as this is the link between the different steps in value chains (processing is left out at this stage). It further looks to distinguish between decisions related directly to the core product (e.g. coffee in the coffee chain) and purchasing decisions for “non-critical” products (e.g. cleaning detergents in the coffee chain). This will allow for measuring the relative importance per factor for decisions directly affecting the image of a product and others.

The first step of the research, optimizing the model in a coffee supply chain, is expected to provide an improved model based on practice in the coffee chain. In order to further optimize the model into a generic, non-sector specific model, we intend to carry out the same research in two additional sectors after that.
Tove Antonissen, MA, MEM, is a consultant in trade from developing countries and sustainability. She is preparing to become Candidate PhD researcher, assisted by Prof. Dr. J. Bossert from the research team Finance & Accountancy of the Inholland University of Applied Sciences.

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A Sustainable Business Model in Action: Environmental and Social Performance

A Case Analysis in the Wine Industry

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Abstract

The aim of this research is to analyse Viña Concha y Toro S.A.’s (VCT) strategic business model (SBM). A Chilean based company, VCT is considered Latin America’s largest wine grower. The case study is focused on two of the three core elements of the value proposition, namely environmental and social performance. Towards this end, we use as a framework for analysis the CSR disclosure index (Gamerschlag et al., 2011), Bocken et al.’s (2014) SBM archetypes, and established GRI sustainability performance indicators as reviewed in VCT’s Sustainability Reports over seven years, between 2012 and 2018. Based on this research strategy, extensive content analysis was undertaken on the company’s annual sustainability reports, followed by a complementary in-depth interview providing for qualitative insights. We can conclude that VCT represents the manifestation of a SBM as defined. Sustainability fundamentals are explicitly present in the vision and mission of the company. The value is created for all stakeholders, and coordinated activities are undertaken and implemented with partners and suppliers – impacting the broader wine industry. Analysis of VCT’s sustainability strategic orientation showed that the company made permanent advances from 2015, with an emphasis on social aspects rather than environmental ones. In 2020, the definition of VCT’s strategic orientation is in progress, with focus directed towards the principles of ethical trade, which involves fair wages and human rights, among other issues. The sustainability performance indicators from GRI reports, show positive results in the environmental and social aspect. The company has different SBMs, which coexist with each other, this confirms the theoretical framework used, which postulates that the services rendered by the firm’s unique bundle of resources and capabilities may lead to value creation, as posited by the Schumpeterian innovation and the Resource-Based View (RBV) fundamentals. The study provides an empirical study on SBM and demonstrates that the generation of SBMs is multidimensional and complex.

Keywords

Corporate sustainability; Sustainability strategy orientation, Sustainability strategy performance; Sustainability Business Model; Listed firms, Wine industry; Resource-based view (RBV)
Exploring Sustainable Academic Entrepreneurship: A Systematic Review and Agenda for Future Research

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Abstract

Current global challenges require the development of new solutions that contribute to sustainable development. Entrepreneurial activities from scientific institutions may offer meaningful opportunities to this end. However, a dedicated notion of sustainable academic entrepreneurship is absent in the literature and relevant knowledge on how to realize its potential for sustainability is scattered among different disciplines. This article introduces the research field of sustainable academic entrepreneurship and depicts existing research on the subject by conducting a systematic literature analysis. The systematic review of 22 peer-reviewed articles published between 2009 and 2020 finds that previous research efforts can be organized into four central themes: Sustainable impact through academic entrepreneurship, Effects of sustainability on academic entrepreneurship, Enabling and fostering sustainable academic entrepreneurship, and Factors influencing sustainable academic entrepreneurship. When comparing the level of analysis addressed by the identified articles, the analysis reveals that previous research focused on the Entrepreneur, Spin-off, and Institutional level of analysis, but so far neglected the External environment level of analysis. The paper’s findings are translated into several avenues for future research. The findings benefit researchers and practitioners by offering a systematic and comprehensive overview of academic entrepreneurship for sustainability. They further highlight the role of scientific institutions as change agents for promoting sustainability by engaging in entrepreneurial activities.

Keywords

Sustainable Entrepreneurship, Academic Entrepreneurship, Academic Spin-offs, Sustainable Development, Literature Review
Introduction

Finding sustainable solutions to global challenges such as poverty, climate change, or social inequality has become a central topic of entrepreneurship research. The concept of the entrepreneurial university models the scientific sector as an enabler for regional growth and innovation (Etzkowitz & Klofsten, 2005; Etzkowitz et al., 2000). By disseminating and transforming scientific knowledge into practical applications, science shapes this process actively (Hayter et al., 2018; Hayter, 2016). Specifically, entrepreneurial activities in the context of science, for example, academic spin-offs, and incubators, yield a high potential to develop answers to sustainability challenges (Fichter, Geier & Tiermann, 2016). Inspired by Schaltegger & Wagner (2011), this paper defines sustainable academic entrepreneurship (SAE) as entrepreneurial activities that are affiliated with scientific institutions and intent to enable and foster the creation of solutions that simultaneously address current and long-term needs with respect to society, economy, and environment.

Recognizing the general discourse on the effectiveness of academic entrepreneurship and technology transfer for stimulating economic growth, innovation, or employment, empirical findings highlight the potential of academic entrepreneurship for achieving sustainable impact. For instance, the entrepreneurial activities of British universities have been found to have a significant positive economic impact in the UK (Guerrero, Cunningham & Urbano, 2015). Spin-offs from scientific institutions are central activities in SAE. They have been found to develop more radical product innovations compared to established firms from the private sector with no academic affiliation (Stephan, 2014). Academic spin-offs are further found less likely to fail compared to start-ups from the private sector (Cantner & Goethner, 2011; Zhang, 2009). Additionally, firms with an academic entrepreneur are more likely to attract external venture capital (VC) funding, perform better in patenting, and are more rigorous concerning proof of concept research (Toole & Czarnitzki, 2009). Block, Fisch & van Praag (2017) identified academics as particularly likely to develop innovative high-growth entrepreneurial opportunities. With respect to global challenges, Fini et al. (2018) argued that scientists might be particularly suited for the pursuit of sustainable entrepreneurship, as they frequently reveal an intrinsic motivation for public service, and societal impact (Hayter, 2011). Entrepreneurial scientists thus integrate societal value, technology and economic outcomes. These findings encourage the exploration of academic entrepreneurship for sustainability.

The knowledge of fostering, creating, and scaling SAE is scarce and embedded in several research disciplines (Franco-Leal et al., 2020; Poponi et al., 2020). Therefore, founders, scholars, policymakers, and science incubators require a consolidated overview of existing research on the subject. While the literature on sustainable entrepreneurship in the private sector is growing and has been recently systemized (Geissdoerfer, Vladimirova & Evans, 2018; Bocken et al., 2014; Boons & Lüdeke-Freund, 2013), there is no condensed overview of how academic entrepreneurship addresses sustainability. Furthermore, a direct translation of insights on private sector start-ups into academic contexts neglects the different initial competence configurations that academic spin-offs are endowed with (Colombo & Piva, 2012). The academic origin of entrepreneurial activities requires dedicated strategies, which take into account their distinct objectives and characteristics (Hossinger, Chen & Werner, 2020). This paper addresses the need by aggregating and systemizing existing research on SAE within a systematic literature review (SLR). It investigates three research questions:

1. What knowledge and themes emerge in existing research on SAE?
2. Which levels of analysis are addressed by existing research on SAE?
3. What opportunities for future research arise from existing literature on SAE?

The remainder of this article is structured as follows. The second chapter introduces the SLR methodology, which was used for identifying relevant articles of SAE. Subsequently, the respective articles are analyzed with respect to research themes and the level of analysis. The fourth chapter
Methodology
A systematic literature review on sustainable academic entrepreneurship

For answering the stated research questions on SAE, a systematic literature review was performed (Gough, Oliver & Thomas, 2017). The SLR is an appropriate method for aggregating and systemizing existing knowledge (Tranfield, Denyer & Smart, 2003). The exploratory nature of the research questions and the assumption that relevant research might be scattered among different disciplines required a rigorous search strategy using three different methods for accumulating relevant data across disciplinary borders. These methods comprise a keyword-based search, a manual search process on journal websites, and reference snowballing. Figure 1 illustrates the search process and is explained in the following.

![PRISMA diagram of the research methodology](image)

Figure 1: PRISMA diagram of the research methodology (own illustration)

In the first step, the SLR used a keywords-based methodology to search four large interdisciplinary databases for academic literature: Web of Science, EBSCO, EconBiz, and ProQuest. These databases are commonly used in SLRs, particularly in the field of management, economics, and entrepreneurship (e.g., Lüdeke-Freund et al. (2016)). The SLR focused on articles published in peer-reviewed academic journals to ensure scientific quality. The SLR’s time range included articles published between 2009 and February 2020. 2009 was chosen as a lower bound, because it marks a growing research interest for the role of academia in sustainability exemplified by the publication of a special issue on “The role of academia in regional sustainability initiatives” in the Journal of Cleaner Production (Issue 12, Vol. 17, 2009).
The databases were searched based on three central keyword blocks according to the research questions: sustainability, academic entrepreneurship, and spin-offs. An initial list for potential keywords was developed based on existing SLRs on sustainable entrepreneurship and academic entrepreneurship (Hossinger, Chen & Werner, 2020; Lüdeke-Freund et al., 2016; Rothaermel, Agung & Jiang, 2007). As suggested by Keown, van Eerd & Irvin (2008), this list was validated and extended in consultation with senior practitioners from university incubation. Appendix A displays the final list of keywords. All keyword blocks were subsequently combined into search strings for the database search. The keyword-based search was performed on the 17th of December 2020 and identified 1.170 potential articles (after removing duplicates). All corresponding abstracts were then screened for relevance, by identifying articles which meet the following inclusion criteria: a) the article addresses more than one dimensions of sustainability (Elkington, 1997) and b) it either investigates academic entrepreneurship specifically or uses academia as an object of analysis for researching entrepreneurship (e.g., research designs using spin-offs as a sample). The abstract screening resulted in 37 articles to be processed in the full-text screening. This high rate of article exclusion may be explained by the wide and general nature of keywords used in the SLR. This broad search for articles was a necessary step to gather data from a variety of different disciplines.

To ensure the capture of all recently published articles (2018 to 2020), the keyword-based search was combined with a manual search process for additional articles on the websites of the relevant journals. These journals were identified based on their significant contribution to previous SLRs on sustainable entrepreneurship (Geissdoerfer, Vladimirova & Evans, 2018; Lüdeke-Freund et al., 2016). The manual search progress took place in January and February 2020. A full list of the journals included is included in Appendix B. The search process was twofold and included first, a title-screening, and, if found promising, a subsequent abstract and full-text screening. Approximately 500 articles were screened, which resulted in the identification of additional 25 articles for full-text screening.

The full-text screening and article reading was completed with reference snowballing. Promising references in the identified articles were selected and evaluated according to the process described above. The reference snowballing enabled the identification of an additional 5 articles. In summary, 22 articles were identified as relevant for the full-text analysis of which 12 articles were identified by the keywords-based search, 5 articles by the manual search process, and 5 further articles by the reference snowballing. A list of all included articles is shown in Appendix C.

All articles were subsequently analyzed using the software MAXQDA for targeted data extraction. Two qualitative methods, framework synthesis and thematic synthesis were used for the analysis (Gough, Oliver & Thomas, 2017). Thereby, the research questions were translated into a preliminary codebook as guidance for the data extraction. However, most codes emerged directly from the data (Gough, Oliver & Thomas, 2017). Each full text was read multiple times using different coding iterations. The articles used in the SLR are also referred to as “data” in the following.

A multi-staged coding approach was used to identify themes in the literature on SAE. The themes were derived inductively from the data (Gough, Oliver & Thomas, 2017). Each article was coded according to its thematic focus, resulting in heterogenous potential themes. The different codes were then mapped and aggregated into upper-level codes if sufficient contextual fit could be observed. The articles were then re-read and validated using the upper-level codes. This process ended when further aggregation was impossible.

A conceptual framework for investigating the level of analysis in research on sustainable academic entrepreneurship

Investigating the level of analysis of SAE research required a conceptual framework. The level of analysis refers to the object or unit that an article investigates with the intention to create new insights (Miranda, Chamorro & Rubio, 2017).
To develop the conceptual framework, this paper borrowed from the research on entrepreneurial ecosystems. The ecosystem concept views entrepreneurship as a multi-level process, which involves multiple stakeholders and contexts (Isenberg, 2010). It inherits thus a more complex and systematic perspective on entrepreneurship. Applying an ecosystem perspective on SAE may contribute to its understanding by identifying the level of analysis inherent in the data (Hayter et al., 2018). In this regard, two ecosystem-based analytical frameworks emerge in the literature. Autio et al. (2014) suggested four different contexts for research on entrepreneurial ecosystems: institutional, social, industrial and technological, and organizational. Similarly, Fichter & Tiemann (2018) identified four units of analysis for understanding university support (eco-)systems for sustainable entrepreneurship: key persons, institutional framework, environmental context, and external interaction. Both ecosystem frameworks have in common that they align individual-, institutional-, and external elements on four separate layers. This approach was adopted when developing the conceptual framework for SAE. It models four elements in descending aggregation, starting with an individual level of analysis to a broader external environment level of analysis. In the context of SAE, however, the four layers involve entrepreneur, spin-off, institution, and external environment. The conceptual framework is illustrated in Figure 2. It is not meant to be a stand-alone contribution of the paper but rather opens a structured perspective for comprehending and systemizing existing research.

![Diagram of ecosystem framework]

**Figure 2: Level of analysis framework (own illustration)**

**Findings**

**Descriptive analysis**

SAE enjoyed considerable attention in the existing literature. Figure 1Figure 3 illustrates the evolution of the research on SAE. 2018 marked a turning point with an increase in the ratio of the number of articles published per year. This trend is likely to continue, as shown by the publication of three articles in January and February in 2020 alone. One reason for the increasing interest might be explained by the growing public and political attention on sustainability in recent years (e.g., Fridays for future movement).

The articles found in the SLR are spread across 13 different journals, predominantly associated with the management sciences. This finding appears intuitive as entrepreneurship is a predominant research
interest in economic and business research. Two journals, Sustainability (5 articles) and the Journal of Cleaner Production (4 articles), contributed particularly to research on SAE.

Several quantitative and qualitative methods were used in the articles to investigate SAE. The most common method used (10 articles) were (exploratory) case studies. Cases studies have been argued to be particularly useful when little knowledge about an emerging and complex phenomenon is available (Eisenhardt, 1989). The frequent occurrence of this research approach thus underlines the emerging nature of the research field. Survey research designs were the second most frequent methods used in the articles (9 articles).

![Figure 3: The evolution of the research on Sustainable Academic Entrepreneurship](image)

The level of analysis of existing research on sustainable academic entrepreneurship

The application of the conceptual framework developed in the methodology section required a dedicated coding process. Thereby, each article was coded for the respective object of analysis. Relevant information was found predominantly in the stated research focus, research question, and the methodology section of the articles analyzed. Table 1 illustrates the level of analysis distribution found in the data. As shown in Fehler! Verweisquelle konnte nicht gefunden werden., the external environment level of analysis has so far only been addressed by 2 articles, while the Entrepreneur-, Spin-off-, and Institution- level of analysis have been addressed by 6 to 7 articles, thus indicating a relatively even spread.

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneur</td>
<td>7</td>
</tr>
<tr>
<td>Spin-off</td>
<td>6</td>
</tr>
<tr>
<td>Institution</td>
<td>7</td>
</tr>
<tr>
<td>External Environment</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 1: Level of analysis distribution found in the data**
Research themes in sustainable academic entrepreneurship research

The multi-staged coding process enabled the identification of four major themes within the existing research on SAE. These comprise Sustainable impact through academic entrepreneurship, Effects of sustainability on academic entrepreneurship, Enabling and fostering sustainable academic entrepreneurship, and Factors influencing sustainable academic entrepreneurship. In the following, all themes are described by referencing the data and highlighting findings on SAE.

Table 2: Distribution of SAE articles on level of analysis and theme

<table>
<thead>
<tr>
<th>Theme</th>
<th>Level of analysis</th>
<th>Entrepreneur</th>
<th>Spin-off</th>
<th>Institution</th>
<th>External Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable impact through academic entrepreneurship</td>
<td></td>
<td>-</td>
<td>Wong et al. (2019); De Angelis &amp; Feola (2020); Poponi et al. (2020); Cheach &amp; Ho (2019)</td>
<td>Wakkee et al. (2019)</td>
<td>Franco-Leal et al. (2020)</td>
</tr>
<tr>
<td>Enabling and fostering sustainable academic entrepreneurship</td>
<td></td>
<td>Lans et al. (2014)</td>
<td>-</td>
<td>Fini et al. (2018); Paniccia et al. (2018); Fichter &amp; Tiemann (2018); Bank et al. (2017); Tiemann et al. (2018); Wijker et al. (2015)</td>
<td>Sáez-Martínez et al. (2014);</td>
</tr>
<tr>
<td>Effects of sustainability on academic entrepreneurship</td>
<td></td>
<td>Kuckertz &amp; Wagner (2010); Wagner (2014); Brandão Paiva et al. (2019)</td>
<td>Scholten &amp; Van der Duin (2015); Van Geehuizen &amp; Ye (2014)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Factors influencing sustainable academic entrepreneurship</td>
<td></td>
<td>Wang et al. (2019); Wu et al. (2019); Yan et al. (2018)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
**Theme 1: Sustainable impact through academic entrepreneurship**

The first theme, *Sustainable impact through academic entrepreneurship*, emerges from six articles. Four articles address the Spin-off level of analysis, one article the Institutional level of analysis, and one article the Institutional level of analysis. Theme 1 describes strategies, methods, and facilitators for creating and achieving sustainable outcomes. Two sub-themes could be identified by the SLR: the process of sustainable value creation and the ecosystem integration for generating sustainable value.

The first sub-theme describes how sustainable value is created in the context of academic entrepreneurship. Wong *et al.* (2019) investigated the creation of social value by academic spin-offs by analyzing two Taiwanese spin-offs within a case study methodology. The authors focused on the type of innovations developed and explore the diffusion of social value for achieving sustainable impact. They found that the skills and experiences of the academic entrepreneurs are used to create particular product niches in ICT. This functional value is subsequently reflected with respect to social impacts and societal value and turned into sustainable business models.

Similarly, De Angelis & Feola (2020) used a case study of one Italian spin-off for investigating sustainable value creation by academic spin-offs. The authors found that sustainable value is achieved by addressing multiple stakeholder groups in the value proposition. This characteristic contributes to the diffusion on the market. Poponi *et al.* (2020) based their findings on a more extensive set of 24 Italian spin-offs. The authors questioned if and how spin-offs can adopt circular business models. They found that under the condition of an open-loop system with a circular approach, spin-offs can create sustainable value. In this scenario, spin-offs can progress the development of a circular economy. Unlike the previous articles, Wakkee *et al.* (2019) addressed the institutional level of analysis. The authors used the case study of one Indian university to explore how academic entrepreneurship can facilitate sustainable value creation in a developing country. They identified multiple facilitators for achieving sustainable development by academic entrepreneurship in the institutional level. These comprise strong leadership support, using narratives for developing a shared vision and values, mobilizing students for disseminating the vision, engaging the local ecosystem for impact scaling, implementing dedicated entrepreneurship education, and facilitating student projects and workshops for supporting a sustainable transition.

The second sub-theme addresses the role of ecosystems in the creation of sustainable value. While ecosystems may be generally considered a supporting function in SAE and therefore belongs to Theme 2, the two articles found in this sub-theme highlight the active role that ecosystems can play during sustainable value creation and thus belong to Theme 1. Franco-Leal *et al.* (2020) surveyed 173 Spanish spin-offs to investigate which agents from the social and institutional context of the entrepreneurial ecosystem contribute to the creation of social innovations of academic spin-offs. On the social level, the authors found that clients, suppliers, and competitors positively influence sustainable value creation. Venture capitalists were found to contribute negatively. On the institutional level, the authors’ findings stress the role of the government and national and international technology transfer offices (TTO) in promoting sustainable value creation. By setting an innovation agenda, supporting opportunity recognition, and consulting on business, these actors may significantly affect the sustainable value creation of academic entrepreneurs. The authors thus argued that TTOs have the highest potential to encourage SAE. Cheah & Ho (2019) explored how two Singaporean spin-offs engage stakeholders from the ecosystem for creating social impact. In the case studies analyzed, the authors found that the ecosystem incorporates knowledge resources that can be used to foster the creation and performance of sustainable academic spin-offs. They argued that the financial domain might be of particular interest as social enterprises are growing slower than profit-driven firms. Furthermore, the article highlights the role of universal incubators, accelerators, and R&D facilities for sustainable value creation. The authors concluded that higher education institutions (HEI) are change agents towards a sustainable transition, as they provide funding, mentoring, and network access.
Theme 2: Enabling and fostering sustainable academic entrepreneurship

The second theme, *Enabling and fostering sustainable academic entrepreneurship*, is addressed by eight articles and thus the largest theme found in the SLR. Six articles target the institutional level of analysis, one article the External environment level of analysis, and one article the Entrepreneur level of analysis. All articles of Theme 2 investigate how SAE can be facilitated and leveraged for sustainable development. Two sub-themes emerged from data: TTO & university support systems and Education on sustainable entrepreneurship.

The first sub-theme describes strategies and methods for implementing SAE. Paniccia & Baiocco (2018) investigated the promotion of sustainability-oriented spin-offs within the technology transfer activities of universities. By analyzing an Italian innovation program, the authors identified three determinants for fostering sustainable ("reciprocal") organizations (Paniccia & Baiocco, 2018: p.7). In this regard, universities contribute to SAE by encouraging spin-offs to consider systematic approaches, enable the combination of market orientation with future visioning, and generally foster the entrepreneurial spirit. Saez-Martinez, Gonzalez-Moreno & Hogan (2014) surveyed 5222 managers of SMEs on factors that impact sustainability-oriented eco-innovations. The authors not only found a direct positive effect of collaboration with HEIs on the development of eco-innovations but further that collaboration positively moderates the effect of policy regulations on the propensity of eco-entrepreneurs. Their findings underline the role of the university in sustainable entrepreneurship. Tiemann, Fichter & Geier (2018) and Fichter & Tiemann (2018) both investigated support systems for sustainable entrepreneurship in universities. Their findings are based on four case studies of leading universities in promoting sustainable entrepreneurship (2 US-American and 2 German). Fichter & Tiemann (2018) developed a conceptual framework for assessing university support systems for sustainable entrepreneurship. The authors identified four key influencing factors: environmental context, institutional framework, key persons, and external interaction. Tiemann, Fichter & Geier (2018) applied this framework for exploring current SAE support activities operated in the sample. The authors found that current university support systems are merely targeting the transformation of institutional framings towards sustainability. Furthermore, support activities were found to center around sustainability-driven technology transfer. Bank, Fichter & Klofsten (2017) addressed a more operational topic of SAE. Within a case study of one German sustainable incubator, the authors analyzed tenant recruitment processes. Based on the findings, they developed five success factors for sustainability-driven incubation. These comprise a well-planned pre-incubation process, a broad challenge approach with a mission-driven focus, effective collaboration and access to sustainability expert networks, incubator reputation, and sufficient funding for a long-term incubator project. Finally, Fini et al. (2018) combined several scientific findings on sustainable entrepreneurship, policy-making, and entrepreneurial ecosystem for arguing how and why science commercialization activities can be translated into societal impacts beyond economic outcomes. The authors subsequently suggested an agenda for further research on SAE and the role of HEIs in promoting sustainability. Their agenda is based on three key topics: the interplay of science commercialization pathways, longitudinal data and multilevel research designs, and process approaches in science commercialization.

The second sub-theme describes educational means for fostering SAE. Wijnker, van Kasteren & Romijn (2015) used the case study of one sustainable energy entrepreneurship program at a Dutch university for identifying several opportunities to foster sustainability in entrepreneurship courses taught in universities. The authors argued for dedicated sustainable-oriented opportunity recognition formats, the introduction of life-cycle thinking, and the simultaneous considerations of interests among diverse actors. They further suggested that factors, such as continuous improvement and learning, the achievement of scale, effectuation theory, and inspiring others, are vital elements in SAE. Lans, Blok & Wesselink (2014) used a mix methods approach for investigating the competencies for sustainable entrepreneurship in the context of HEIs. In their study, the authors used a focus group workshop comprising eight teachers for identifying several entrepreneurial competencies for creating sustainability-driven opportunities. Subsequently, the authors validated them by surveying 231 Dutch
students. Thereby, they identified five central competencies: embracing diversity and interdisciplinarity, foresighted thinking, interpersonal competence, normative competence, and systems thinking competence. The authors further found that the pursuit of sustainability-driven opportunities (strategic management competence) and the realization of a concrete project (action competence) do not appear as independent competence but are related in the case of SAE.

**Theme 3: Effects of sustainability on academic entrepreneurship**

The third theme, *Effects of sustainability on academic entrepreneurship*, is addressed by five articles, which investigated the impact of a sustainability focus on several entrepreneurial constructs.

Three articles assess the relationship between sustainability-orientation and entrepreneurial intention on the entrepreneurial level of analysis. Kuckertz & Wagner (2010) surveyed 712 students and alumni from a German university. The authors found that sustainability-orientation is positively related to entrepreneurial intention among engineering students. However, the relationship becomes insignificant when comparing the results with a sub-sample of business students and alumni. The authors concluded that business experience might have a deteriorating effect on the relationship between sustainability-orientation and entrepreneurial intention. This finding implies that sustainability-orientation does not necessarily lead to SAE. Similar results were confirmed by Wagner (2012). The author investigated the associations between entrepreneurial activity and entrepreneurial intention on sustainability-orientation, religiousness, and attitude towards entrepreneurship by surveying 129 German students. Wagner (2012) found that sustainability-orientation is positively associated with the pursuit of sustainability-driven opportunities. However, the most influential determinant for entrepreneurial activity found in the study was attitude towards entrepreneurship. Brandão Paiva et al. (2019) also explored the link between sustainability-orientation and entrepreneurial intention but built on a sample of 318 Brazilian students. In their study, the authors found an insignificant relationship between sustainability-orientation and entrepreneurial intention.

Two articles in Theme 3 address the Spin-off level of analysis. Scholten & van der Duin (2015) analyzed the relationship between responsible innovation (RI) and absorptive capacity of university spin-offs, by surveying 61 academic entrepreneurs of one Dutch university incubator. The authors found that a spin-off’s absorptive capacity was negatively correlated with sustainability practices, but positively associated with social responsiveness and stakeholding engagement. They further stressed that insights on products or technology mean a valuable asset for spin-offs, thus sharing them implies a risk and cost. Van Geenhuizen & Ye (2014) also adopted a responsible innovation perspective. The authors investigated the extend of spin-off involvement in RI practices, its relationship to open knowledge networks, and the conditions for progressing sustainability. In a mixed-methods research design comprising a survey of 105 Dutch and Norwegian spin-offs and small-scale case studies, the authors found that RI drives a spin-off’s openness with respect to knowledge domains and knowledge partners. They further observed that commercial growth negatively affects the number of knowledge partners a spin-off engages. The authors thus argued for specific benchmarks to indicate an optimal number of partnerships that a spin-off can manage, which comprise three partners for small spin-offs and five partners for larger ones. This relationship flips, however, if one partner is an intermediary or platform provider. The authors concluded that a spin-off’s effect on system change towards sustainability is dependent on the fragmentation and complexity of the system as such, but further, the availability of market niches protected by policy support.

**Theme 4: Factors influencing sustainable academic entrepreneurship**

The fourth theme, *Factors influencing sustainable academic entrepreneurship*, is addressed by three articles, which all cover the Entrepreneur level of analysis. Compared to Theme 3, Theme 4 switches the research focus and explores which factors influence sustainability-oriented entrepreneurial intention (SEI).
All three studies were performed by surveying students of Chinese universities and thus relevant for the SLR. Based on a survey of 466 students, Wang et al. (2019) found that sense of opportunity identification efficacy and network scale are positively associated with SEI. Wu et al. (2019) and Yan et al. (2018) both investigated the effects of different personality traits on SEI. While Yan et al. (2018) focused on a mix of different personality traits, Wu et al. (2019) explored the effects of three “dark personality traits” - Machiavellianism, psychopathy, and narcissism - on sustainable entrepreneurship orientation (SEO) among a sample of 328 students. The authors found that Machiavellianism and psychopathy had a negative effect on SEO, while narcissism was positively related. The authors explained the latter findings by arguing for a certain degree of optimism towards SEO included in narcissism. Yan et al. (2018) explored the relationship between the personality traits of agreeableness, extraversion, and neuroticism, their interplay with opportunity recognition and entrepreneurial alertness, and the effect on SEI. In a survey of 316 students, the authors found a positive relationship between extraversion and agreeableness on SEI and a negative effect of neuroticism. Entrepreneurial alertness and opportunity recognition were found to play a mediating role between personality traits and SEI.

Discussion & Future Research

Several insights about the existing research on SAE can be drawn from the findings of the SLR. First, the literature on the topic is generally scarce. This issue is frequently recognized and confirmed by the articles (Franco-Leal et al., 2020; Poponi et al., 2020). The lack of scientific evidence might explain the current need for dedicated concepts on how to foster sustainability within academic entrepreneurship for realizing the full potential of HEIs entrepreneurial activities for sustainable development.

Second, the research on SAE is scattered among different subfields of the management literature. The data found within the SLR involves research areas such as responsible innovation, circular economy, eco-entrepreneurship, and social entrepreneurship. It appears that a concentration of research in one theoretical school of thought with a specific focus on SAE is absent yet. One reason might be the conceptual ambiguity of “sustainability.” If understood in the sense of the triple-bottom-line, sustainability might be a common denominator of related concepts. While recognizing conceptual differences among, for example, eco-entrepreneurship and social entrepreneurship, sustainable entrepreneurship might unite some research evidence. A concentration of the different streams of research could enable a more dedicated allocation of research attention and research funding. A similar approach has been suggested by Schaltegger & Wagner (2011).

Third, as SAE currently encompasses a bricolage of different research fields, the breadth of research topics is relatively complex. However, only a few articles address a similar research topic, revealing a lack of depth within the literature. This might be explained by the emerging nature of the research exemplified in the absence of dedicated definitions, concepts, and theories. Most of the articles found in the SLR use exploratory research methods. This finding underlines the argument of SAE as a nascent research field. While future research on SAE needs to continue with exploratory research for identifying new concepts based on empirical insights, scholars may simultaneously recognize the importance of validating previous findings. The knowledge base on SAE for explanatory research and dedicated theories requires additional research efforts.

Fourth, there is no dedicated definition of SAE yet. This might be explained by the interdisciplinary nature of articles and a variety of research foci. Thus, to the best of the author’s knowledge, this paper is the first to describe the SAE concept. Future research might build upon this definition to further development of the subject.

An agenda for future research on sustainable entrepreneurship

Based on the findings and discussion, an agenda for future research is needed to enhance the understanding of SAE. Table 3 illustrates several research opportunities indicated by the SLR. This list is not exhaustive but may encourage the development of additional research questions.
How can sustainable spin-offs trigger system-level change?  
What are the social, economic, and environmental costs associated with growth? How can they be mitigated?  
How do spin-offs ensure a balance on the three dimensions of sustainability, when scaling their business?  
How do spin-offs impact the scale for the spin-offs?  
How are individual differences in sustainability perceptions transformed into a shared vision for sustainability?  
What are activities in each phase?  
When does the spin-off phase when creating new sustainable business models? What are the key activities in each phase?  
Where are the spin-off phase when creating new sustainable business models? How do they overcome them?  
What are the spin-offs phase during the creation of sustainable business models? How do they overcome them?  
How do academic spin-offs transform (technological) opportunities into viable sustainable business models?  
How do scientific spin-offs transform sustainability-driven opportunities into a pro-environmental motivation?  
How do academic entrepreneurs identify sustainability-driven opportunities?  
How does the perception of academic entrepreneurs differ with respect to entrepreneurs in the private sector?  
How do academic entrepreneurs perceive and understand sustainability?  

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<tr>
<th>Example Research Question</th>
<th>Subject</th>
<th>Level of Analysis</th>
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Table 3: Opportunities for Future Research on Sustainable Academic Entrepreneurship
Table 3: Opportunities for future research on sustainable academic entrepreneurship

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<tr>
<th>Research Question</th>
<th>Subject</th>
<th>Institutional analysis</th>
<th>Level of</th>
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</thead>
<tbody>
<tr>
<td>What value do they add?</td>
<td>Ecosystem integration</td>
<td>Sustainable transition</td>
<td>Impact of spin-off process</td>
</tr>
<tr>
<td>Which actions contribute to the development of sustainable academic entrepreneurship?</td>
<td>What is an appropriate architecture for designing sustainable academic ecosystems?</td>
<td>External environment</td>
<td>How can sustainable academic incubators enable and foster the transition towards improved sustainability?</td>
</tr>
<tr>
<td>Which factors facilitate the transition towards improved sustainability on the ecosystem level? Which obstacles exist?</td>
<td>Does the type of ecosystem determine the sustainable value propositions developed by academic spin-offs?</td>
<td>How can academic incubators introduce sustainability in their operations? What are the facilitators in this process?</td>
<td>How can academic incubators introduce sustainability in their operations? Higher levels of sustainability?</td>
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<td>What is the role of the faculty, research teams, deans, and other institutional actors in SPFs? How do they impact the venture process of sustainable spin-offs?</td>
<td>How does the relationship between the scientific institutions and the spin-off change after completing the mission?</td>
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</tbody>
</table>
Conclusions

The global challenges force the scientific sector to develop new solutions that contribute to sustainable development. Sustainable academic entrepreneurship may offer opportunities to this end. However, there is no condensed overview of the subject and relevant information on how to realize this potential is scattered in the literature. This article introduces the research field of SAE with a first definition and depicts existing research using a systematic literature analysis. It contributes to the understanding of SAE in four regards. First, the SLR methodology enabled a rigorous and methodologically comprehensive identification of 22 relevant articles on SAE. The evolution of SAE research indicated an increasing research interest since 2018. Second, the SLR found four central themes in the SAE literature. These comprise of Sustainable impact through academic entrepreneurship, Effects of sustainability on academic entrepreneurship, Enabling and fostering sustainable academic entrepreneurship, and Factors influencing sustainable academic entrepreneurship. Third, a conceptual framework was developed to investigate the level of analysis of previous research attention in SAE. It found that most of the existing research spread evenly on the Entrepreneur, Spin-off, and Institutional level of analysis. The External environment level of analysis, however, is currently underrepresented. Fourth, the findings of the SLR were translated into several opportunities for future research.

The findings of this paper contribute to the practical and scientific discourse on SAE. They may serve as a comprehensive overview for scholars who are new to the field. Furthermore, the findings not only benefit senior scholars by providing new impulses for future research on the subject but they further explicitly aim to encourage sustainability-driven research agendas. Practitioners such as managers of research incubators, policymakers, and founders of spin-offs can similarly benefit from the findings. Policymakers and managers of research incubators can apply the aggregated knowledge in their strategies for fostering sustainability-oriented incubation, mission development, and technology transfer policies. The suggested research agenda and four themes may specifically contribute to the appropriate allocation of research funding and the alignment of R&D strategies. Finally, the founders of spin-offs can use this paper’s findings to learn from best practices of sustainable spin-offs companies when developing business models, visions, and operational processes.

Reference list


Gough, D., Oliver, S. & Thomas, J. (eds.) (2017) An introduction to systematic reviews. 2nd ed. Los Angeles, SAGE.


Appendix

Appendix A:

<table>
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<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
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<td>&quot;Academic Entrepreneurship&quot;</td>
<td>&quot;Spin-off&quot;</td>
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<td>(combination of both columns)</td>
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<td>responsibl*</td>
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<td>entrepreneur*</td>
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<td>green</td>
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<td>Start-up*</td>
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<td>ecolog*</td>
<td>universit*</td>
<td>intrapreneur*</td>
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<td>sustain*</td>
<td>research*</td>
<td>ventur*</td>
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<td>triple-bottom</td>
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<td>&quot;bottom of the pyramid&quot;</td>
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<td>circular</td>
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<td>value*</td>
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<td>inclusiv*</td>
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Appendix B:

List of Journal used in the manual screening process
(inspired by Lüdeke-Freund 2016 and Geissdörfer et al., 2018)

- Energy Policy
- Journal of Cleaner Production
- Business Strategy and the environment
- Global Business and organizational excellence
- Governance the int. Journal of business in society
- Sustainability
- Journal of Technology Transfer
- International Journal of Sustainability
- Organisational Enviroment
- Journals of Business Venturing

Appendix C:
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Journal</th>
<th>Methodology</th>
<th>Sample</th>
<th>Research Question</th>
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</thead>
<tbody>
<tr>
<td>Factors Influencing University Support for Entrepreneurship Initiatives</td>
<td>Fichter &amp; Theman (2018)</td>
<td>Journal of Cleaner Production</td>
<td>Case study</td>
<td>1 German Universities and 2 US Universities and 2</td>
<td>What are the key success factors that contribute to a successful university entrepreneurship initiative?</td>
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<tr>
<td>Circular Business Models in Singapore</td>
<td>De Angeles &amp; Feola (2020)</td>
<td>Journal of Cleaner Production</td>
<td>Case study</td>
<td>1 Italian Spin-off</td>
<td>How are the circular economy business models implemented in Singapore?</td>
</tr>
<tr>
<td>Entrepreneurial Invention of Sustainable Products: The Behavioral Consequences of Environmental Awareness</td>
<td>Brandao, Pena et al. (2019)</td>
<td>Brazilian Journal of Management / Revista de Administração do Lider</td>
<td>Survey</td>
<td>378 Students of Brazilian University</td>
<td>How does the environmental awareness affect the entrepreneurial intentions of students?</td>
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<tr>
<td>Title</td>
<td>Journal</td>
<td>Sample</td>
<td>Methodeology</td>
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<tr>
<td>The role of social and institutional contexts in shaping academic entrepreneurship of Spanish universities</td>
<td>Sustainability</td>
<td>173 Spanish spin-offs</td>
<td>Survey</td>
<td>Which of these contexts contribute to the development of academic entrepreneurship?</td>
<td>Franco-Real et al. (2020)</td>
</tr>
<tr>
<td>Rethinking the public sector from entrepreneurial public service</td>
<td>Perspectives</td>
<td>-</td>
<td>Review</td>
<td>How can science entrepreneurship be used for sustainable university support systems?</td>
<td>Fil &amp; El. (2018)</td>
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<th>Sample</th>
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<th>Research Question</th>
<th>Journal</th>
<th>Title</th>
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<td>Dutch university incubator</td>
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<td>What is the impact of institutional support and how do leading universities support entrepreneurial ventures?</td>
<td>International Journal of Entrepreneurial Venturing</td>
<td>Thomassen et al. (2018)</td>
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<td>German universities and 2 US universities</td>
<td>Case study</td>
<td>Entrepreneurship and how sustainable development are their support systems for sustainable entrepreneurship and innovation.</td>
<td>International Journal of Entrepreneurial Venture</td>
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<td>Journal</td>
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| 129 students of German       |              |        | In which ways are spin-off enterprises 
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<th>Journal</th>
<th>Title</th>
<th>Authors</th>
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<td>2 spin-offs of Taiwanese universities</td>
<td>Case study</td>
<td>What types of innovation are encouraged by the case study?</td>
<td>Science, Technology, and Society</td>
<td>Entrepreneurship for Academic and Technological Entrepreneurship</td>
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<td>1 Indian university</td>
<td>Case study</td>
<td>How does a university use entrepreneurial resources associated with attitudes towards technological forecasting?</td>
<td>Technology and Social Change</td>
<td>Entrepreneurial Technological Forecasting</td>
<td>Wagle et al. (2019)</td>
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</tbody>
</table>

Not every article stated a dedicated research question. To enable a comparison of the articles, the author approximated a research question based on the article’s research.
Data-Driven Circular Business Models: A Case Study

Päivi Luoma¹,*

¹Faculty of Agriculture and Forestry, University of Helsinki, Finland

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+This extended abstract is part of an on-going PhD research project.

Extended abstract

Problem and current understanding. Scarcity of resources is among the most significant factors defining the landscape where today’s companies do business and create value. For companies, resource scarcity is not only a source of risk and concern (e.g. Gaustad et al. 2018) but, through circular business models, also an opportunity to pursue new revenue streams and market segments (e.g. Lüdeke-Freund et al. 2019). In the context of circular economy, new innovative business models are needed for closing resource loops, slowing them, and narrowing the loops (e.g. Bocken et al. 2016).

At the same time, the burgeoning availability of data is transforming how business operate, and data’s utility in generating knowledge and insight to improve decision-making is seen as a potentially powerful source of creation of both economic and social value (Grover et al. 2018). More efficient use of data can serve as a significant driver and enabler of circular economy (Frishammar and Parida 2019, Gupta et al. 2018, Tura et al. 2019), and interesting examples of data-driven circular business models are already emerging (Ellen MacArthur Foundation 2019, World Economic Forum 2016).
Recent years have witnessed growing interest in sustainable business models and related innovations (see e.g. Dentchev et al. 2018, Wirtz et al. 2016), with circular business models being no exception (e.g. Brown 2019, Lüdeke-Freund et al. 2019, Manninen et al. 2018, Pieroni et al. 2019). Prior research also informs us about data-driven business models and of the benefits and value of data in general (e.g. Chen et al. 2015, Grover et al. 2018, Hartmann 2016).

However, the current understanding of the intersection of circular business models and data is highly fragmented, although we have seen an increasing interest in understanding the nexus of circular business models and digital technologies during the past few years (Luoma et al., research to be published). There is a significant research gap in understanding how data is transformed into a strategic value for a company in a networked circular economy context.

**Research questions.** In this empirical research we want to get an in-depth insight on how data can be exploited in the core of circular business models. The specific research questions are:

1) what type of data is or can be valuable for circular business models,

2) how the value of data is or can be transformed into business (considering different business models elements), and

3) what is or can be the role of collaboration when exploiting the value of data in a networked circular economy context.

**Conceptual background.** In our previous research, based on reviewing the existing body of literature on circular business models and value creation about the role and value of data (Luoma et al., research to be published), we identified four data categories potentially valuable for circular business models. These categories are data on customers’ behavior, full service life of a product or service, system performance, and material flows. In addition, we identified two different paths to the value of data, namely the customer-driven path and the performance-driven path. The customer-driven path to the value of data focuses on the circular value proposition of the business model. Data is used primarily for enhancing customer experience in the direction of circular economy objectives through product and service design, extension of product life, stronger user involvement, and building of product-service systems. The performance-driven path focuses on circular value creations. In this path, data is being used in optimizing the performance of circular
systems and supply chains on a more operations-oriented level. The concept of these two paths is close to what Urbinati et al. (2019) pinpoints as significant in creating circular business models and what Zolnowski et al. (2016) describes as being the source of data-driven business innovation.

Regarding the question on collaboration we will build on the recent research on this field in the circular business model literature and digital platforms. It is still to be decided which theoretical frameworks would best support the analysis of the study.

Research design. A case study is done focusing on 1-2 examples of circular business models where data utilization plays a central role. The empirical material is collected through interviews and written material. In addition to or as an alternative to the case study methodology, action research might be used to develop the target organization and its policies. The research material is systematically processed and analyzed to serve as research results and conclusions. The researchers have access to several potential business cases, and the final case selection is ongoing.

Expected contributions and practical implications. The contribution of the research will be related to how to create data-driven circular economy business and how the emergence of such networked business can be accelerated. The conclusions help in understanding the most significant strategic choices made to create new business in a networked circular economy context.

The research creates new insight on transforming data-based value creation into business and is one of the first systematic studies on data-driven business models in a circular economy context. The results can be utilized to further increase both practical and scientific expertise on the field. To companies, the study gives business-relevant decision-supporting insight on how to work towards circular economy goals.

At the time of the NBM Conference we will be ready to present the preliminary results and open the discussion for further insight on this interesting topic.

Keywords
business models, circular economy, data-driven, value of data, sustainability
References


Future Scenarios for Circular (Peer-to-peer) Electricity Markets, Business Model Matrix Analysis

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Keywords: business model, sustainability, circular economy, sharing economy, peer-to-peer (p2p) trading, electricity market

Abstract

While major knowledge in management science is built on the assumption of scarcity of resources, sustainability attempts are made to make sure resources will sustain and suffice for the future. Sharing economy concept as one of the main building blocks of circular economy is considered to increase the efficiency of value creation and enhance sustainability.

Sharing economy is a new paradigm to use others’ (individuals or firms) unutilized (tangible or intangible) resources without owning them. It moves away from the traditional business models where every market player is tied to its limited resources. The sharing of resources is supposed to increase the efficiency of value creation and enhance sustainability.

Peer-to-peer trading of electricity enables citizens to share/trade the electricity produced from renewable sources at their sites with other citizens in the same region. The possibility of trading electricity amongst peers has implications on the value network regarding the involved players and their activities in the value creation. It leads to the emergence of new roles and activities in the electricity market. It pushes the players to adjust their business models and it opens windows of opportunity for disruptive business models. Peer-to-peer trading as an archetype of sharing economy is said to offer the promise of more efficient use of dispersed resources, increased social resilience and enhanced sustainability.

Considering the definition of sharing concept, sharing can extend its application further than electricity trading/sharing amongst peers.

While the value creation paradigms in the industrial age was more linear in compare to more intertwined setting of stakeholders today, value chain analysis was able to show the way value was being generated and delivered. Value chain thinking is gradually being replaced by new models of the value network to analyze value creation when there is a network of stakeholders involved in generating value for consumers. Consumers themselves are also involved in value creation. Value networks generate value through complex dynamic exchanges between one or more stakeholders.

The outcome map of the value network analysis shows how critical business interactions occur between the concerned stakeholders throughout the entire business ecosystem and what meaningful service streams are recognizable.

While the concept of value generation is becoming more complicated to trace, the focus of business modelling has gradually shifted from the single firm to networks of firms, and from simple concepts of interaction or revenue models to extensive concepts encompassing the value network, the functional architecture, the financial model, and the eventual value proposition made to the
The subject of business modelling has evolved from the positioning and/or marketing strategy of a single firm to the outset of the entire network, its interrelations and inherent hierarchies. This study follows a qualitative approach. This paper uses business model matrix framework to identify the most important uncertainties about value creation and control issues in the future electricity market in future. Business model matrix has twelve elements under two main categories. Value and control parameters are the two main categories of the elements in the business model matrix framework. The Elements of the business model matrix are combination of assets, vertical integration, customer ownership, modularity, distribution of intelligence, interoperability, cost (sharing) model, revenue model, revenue sharing model, positioning, user involvement, and intended value.

Based on a set of interviews with the main stakeholders in the electricity market (prosumers, retailers, aggregators, distribution system operators, transmission system operators, and generators) and potential disruptors (enabling technology providers, platform providers, etc.), twelve elements of the business model matrix are critically analyzed to recognize the most uncertain elements in the future electricity market. Two main uncertainties are selected: customer involvements and customer ownership, and four scenarios are built for the future of the electricity market.
Sustainable Business Models for Electromobility

The automotive world is changing dramatically and new, partially disruptive technologies, new customer requirements and changed customer behavior are forcing companies operating in the automotive business to adapt their strategies in the operative business (Zingrebe, Stephan, & Lorenz, 2016, page 44). In addition, there are considerable opportunities for new players to develop new business fields that have so far been hardly or not at all necessary for the success of mobility (Kley, Lerch, & Dallinger, 2011) and thus represent new competition for the established companies. Environmental associations, environmentalists, politicians, but also customers are demanding products and services from industry that not only have a lower impact on the environment along the entire value chain, but also take into account the social concerns of the workforce and satisfy individual mobility needs that are not focused on their own vehicles. The resulting pressure on the development, production and sale of electric mobility is considerable, and politicians in particular are setting hard limits with demanding values for fleet average CO2 consumption (EUROPEAN COMMISSION, 2019), new environmental legislation and increases the political pressure to convert existing mobility to electric mobility. However, sales of electric vehicles, for example, are lagging far behind plans and expectations, and the registration figures desired and forecast by politicians and environmentalists are nowhere near being achieved (Dudenhöffer, 2015, page VII).

Ultimately, however, it is the customer who determines whether he accepts the new products and services and thus ensures the economic success of the company. Today's proven and successful business models of the automobile manufacturers cannot manage this change and have to be changed and further developed. In direct comparison with combustion engines, the benefits of electromobility are not sufficiently apparent to customers. Thus, in addition to the technological challenges, car manufacturers must also design innovative business models that are attractive for companies and customers. Sustainable business models are of great importance here. This raises the question of whether the car manufacturers can meet these challenges alone or whether new cooperation's in the value chain need to be entered. With a sustainable business model for electromobility, new ways of thinking will be initiated.
that generate greater benefits for the customer, for which he is also prepared to pay a corresponding price, and which give companies the opportunity to generate profit.

The first step is to define the scope of electric mobility. This goes far beyond replacing vehicles with combustion engines with electric vehicles. Electric vehicles have considerable disadvantages compared to today's technology and infrastructure on the same scale. They are more expensive, have a shorter range, longer charging times and a still insufficient infrastructure in the form of charging points. The registration figures show the low motivation of users to buy and use an electric vehicle. Electromobility also includes new mobility concepts for supplementing and broad use by customers. In addition, information and communication systems are needed that enable convenient use and thus reduce the inhibition threshold. However, new business models that generate a value proposition for customers and thus motivate them to switch are needed as a fundamental prerequisite.

The concept of sustainability is also closely linked to electromobility (Altenburg, Bhasin, & Fischer, 2012). The term has found an inflationary use in the media in recent years and is used differently in science and industry. Especially in advertising and business, sustainability is used as a symbol of environmentally friendly progress and is intended to give users and customers a good feeling that the product they buy, or use is environmentally friendly. It is often left open what significance sustainability has. Over the last centuries, forms of organization have developed in industry that focus on efficiency in the creation of value in the manufacture of products and the provision of services. Other concerns, such as the impact on the environment or social conditions, have been given far less consideration, even though companies no longer completely ignore these issues (United Nations, 2015). However, the core intention remained to generate profit and externalize environmental and social costs and not to include them in cost-benefit analyses (Jonker & Faber, 2019, page 155). The operationalization of sustainability can be achieved in companies by implementing the Triple Bottom Line (Elkington, 1998), whereby there are also approaches in the literature that there are differences between Corporate Social Responsibility (CSR) and sustainability management (Schaltegger, 2015, pages 195 - 211).

The concept describes the integrative approach that economic, ecological and social objectives are pursued as equally as possible by the company and are considered in
the company's development (Elkington, Mayer, S. 24, Low S. 66). For each of the three pillars, different strategic and operational goals can be formed and anchored in the company's branches. This enables targeted planning and progress monitoring and facilitates operational control. The management's committee to harmonize all pillars enables strategic sustainability of the entire company. On the other hand, the three pillars are interdependent and interact with each other. If one pillar is given too much weight, this is at the expense of the others and the company may lose its balance. If the environmental or social components are neglected over a longer period, it can have an impact on public image or employee motivation. Both can lead to economic disadvantages due to lower productivity in the company or reduced turnover because buyers avoid the products.

The approaches of business models in the automotive sector are based on basic elements of existing combustion engine technologies. This technology, which has been further developed for over 120 years (Bernhart & Zollenkop, 2011a) is the basis for an industry sector in which the market and competitive environment has changed only marginally (Bernhart & Zollenkop, 2011b; Jacobsson & Bergek, 2004; Johnson & Suskewicz, 2009). In the business model, vehicles are produced by original equipment manufacturer (OEMs) and sold, leased or rented to customers with the help of other services closely linked to the vehicle, such as financing and after-sales (Zingrebe et al., 2016, p. 48). Very often these tasks are also taken over by the manufacturer (manufacturer-owned banking and leasing companies, such as BMW Bank, Mercedes-Benz Bank, Renault Bank). Over the decades, a high proportion of the development and value-added share has shifted to upstream and downstream suppliers (Bernhart & Zollenkop, 2011b) and the vehicle manufacturers developed into highly professional assemblers, with competence in production and distribution.

If changes occur in the business environment, especially in ecological, technical, socio-cultural, political and macro-economic terms, this also changes the behavior of suppliers, competitors and customers and influences the parameters and determinants of business models (Bernhart & Zollenkop, 2011a). The automotive industry is currently in this phase, in which the environment is changing dramatically. The question will be to what extent the incumbents will be able to break free from path-dependent behavior and create new, creative business models, as they are unable to detach themselves sufficiently from the successful experiences of recent decades (Bohnsack,
Pinkse, & Kolk, 2014), For years to come they will have to subsidize the new business models from the revenues of the existing ones. A complete replacement is not even possible in the short term, as the income from electromobility is not sufficient to ensure the company’s profitability (Sosna, Trevinyo-Rodríguez, & Velamuri, 2010, p. 403)

Based on the triple bottom line approach (Elkington, 1998), a company with sustainable business models generates economic, ecological and social added value and thus contributes to the goals of electromobility. The focus, however, is on the customer benefit that electric mobility and the demand for sustainability provide. The business model enables and is a prerequisite for successfully marketing new technologies and generating customer benefit (Chesbrough & Rosenbloom, Richard, 2002). The development of sustainable business models for electromobility discusses and answers the following questions (Schaltegger, Hansen, & Lüdeke-Freund, 2016): (Schaltegger, Hansen, et al., 2016)

Value proposition, value creation, environmental, social, revenue model, seamless interoperability and cooperation of stakeholders are part of a framework, which should provide a framework for the creation of sustainable business models for electric mobility.

Current examples will be used to show how sustainable existing business models are and what opportunities can be created through business model innovations.
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The Business Model of Non-profit and Hybrid Organizations, Archetypes of Social Impact

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Extended abstract

Non-profit and hybrid organizations can certainly benefit from research in business models. Organizations pursuing social objectives, such as non-profits, social enterprises or other hybrids, often struggle to gain legitimacy, the condition of being desirable, proper, or appropriate within some socially constructed system of norms, values and beliefs (Suchman 1995). Largely, non-profits rely on voluntary contributions of members and supporters, which donate money or time to trusted organizations that pursue the social goals that they also value. Moreover, Social Enterprises are a particular type of privately held, hybrid organizations, which prioritize social welfare over economic goals, while participating in the marketplace. These organizations adopt some of the same forms of revenue models used by the for-profit organizations competing with them (Sparviero 2020). Categories such as for-profit and non-profit are important taken-for-granted constructs of norms, expectations and standards used by different stakeholders to make judgments about organisations (Galaskiewicz and Barringer 2012), hence social enterprises can struggle to gain legitimacy as they mix value systems and action logics of various sectors of society into their business models (Lüdeke-Freund et al. 2016). In other words, they might be seen as too commercially oriented for donors, or too charity-oriented for business partners. Justification, or the act of providing clear and persuasive accounts of strategy and actions, is considered to be the solution for non-profit and hybrid organizations to earn legitimacy (McInerney 2012) – hence, to receive donations and to make business deals – and business models are powerful instruments for its delivery. In fact, business models are conceptual tools and simplifications used to explain performance and competitive advantage (Zott, Amit, and Massa 2011). They are also used to transform tacit knowledge into transferable information and to coordinate action within the organization and between the organization and external stakeholders. Therefore, business models can be employed to simplify cognition and build narratives that facilitate communication (Massa, Tucci, and Afuah 2017).

Business model research can also benefit from the study of non-profit and hybrid organizations. Although most non-profit and hybrid organizations tend to be smaller than their for-profit competitors (i.e. less resourced and reaching smaller market shares), they can be models of innovation and engines for radical change in markets and industries. Social Enterprises have been defined as conduits for the transfer of ideas between institutional domains (McInerney 2012) and their business models are objects of comprehensive academic
research. On the contrary, the business model of non-profit organizations, or “the analysis of the rationale, infrastructure, capabilities and use of resources that enable stakeholders to create value for themselves and for the organization” (Sparviero 2019:12) remain under-researched, despite the increased attention paid nowadays to organizations that consider, for example, a double and triple bottom line (Zhang and Swanson 2014).

Furthermore, taken collectively, non-profit organisations constitute a relatively large sector in developed economies. For example, the value added (VA) of Non-profit Institutions Serving Households (NPISHs) in the United States is almost as large as the VA of the Information and Communication sector. NPISHs are legal entities “principally engaged in the production of non-market services for households and whose main resources are voluntary contributions by households” (Commission of the European Communities - Eurostat et al. 1993:23), hence they do not include hybrid organizations that generate a large part of their own resources from selling goods and services. Yet, calculated as a percentage of the 2016 Gross Domestic Product (GDP), the VA produced by NPISHs was 5.49% compared to 6.15% of the Information and Communication sector. Furthermore, the growth of this sector over the last decade was quite remarkable: in fact, the VA produced by the NPISHs in 2016 was over 1 billion dollars, growing by over 33% since 2008. Calculated as a percentage of the GDP, the share of VA produced by the NPISHs grew by 0.27 percentage points (p.p.) since 2008, and faster than the share of VA produced by the Information and Communication sector, which was 0.22 p.p. (Sparviero 2020).

As a result, considering that non-profits are a type of organizations that is growing, and that there are non-profits that have profoundly influenced the ICT revolution, the study of these organizations can certainly be source of stimulating knowledge for business model research. The non-profit organizations Mozilla, Creative Commons and Wikimedia are clearly among the success stories of the ICT revolution. Mozilla is the corporation (owned by a non-profit foundation) that has introduced the open-source-software movement to the average user of digital goods and services. Creative Commons is the non-profit organization that has delivered a legal framework for the protection of digital artefacts to professional and nonprofessional designers and creators. Wikimedia is the non-profit organization coordinating the development of Wikipedia, which is the most successful example of global, online collaboration, given its 90 million dollars annual budget (Anon 2020c), its 38 million registered users (Anon 2020b), the 299 active languages used (Anon 2020a), and its ranking as ninth most used global website (Anon 2019). Although social goals drive these three organizations, they are very successful in creating economic value and mobilizing resources globally, in order to be able to pursue their respective social missions. Their success and characteristics justify comprehensive research on their business models. Yet, the most common available methodologies designed for the understanding of for-profits induce researchers to overlook key features of non-profits and hybrid organizations.

The paper proposes to contribute to the theme “Exploring methodology and its role in transformative business models” of the second track. In addition to reflections about the role of non-profit organizations in understanding processes of value creation and related organizational settings that are applicable to a wider context, this study reviews and critically assess the most common methodologies proposed for the analysis – pictorial and symbolic - of business models of organizations driven by a social mission. More specifically, the paper updates the concept of Social Enterprise Model Canvas (Sparviero 2019), and compares it to the Business Model Canvas (Osterwalder and Pigneur 2010) and recent adaptations and developments conceived for more accurate analyses of organizations with multiple bottom
lines. These include The triple layered business model canvas (Joyce and Paquin 2016), the analysis of strongly sustainable business models (Upward and Jones 2016), the public governance canvas (Martins, Rindova, and Greenbaum 2015), the Social Business Canvas Model (Portales 2019) and other recent case studies (e.g. Canestrino et al. 2019; Wulandari et al. 2019). In addition and as an illustration, the Social Enterprise Model Canvas is used to analyze the business model of Wikipedia. The information for the analysis of this business model is collected from the documentation published by Wikimedia, independent, and interviews of experts carried out between January and Mai 2020.

Bibliography


How can we think and act inclusive about nature in New Business Models?

An Extended Abstract Submitted to the NBM Conference 2020

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This contribution is based on PhD research conducted between 2013 and 2019

Abstract

Every day relating to nature is pretty much absent in socio economic thought and not valued in culture and how culture is reproduced. The research in this presentation addresses if a new way of relating to nature is possible and if so how such a relation would work within economic reform towards sustainability; a key input into New Business Models for sustainability and their level of inclusivity. The research was built on 15 series of narrative interviews distributed over 5 different nature practices, distilling lived experience of relating to nature and how that works through in peoples practices and leadership. Transcripts were analyzed through the notion of the ‘defended subject’, as talking about ‘relating to nature’ is culturally highly sensitive and contested. The insights from the research can be summarized as: 1. The experience of nature having agency is undisputed. 2. The experience of communication with nature, but not through human language, is undisputed. 3. Talking about experiencing nature to others is resisted as it is seen as being outside social norms and conventions, creating emotional responses that can be uncomfortable and confronting. 4. Integrating a relational (inclusive) stance to nature into culture (as in further developing one’s practice (business model) is a highly pioneering and socially risky endeavor. The research helps to understand this endeavor in more structural ways (categories of inclusivity of relating to nature) and provides several lenses to how a relational stance is critical and can be developed.
Extended abstract

We live in and with nature, yet conscious reference to relating to nature is pretty much absent in socio-economic thought other than nature as a resource. The absence of language, cultural value frames, social norms and accepted practices when it comes to relating to nature in everyday socio-economic life is a problem for transitioning our economy to a sustainable one. Fundamentally this is the problem of (Western) culture, splitting off nature from culture (Kidner, 2012). Although this problem is discussed extensively in sociological and philosophical literature (Toadvine, 2009) there is little research done into practices of relating to nature (Thomas, 2015). Between 2013 and 2019 the author conducted research on the basis of interviewing 15 participants each professionally involved in some kind of nature practice. The research was founded from literature study of the different ontologies and epistemologies when it comes to relating to nature. Obviously one of the clearest, most dominant ontologies is the one of the natural sciences, that has placed humans outside nature, the origin of which goes centuries back. But ontologies that are emphasizing relating have lately become more accepted. For instance the French Philosopher Merleau-Ponty has done major work advocating relating to nature to be dynamic. Central to that is perception (Merleau-Ponty, 2013; Abram, 2010). When studying perception, a whole different ontology and epistemology presents itself, one of being intertwined with nature. From that position a research frame was built that led to the distinction of five different practices of relating to nature (taking others into nature, working with non-human others and humans, working with place, doing advocacy for nature conservation and the category of changing one’s career, from corporate to the NGO world. This latter category presented itself following people with a longing to do good and contribute to save the natural world and planet). Within each category 3 people were interviewed. The interview method was based on a qualitative narrative method, consistent with the epistemology the research was built on. There are different narrative methods, some semi structured, some open. In this research an open form was used in order to allow for spontaneous answers, comments and expressions that could be seen to be clues to areas of unconscious knowing. The analysis of the transcripts was done in three different ways. The first was to look at the theory of the person, this refers to a tradition of psycho-social research based on the notion of the defended person (Hollway and Jefferson, 2013). A person invests in his or her identity and defends his or her construct of it in the face of questions that one is not expecting or finds confrontative, hence the use of an open interview method to help interviewees to freely associate. This part of the analysis looked into what it is in the person’s history and wider context of that person’s upbringing (like discourses somebody is exposed to) that brings insight to understanding his or her particular and unique story of relating to nature. For instance, one interviewee spoke about being brought up in a situation and time of open social conflict and having to bear the trauma of it, which is meaningful in relation to the person’s practice of taking others into nature with a minimum of explaining and instructing about nature (staying out of putting unnecessary pressure onto others) and a
maximum of self-exploration (while providing lots of support of expressing personal experience in nature). The second analysis was done across categories looking for themes that were particular for that category of interviewees. Here a method called thematic analysis was used (Braun & Clarke, 2006). This means transcripts are carefully analyzed for particular dominant themes from the transcripts in that category. For instance, the theme of ‘a social threshold to sharing experiences of nature, as they can be seen as weird’ was identified for the category of taking others into nature. The last analysis was done according to the protocol of interpretative phenomenological analysis (Smith, et.al., 2009). IPA is an approach through which the lived experience of interviewees can be brought to the surface. For instance, through IPA the lived experience of ‘being in the middle’ was identified. This refers to interviewees expressing traveling between a culture of living in a town and a culture of living on an Alp together with sheep and dogs and the occasional trespasser. Going back after the summer one quickly has to shut down and use one’s filters to not be overwhelmed by information and impressions, while on the mountain all of one’s senses open up and are needed to do the job of herding. The insights from the research can be summarized as:

1. The undisputed experience of nature having agency.
2. The undisputed experience of communication with nature, but not through human language.
3. The social anxiety of talking about experiencing nature to others.
4. Integrating a relational (inclusive) stance to nature into culture (as in further developing one’s practice (business model) is a highly pioneering and socially risky endeavor.

The implications of these insights for the areas of sustainability, circularity, and inclusivity are several. First understanding nature as having agency means that practices need to include nature at the interactional level, acknowledging a dynamic reciprocity (Haraway, 2008; Despret, 1996, 2016; Bennett, 2010). It is not only human agents that engage in dynamic ways, while responding to other people’s influence and behaviour (Benjamin, 2004; Ferro & Civitarese, 2015). The same holds true of nature and non-human actors in nature. Secondly the research shows shifts of meaning on a perceptual level. New transformational meaning is produced while in nature, at first beyond human language. Examples are engaging with non-human animals, becoming a living part of the dynamic of an ecosystem, while being aware of affective responses to be different depending on place attachment. An interviewee experienced merging with a rock, while mountaineering. Digesting that experience meant a complete shift of her life’s purpose. Thirdly it can be deduced from systems theory that a transformation takes place within the system as a whole, ‘the whole that can change the whole’ (Bion, 1961; Bateson, 1979). Inviting and organising more agents from the perspective of a living system representing the larger whole including nature and its
non-human actors, enhances sustainability (Borland & Lindgreen, 2013; Meijerink and Huijema, 2010; Schippers, et al., 2014; Short and Dwyer, 2012; Stepanoff, 2012; Thomas, 2015), while addressing sustainability transitions (circularity and inclusiveness) from within the business sector alone is not successful despite many individuals sustainability business leaders expressing such a worldview (Schein, 2015). While a systems and inclusive approach is more and more understood within the extended business sector (this conference), from this research it is strongly suggested and recommended to include non-human actors / nature as well. Transformation into New Business Models, requires understanding the cultural split (culture from nature) and act on that understanding working across sectors (business, government, grassroots), challenging the current dominant assumptions about nature and work towards nature inclusive strategies.

Keywords
Non-human other, agency, lived experience, reciprocity, transforming nature culture split.

Selected references (NB. the list of references to the research itself, is 15 pages).


Recent publications


Conference Themes
THEME I SOCIETAL TRANSITION (SOCIETAL AND ECONOMIC LEVEL)

Theme coordinator: Niels Faber

Business models may be seen as instrumental to the transition of society and the economy. The idea is that changes at meso and micro levels, when gaining sufficient momentum, may result in significant scale changes in widely accepted and practised behaviour and institutional adaptations to accommodate this. The aim is to increase the understanding of the dynamics through which new business models instigate changes towards a society that builds on sustainability, circularity, and inclusivity.

Chairs
Niels Faber, Jan Jonker, Frank Berkers, Nikolay Dentchev, Abel Diaz, Deike Schulz, Abhishek Agarwal, Harold Krikke, Wim Lambrechts, Manon Eikelboom, Thomas Long, and Gjalt de Jong
Social Entrepreneurial Ecosystems at the Bottom of the Pyramid: Engagement of International Organizations

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Extended abstract

Supporting entrepreneurial ecosystems (EE) can increase the chance of success of social enterprises (Roundy, Brockman and Bradshaw, 2017), especially in the context of the Bottom of the pyramid (BoP) (Prahalad and Hammond, 2002). The BoP refers to the population that lives with less than two dollars per day (Yunus, 2007), and faces low access to resources, low level of education, weak legal institutions and market fragmentation (Goyal, Sergi and Jaiswal, 2016).

Several elements are essential for the development of successful EE, amongst which are diverse access to funding opportunities, quality education and presence of role models (Feld, 2012; Isenberg, 2014; Mason and Brown, 2014). Unfortunately, most of the time these elements are missing at the BoP. Developing these elements at the BoP is possible yet is challenging and time consuming.

Leveraging resources and structures from existing international networks constitutes an easier and faster alternative (Malecki, 2018). Given that “the BoP framework requires the involvement of an external organization not native to the BoP community” (Dembek, Sivasubramaniam and Chmielewski, 2019, p. 16), in this paper, we answer the call by Alvedalen & Boschma (2017) to study “the relative importance of non-local versus local linkages, or what kind of institutions at different spatial scales matter in EE” (Alvedalen and Boschma, 2017, p. 894). Hence, the present paper’s research question is: “Do EE with non-local linkages show more entrepreneurial dynamics?” (Alvedalen and Boschma, 2017, p. 896)
While EE literature addresses different dimensions of entrepreneurship (Alvedalen and Boschma, 2017), little attention has been made to network theory (Granovetter, 1983). Using this theory, we will map a Social EE as suggested for Auerswald (2015) that will present the actors, their interactions, their roles and the existent relationships by type, direction and magnitude.

For this, we will use the case of Bolivia, which is the poorest country in South America -based in GDP per capita- (World Bank Group, 2017). According to the Inter-American Development Bank, by 2019, 42% of the population was considered as BoP population with low level of education, limited access to healthcare, no social protection and lack of quality jobs (Beverinotti, 2018). The EE of Bolivia is currently in a very initial stage with a variety of actors that are slowly starting to work together (Figueroa, 2015).

We will collect information of four cities in Bolivia (La Paz, Santa Cruz, Cochabamba and Tarija) and we will carry out a quantitative, comparative study of La Paz and Santa Cruz which have high presence of international actors with Cochabamba and Tarija where there is less presence of international actors. The reason to use cities of the same country is to maintain a similar general context and identify if there are differences in the cities based in their non-local linkages. We will use surveys to collect information regarding the different actors that are present in the EE (which will include questions related to their activities and different relationships amongst the actors). The aim is to cover as many actors of an EE as possible by tackling smaller local EEs across the four cities.

We aim to understand the mechanisms of how international organizations have an impact in the development of EE at the BoP. We expect to find a positive and negative relationships between the non-local linkages and the entrepreneurial dynamics. Positive as the existence of non-local linkages might provide access to resources as better education, funding alternatives, role models and markets that are not present in the local ecosystems. Negative as the involvement of international organizations that do not understand the context nor culture may lead to destruction of it. The contribution for the session of Building Ecosystems in support of Social Entrepreneurship is to acknowledge the impact for non-local linkages as a replacement when key elements are not present in the local ecosystems.

**Keywords**

Social Entrepreneurial Ecosystems, International support, Network theory, Bottom of the pyramid
References

Extended Abstract

World Heritage sites encompass nature and heritage assets that bring tangible economic benefits (Kim et al., 2018; Choi et al., 2010). At the same time, these assets are often vulnerable, and require careful management and conservation (Li et al., 2008). Sustainable business models provide a means for achieving a balance between socio-cultural, environmental and economic goals. The context of a heritage and ecologically rich, and sensitive area, requires innovation in development and execution of sustainable business models. This is accentuated by contextual factors such as institutional pressures to have sustainable practices, varied stakeholder goals in the networks (such as nature organisations), and low-technological requirements of businesses that exploit nature and heritage assets. Earlier studies emphasised that development of sustainable business models is a context specific and iterative process (Baldassarre et al., 2017; Breuer et al., 2018; Dembek et al., 2018). However, there is lack of empirical evidence on how sustainable small and medium sized enterprises (SMEs), in sensitive ecological and heritage areas, innovate existing business models (for incumbents) or apply sustainable business models (for start-ups) (Wells, 2013; Geissdoerfer et al., 2016; Geissdoerfer et al., 2018). This study contributes to empirical literature by looking at sustainable business models at the micro-level and identifying the mechanisms used by sustainable SMEs to overcome barriers and capture value from nature and/or heritage assets.

Nature and heritage assets often offer goods and/or services (Rodzi et al., 2013; Satterfield et al., 2013; Esfehani et al., 2018). However, SMEs find it challenging to include these assets in their business models. In addition, these assets have environmental and socio-cultural value that need to be conserved (Dans & González, 2019). Business model innovation is required to satisfy the three goals of environmental, socio-cultural and economic benefit from an enterprise (Schaltegger & Lüdeke-Freund, 2012; Bocken et al., 2014). There is lack of information of how sustainable business models can be implemented within complex nature contexts. Protected nature areas face societal and environmental challenges in addition to economic ones. For instance, the Wadden Sea region faces ecological challenges of preserving the nature assets threatened by climate change and increased pollution. It faces socio-economic challenges due to decline of traditional industries such as farming and fisheries. In addition, emigration of the youth in search of better education and jobs has led to demographic challenges (Arndt et al., 2004). Due to the sensitive ecological systems, and rich cultural heritage in the area, sustainable entrepreneurship is essential in the Wadden Sea region (Arndt et al., 2004; Kabat et al., 2012).
The conditions in the Wadden Sea are replicated to varied extents in protected nature areas in the North Sea region. Sustainable business models provide a means to achieve sustainable entrepreneurial goals of environmental, societal and economic benefits. Due to the availability of nature and heritage assets, the low technology requirements of innovation and diversity of stakeholders, the protected area gives an interesting setting for business model innovation research (Bocken et al., 2013; Boons & Lüdeke-Freund, 2013; Evans et al., 2017). Thus, SMEs who innovate in such a setting may perhaps utilize exclusive mechanisms. The study will shed light on how such SMEs in protected areas, include non-conventional assets (nature and heritage) in their sustainable business models. This may be owing to or despite of contextual influences.

In order to investigate these mechanisms, the study will build on frameworks relating to sustainable value capture, from nature and heritage assets. It will examine stakeholder’ satisfaction, strategic drivers, business processes, capabilities and stakeholders’ contribution, to identify how sustainable value is captured in protected nature areas (Morioka et al., 2016). Further, it will apply the framework for value-uncaptured (Yang et al., 2017), to outline the sustainable opportunities present due nature and heritage assets in protected areas.

A multiple case study approach will be used to gather empirical evidence on sustainable businesses operating in the Wadden sea World Heritage area. This method will allow for analysis of a phenomenon in its specific context and result in in-depth understanding of a specific topic (Simons, 2009; Yin, 2017). The qualitative data will be analysed in order to answer the questions of; How do SMEs, capture nature and/or heritage value in their sustainable business models? And What are the factors that encourage application of sustainable business model in the context of protected nature areas?

The research will identify the factors that drive sustainable business model innovation (ingredients) and the mechanisms used by SMEs to overcome barriers to capture sustainable value from nature and/or heritage assets.

**Keywords:** Nature and heritage assets, sustainable business model innovation, small and medium sized enterprises, World Heritage sites
References


The Emerging Research Field of Experimentation for Circular Business Model Innovation

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Extended abstract

The circular economy (CE) focuses on slowing, closing and narrowing of resource loops (Bocken et al., 2016; Geissdoerfer et al., 2017), and, despite high academic interest, this emerging concept is in need for action and validation (Blomsma & Brennan, 2017). Large established businesses such as Philips and Dell are vocal about the potential of circular business models to save natural resources, while becoming more competitive (World Economic Forum, 2018). At the same time, the implementation of the CE concept in large businesses is slow (Ritala et al., 2018) and the outcomes of innovating business models to serve the CE concept are uncertain (Linder & Willander, 2017). Experimentation can test novel circular business models in a flexible and efficient way, thus closing the ‘idea-action gap’ by focusing on testing options in practice.

The need for business model experimentation coupled with differing, yet potentially compatible perspectives on the concept, calls for conceptual clarity in
this emerging research agenda. Hence, this study explores the role of business model experimentation and its opportunities for accelerating and facilitating the implementation of the circular economy approach in company business models. While researchers in different fields started to investigate the role of business model experiments, also in relation to sustainability (e.g., Chesbrough, 2012; Huijben & Verbong, 2013), the concept of “circular business model experimentation” is still unrefined. The following research question is addressed: What is business model experimentation in a circular economy context?

The review followed the suggestions of Fink (2020) and Tranfield et al. (2003) and started with a systematic database search. Web of Science, Scopus and Google Scholar databases were selected to review literature written in English. The following search string was used to systematically review article titles, abstracts and keywords: ‘business model*’ AND ‘experiment*’ AND ‘circular economy’. The search was constrained to management, engineering and social sciences.

The abstracts were examined to identify the initial literature sample. In the second step of the systematic database search, inclusion and exclusion criteria were applied prior to extracting the information provided in the literature sample on the types, roles and process of circular business model experimentation. Only peer-reviewed journal papers were included.

As the first search step only generated a limited number of results, the search string ‘business model*’ AND ‘experiment*’ AND ‘sustainability’ was used as second step to generate further insight. The rationale behind this is that the circular economy field may be regarded as a ‘subset’ of the broader sustainability concept (Geissdoerfer et al., 2017), so that the broader sustainability search string would generate additional results. The same inclusion and exclusion criteria as in the first step were applied to the second search step. This review method allowed us to generate a clear understanding of the emerging landscape of “circular business model experimentation”.

The findings of this review include an overview of an emerging landscape of “circular business model experimentation” research and a proposed research agenda. Furthermore, this research offers novel insights into the nature of circular business model experimentation and tools, methods and approaches.

The contributions to research are fourfold. First, the emerging landscape of circular business model experimentation is developed for this paper. Second, the
principles underpinning the concept of circular business model experimentation are developed. Related to this, the need for deeper analysis within disciplines, but also transdisciplinary research on circular business model experimentation, was identified. Third, a range of distinct tools, methods, and approaches was uncovered. Many of these build on or directly use familiar frameworks from business model innovation literature. Others position experimentation in transitions literature, or as a research method, or describe circular business model experimentation as an inherently new approach. Fourth, and finally, we suggest a research agenda, with the key recommendation that consumption and production related experimentation must be linked. This aligns with the values-based view on the sustainable business model concept. This bridges production and consumption, by describing what value is proposed and to whom, how it is created and delivered, and how money is made and other forms of value are created to stakeholders.

Other future research may focus on how to best conduct experimentation and which parameters would be desirable for this – points on which there is no agreement yet in the reviewed articles. This research agenda point ties in with the discussion on quantitative versus qualitative data and how both types of data can be used in a business experimentation setting. Furthermore, the intersections with other disciplines such as design, transitions research, and further afield areas like biology used for ecosystems perspectives and the broader concept of Industrial Ecology, form a rich source for further tool and method development.

Finally, for practitioners, this work has sought to shed light on the adopted tools and methods in the business context, including how practitioners could try experimentation as a method in their business model development. Yet, there is still ample opportunity to investigate which tools are best suited for which organizational context, but also how to address the difficult question of how to embed the circular economy concept effectively in the business model and measure the impact of this implementation strongly echoing the empirical findings of Weissbrod & Bocken (2017).

Keywords

circular business model; sustainable business experiment; circular economy; circular business model experiment; literature review
References


Can Circular Touch Points create Customer Values in Healthcare?
A Multiple Case Study into Connecting Circular Activities with Value Creation

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Extended abstract

Background and problem statement

Circular economy (CE) is based on reuse and recycling activities, where value for people, nature and economy is important in every part of the system (Reike et al. 2018). CE offers advantages for the manufacturer, but the success of a CE depends on the adaptation of customers to participate in a CE (Hazen et al. 2017). Customer values are seen as a holistic concept that involves the proposition to the customer regarding environmental, economic and service benefits. In literature, definitions are often mixed up creating confusion. For example, terms like circular business models, - sustainable activities and values created are often used intertwined. According to Kirchherr et al. (2017) this might even endanger the future of CE as concepts are misunderstood.

This study contributes to the literature by clarifying how to connect customer values with supply chain activities in CE; commonly known as Closed Loop Supply Chains (CLSCs). It structures the field by defining a framework displaying six circular activities (CAs) as experienced by the customer; coined as Circular Touch Points (CTPs). In marketing this general concept is known as customer touch points which form an essential element in buyer-supplier relationships (Yu, 2001). (Antikainen & Valkokari, 2016) even argue that successful circular business models (CBMs) require co-creation, an advanced form of collaboration. In CE, CTPs present moments or occasions at which customers can make choices using circular offerings of the supplier. From a supplier point view, CTPs provide an opportunity to learn how to create value(s) for the customer through circularity. CAs and CTPs are strongly interconnected,
as CAs provide customer contact within given time windows. This also means that some CAs will be CTPs and others will not. The question is how to utilize CTPs from both sides. CAs distilled from the literature are sustainable purchasing, circular business models, buying reused/refurbished/remanufactured products, purchasing (products containing) recycled materials, selling used products and collecting/returned end-of-life products. Note that some CAs overlap content wise yet the touch points (CTPs) differ in timing: CTPs are CAs at different stages of the CLSC. The figure below shows the CTPs in a full context.

Figure 1: Circular Touch Points (CTPs) in a closed loop supply chain (CLSC)

Methods

After literature review a framework was developed. Subsequently, an explanatory multiple case study research (Yin 2009) with ten comparative mini cases was conducted at ten different hospitals. Three sampling criteria were applied in selecting the hospitals. First, we looked to sustainability policy of the hospital. For this, the Green Deal list has been used. Secondly, a broad demographic spread within the Netherlands has been chosen, with hospitals selected
from several provinces. Finally, the size of the hospital was considered and small, medium and large hospitals have been evenly approached.

There are 85 hospitals in the Netherlands. This means that the investigation has been conducted at 11.8% of Dutch hospitals. In this study, hospitals were chosen within Healthcare as they purchase a wide range of products. Interviews have been recorded and then worked out in transcripts. At each hospital, one interview was conducted with the purchasing department. This because the purchasing department is the link between the supplier and the customer. Transcripts were submitted to the interviewed persons for verification. Text fragments have been extracted from the transcripts and encoded. For the open coding, catchwords are made clear. The various codes are clustered by axial coding. After this, the framework was tested with the help of pattern recognition.

Results

The results clearly show that value is created at the CTPs at all times and one usually gets one chance only. Yet outcomes are paradoxical. First, it is striking that all six CTP’s bring environmental benefits. The main argument is that hospitals can use these CTP’s for communication and green marketing purposes. ‘sustainable purchasing and buying recycled products and materials are perceived as most important. For the other four CTP’s, hospitals have difficulty in using the CTP in their communication, but it does in fact provide environmental benefits that can be used for sustainable certification. In addition, the most real impact on the environment can be achieved via ‘new sustainable and green products’, ‘using CE business models’ and ‘purchase second hand and refurbished products’. Less impactful are ‘purchasing products from recycled materials’ and ‘collecting products that are EOL’. Although the impact on the environment is less, this activity can be used effectively in sustainable communication. It appears that perception of CTP’s is more important than actual impact. Therefore, communication could be seen as a 7th CTP.

Second, four of the six CTP’s offer strong economic benefits to the customer. These four CTP’s are; ‘CE business models’, ‘purchase of second hand and refurbished products’, ‘selling used products’ and ‘collecting products that are EOL for recycling’. They all lower a customer’s Total Cost of Ownership and gain better pricing conditions. Furthermore, selling used products generates revenue. CE business models mainly reduce investment costs, shifting costs to the operations phase. The highest impact can be achieved with ‘CE business models’, ‘purchasing second-hand / refurbished products’ and ‘sell of used products and the collection of products that are EOL’. For CE business models applies that they must be more than just an operating cost shift. Financial risks need to be owned by both customer and supplier. For the remaining three CTP’s it applies that they can be implemented easily and quickly, so provide a quick win. However, the economic impact is many times lower. In economic value, the actual impact is more important than perception.
Finally, there are few CTPs with service benefits, and benefits are experienced as mixed. CE business models in which the manufacturer remains the owner of the product are perceived as unburdening by one hospital. Others find it annoying that they are deprived of the flexibility to work with their own engineers. No service benefits are experienced with the other five CTP’s. Service is also seen primarily as ‘a qualifier or minimal requirement’ to keep products working and based on regulations. This means service benefits are minimal and offer little to no added value for the customer.

In sum, figure 2 links CTPs to different kinds of customer values.

Figure 2: CTPs and customer values interconnected

Conclusions

Customer values in CE can be economical, environmental and service based. Each CA creates different values and various customers prioritize values in their own way. This means that a supplier needs to know exactly how to respond to the values for each customer and manage CAs accordingly. The concept of circular touch points (CTPs) can be of help to better understand the values (supplier) and support customer choices (customer). Eventually CTPs connect CAs and value creation in CE.

Today, most hospitals still focus on the economic benefits of CE, as they are societal foundations with subsidies and governmental agreements. Furthermore, a green image is more important than really lowering environmental impact. Given a sharp cost focus, investing in sustainability in Health Care is in its infancy. Our framework structures the field with the aim to stimulate managers make better decisions. Further research can elaborate on the role of the insurer and the government. Other sectors and other target groups can also be looked at, in order to enrich the scientific knowledge on the subject.

Keywords

Circular Activities, Circular touch points, Customer values, Economic values, Environmental values, Service values, Circular Economy
References


Ecosystems in Support of Social Entrepreneurs: A Literature Review

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Extended abstract

Social entrepreneurs (SEs) find creative solutions to the most pressing issues of modern society (Martin & Osberg, 2007; Zahra, Gedajlovic, Neubaum, & Shulman, 2009). They introduce innovative business models to address most of the challenges under the Sustainable Development Goals (SDG) framework, which range across poverty alleviation, climate change, refugee crisis, hunger, access to clean water and sanitation, amongst others (Austin, Stevenson, & Wei-Skillern, 2006; Dees, 1998; Martin & Osberg, 2007).

Business and Society literature highlights the importance of multinationals, industries and traditional businesses to contributing on this social transformation, mostly through their Corporate Social Responsibility (CSR) programs intervention (Littlewood & Holt, 2015; Phillips, Lee, Ghabadian, O'Regan, & James, 2015). Besides the traditional for-profit businesses, SEs are also part of this workforce (van der Have & Rubalcaba, 2016) and part of their success is due to the complementarities brought by other parties to obtain all different kind of resources needed for their business operation (Roundy, 2014).

Montgomery, Dacin, and Dacin (2012) suggest that SEs can rely on the existence of support networks to facilitate their access to financial assistance, cultural and institutional support, and specialized knowledge to tackle the identified social problem. Such opportunity identification is based on societal needs emerging from government failures or long-standing inefficiencies in their social circles (Austin et al., 2006). Unfortunately, identifying the problem is insufficient to launch and sustain their businesses, as SEs also need to be able to build the necessary relationships to persuade and attract different resources and support to achieve their mission (Saebi, Foss, & Linder, 2018).
With this paper, we will argue that ecosystems can support SEs to address such challenges and mobilize the resources needed thanks to different attributes such as a variety of actors, supportive infrastructure, availability of funding, knowledge and human capital, supportive policies among many other factors (Biggeri, Testi, & Bellucci, 2017; Roundy, 2017; Spigel & Harrison, 2018).

Challenges of SEs can be classified into two different clusters. The first cluster relates to the barriers imposed by the lack of basic resources or direct support. Into this category, we find challenges such as funding, human resources, lack of professional management and networking. The second cluster group challenges related to the straightening or continuous improvement of their business models. Into this category, we find challenges such as scalability of social impact, impact measurement, acquiring legitimacy and mission drift (Certo & Miller, 2008; Dees, 2007, 2012).

Our study contributes with an in-depth analysis of the support function of the ecosystems in support of SEs including its success factors. We have adopted a systematic literature review (Tranfield, Denyer, & Smart, 2003) of 234 articles. Based on our literature review, we argue that ecosystems can support SEs through three main mechanisms, that we would like to call “ecosystem fuel”, “ecosystem hardware” and “ecosystems DNA” “Ecosystem fuel” contains attributes of support such as availability of resources, funding, qualified human capital, as well as access to a variety of supporting actors. The availability of those attributes is essential for any ecosystem to operate (Roundy, Bradshaw, & Brockman, 2018; Roundy, Brockman, & Bradshaw, 2017) and constitute the foundations for an ecosystem building (Isenberg & Onyemah, 2016).

The “ecosystem hardware”. This category is based on the involvement of organizations and institutions providing support through their specialized research and development, as well as infrastructure (Kramer & Pfitzer, 2016). We find here universities (with training and education, research, technology transfer, events and infrastructure) and other organizations offering services to SEs (incubators, coworking, legal, and accounting professional services). These organizations develop different programs, events and activities targeting SEs and other ecosystems participants, to improve their conditions, strengthen their business models and increase their impact. The “ecosystem DNA” refers to the availability of entrepreneurial culture, supportive government and policies and the visibility and recognition
of SEs. These are intangibles that are valuable for the success of SEs (Hervieux & Voltan, 2016). Ideally, the three supportive mechanisms of an ecosystem - the fuel, hardware and DNA - should be fully accessible to SEs to develop their businesses and achieve their noble missions. However, ecosystems are often underdeveloped and do not possess all elements to support SEs. On that account, SEs need to work without fully structured support, and themselves need to reach out to different initiatives led by various stakeholders. Those could range from businesses that like to support SEs through their CSR programs, governments that encourage social entrepreneurship, or universities engaging students and faculty for the good cause (Feld, 2012).

Our finding allows us to suggest at least four avenues for future research. First, future research is needed to decompose the antecedents of support. What motivates ecosystem actors to support SEs? Are they driven by altruism or some have a commercial interest to support SEs? Since many colleagues mention the support of universities, banks and consultants almost without any attempt to discriminate, it would be useful for our field to develop various archetypes of support (Spigel and Harrison, 2018). Second, future research is needed to study supportive ecosystem for the scalability and growth of other private and public initiatives for sustainability, beyond the context of SEs. What is the contribution of ecosystem’s success factors and their support function towards multinationals, SMEs, NGO’s, universities, and other public organizations, in their initiatives that advance sustainable development? Third, governments play an important role in business and society. They have a fundamental interest in steering CSR in their countries by supporting and influencing CSR activities (Dentchev, Haezendonck, & van Balen, 2017; Dentchev, van Balen, & Haezendonck, 2015).

Since the development of solutions for complex sustainability issues needs coordinated approaches, future research can be developed to both conceptualize and the role of governments to in building and coordinating ecosystems in support of multinationals and their CSR initiatives. In this context, future research may want to address the following questions: Do partnerships and collaborations need to be limited to the local jurisdiction, or governments need to advocate for international actors and build a broader ecosystem? When can governments better play a central or a peripheral role in ecosystems that address social and environmental challenges? Fourth, ecosystems provide a general supportive structure for the development of sustainable business models (SBM). We need to move beyond the
conceptualization of SBM (Dentchev et al., 2018) and provide more practical insights on how can businesses use the support of ecosystems to develop or shift towards an SBM. More in-depth studies are needed from a transdisciplinary approach to study how ecosystems can support and strengthen SBM and their impact on addressing sustainability issues.

**Keywords**

Ecosystems, Social Entrepreneurship, Support, Literature Review

**References**


Upscaling of circular business models
to reduce plastic pollution

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Extended abstract

Circular business models (CBMs) have emerged to tackle the growing challenge of plastic pollution, however little research to date has focused on how to scale up these business models. This paper seeks to answer the question: What role do stakeholder relationships play in upscaling circular business models? Preliminary results suggest that CBMs create value for a range of stakeholders, and that these stakeholders in turn contribute to CBM upscaling.
The Circle Game: Poetry and Sustainable Enterprises

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Abstract

Organizational progress toward sustainable social and natural environments is essential. So too, is financial performance sufficient to support organizational investment in sustainability. Perspectives as to what organizational sustainability is, how it is pursued, and its preferred fruits have evolved in recent years to incorporate both inclusion and circularity. Regardless of the prevailing organizational perspective, the organization will need to formulate and execute triple top line strategy to deliver triple bottom line performance and impacts. Interpretation of inclusion depends on whether organizational focus is internal, or is riveted on people, communities, or societies the organization serves or hopes to impact. Herein inclusion is principally outward-looking, and hence primarily addresses marginalized individuals or groups, including individuals at the base of the pyramid. Organizations aiming to ‘do well, by doing good’ are called for-benefit organizations and are central to this effort and, often, are inclusive businesses. More than ‘doing good’, such organizations may aid disadvantaged or marginalized individuals or groups...
through beneficial cultural innovation and transformation. Companion to inclusivity is circularity, where businesses focus on resource recovery and redeployment. New business models aiming to direct organizations toward sustainable excellence, will incorporate inclusivity and circularity.

**Keywords**

base of the pyramid; circular economy; cultural innovation and transformation; for-benefit organizations; inclusive business; triple top line strategy.
Community involvement in the circular economy
Action research in the social housing sector

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Abstract

Involving communities in circularity can assist housing associations in combining circularity with their social goals. This study explores a community involvement process for circularity, following the lens of issue-focused stakeholder management. This was investigated through an action research approach during September 2018 to December 20201.

Keywords

Circular economy, community involvement, social housing, action research

References


1 This short paper is based on the preliminary results of the project


Social Enterprises And Stakeholder Engagement
Social network insights from Bolivian and Belgian cases.

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Extended abstract

The success of a social entrepreneur (SE) depends on its ability to engage with a variety of stakeholders. Because the SE combines social and commercial objectives (Wry and York, 2017), he or she needs to manage a network of stakeholder relationships, as well as their diverging expectations and demands. Engaging well with stakeholders can lead to cross-sectoral partnerships, which have been identified as crucial for the SE’s success (Arena et al., 2015; Montgomery et al., 2012). However, Bissola and Imperatori (2012, p.138) pointed out that despite the importance of managing multiple stakeholder relationships, “little research has been developed on this topic.” Years later, calls for further development on the topic of stakeholder engagement (STE) for SEs are still presented (Smith and Woods, 2014). As such, we aim to contribute to the call of Bosse et al. (2019, p.1) as “the application of stakeholder theory in entrepreneurship has seen limited work”, by developing further insights of the STE capabilities of SEs.

STE refers to the “practices the organization undertake to involve stakeholders in a positive manner in organizational activities” (Greenwood, 2007, p.315). Typically, the process of STE consists of different phases, such as the
identification of stakeholders, assessing their relevance and power, setting up a managerial plan, and evaluating relationship performances (Bal et al., 2013). Smith and Woods (2014) discuss how three factors (shared meta-identity, governance, and legitimacy) contribute to the STE process of SEs. If well managed, STE holds benefits for the SE, such as minimized social risks, gained competitive advantages and increased opportunities awareness (Andriof and Waddock, 2013). Successful SEs thus are capable of growing social impact, because they can rely on a variety of collaborations (Selsky and Parker, 2010; Smith et al., 2013), and gain “qualified and high-quality contributions” (Bissola & Imperatori, 2012, p.138). This has “become a critical basis for STE” (Andriof & Waddock, 2013, p.20).

Nevertheless, to further deepen our knowledge on STE, we follow the advice of (Bernardino and Freitas Santos, 2019, p.19), as “it would be beneficial to assess the extent to which networks can influence the success of social organizations.” For this study, we take on the theoretical perspective of social networks (Burt, 2017; Granovetter, 1973) which have been useful for SE research in terms of financial sustainability (Chell, 2007), resource mobilization such as financial or human resources, knowledge or information (Hwee Nga and Shamuganathan, 2010), trust and legitimacy development (Dufays and Huybrechts, 2014) and cross-sectoral collectivism (Selsky and Parker, 2010). We expect that network characteristics of the SEs, such as their position and interactions with other actors, will affect their STE capabilities. The constellation of strong and weak ties, as well as the presence of structural holes in their ecosystem, may prove useful to understand to what extent SE can engage with their stakeholders.

We follow the suggestion of Bernardino and Santos (2019, p.19) by providing “a qualitative investigation based on in-depth interviews” from a social networks’ perspective. This study carried out 76 semi-structured interviews and ten focus groups across 43 Bolivian and Belgian social enterprises over the last two years. Both the Bolivian and Belgian contexts are thought-provoking for this research, as it would allow comparing insights from a developing and developed environment. Comparing two different contexts would help us gain insights into institutional factors influencing the STE capabilities of SEs. We conducted interviews with both
internal (founders or team members) and external stakeholders (partners, local government, or incubators). The social enterprises we interviewed are active across different sectors. The number of different cases and interviews conducted would allow us to build theory regarding STE processes of social enterprises (Eisenhardt, 1989). To further strengthen findings from the interviews, using the triangulation method (Dicicco-bloom and Crabtree, 2006; Yin, 2009), we already started the collection of secondary and archival data (websites, social media, reports and newspaper articles) from these social enterprises.

Insights from this study would hold implications for the entrepreneurship, stakeholder management, and social entrepreneurship research field. It also provides practical implications for both nascent as well as scaling social entrepreneurs, finding it challenging to manage partnerships, or mobilize resources with relevant stakeholders. We aim to contribute with this study to the session of “building ecosystems in support of social entrepreneurship.” This study is expected to highlight how the SE not only can benefit from a supportive ecosystem but also how he or she can build up and manage its network of support. Since no actor (or social entrepreneur) is an island, insights from this study could provide further discussions on how different stakeholders can best support social entrepreneurs in their endeavor.

Keywords

Social enterprises, Stakeholder engagement, Social Network Theory

References


A Study into the Process and Emerging Patterns Enabling the Transition to a Circular Economy: Three Cases in Dutch Food Networks

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Abstract
The ambition to change towards a circular economy gains increasing attention given its promising logic of organizing a sustainable economy and society. However, CE requires a different way of organizing which postulates a fundamental change in structure, culture and practices of (sub)systems, which is called a 'transition'. The field of transition studies has disclosed transition patterns and pathways of change. A first pathway identified emerging radical niche innovations advancing a regime (the institutionalized dominant structures). Recently, a second pathway presented societal transitions as the outcome of building up (concerning niche development) and simultaneously breaking down processes (concerning regime destabilization). Our research aims to contribute to transition studies disclosing emerging patterns enabling the transition to a circular economy.

We conducted a qualitative case study of three Dutch food networks (dairy, beer, and potatoes). In our research, small steps to circular practices can be observed showing two patterns. First, concerning the position in the network: the partners who are closest to the market started organizing CE practices; the pressure of NGO’s stimulates regime players to act. Second, concerning the partnerships: in all networks, partners maintain long-lasting connections. These seem an appropriate infrastructure for transformation and acceleration of change. Finally, our research led to a third pathway with a distinct breaking down process of the regime. During the predevelopment phase and take-off phase, the dominant regime incrementally adapts to tensions from the external environment, without visible breaking down processes.

Keywords
circular economy, multi-phase approach, transition patterns, transition pathway, Dutch food networks
1. Introduction

The ambition to change towards a circular economy gains increasing attention as it is viewed as a promising logic of organizing a sustainable economy and society. It proclaims to reduce the need for materials, and reuse, recycle and restore these thus enabling to keep their value as long as possible in the loop (Blomsma & Brennan, 2017; Ellen Macarthur Foundation, 2013; Geissdoerfer, Savaget, Bocken, & Hultink, 2017; Jonker, Kothman, Faber, & Navarro, 2018; Murray, Skene, & Haynes, 2017; Stahel, 1982). The advantages of a CE are the reduction of costs through the whole value chain because fewer resources are needed for production activities resulting in reduced emission in the value-chain and life-cycle (Van Buren, Demmers, Van der Heijden, & Witlox, 2016). However, CE requires a different way of organizing (Jonker, Stegeman, & Faber, 2018). This line of argument is based on (1) the cooperation between partners in loops and networks, (2) leading to cooperative or collective value creation, and (3) value that is understood not only as economic value, but also a corresponding set of ecological and social values. The turn to CE thus requires a transition.

A 'transition' can be defined as a radical structural transformation of a societal system (or of a set of subsystems) which entails mutual changes in the fundamental societal structures related to economic, cultural, technological, ecological, and institutional arrangements at different societal levels (Rotmans, Kemp, & Van Asselt, 2001). From a different perspective, a transition can be considered as a fundamental change in structure, culture, and practices of (sub)systems (De Haan & Rotmans, 2011; Rotmans & Loorbach, 2010). The rapidly growing field of transition studies (Chappin & Ligtvoet, 2014) aims to explain how such systemic shifts unfold and may be guided.

This research aims to contribute to transition studies by disclosing emerging patterns in the second transitional phase enabling the transition to a circular economy of the Dutch food system.

2. Theoretical considerations

This contribution applies a multi-phase approach to transitions to track the societal development of transitional change over time. Transition thinking distinguishes four non-linear dynamic phases of societal development (Loorbach, 2007; Rotmans et al., 2001):

1) 'Predevelopment' in which an increasing political and societal sense of urgency is being felt whereby societal pressure is building up, but the existing state of play remains unchanged.

2) 'Take-off' in which the process of change begins to build up and is fueled by the shared goals and agendas of political and private institutions. The system starts to shift.

3) 'Acceleration', also referred to as 'breakthrough', in which rapid structural changes accumulate in the economic, cultural, technological, ecological and institutional arrangements and reinforce each other. They become apparent from the transformations in societal subsystems.

4) 'Stabilization' in which the rate of societal changes decreases, and a new dynamic equilibrium is established.

Based on our earlier research consisting of a systematic analysis of the niche development literature, we constructed a four-phase process of development with key-activities of each phase based on theoretical considerations (Engels & Jonker, 2020, submitted for publication). These are summarized in Table 1. Figure 1 depicts these four phases of niche development in an uncomplicated and ideal-
typical pathway of emerging niche innovations advancing a regime. A ‘niche’ is a protected space where the innovation can experiment while being shielded from the selection environment of the mainstream market (Kemp, Schot, & Hoogma, 1998). A regime represents the institutionalized dominant structures (Geels, 2002).

Figure 1. Four phases of niche development in a simple and ideal-typical niche-to-regime pathway (adapted from Geels & Raven, 2006; Schot & Geels, 2008).

A remarkable observation from this literature research is that it seems as if only thorough empirical research has been conducted in the first (predevelopment) and third (acceleration) phases. In contrast, research in the second phase (take-off) and fourth phase (stabilization) seems to be unbalanced, yet each phase is primordial in the process of a transition. Especially the second take-off phase, when the innovation structure is developing its 'market niche' seems most underexposed. It is the phase when, in the niche, a business model is developed and tested.
Table 1. Four phases of niche development and their characteristic activities, constructed from transition literature.

<table>
<thead>
<tr>
<th>(1) Predevelopment characteristics</th>
<th>(2) Take-off characteristics</th>
<th>(3) Acceleration characteristics</th>
<th>(4) Stabilization characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Space: niches.</td>
<td>• Space: market niches.</td>
<td>• Space: competitive marketplace.</td>
<td>• Space: inert marketplace.</td>
</tr>
<tr>
<td>• Experimentation.</td>
<td>• First transactions.</td>
<td>• Full interaction of niche regime with the existing dominant regime. Success of breakthrough depends on pressures from the economic and sociopolitical environments combined with the destabilizing tensions from within the regime and the problem-solving potential of the radical innovation.</td>
<td>• New dynamically stable equilibrium.</td>
</tr>
<tr>
<td>• Internal processes: 1) articulation of expectations and visions, 2) building of social networks, 3) learning. The interaction of these processes leads to more articulated shared rules.</td>
<td>• Further technical specialization.</td>
<td>• Five paths of regime change in which radical innovations play a role: 1) reconfiguration; 2) substitution; 3) backlash; 4) teleological path; 5) lock-in path.</td>
<td>• Co-evolutionary development of structure, culture, practices of the dominant regime leads to a lock-in state.</td>
</tr>
<tr>
<td>• Protection processes induced by external forces: shielding, nurturing, empowerment.</td>
<td>• Stabilization of learning processes leading to a dominant design of the innovation structure.</td>
<td>• The regime is subject to new challenges from the environment and from within.</td>
<td>• The regime is subject to new challenges from the environment and from within.</td>
</tr>
<tr>
<td>• Generation of a global niche level from local projects: sharing knowledge, creating resources, guiding activities in local projects. Intermediary actors at the global niche level play an important role.</td>
<td>• Networks become larger, 2) rules become more stable, 3) a niche regime has constituted as a new coherent set of rules and routines, created by the mutual development and alignment of the new technology, user preferences, infrastructure, industry structure, scientific knowledge, financial institutions, policy, and cultural meaning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Protection processes (shielding, nurturing, empowerment) by external forces phase out.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key-references
Kemp, Rip, & Schot, 2001; Kemp, Schot, & Hoogma, 1998; Smith & Raven, 2012; Geels & Raven, 2006; Geels & Deuten, 2006; Beers et al., 2019; Martiskainen & Kivimaa, 2018

Key-references
Van den Bosch & Rotmans, 2008; Geels, 2002; Geels, 2005; Geels & Kemp, 2007; Rotmans & Loorbach, 2010

Key-references

Key-references
Unruh, 2000, 2002
Transition studies have identified transition patterns and pathways of change. A first pathway was investigated by Strategic Niche Management (SNM), a strand within transition studies. SNM is a conceptual framework to guide the adoption of new technologies in its early stages to ensure the creation of path-dependency in the direction of sustainability and eventually enhance a regime shift (Kemp, 1994; Kemp, Schot, & Hoogma, 1998; Rip & Kemp, 1998). From the perspective of SNM, emerging radical niche innovations advance a regime, thus adopting a niche-to-regime process as shown in Figure 1. This niche-to-regime process predominantly takes place in the first and second phases of a transition.

Schot and Geels (2008) argued that, although niches play a crucial role in achieving a regime change, other external forces are also vital in transition processes. The opportunity of the niche regime to advance in the third phase of acceleration depends on the interplay of three processes (Geels, 2014; Turnheim & Geels, 2012, 2013): (a) pressures from the economic and sociopolitical environments; (b) destabilization of the regime caused by internal problems; (a) and (b) provide windows of opportunity, but further adoption of the niche depends on (c) the problem-solving potential of the innovation or its potential to fulfil societal needs in general. It is argued that societal transitions are the outcome of building up and simultaneously breaking down processes (Loorbach, Frantzeskaki, & Avelino, 2017), as shown in Figure 2. As the figure shows, it is presumed that these processes of building up (concerning niche development) and breaking down (concerning regime destabilization) simultaneously start in the first predevelopment phase.

Figure 2. “Dynamics of societal transitions as iterative processes of build-up and breakdown over a period of decades”, from (Loorbach et al., 2017, figure 2, p. 607).
When the turn from a linear economy to a circular economy requires a transition, in which transitional phase might we position CE in the Netherlands? We argue CE finds itself at the beginning of this second phase of take-off. CE has already created a global niche level (marking the end of the predevelopment phase) at which intermediary actors connect the local projects and share practical knowledge; universities provide the expertise; local and provincial governments guide activities, and provide financial resources for local projects. Characteristic of the second phase of take-off is the development of a market niche in which occur the first transactions, growth of the innovation community and structure, the rise of a dominant design of organizing a CE guiding the development of practices, structures and culture. Although the first transactions of CE are taking place, progress towards a dominant conception of organizing has not yet been finished.

What is meant by CE in agriculture is a cycle of land, crops, cattle, manure. This cycle can be practiced at one company site, known as organic or bio-dynamic farming. This is practiced in the Netherlands in a small niche with a land share of 4.3% (www.groenkennisnet.nl). Alternatively, CE can be practiced by collaboration in and between chains. Such a CE in the Dutch food system has recently been sketched, as the first contours of a CE have been presented to the government (Scholten et al., 2018): CE entails the closure of the cycles of biomass and nutrients, preferably at a local level, but if necessary at a national or European level; CE foresees the reduction of land use necessary for the production of foods: land to be used primarily for food production for human consumption; land for dairy cattle exclusively where no arable crops can grow; re-use of food waste flows as feed for cattle; no land to be used for producing feed; CE proclaims the use of organic instead of chemical fertilizers. Food consumption shifts to more vegetarian options and healthier food; and last, reduction of food waste has to be achieved. As noted, according to Jonker, Stegeman, & Faber (2018) CE requires (1) the cooperation between partners in loops and networks, (2) leading to cooperative or collective value creation, and (3) value that is understood not only as economic value, but also a corresponding set of ecological and social values. Note that here the overlap between CE and sustainability -known as People, Planet, Profit (Elkington, 1998)- becomes manifest.

As noted, this research aims to contribute to transition studies disclosing emerging patterns in this second transitional phase enabling the transition to a circular economy of the Dutch food system.

3. Methodology
We conducted a qualitative case study of three Dutch food networks including (1) dairy, (2) beer, and (3) potatoes for consumption. We selected these networks because of their socioeconomic significance to the Netherlands. The research focused on the process of development to a circular economy during the last ten years, adopting an event-driven narrative approach (Geels & Schot, 2010; Van de Ven & Engleman, 2004): the knowledge of CE, how CE is practiced, signals of a transition. We interviewed 20 key informants of actors of these networks in their function of (sustainability) directors of their companies: farmers or growers, producers, food service and retail managers, owners of outlets, a financial institution, NGO’s and environmental consultancies in January until September 2019. Additionally, archival sources were reviewed to investigate relevant historical events.
We searched for patterns in the data. A pattern can be regarded as "a visible indication of a hidden logic suggesting rules and order" (Jefferies, 2012). Patterns concern order, structure, stability and help understand change. A pattern appears as a regularity in the data, not only in what these data share but also in their variation (Stenner, 2012). In our case, a pattern was approached as a regularity of the configuration of events. The events are characterized by preceding occurrences, the sequence of incidents, type of actor (role and position in the food network), or interrelationship with the environment. We compared these patterns with the patterns and pathways identified in transition studies.

4. Empirical findings
The development of the agricultural sector, and especially the dairy sector, could better be understood from a historical perspective. In 1945, after the severe 'hunger winters' of World War II, the priority was to restore the food provision for the Dutch people. Since World War II, the development of the agricultural sector was initiated by the Dutch government (predevelopment and take-off phase). Minister Mansholt had a strong articulated vision of modern agriculture, e.g. at low-cost, large-scale, intensive. In the acceleration phase, the new regime developed a large community, including farmers, supporting political parties, strong industrial food and feed partners, financial institutions and knowledge institutions. The Dutch agricultural economy was ready for competition in the European (and world) marketplace. In the stabilization phase, the sector developed a stable structure (i.e. regulations and resources), culture (i.e. paradigms, norms, values) and practices. Although system flaws were disclosed over time, the regime of the food system remained stable. Incremental improvements were applied within the dominant rule-set to develop further to a low-cost, large-scale intensive farming. In this phase, the regime is subject to challenges from the environment (tensions from landscape developments and pressure from radical innovations), and stress from within. At present, the force of (European) legislation is demanding the reduction of pollution. In reaction, farmers (supported by some agricultural industry partners) put pressure on the Dutch government, in their demand of room for new growth. The regime resists changing, or...?

The conducted interviews show what organizations understand as CE of food and the efforts they are making. The results are given in Table 2, showing circular practices in the Dutch food networks of dairy, beer and potatoes for consumption.

4.1 The case of dairy
The dairy sector is the largest agricultural food sector of the Netherlands concerning economics (1,2% contribution to the Dutch economy in 2014) and land-use (28% of Dutch surface area). By far the largest dairy company is cooperative Friesland-Campina. This dairy sector poses several societal challenges including greenhouse gas emissions, nitrate emissions, biodiversity loss and animal welfare.

This case of the dairy network confirms the observation that circular economy is an issue that has just gained more attention. On the initiative of the retail organization has the dairy producer in 2018 organized a closed chain for a part of their dairy supply, demanding special requirements to the dairy farmers regarding fewer CO2-emissions, feed increasingly originating from Europe, increased pasture grazing, animal welfare and biodiversity as these topics are seen as socially relevant. The farmers who
participate in this program receive an additional fee for their efforts. The NGO developed a tool for the assessment of environmental sustainability, including circular loops, in partnership with the dairy producer and the financial institution. As a result, the leading cooperative of Dutch dairy has also started a premium product-line supporting fewer CO2-emissions, more pasture grazing, animal welfare and biodiversity.

Furthermore, the financial institution launched a commercial product providing an interest discount for agricultural loans. The retail organization operates since 1970 closed chains for fresh produce, maintaining long-lasting relationships with growers and farmers, but only for those products sold under their retail brand. Due to fierce competition between Dutch retail organizations, these inspire each other to achieve step-by-step a more sustainable and circular mode. Finally, the environmental consultancies advise the national and provincial governments and businesses, offering directions for circular agriculture. Most interviewees of this dairy case suggest circular practices to be organized as a cooperation between firms at a regional scale, i.e. connecting the dairy farmer and arable farmer for the exchange of manure and feed.

4.2 The case of beer
Although Germany is the largest producer of beer in the EU, the Netherlands is the largest exporter of beers to the rest of the EU. This sector contains a few dominant players, including Heineken as one of the largest brewers of the world. Many micro-breweries brewing specialized beers have entered the market, thus opening a new niche. Energy from renewable sources, reuse of water and soil fertility are on the agenda.

The next case of a Dutch beer network shows if and how collaboration at such regional scale may function. The family-owned brewery is situated in the southern region of the Netherlands for more than 200 years. Sustainability and long-lasting relationships are intrinsic values of the company. The brewery employs a closed supply chain and as a principle, sources its main ingredients like barley and hop within 30 miles (ca. 48 km) from the production location. Yet, the growers of barley and hop cultivate other cash crops for the (inter)national markets as their primary income but are willing to supply barley and hop at an increased price. The regional principles of the producer thus have a limited effect on a transition to circular agriculture, but on the other hand, inspires customers to also start with regional sourcing. A significant event for the brewery was the installation of a new, state-of-the-art brewery equipment in 2019. Such significant investments enable making a step forward to more sustainable and circular practices. Most interviewees see in general more balanced power relations in the food chain as necessary, including fair prices for growers and farmers.

4.3 The case of potatoes
Potatoes for consumption is another large Dutch sector, containing four dominant industrial players which deliver to several multinational food service customers. The Netherlands is one of the four leading exporters of frozen potato products. Energy from renewable sources, reuse of water and soil fertility/biodiversity are concerns of this sector.

Interestingly, in the third case of a Dutch potato network, we explored the development of CE regarding a cash crop. For the potato producer key notions of their sustainability strategy are "climate
neutral, circular and collaboration". The producer operates a close, long-lasting partnership with a significant international customer who is a source of inspiration to the producer. The producer also maintains long relationships with potato growers, who he supports with planting material and practical knowledge. This producer launched a new program supporting their growers to preserve or restore soil fertility to secure their supply of potatoes. They intend to create value for their company, shareholders, employees, and direct stakeholders in the region. But concurrently, some investments that would improve circularity are not initiated because the economic business case is used as a yardstick. The producer suggests that the price of energy, water, CO2 are too low for an appropriate payback period. Although the restaurant chain has a circular strategy on some issues, like food waste, potatoes are not their focal issue. Both companies feel the pressure to achieve sustainability goals once they have been publicly committed, i.e. published in company reports.

Table 2. Results of the interviews: circular practices in the Dutch food networks of dairy, beer and potatoes for consumption.

<table>
<thead>
<tr>
<th>Position</th>
<th>Dairy network</th>
<th>Beer network</th>
<th>Potato network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer / grower</td>
<td>Produces 100% milk at the set requirements and receives an additional fee; is aware of societal pressure for land-based grazing as well as against excess of manure</td>
<td>Barley grower and hop grower are willing to deliver ingredients at an increased price; they have a long-lasting relationship with the producer</td>
<td>Grows potatoes mainly under contract; is supported by the producer with knowledge of cultivation and the planting material; has long-lasting relationship with the producer</td>
</tr>
<tr>
<td>Producer</td>
<td>Specialized in cheese production, and sells milk under the retailer’s brand; organizes farmers who supply according to the set of retailer’s requirements; has long-lasting relationships with them</td>
<td>Produces beers for his brand for (inter)national channels; organizes his supply of ingredients within 30 miles (ca. 48 km) of his production site; is building a community of customers, consumers</td>
<td>Buys potatoes mainly from contract-growers, maintains long-lasting relationships with them; requested a soil quality certification to secure the availability of potatoes for the business; has a long-lasting partnership with the restaurant chain</td>
</tr>
<tr>
<td>Retail organization</td>
<td>Sells to a broad consumer base; requires a closed chain for own retail brand products; buys dairy products at a set of sustainable requirements</td>
<td>Sells organic products; knows the origin of ingredients of his retailer’s brands; is building a strong community of consumers</td>
<td>-</td>
</tr>
<tr>
<td>Out-of-home outlet or organization</td>
<td>-</td>
<td>Appreciates the regional and personal approach of the producer, feels as if he were part of a family</td>
<td>Sells to a broad consumer base; potato fries is an important product though not focal to their sustainability program</td>
</tr>
<tr>
<td>Producer using waste flows</td>
<td>-</td>
<td>Uses brewers grains for the production of bread; focuses on healthy products from short supply chains</td>
<td>Defines circularity as the re-use of materials and use of all talents of people</td>
</tr>
<tr>
<td><strong>Financial institution</strong></td>
<td>Offers a program to stimulate circular practices of customers, implements interest discounts for loans</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Environmental consultancies</strong></td>
<td>Have an advising role for the government and businesses on strategy and implementation of circular agriculture</td>
<td>Develops and maintains an environmental certification scheme; opens up discussions with retail partners on revenues for growers</td>
<td>Has an advising role for the grower on crop management, diseases, fertilizers and cultivation plan</td>
</tr>
<tr>
<td><strong>NGO</strong></td>
<td>Collins with business partners to stimulate sustainability requirements</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

5. Conclusions: Process and emerging patterns of CE

Most organizations in this research are familiar with the notion of sustainability, although it is operationalized differently in different sectors. The notion of Circular Economy, however, is relatively new for most of these organizations. Yet, the companies of the networks in our research have developed some policies and implementations to organize a CE. Figure 3 shows the linkages between the material flows of the three researched food networks. A cycle of crops, products, feed, cattle, manure, land is recognizable, although at several knots leakages can be found: imports of cattle feed from countries overseas; the amount of manure is too high compared to the amount of arable land use; only small portions of the food remains are re-used for human consumption.

Most regime players seem to be driven by personal and internal motivations, in combination with economic chances or societal risks, and within the boundaries of the policies of their companies. These boundaries are of an economic character.

The first pattern disclosed by the results of our research is that the position of the partners of the network arouses different dynamics. In our study, the initiative for organizing more sustainable or circular practices lies with the producer or the reselling organization: (1) the retail organization views the dairy sector as relevant and significant; (2) the restaurant chain is conscious of the moral-ethical questions raised to consumers by selling products of beef; (3) the beer producer has a strong engagement with his region and commercializes his vibrant regional brand's heritage. They are closest to the end customer or consumer, and they show sensitivity to their comments and suggestions, while also the pressure of NGO’s is viewed as relevant: "the pressure of NGO’s starts off things". As opposed to the farmers and growers who mainly have a practical role in implementation, sometimes invited and rewarded, and sometimes forced to do so to remain into the business. The NGO (as a moral voice) pushes organizations forward to achieve sustainability goals which are -from their perspective- most important. In the dairy network, the NGO collaborated with business partners to open up experimentation with innovations. The environmental agencies we interviewed show having a broad overview of societal issues and possible solutions. From the sideline, or as close partners of the business, the agencies stimulate CE and sustainability when possible.
One of the denominators for behavior is found to be the foundation of the organizations. The international stock market listed companies have less space for maneuver to change than the family-owned company. The international head office can restrain sustainability ambitions when they deviate too much from the achievements of this head office. Publications have to be confirmed by the (international) board; it is seen as "the reality of a stock market listed company with financial responsibility to shareholders". The reactions from shareholders are not felt as pressure. It is the dominance of financial results that is the standard within these companies. Indeed, the international operating organizations use an assessment of materiality (e.g. a risk analysis on relevance for the customer and significance for their company) for setting priorities for interventions and investments.

A second pattern we observed in all three cases are long-lasting relationships of collaboration between partners in a value-chain. They can accelerate change, although stable relationships also lead to co-evolution and mutual interdependencies and are vulnerable to a lock-in. Long-lasting partnerships are desirable for all partners to secure income (farmers and growers), secure supply (producer and retailer), guarantee the quality of produce and products, make special requirements possible (retailer and producer) and enhance the regional economy (the beer producer). The long-lasting partnerships are the existing operational structures of cooperation and built on mutual interest and trust.
Therefore, they seem an appropriate infrastructure for transformation and acceleration of change, once CE is prominent on the agendas of the producers and retailers. The dairy network demonstrates this collaboration results in an alignment. The organizational change throughout the dairy network seems to take-off. The dairy network appears to be most on the same page: (1) organizations try to tackle similar issues; (2) they have a common strategy; (3) they have the will to collaborate; 4) the regime shows alignment on the dimensions of technology, scientific knowledge, financial institutions, policy. It might be the fragile beginning of a dominant design of organizing a sustainable CE. Only the dimensions of user preferences and cultural meaning stay behind. The other two cases of potatoes and beer show less alignment between these seven regime dimensions (Geels, 2002).

Throughout the other networks, the change to organizing a CE is still fragmented and these cases are still at the beginning of the second phase. The main reason is that the efforts of one partner are not always topical to the other. For example, the restaurant chain focuses on the meat and dairy chain instead of potatoes, due to the trend of a more critical societal opinion on production and consumption of animal proteins. Interestingly, they turn to the supplying dairy producer in their consideration of participation in the sustainable dairy program. Similarly, the barley and hop growers grow other crops which generate their primary income, such as potatoes. Thus, the priorities of various organizations do not always meet and therefore, do not reinforce each other. Yet, some efforts are noteworthy for enhancing a transition to CE. The beer company inspires some of his customers throughout the country to follow the regional sourcing principles. The retailer encourages national competitors to adopt his sustainable practices. The financial institution also operates a CE-program for other than agricultural customers.

Another denominator for behavior in the cases of dairy and potatoes is the economic drive underlying most decisions to act (or not): pricing, revenues, cost-income are essential matters. It is understandable that a payback period may be judged as too long for investments in more sustainable practices, concerning selling commodity products in a competitive sector; it is understandable that an additional fee is wanted for production at increased requirements in light of production that is optimized to current standards. It emphasizes a lock-in of the regime with regard to industrial food partners, where any deviation from mass production puts pressure on the prices generated by the industrial scale (Unruh, 2000). The producer of beer, however, follows a different strategy. By keeping personal relationships with his suppliers and customers, he creates a private network where other values than price play an additional role, including trust, pride, individual recognition, family belonging.

Our research allows for the following conclusions:

− in our study we observed the first steps to circular practices, which confirms the position of CE in Dutch food networks in the second take-off phase;
− the initiative for organizing more sustainable or circular practices comes from the producer or the reselling organization who is closest to the end customer or consumer;
− the pressure of NGO’s stimulates regime players to act;
− existing long-lasting partnerships seem an appropriate infrastructure for transformation and acceleration of change;
− stock market listed companies rely on risk management, whereas family companies tend to focus on market opportunities;
− radical innovations in the food networks remain scarce;
− economic motives play a crucial role in changing to a sustainable and circular mode;
− regime players tend to organize collaboration of practices in and between chains, in a sense of shared interests. However, if this will also lead to a shift in structure and culture, and thus to a transition, is unclear so far.

6. Discussion: transition dynamics

Although in our research, we observed the first steps to circular practices, it is unclear if this will lead to a shift in structures and culture, and thus to a transition. The dominant regimes are dynamically stable. No radical innovations of interest are threatening the regimes. Incumbents are attentive to the opinions and activities of NGO’s. Thus the dominant regimes incrementally adapt to tensions from the external environment (the dent in the black line of Figure 4), and remain mainly directed to ‘doing business as usual’. There is no sign of breaking down the structures of the regime or the destabilization of the regime. CE is integrated in their practices step by step at the basis of risk assessments: first reduction of materials, waste reduction and recycling, then also waste value capturing. Incumbents see the economic potential of CE. So, there is a fragile transition going on, but the transitional pathway is a transformation, hence regime adaptation from within.

Hence, the result of our case study directs to a third transitional pathway with a temporal different breaking down process than shown in Figure 2 (Loorbach et al., 2017). During the predevelopment phase and take-off phase, the dominant regime incrementally adapts to tensions from the external environment, without visible breaking down processes of the regime. First, we understand in Figure 2 the depicted ‘optimization’ processes of the industrial regime as further improvements on the dimensions of the regime. Literature shows that optimization leads to returns, including "scale economies, learning economies, adaptive expectations, and network economies" (Unruh, 2000, p. 820). These offer industrial regime players an advantage towards innovative niches (new entrants) that functions as a strong barrier. The regime players can remain ‘doing their thing’ in the first predevelopment and second take-off phases. Second, ‘destabilization’ might occur when the pressure on the regime has built up, and regime players feel the urge to react. We would expect in our case study this response might be given in the third acceleration phase. We propose a distinctive line based on the above comments, as shown in Figure 4. We observed no sign of breaking down the structures of the regime or the destabilization of the regime in the first and second transitional phases, only incremental adaptations to tensions from the external environment. In the acceleration phase, the confrontation of the dominant regime with niche regimes will finally lead to the development of a new dynamic equilibrium.
Figure 4. A simple presentation of the dynamics of a societal transition based on a multi-phase approach. During the predevelopment phase and take-off phase, the dominant regime incrementally adapts to tensions from the external environment, without visible breaking down processes.

7. Implications

This research is contributing to transition knowledge by disclosing two patterns of change in the food networks. The first one concerns the position of initiators in the network: the partners who are closest to the end customer or consumer start organizing CE practices, in some occasions forced by the pressure of NGO’s to act. Second, in all networks, partners maintain long-lasting bonds. This seems to offer an appropriate infrastructure to enhance transformation and the acceleration of change. But despite these emerging patterns, it is not yet clear if actually a transition will occur. This observation led to the identification of a third ‘transitional’ pathway. Namely, one that is (implicitly or explicitly) focused on preserving the status quo. Considerable efforts are deployed in keeping and continuing policies and practices as they are, despite talk that expresses the desire to create and support transition. So, the question remains if and how a change in these food networks may develop given the three identified pathways. Further research is needed to explore and understand how the identified pathways intervene and interact.

References


The Shared Vision Paradox in Collaborative Business Model Development

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Abstract

Circular construction entails keeping stocks in a closed cycle and working without harmful emissions to air, water and soil. Traditional building interferes with those principles. Constructions companies need to innovate and collaborate in value-webs. We explored the development of Collaborative Business Models in circular renovation projects. We used our steppingstone tool for collaborative business model development: (I) Vision, (II) Joint Learning, (III) Network Dynamics and (IV) Business Model. We found that there is no royal path for renovation projects in residential housing; the process is cyclical and iterative. We elaborate on the shared vision paradox. On the one hand, visions are soft and based on reference frames and mindset. On the other hand, vision are influenced by hard factors, like solid contracts and final price agreements. Organisations need to negotiate the bandwidth of what is fixed and where there is room to manoeuvre. Awareness, transparency and trust are crucial conditions for developing Collaborative Business Models.

Keywords
circular economy; construction; collaborative business models; shared vision; multiple value creation
1. Introduction

The building industry has a significant impact on the natural environment, so its role in the transition to a circular economy is crucial. Challenges are expected from environmental pressure and the growing scarcity and price fluctuations of raw materials. The construction sector needs to counter climate measures, for instance by developing (nearly) energy-neutral new buildings and organising the energy transition for existing housing stock. Next to construction, the production of building materials also causes significant CO2 emissions. Circular construction can contribute to the reduction of CO2 emissions, for example through high-quality reuse of materials. By reusing materials and products that become available during demolition or disassembly of buildings, the footprint of the newly renovated building is reduced.

The construction industry needs to innovate but cannot manage that in isolation: visioning and collaboration is the starting point. This is a challenge for most building companies since they are used to a traditional way of building and do not focus on long term relationships. Many companies enter temporary joint ventures for pre-defined projects, without agreeing on longer-term visions. Assignments are usually based on lowest prices and shortest delivery times. These principles interfere with those of a circular economy: circular construction entails keeping stocks in a closed cycle and working without harmful emissions to air, water and soil. This implies working together from a joint vision on sustainability. Thus, innovation in a circular economy requires long term relationships and new collaborative ways of doing business.

In our research, we explore (circular) values-based and sustainability-oriented innovation management in the construction sector. We focus on the process of circular renovation in residential areas, from the perspectives of demolition companies, design-and-build teams and housing associations. We are interested in how these individual players develop collaborative circular business models, based on new roles and capabilities and a trade-off in values.

2. Circular construction

*Circular economy and value creation*

The transition to a circular economy is one of the necessary conditions to reach prosperity while protecting a live-able earth now and later (WCED, 1987). This
concept is recognised by both academics and practitioners as a proposition to face today’s societal, economic and environmental challenges. Circular economy is defined as an economic and industrial system “where material loops are slowed and closed, and where value creation is aimed for at every chain in the system” (Ellen McArthur Foundation, 2015). This can be realised with efforts to reduce raw material use, reuse products and components and recycle raw materials (Kirchherr et al., 2017). The repeated use of raw materials results in maximising reusability and minimising value destruction. The goal is to close cycles (Ellen MacArthur Foundation, 2013; Jonker et al., 2018). A circular economy is based on the effort to recreate value with existing things. This value creation may be in the form of money, human value, social value or natural value. It ensures a constant flow of services and goods without the need for new materials or raw materials, through different ‘value circles’ (Ellen MacArthur Foundation, 2017). For this, radical and systemic innovation is needed, on the technical level as well as on the business level.

According to the Dutch ‘Transition Agenda Circular Building Economy’, circular construction means the development, use and reuse of buildings, areas and infrastructure, without exhausting natural resources, polluting the living environment and affecting ecosystems. Circular construction is economically responsible and contributes to the welfare of humans and animals (Nelissen, 2018). A building consists of different layers according to the ‘layers of change’ by Stewart Brand (1994), see Figure 1. The possibilities for circularity are different for each layer since some parts can last for a long period (supporting construction) while others only last for a short term. The Dutch government stated that buildings have to use 50% less raw materials by 2030 (compared to 1990) and in 2050, the norm is 100% circular construction.

![Figure 1 Shearing layers of change (Brand, 1994)](image-url)
System thinking and business models

Thinking at a system level is essential in the transition to a circular economy. This thinking means that companies should not only focus on their gains but also need to take the optimisation of the entire system into account. When companies collaborate with customers, partners and other stakeholders for value creation, their thinking and behaviour changes. Creating a shared identity for the collaboration is crucial in this respect (e.g. Öberg, 2016). Also, when organisations commit themselves to those shared values, it is more likely that multiple value creation is realised (Jonker et al., 2018). Organisations need to reconsider how they can maximise their contribution to the product while reducing the usage of natural resources and creating positive societal and environmental impact (Kraaijenhagen et al., 2016). By working together and truly joining forces, companies in the value system can increase their positive impact for all actors, society and the environment.

Circular business models are by nature collaborative: they require teamwork, communication and coordination within complex networks of various and different actors and stakeholders. They address the need to adapt to a changing business environment, causing a necessity to adjust value chains at a business ecosystem level. The collaborative character of a business model means that both for the network as a whole, and for the constituent parties, the business model needs to create added value. Only then will the overall project be viable because each party generates a kind of yield from the collaboration (Kraaijenbrink et al., 2019). Collaborative business modelling is a process in which parties jointly examine whether their partnership can create value and agree on a business model, or logic, by which the partnership wants to create value. It shows what the participating partners do, what matters for whom, what it takes to realise that and what yields are gained.

Collaborative business models

Rohrbeck et al. (2013) found that collaborative business modelling contributes to jointly identifying economic and societal value, defining value creation/value capture systems, and planning of complex and uncertain future markets. Therefore, business models need to be shaped by different actors as a collective endeavour. Many organisations struggle to adapt their existing business model or create new circular business models (Bocken et al., 2015; Antikainen and Valkokari, 2016). Organisations need to reconsider how they maximise multiple...
values in product design and use of materials to decrease the usage of natural resources and create sustainable impact (Kraaijenhagen et al., 2016). Leising et al., 2018) have developed a conceptual framework for studying circularity in supply chain collaboration in the construction environment. They define this circular approach as “a lifecycle approach that optimises the buildings’ useful lifetime, integrating the end-of-life phase in the design and using new ownership models where materials are only temporarily stored in the building that acts as a material bank”.

The concept of collaborative business model development seems very promising, but more research is needed to operationalise it. Innovation processes create more leverage for change than other processes within the organisation. Hence, innovation can be a well-suited means to trigger circular construction. These innovation processes need to outreach collaboration in a chain, it requires decisive and conscious sharing of resources and risks by all stakeholders, and transparency and trust are essential (Janssen and Stel, 2018).

3. Method

*Research design*

Organisations are looking for ways to optimise social and environmental values while maintaining economic viability. We are interested in circular business development and innovation in the construction sector. In this sector, issues involving energy efficiency are being widely explored, but circularity is still a relatively new topic. Circularity assumes that products from today are the raw materials for later: after use, products can be dismantled, and the materials can be reused. Therefore, the use of materials needs to be optimised over the entire lifespan of the construct (value retention, fewer costs, more reuse and less environmental impact). We explore the development of collaborative business model development in different cases on circular renovation for residential houses. We aim to answer the following question: how can construction companies develop collaborative business models, based on everyone’s roles and capabilities in the construction process?

Working from the models of Bocken et al., (2015) and Leising et al., (2018), we developed a steppingstone tool for circular business model development. This tool
is based on a two years project on business model development for reusing steel in utility buildings. It contains four essential steps: (I) Vision, (II) Joint Learning, (III) Network Dynamics and (IV) Business Model. We explore the value of this steppingstone tool given the current state of cooperation in the construction industry. We organised seven interviews/workshops with architects, contractors and installation companies to explore how they define circular ambitions, how they learn from each other and start collaborating, in order to come up with a business plan. We focused on renovation projects of residential houses. Also, we interviewed ten demolition organisations (experts on reuse of materials) and nine housing associations (clients) to gain more in-depth knowledge on their role and influence in this value-based transition to a circular economy. We applied a multiple cases study approach, defined as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not evident; and in which multiple sources of evidence are used” (Yin, 1994:13). We used semi-structured interviews and workshop techniques to trace why and how different organisations aim to develop circular practices and enact them within their organisations and with their stakeholders.

A steppingstone tool for Collaborative Business Models

Our findings have been categorised according to the conceptual framework for circular economy in chain collaboration (Leising et al., 2018) that has been elaborated into a steppingstone tool for the design of collaborative business models in the project 'Higher on the Ladder' for climbing from recycling to reuse in the construction chain (Janssen and Van Son, Hoger op de Ladder, Avans Hogeschool, 2019 -in press).

In step ‘I Vision’, partners discuss their visions on circular possibilities. Partners need to agree on what they want to achieve and define their ‘point on the horizon’. Defining a vision provides coordination between the partners and provides guidance and orientation on the joint actions and collective goals. Future visions contribute to the transition to a circular construction sector, for example, through pilot projects and demonstrations that showcase the potential gains.

In step ‘II Joint Learning’, partners share information that individuals assimilate and apply in subsequent actions for themselves. First-order learning leads to new insights about options for a particular challenge and context, whereas higher-order learning can change problem definitions, norms, values, beliefs and goals of
actors. The latter is necessary to implement radically new sustainable solutions and to support required change processes.

In step ‘III Network Dynamics’ participants will find out how they are linked to each other. Organisations, companies and individuals are connected through different types of relationships. The connections not only arise from a technological transition but are also social. On the one hand, partners look at how they are connected based on their essential contributions to the project, and on the other hand, partners contemplate their relationship in terms of (1) strategic elements, (2) cooperation elements in shared activities and (3) cultural elements such as trust and transparency.

In step ‘IV Business Model’, partners will redesign their business models. This redesign is essential for creating ecological and social value. A circular business model is defined as the rationale to create, deliver and capture value with and within closed material loops.

A steppingstone tool for Collaborative Business Models
Figure 2 A steppingstone tool for Collaborative Business Models (in Stap voor Stap Hoger op de Ladder: stappenplan voor circulaire business modellen, Janssen and Van Son, Avans Hogeschool, 2019 -in press).

Cases

This steppingstone tool has been discussed, completed and evaluated with various actors in the construction sector. We discussed the development of two renovation projects with the Design & Build Teams to observe the dynamics in the collaboration. Also, semi-structured interviews were held with demolition companies and housing associations.

Design & build teams: The first case considers the Overvecht housing project in Utrecht, where a residential area with high-rise flats is being renovated in various phases. The aim is to increase the level of circularity in each stage. The second case concerned the renovation of a bank in Goes. Beveland Wonen, a housing association, has bought this building for its new office. To demonstrate their circular ambition as cooperation, they aimed to renovate this new office circularly.

Demolition companies: Demolition companies are from origin concerned with the reuse and recycling of construction products. We interviewed demolition contractors because they experience better than anyone the practice of possible reuse and recycling. We discussed their vision on circular construction and ideas on business model improvement when taking circularity into account from the beginning of a building project.
Housing association: Housing associations owned more than 2,370,100 housing units in the Netherlands in 2017 (Ministry of Infrastructure and Water Management, 2019). That is about 30% of the entire housing offer in the Netherlands. Housing corporations, therefore, have a significant impact on the whole industry. According to a study from 2019, it appears that housing associations are at the end of the introduction phase in the transition to a circular economy. The industry is no longer sceptical about the value of a circular economy and believes that if they do nothing, they will lag behind others (Slot, 2019). We discussed their vision on circular renovation and ideas on business model improvement by taking circularity into account.

4. Results

Design & build teams

Respondents in the design & build teams have a pragmatical approach to circular construction; they just wait and see what possibilities come along. For example, a contractor observed that the sinks in a residential building were still of high quality. He took them out, refreshed and installed them for a lower price. This was fully supported by the client because they operated from the same circular ambition. They do not have clear statements on how to define circular activities. When actors agree on the ambition that is set in the tender, they need to translate that ambition into measurable objectives and define their own contribution to achieving them. It is essential to identify these ambitions in clearly quantifiable goals, for example in percentages for reuse and recycling of material.

Partners usually have a history of working together, they know each other from former projects, or they met each other during tender procedures. They trust each other well enough to start new collaborations, new partners are seldomly invited to participate. Too little attention is paid to the expertise and knowledge of demolition companies to achieve the objectives regarding future reuse of material. The same counts for suppliers with innovative sustainable solutions. These partners appear to get little room to present their circular solutions. This is due to the uncertainty whether those solutions will be available on time, within the budget, and they often don’t have a track record. There is no room for experiments unless it is explicitly provided by the client. But even then, there is a tendency to work with trusted partners.
Respondents agree that it is essential that partners from the entire chain are involved: client, architect, engineer, builder, supplier of new and used materials (demolition, urban mining platform for used materials). In the case of a renovation project, the Design & Build team learned that it is helpful when the demolition worker is already involved at the beginning of the project to advise on the reuse of materials since they have experience in valuing the outflow products. During the design phase, the partners must already consider the different life span of products and determine how it can be extended. Findings indicate that architects have a steering role in giving existing buildings a different function, for example. Through design, they can show what the possibilities are; for instance, architects with a circular vision consider what materials can be preserved and how to use them in a sustainable matter. Contractors indicate that they work pragmatically. Based on their experience, they see possibilities for each project. They suggest that their clients must rely on their expertise and ambition. Construction teams indicate that a disassembly plan must be included in the design phase of the building.

Design, construction and demolition are moving closer together. Circular construction changes the existing division of roles in the construction chain. Respondents who have organised intensive consultation with all partners to discuss the circular ambitions, do recognise the benefits of long term collaboration. A disassembly plan must be included in the design. The main challenge that the partners face is the negotiation of costs and returns, risk sharing and collaboration in new entities rather than in linear one-off transactions. Suppliers think in terms of quality and material. Project developers think in profitability. Contractors think in terms of the lowest price. We see that there are still great opportunities for the parties in the chain. During the design phase, the partners must already consider the different life span of products and determine how it can be extended.

**Demolition companies**

Demolition companies are from origin occupied with valuing materials. Demolition companies try to keep raw materials/products in the chain in order to preserve the value of these raw materials/products and to create higher value with chain partners. Findings indicate that demolition companies often feel they are undervalued in renovation projects. They are not automatically involved in construction teams or consulted by architects. Demolition companies state that selective demolition for renovation is a speciality for which it is difficult to make a
price-offer because the market does not automatically value their expertise. This is also seen in tenders. Tenders often have unclear evaluation criteria for circular impact. The ideal tender should give points for price, quality, and circularity.

Demolition workers are given too little time in the preparation, and drawings are often incomplete. There are significant risks for demolition bidders: time delay can lead to fines from the client. Due to incomplete information, this often occurs: toxic substances lead to extra costs for safe processing; there is discomfort due to bricked-in, collapsed material. Demolition companies feel that they are trapped: if they want to fix everything with guarantees and provide a track record, it is difficult to get the job. Demolition organisations indicate that they see potential to work together with all partners in the teams and want to be involved as a party in the construction chain from the start.

Demolition companies start taking new responsibilities by taking position as materials expert and supplier of used materials. They develop hubs to match supply and demand. Moreover, they think that with more support of the government, many materials and raw materials can be reused, much more than currently is the case. For them, zero waste in construction is the eye point on the horizon. This cannot be achieved with a big bang. Circular construction (demolition) requires a transition process with a clear vision, courage and entrepreneurship. Investments must be made in transparency regarding quality standards and the availability of products/materials and raw materials. Frontrunners see opportunities and are looking for clients who want to – and dare to – exploit these opportunities. Until then, contractors will go for certainty and calculate the reuse forecasts conventionally. The business cases for reuse are currently limited to a calculated risk with safe margins.

**Housing associations**

Housing associations are dealing with sustainability from the start of the energy transition. Better isolation, energy labels and gas-free houses have received exclusive attention for a long time. Just recently, circular material use also became an item on the agenda since its expected impact will be many times greater. Housing associations are increasingly aware that they must use products economically and sensibly. Circular use of building products will contribute to value retention in the future. For this, they make a distinction between inflow and outflow. Inflows are circular alternatives, such as second-hand, bio-based or
demountable building products. Outflow concerns the suitability of products for reuse: for direct use within its property or to market products to actors with a good reputation.

Intrinsic motivation for sustainability often appeared to be the starting point for housing associations to aim for circular building. A few respondents seemed to be frontrunners who create pilot project and experiment with circularity. However, the majority is still in the learning phase and aim to make a circular agenda, a roadmap or an action plan. They try to set their ambitions high, also imposed by the ‘2023 memorandum’ and the governmental instruction to be fully circular by 2050. The extent to which housing associations provided an excellent interpretation of circular ambitions appeared to be very different. Many housing associations are inspired by the principles of The Natural Step, e.g. backcasting (Robert et al., 2002; Lozano, 2020). Circularity is seen as an opportunity for adaptive and modular building in order to be flexible. With these opportunities, housing associations want to contribute as a social organisation to prevent waste of materials and energy.

In addition, we observed significant differences between corporations in knowledge and expertise in circular construction/renovation. Housing associations are still in the exploring and learning phase. They like to be informed about the possibilities and actively search collaboration with other experts or ambitious persons to share best practices. Even if a corporation is idealistic – with support from tenants – it is too expensive to focus on circularity entirely. In most cases, the technical side of it is well developed, but the economic one not at all: circular building is not profitable, and it takes a lot of knowledge and skills to align it in the current organisation. Housing associations believe in trial-and-error. During mutation projects (renovating a house between two renters) they create room for experiments. Instead of directly replacing everything, corporations are looking for options to demount and reuse parts that have a logical replacement cycle, such as a bathroom. These parts need to be installed in such a way that they are easy to disassemble and contain standard products for which there is also a second-hand market. Since not all parties in the chain have the same ambition – e.g. one party may want to go a step further than the other – partners in a building project have to find each other in a joint circular aspiration. They have to consider the feasibility and the right balance between enthusiasm and realism.
Lessons Learned

Findings indicate lessons learned in the four stepping stones across all three categories. The most significant lessons learned per stepping stone are:

I Vision:
- There are substantial differences between actors in knowledge of and expertise with circular construction/renovation: demolition contractors or waste processors have a wealth of knowledge and expertise; construction companies are mostly looking for possibilities; housing associations do not know what to ask for.
- Clients must design the tender in dialogue with stakeholders and potential implementers; exchange of knowledge and expertise always delivers a more sustainable result.
- The mindset must be on multiple value creation; parties must allow others to yield benefits as well.
- Ask the market to challenge their clients more; become supply-driven instead of demand-driven.
- Do it in steps, first choose a spearhead and then make it tangible; such as renewable materials.

II Joint Learning:
- Select partners with knowledge, expertise and ambition in the team.
- As a network, partners must collectively investigate what is possible and work out together how to achieve that.
- Intrinsically motivating other creates input for a shared strategic vision.
- Setting up a circular project takes time; take the time that is needed, but start experimenting along the way.
- Trust and transparency are essential; you don’t know everything beforehand.
- Work towards co-creation in a learning community.

III Network Dynamics:
- Crucial for achieving the intended result is the commitment of all parties to the ultimate goal: ‘a zero waste’ construction economy.
- It is necessary to adapt building regulations to circular solutions.
- In the design phase, the partnership should jointly look for ways to maximise the circular potential.
• For everyone to be able to fulfil their role, first, conditions and contributions must be clear before you enter the collective.
• Partners must share the same vision; a chain orchestrator can monitor the shared vision.

IV Business Model:
• Companies need to understand that individual business models are intertwined. Agreements on the allocation of investments and returns is essential. Balancing a fair deal between those who make the investments and those who get the profits is a challenge.
• There are few specific business cases for circular construction, it is still an experimental and learning process.
• Circular Economy Service Companies (CESCOs) are promising for financing circular construction projects.
• Circularity is now mainly designed with technical people, few people from strategy or (financial) policy are included.
• The management of the organisation must set out a clear vision in the field of circular construction.

5. Conclusion and Discussion

Stepping stones for collaborative business model development

Circular construction is in its experimental phase: there are plenty of initiatives by frontrunners – more and less prosperous – and the circular economy is in the spotlight of society. An increasing amount of large clients are emerging as launching customers, banks are introducing flexible forms for financing real estate, and buyers are using sustainable criteria in their procurement. Covenants have been concluded between major banks, institutes and the government, and many research reports and policy intentions are published. Under the influence of regulations, for example on energy neutrality, there is a good start for circular construction to continue to scale up to the mainstream. However, the pace of this upscaling needs to increase. We observed that there is no royal path for renovation projects in residential housing. The process is cyclical and iterative; steps are not followed sequentially. However, all aspects are relevant and need to be dealt with one way or another.

(I) Vision: findings indicate that actors need to agree on the impact they want to achieve. If they openly and transparently agree on a shared vision, for instance, on
reuse of materials, they will more likely reach innovative solutions. However, visions are not explicitly discussed within construction teams. They use a pragmatic approach to discover possibilities. Experimenting, piloting and trial-and-error act as a means to achieve circularity to some extent. The degree in which housing associations are involved differs on a broad range. Only a few have a clear vision of what circularity means for them, but most are still searching how they can integrate circularity in their business.

(II) Joint Learning: findings show that in construction projects, many actors, with their different roles and capabilities, need to work together. In a circular economy, these roles change and new skills are required. It is essential that the various interests are coordinated and involved from the start. Recognition of soft aspects like mutual values, ambitions, and joint learning entices participants to reflect on their current roles and discuss the circular alternatives that lead to a collaborative ‘fair deal’. To get the highest learning experience, it is crucial that all partners are involved from the start of the project, including demolition organisations and architect.

(III) Network Dynamics: findings show that construction projects are often one-offs. After the project is closed, learning points are lost. In a circular economy, actors need to commit themselves for an extended period to take responsibility for the lifecycle of materials. Organisations must adapt individual business models to collaborative business models, taking into account the traditional ‘value based’ ways of working in this industry. Circular renovation requires long-term involvement and performance agreements. From this respect, it is essential to look at an orchestrator who keeps track of the collaboration and the development.

(IV) Business Model: all respondents indicate that the most significant impact can be made in the design phase. When buildings are designed for disassembly or with modular units, the circular potential is the highest. This can be enriched with sustainable or circular materials, like bio-based or reused products. All companies involved need to share a circular vision. Awareness, transparency and trust are crucial conditions for developing Collaborative Business Models. Adaptivity and flexibility of structures is of great value because the long-term use of a building is then guaranteed. If buildings are to be seen as material banks, it is crucial to have a system to predict and match supply and demand for materials.
**Shared vision paradox**

Frontrunners in the construction sector state that the central aspect of accelerating the transition to a circular economy is to stop talking and start doing. Actors do not need to write down what they want, but share what they want to achieve: their vision and ambition. A vision leads to stronger motivation, more inspiration and well-focused direction. We observed a paradox of the shared vision in collaborative business model development in the construction industry. On the one hand, visions are soft and based on the reference frame of the actor, the mindset. Circular potential is discovered pragmatically, via experiments and pilot project. On the other hand, you have the hard factors of substantial contracts and final price agreements. Price and delivery time have been leading in the construction sector for ages and are still essential selection criteria for contracting.

To accelerate the transition to circular construction, organisations need to collaborate, share experience and start trying for the best. Most practitioners confirm that a shared vision is needed for successful action, and the active development of vision is, therefore, to be encouraged (Van der Helm, 2008). This is in line with findings of Eileen Shapiro who suggests ‘the reality of visionary management is that people do truly stretch more when they can put their actions in the context of goals that they can care about – and they truly do withhold potentially valuable contributions in the absence of such goals’.

Taking our Step I of the steppingstone tool for a collaborative business model for circular renovation, we highlight that the vision really needs to be developed within a group or network of actors. The vision needs to be actively developed by using our steps as an interactive team process. The shared vision will then support and lead actors towards the joined conception of the collaborative business model. The vision acts as the ‘common ground’ on which organisations need to formulate the bandwidth of what is fixed and where there is room to manoeuvre. Hence, the vision is an explicit preparatory step to get towards action.

**Practical implication and contribution**

Our steppingstone tool appears to be useful to create awareness in this playing field. It contributes to the creation of transparency and trust, which are the crucial conditions for developing collaborative business models. The tool can be used as a pragmatic approach to foresee what actors may encounter, in which each project still will have its dynamics and learning points for innovation. This paper
contributes to the debate that different actors need to shape their business models together, resulting in a range of innovations, including value creation, shared visions and business models.

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**References**


Collaborations for circular food packaging: 
The set-up and partner selection process

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Extended abstract

It is estimated that, after a short first-use cycle, 95% ($80-120 billion) of plastic packaging material value is annually lost to the economy. Moreover, 32% of plastic packaging escapes collection systems and accumulates in the natural environment (EMF, 2017). A circular economy (CE) is often promoted as a solution to the current inefficient production, use, and disposal of plastic packaging. Circular packaging solutions, requiring new business models (BMs) to create value cycles instead of chains, include redesigning packaging formats and delivery models, introducing reusable packaging, and improving plastic recycling quality and economics (EMF, 2017). Although the concept of a circular plastics economy has lately been taken up by policy and industry initiatives in Europe (EC, 2018), its implementation remains limited due to the high degree of cross-chain collaboration required in circular BMs. Also, literature on collaboration in the CE is still scarce and provides little guidance on how to establish circular partnerships (Meherishi et al., 2019; Lahti et al., 2019; Brown et al., 2018). This research aims to fill this knowledge gap by answering the question: “How do focal firms set up and choose collaborations for circular food packaging?” Food packaging (FP) was selected since half of all plastics converted into packaging are used for preserving food, and food safe packaging presents specific obstacles to recycling and reusing (Rhim et al., 2013). The scope of the study was limited to
food companies operating in Europe and engaging in cross-chain collaborations for reusable or recyclable primary retail FP.

A preliminary theoretical framework on the collaboration set-up, task-related roles, and partner-related characteristics as selection criteria was first developed based on traditional (e.g. Bryson et al., 2015; Dietrich et al., 2010; Czajkowski, 2007; Geringer, 1991) and, if available, sustainable (Goodman et al., 2017) and circular (Brown et al., 2018) collaboration literature. 17 qualitative semi-structured interviews (with six sustainable packaging experts, three food-products MNCs, two food-products SMEs, four food retailers, and two reuse service providers) of an average length of 60 minutes were conducted in the last quarter of 2019 with the aim to test and refine the theoretical framework. Interviewees were chosen via a purposive three-step sampling strategy based on their: (1) past/current work on reusable/recyclable FP; (2) experience on focal food firms’ processes; and (3) knowledge on circular food packaging (CFP) collaboration choice and set-up. The interviews were transcribed and analysed using thematic analysis.

Results provide empirical evidence for most elements of the preliminary framework, while at the same time going beyond existing collaboration and CE literature by revising and identifying novel steps, partner roles, and characteristics. The refined framework (Figure 1) consists of nine typical collaboration set-up steps divided into five phases, alongside fourteen partner roles, nine partner characteristics, and their main influencing factors.

Figure 1: Revised framework: Collaboration choice and set-up for CFP.
In the initial ‘prerequisites phase’, a motivation to work towards a CE (being more pronounced for MNCs and sustainability-oriented SMEs) was identified as important before recognising the need to collaborate.

In the ‘understanding phase’, earlier in the process than previously assumed, firms typically aim to understand the market and material flows (e.g. recycling capacities or packaging usage scenarios). Depending on the development stage of the local reuse/recycling system, four possible collaboration types may be required: a) vertical networks to develop the packaging reusable/recycling system, b) horizontal networks to develop new materials for or utilise existing systems, and c) one-to-one alliances to improve packaging/technologies. Irrespective of the system’s development stage, food companies also employ d) informal collaborations for knowledge exchange. Subsequently, most companies were found to develop a CFP vision and strategy, for which top-management support and alignment across the company, as well as flexibility and transparent communication are required.

In the ‘preparation phase’, this study introduces 14 roles that food companies or their partners may fulfil to realise CFP, of which three (‘internal-educator’, ‘market-expert’, ‘end-of-life supporter’) were added and three (‘impact extender’, ‘enabler’, ‘promoter’) slightly amended compared to previous literature. The three roles associated to the project’s realisation stage are found particularly important to deliver, create, and capture value within circular BMs. Further, while food brands can fulfil all roles except the ‘end-of-life supporter’, retailers never take up seven of the fourteen possible roles. Besides the position in the value chain, the type of partners sought after appears to differ based on the project type. For recyclable FP facing technical, legal/safety, or economic challenges, these are the ‘financier’, ‘circularity expert’, and ‘end-of-life supporter’; while for reusable FP requiring new service-oriented BMs the ‘impact extender’, ‘promoter’, and ‘use-phase supporter’ tend to be roles of particular relevance. In addition, the findings highlight the importance of three CE-enabling (‘mediator’, ‘knowledge broker’, ‘enabler’) and two CE-educating (‘internal educator’, ‘external educator’) roles since the CE requires a novel economic system affecting production, distribution, and consumption processes (Kirchherr et al., 2017). Lastly, three roles (‘initiator’, ‘piloter’, ‘market expert’) were found to be generally important, rather than CE-specific. As a sixth step, companies were found to typically form a team internally. In contrast to existing collaboration literature, food companies do not appear to require internal
alliance skill building, but their employees need collaborative skills, CFP expertise, and the ability to deal with uncertainties and complexities.

In the ‘partner involvement phase’, interviewees frequently mentioned the external outreach step, which is rarely addressed in collaboration literature. Although firms tend to prefer prolonging existing relationships (cf. Dyer & Singh, 1998), for CFP, some new partners are needed. Assisting firms in evaluating potential partners, this study identified nine characteristics of importance in a CE. Three characteristics are paramount in a CE: ‘strategic fit’ (e.g. CFP vision, company culture, geographical proximity for material exchange), the newly identified ‘creativeness/open mindedness’ (due to multiplayer-networks, complexities, and uncertainties in a CE), and ‘open communication’ for collaborative learning (cf. Clark et al., 2019; Rohrbeck et al., 2013). Furthermore, two CE-baseline characteristics are identified: ‘goals alignment’, and ‘commitment’ (due to mutual dependence and reciprocity in a CE). Finally, the study found four generic partner characteristics: ‘complementarity’, financial ‘advantageousness’, ‘no negative reputation’, and ‘trustworthiness’.

In the final ‘formalisation phase’, the study confirms literature calling for informal and formal agreements. It was found that in CE multiplayer collaborations reaching full consensus may neither always be possible nor needed, while their management and contract design calls for further exploration.

The findings of this research present valuable insights on the collaboration set-up and partner selection in the CE context. Compared to traditional collaborations, in a CE, firms need to employ new BMs and participate in multi-stakeholder collaborations spanning institutional and sectorial boundaries, potentially causing uncertainties and complexities. Hence, understanding the particularities of CE collaboration presents an important contribution to realise a change towards a circular, resilient economic system. To drive the practical uptake, the framework could be used to develop guiding tools. Future research could also validate the framework for other geographical contexts, CE fields, strategies other than recycling and reuse, and further examine the relation between partner roles as well in relation to characteristics.

**Keywords**

circular business models, cross-chain collaborations, partner selection, reusable food packaging, recyclable food packaging
References


The transition of social housing associations to sustainable business models for new buildings and retrofits

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Extended abstract

Sustainability has become one of the biggest societal challenges of the 21st Century. Sustainability issues are characterized by their increasing complexity and uncertainty, and are often referred to as ‘super wicked problems’ (Levin et al., 2012). Companies and organizations worldwide have become aware of the necessity to foster sustainability, e.g. by focusing on the Sustainable Development Goals (SDGs). Within the business context, the growing attention towards sustainability has led to an exponential growth in the research field of sustainable business models (Bocken et al., 2014; Dentechev et al., 2016). The sustainable business model tries to incorporate sustainability within the business model canvas (Osterwalder & Pigneur, 2010), providing an array of possibilities to integrate sustainability into the activities connected to value creation, value delivery and value capture. This paper will focus on the transition towards sustainable business models in the context of social housing associations, a sector that has to deal with challenges regarding energy use and retrofitting (Crilly et al., 2012).

Social housing associations play an important role in society, as they provide affordable and qualitative housing for vulnerable citizens. Yet, the sector has to deal with a historical legacy: a high number of old and poorly insulated buildings, which results in high levels of CO2 emissions due to heating. In the Netherlands, providing the case context for this study (cf. Boelhouwer & Priemus, 2014), upgrading 2.2 million buildings might contribute to the much
needed CO2 reduction strived for on global and regional scale. Research into the processes that drive or hinder business model innovation in this sector is scarce, and therefore this study aims to identify the critical success factors of the transition of social housing associations to sustainable business models for new buildings and retrofits.

The research question is analysed by means of multiple qualitative case studies within the sector of social housing associations. Based on several inclusion criteria, four social housing associations have been selected, in which a total number of 10 respondents were interviewed. Data triangulation is achieved by gathering data from secondary sources through desk research. The interviewees have different backgrounds and profiles: managers, project leaders and strategic advisors.

The results show that there are four crucial factors for a successful transition process: collaboration (both with supply chain partners as well as other social housing associations); continuous innovation; vision; and the role of the government (external factor: subsidies and fiscal regulations). Economic performance is an important boundary condition, in order to guarantee the continuity of the organization. Rather surprisingly is that the sustainability is not seen as a strategic foundation of the organisation, which might be interpreted in light of the historic legacy of this type of organisations. Furthermore, a number of barriers were identified in the data: the lack of support from the wider system (more specifically the construction sector as well as the government), macro-economic factors (more specifically the increased construction costs), as well as customer acceptance.

Collaboration is a key driver in the transition to sustainable business models in a rather conservative context, a result which is in line with previous research in other sectors (e.g. Long et al., 2018). Furthermore, within this sector, the current state of affairs influences the transition process: on the one hand, social housing corporations have to manage old and poorly insulated buildings, on the other hand, the current technologies are being thought of as insufficient to lead to CO2-neutral buildings (Boerenfijn et al., 2018). Therefore, innovation is essential in order to incorporate sustainability in the business model of social housing corporations. It might be interesting to study the effectiveness of energy performance fees as a solution to the problem of 'split incentives'. The transition costs are high, and subsidies as well as fiscal regulations are needed in order to foster sustainability. The role of the government in this process is complex, and is identified as both a critical success factor as well as a barrier for change.

**Keywords**

social housing associations, transition, retrofit, sustainable business models
References


Social entrepreneurs and their business models: in search of other ways to integrate social impact

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Extended abstract

Social entrepreneurship has become a distinct research topic (Lubberink, 2019). Social entrepreneurs are defined as being different from ‘traditional’ entrepreneurs because of their focus towards social or societal problems which they try to address through an entrepreneurial approach. Hence, they strive towards (social) value creation, and not value capture (Santos, 2012). Blending social and business interests is typical for hybrid organisations (Alter, 2003). In the case of social entrepreneurs a social mission is combined with an economic activity, and the relation between both may differ: from completely overlapping (in which the economic activity is clearly linked to the social aim), to completely separate (in which the economic activity only serves to raise money for the social aim). Social enterprises come in many sizes and shapes, and cannot be labelled based on their legal status: some social enterprises can take the form of not-for-profit, cooperatives, or for-profit organizations (Dacin et al., 2011; Dentchev et al., 2016; Roper & Cheney, 2005). Furthermore, their status can change over time, e.g. a not-for-profit organization may shift towards a cooperative structure, due to legislative influencing factors. Similarly, not-for-profit organizations increasingly adopt for-profit approaches under the influence of neoliberal climate (Maier et al., 2016). Such processes might occur gradually, and even unintentionally in these social enterprise organisations.

Research in social entrepreneurship mainly focused on the level of the individual entrepreneur, portraying an array of social entrepreneurs worldwide as mere heroes that tackled social problems by their visionary approach. For example, the story of Muhammad Yunus and his Grameen Bank is often mentioned as a best practice when it comes to social entrepreneurship and more specifically Bottom of the Pyramid (BOP) approaches, albeit criticised as well (Chmielewski, et al., 2020). This literature with focus on heroic story-telling,
assumes that social entrepreneurs always take rational and visionary decisions, mostly individually. Social entrepreneurs have been identified and labelled, according to their characteristics. For example, Zahra et al. (2009) distinguished the Social Bricoleur; the Social Constructionist; and the Social Engineer. Social entrepreneurship is often portrayed per definition as ethical in its purposes and approaches (Chell et al., 2016). Such viewpoints neglect a number of issues. First, it neglects the fact that social entrepreneurs collaborate, whether institutionalized or not, with other societal partners (e.g. Borzaga & Galera, 2016; Saffer, Yang & Taylor, 2018). Second, it neglects the fact that social entrepreneurial initiatives are not always resulting from rational decisions, nor that it is always possible to determine visionary decisions.

Research on social entrepreneurship has also been focusing on social business models, which try to elucidate the specificities of social entrepreneurship approaches within the Business Model Canvas (e.g. Sparviero, 2019). Also within the literature around sustainable business models, focus has been set on the social and societal characteristics of these business models. For example, in identifying different sustainable business model archetypes, Bocken et al. (2014), addressed the archetypes “repurpose for society/environment” within the organisational cluster, and “Deliver functionality rather than ownership”, “Adopt a stewardship role”, and “Encourage sufficiency” within the social cluster (Bocken et al., 2014). Both the social business model canvas and the social/organizational business model archetypes reflect the growing attention towards the social and societal role of entrepreneurship (Zahra & Wright, 2016). Although the origin of social entrepreneurs goes back to social challenges, the urgency of environmental issues has been responded by an integration of ecological inspired business models, such as circular and sharing economy. In that case, it is becoming more appropriate to enlarge the field of these hybrid entrepreneurs to societal challenges instead of social only.

Whether social entrepreneurs always intentionally choose their business model activities, is unclear. Certainly in case of small-scale, local initiatives, one could imagine that the social mission and economic activities not always follow a rational and intentional approach (as is described as well by Zahra et al. (2009) in their ‘social bricoleur’ type of entrepreneur). In this paper, we will explore the way social entrepreneurs shape their organization, intentionally or not. Based on 30 in depth interviews, inspired by business model structures and activities, we analyse how social entrepreneurs in Belgium combine their social mission with economic activities, how they make sense of their approaches, and through which influencing factors they plan their work.

The research points out that decisions regarding business models and entrepreneurial activities are not always made rationally nor intentionally. Social entrepreneurs display a variety of perspectives when it comes to solving social issues at stake through an entrepreneurial approach. Some of these entrepreneurs take the form of a non-profit
organization, and only develop minor economic activities (e.g. because they receive funding); others adopt a for-profit mentality, and tend to drift away from their social mission (mission-drift), hence applying a traditional business model focusing on profit maximization. Within the group of social entrepreneurs that intentionally adopts business model approaches, a variety of business model archetypes are identified: not only the archetype “repurpose for society” is important, but also (combinations of) other archetypes appear as well, such as “value from waste” and “encourage sufficiency”. Circular business models have been detected as well, in which circular and social approaches are combined. Moreover, strategies of developing local clusters, as distinguished by Porter and Kramer (2011), are popping up. Social entrepreneurs understand that they cannot work on their social mission in isolation. Collaborating with other (social) enterprises creates network effects that strengthen the sustainability of the local environment they are operating in. These entrepreneurs move away from the old image that a social entrepreneur is a visionary individual who can make the world better individually.

This study contributes to the existing body of knowledge by providing new and differentiated insights into social entrepreneurship. Not every social entrepreneur is a visionary, ethical, and heroic individual, and not every social enterprise organization adopts a social business model. Rather, the field shows a diversity in perspectives, and the application of blended approaches, both in combining social and economic goals, and in (un-)intentionally defining their business model.

**Key words**

Social entrepreneurship, Social business models, Social impact, Mission-drift

**References**


Consumers in Circular Economy – Focus Group Method as a Way to Understand Consumer Acceptance of New Business Model Innovation

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Keywords
Consumer acceptance, focus group method, circular business model innovations

Introduction

Circular economy (CE) has seen as one viable solution to deal with the challenges from diminishing non-renewable resources, global warming, unsustainable consumption, growing population and urbanisation (Merli 2018; Geissdoerfer et al. 2017; Murray 2017; Ghisellini et al. 2016; Hobson & Lynch 2016;). A circular economy is based on the principles of designing out waste and pollution, optimizing the lifecycle and usage of products and materials, and regenerating natural systems (Geissdoerfer et al., 2017; Ghisellini et al. 2016). As a systemic level change, the transformation towards CE will affect consumers, companies, policymakers and societies as a whole (Lofthhouse et al. 2017; van Weldeen et al. 2016; Ness, 2008).

Successful transformation towards CE needs active consumers that will accept new solutions in markets (Ghisellini et al. 2016). Active consumers are at the centre of the closed loop in the CE, hence, the new business models have to be attractive to consumers. Thus, understanding consumers in the CE plays a crucial role in the whole transformation process. Previous studies (e.g. White et al. 2019) has pointed out that transforming consumers’ habits is crucial if companies are aiming to long-lasting changes - like transformation to CE - in the markets. Furthermore, previous studies have also found that consumers need to combine their existing practices and ongoing dynamics (Antikainen et al. 2015; Shove et al. 2012).

Prior studies (von Hippel 1976) have pointed out that focusing on consumer needs can make innovations more successful comparing to ones that concentrate on a technological opportunity. Hence, active consumers may have a central role in the innovation process when companies are creating new CE business models for consumers (Grönroos and Ravald, 2011). In this paper, we will examine how consumer focus groups could work as a useful method for companies to create new CE business models that would be attractive to consumers.
Aim of the paper and method

In this paper, we will focus on using the focus group method as a way to build an understanding of consumer acceptance in novel circular services for companies.

We will ask
-is the focus group interview effective method for companies to build understanding about the acceptance of circular business models?
-what are the pros and cons of using the focus group method?

Sociologist Robert Merton and his colleagues developed the ‘focused interviewing’ method after the Second World War (Merton, [1956] 1990). They were interested in collective behaviour and the social context of force persuasion, especially in communication and watching films. Focused interviews or focus groups became widespread in marketing and social sciences in the 1980 century, and the use of the method spread completely detached from the previous work of Merton and his colleagues (see e.g. Lee, 2010). Since the 1980s, focus groups have been common in marketing, and also in social sciences researchers have been interested in the method (Cyr 2019).

As a method, it emphasises group dynamics: people tend to share experiences in a social context (eg Berger & Luckmann, 1994; e.g. Lee, 2010). They will also influence each other in the discussion. In group discussions, people will express themselves, explain what they think and what is the reasoning behind their views (see Threlfall, 1999). It is a safe environment for sharing ideas and also feed new ones.

All the data was collected in collaboration with companies, aiming to have a better understanding of consumer preferences and acceptance about novel, circular economy-based services. We were working with companies who are making products for consumer markets, retailers, logistic companies and waste management companies. Before organizing focus groups, we had a brainstorming session with companies to clarify their needs. After that, we formulated questions for the focus groups and asked feedback from the companies. Companies did not attend the discussions in order to give consumers the freedom to talk.

We organised two group events with consumers in Finland. Our first focus group in 2016 focused on the possibilities of the circular economy and novel business models in CE. 42 consumers were divided into five groups facilitated by a researcher. All discussions took between 2.5 and 3 hours. The second focus group event in 2019 focused on home deliveries and additional circular services. 20 consumers were divided by age so that we could emphasise different needs during different life stages. All discussions took about 1.5 hours. Discussions were recorded as audio files and reported as text files. The discussions were in Finnish. In all focus groups, the researcher led the situation by presenting pre-defined questions, each of which was answered in turn. The participants expressed their own opinions and commented on other participant’s views. Furthermore, they were
encouraged to present their views and comment and add to one another’s views. All discussions were recorded and transcribed verbatim to increase the findings’ reliability (Yin, 2013). After the focus groups, the outcomes were reported to companies. Later on, guided by the outcomes some pilots were carried out by companies to test business ideas.

Findings

We used the focus group method in this study because considering new solutions works well in a group context. Although discussions were facilitated by researchers, the other participants in the groups actively contributed to the course of the discussions. We aimed to deepen the understanding of consumer acceptance in everyday life situations and also to understand, how the group situation will affect the discussions. In general, the focus group method is quick and effective, and it can provide data from several people at the same time. This was one of the reasons we decided to use group interviews: we as researchers wanted to deepen our understanding about how people think and why. Furthermore, the companies we were co-operating with had relatively simple questions that wouldn’t need a survey or other representative methods.

In our case, the focus group method was found to be an effective one, providing interesting research material as well as practical knowledge for companies. As researchers, we gained rich research data. Besides, group interviews were well suited to our research, where we wanted to know what people think, but also in what way and why they think as they think (cf. Threlfall, 1999). The methodology highlighted group dynamics instead of individual choices. The researcher led the situation by presenting pre-established questions, in which each participant replied in turn. The participants of the group expressed both their assessments and commented on each other's opinions. Besides, they asked questions to each other, while encouraging other chatters in the group to present their views and discuss one another. This is how the interview was structured according to the situation; the views expressed by the members of the group contributed to the discussion.

For the companies, the outcome of the discussion encouraged them to decide what ideas could be piloted in order to get more feedback from markets before launching new circular services. The piloting will also help with getting more accurate information about pricing the services. Although we were discussing acceptable price in the focus groups, that didn't give accurate enough information for the companies.

The downside of the focus group method is, that as a qualitative method it does not give representative data for generalization. Instead, qualitative method is appropriate when studying new solutions and co-creating with consumers. From our group discussions, we found several factors that accelerate or inhibit consumer acceptance towards CE services. That will help companies to create new business models and new circular services that will be successful in the markets.
References:


Societal Value Creation in Open Business Models

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Extended Abstract

For business to help deliver a rapid transition to a more equitable and sustainable economic system, it must go beyond ‘doing no harm’, and generate meaningful societal value at the core of business activities. This means integrating societal value creation into the business model logic and value proposition. The focus on the creation of value outside traditional business boundaries is an important construct in sustainable business models (Schaltegger et al., 2016, p. 6), although it tends to attract the greatest explicit level of focus in social innovation and societal enterprise literature (Michelini, 2012; Johanisova et al., 2013) where businesses are commonly founded with socially ‘regenerative’ business model logic. While the transition must involve such enterprises taking market share from firms with business models that remain rooted in value extraction, the mass market must also better understand how to better evolve business models towards the embedding of societal value.

Extending innovation beyond firm boundaries is crucial not only to creating shared value for customers, investors and other stakeholders (Porter and Kramer, 2011), but extending toward creating net positive system level impact (Adams et al., 2016). More radically sustainable businesses commonly involve strong multi-stakeholder relationships that influence the way they create or capture value (Khmara and Kronenberg, 2018). Indeed, collaboration is popularly cited as a crucial ingredient in solving increasingly complex sustainability challenges; yet sits awkwardly with traditional ‘closed’ business strategy in competitive markets. Collaborative, or ‘open’ innovation processes (Chesbrough, 2003) cover a broad spectrum of activities from the more superficial to sustainability, to activities that create products or processes that deeply embed societal value creation, or reduce value extraction. We know empirically that open innovation processes correlate with the synergistic
delivery of both sustainability and economic performance (Rauter et al., 2019), but to what extent do these processes actively help to shift the business model towards societal value, and how? This research examines organisations with ‘open business models’, in which “collaborative relationships with the ecosystem are central to explaining the overall business model logic” (Weiblen, 2016, p. 57), to study how external relationships deeply influence value creation and capture.

**Overview and Method**

This paper explores the relationship between collaborative external partnerships underpinning open business models, and societal value creation, via the following research question: “Under what conditions does ‘opening the business model’ to external collaboration lead to better alignment of customer and societal value?”

Using interview and survey-based comparative case studies of two initial privately-owned clean energy businesses, this paper applies mapping boundary spanning value exchanges (building on Brehmer et al., 2018), and organisational system dynamics through qualitative Causal Loop Diagrams (CLDs). These representations are iteratively tested with key informants and overlaid between comparative cases to identify patterns in how enterprises with open business models align the business model with the creation of societal value.

The energy sector has been selected as a disrupted sector seeing a greater prevalence of collaborative partnerships in newly evolving socially aligned business models.

**Results & Discussion**

**Important conditions**

Emerging findings of this working paper are that in a rapidly emerging market landscape, openness to collaboration was underpinned by the market assessment that the proliferation of new customer solutions will not be controlled by any one organisation; and thus these open business models were underpinned by an ‘ecosystem builder’ mindset that seeks to distribute empowerment, rather than a ‘command and conquer’ mindset. In the growth-phase organisational energy businesses studied, environmental value creation within the product portfolios is often tied to the technology applications, and external partnerships fill a critical role in completing new pathways to market. However, richer tapestries of social value creation – or enhanced circulation of economic value within a more localised economic system – appear more likely to require an embedded external organisational partner in the business model logic. This was enriched where the collaborations involved strongly locally-rooted organisational types (e.g. often not-for-profit, social enterprise and/or geographically rooted), which brought existing trust-bound ‘customer communities’ to the partnership.
Other important conditions include the centrality of a shared social or environmental system/market transformation goal; and careful identification and minimisation of competing stakeholder incentives, during business model design and evolution. This alignment of interests approach is crucial in eliminating extractive elements of potential business model logic, and appears to be strongly complemented by a coherent ethical framework, and transparency as a core business principle.

Qualitative System Dynamics

Three ‘virtuous’ loops that provide beneficial reinforcing feedback are emerging, as numbered in Figure 1:

1. A long-term value reinvestment loop (#1): The dynamics of this larger outer loop are supported by the reinvestment of profit in business growth and new value creation, a long-term investor perspective, and an ongoing process of business model structuring for alignment of stakeholders’ interests.

2. A collaborative societal value creation loop (#2): Societal value creation builds trust in the partner network, leading to new partnerships, which then leads to new avenues for embedding societal value in the business model.

3. A dynamic capability enhancement loop (#3): Crucial to the operation of the societal value creation system is the competitive advantage delivered by collaboration: enhanced flexibility to rapidly change organisational strategy in response to emerging market needs, with low capital investment. This was closely related to a risk management benefit, whereby the agile, open logic of the business model reduced the likelihood of over-reliance on technologies or business model logics that fail to achieve market success.

A willingness-to-pay balancing loop (#4) also acts to cap the amount of societal value creation possible within a given business model in a competitive marketplace; at least to the extent that this value is not captured by the firm or its value network.

External collaboration structures were found to suit business-to-business market strategies where the organisation’s specialised product or expertise only forms a component of the final customer offering. It is unclear, however, whether such businesses would retain their boundary-spanning structure – and embedded societal value creation logic – if merged into or acquired by a larger business, if the market consolidates. Nonetheless, in these cases, embedding societal benefit into the core business model logic via collaborations creates a deeper association with organisational identity and the core customer value proposition (as observed by Spieth et al., 2019). Future it may be useful to examine whether this would limit While perhaps less robust than enshrining societal value creation in legal ownership and governance structures, rewiring business model logic may help to manage the risk of ‘mission
drift’ presented by rapid growth-oriented or returns-oriented venture capital, or by corporate acquisitions.

Figure 1: Simplified causal loop diagram of societal value creation in open business models (working output)

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| Solid lines are positive relationship (more of factor 1 leads to more of factor 2); dotted lines imply are opposite.

Conclusions

This working paper documents how and where the active involvement of external parties in innovation processes facilitates societal value creation, as well as the other organisational benefits that this enables. It explores the value of iterative qualitative systems visualisation with key informants for identifying and comparing complex influences on organisational value creation. Subsequent work beyond this initial sample is broadening cases to encompass: i) later stage, larger and not ‘born sustainable’ organisations; ii) a greater diversity of ownership and governance settings; and iii) the presence of more extractive business model characteristics. This will further develop the conceptual model of relationships and seek explanatory fit with extant business model and innovation theory, using an Adaptive Theory approach (Layder, 1998).
References


Keywords

Collaboration, societal value, open business model, causal loop
Business Models for a Circular Economy in the Food & Beverage Industry:
A Canvas & CE Indicators, Illustrated for a Brewery.

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Abstract

The paper contributes to creating a circular economy in the food and beverage industry by (i) providing an overview of existing CE indicators for the food and beverage industry, and (ii) by developing a CE business model canvas as well as a specific set of CE indicators in a scorecard and (iii) applying this to a brewery case in the Netherlands. Based on a literature review on existing CE indicators and business models, as well as expert consultation and validation sessions, a CE indicator scorecard was developed that is linked to a CEBM canvas. The scorecard offers a performance-based score based on the building blocks of a novel circular economy business model (CEBM) canvas: (i) value proposition, (ii) value creation & recovery, (iii) value delivery, (iv) value capture and (v) value anchoring. This enables companies active in the food and brewery industry to use the score card assessment to develop strategies for becoming circular in a sustainable way. Similar scorecards could be filled out by producers in the supply chain for creating circularity along the lifecycle of the product. The brewery case application shows (I) a clear ambition of the involved companies in reaching a circular economy, as well as (II) the potential in improvement in several categories of the scorecard. It was also found that in order to optimize the companies’ overall circularity trade-offs between performance indicators like water or nutrient reuse versus energy consumption are inevitable. The scorecard provides insight and helps the decision-making of companies in these circular trade-offs and can facilitate cooperation between stakeholders along the life-cycle of the product to work together on creating circularity. A decision-making tool based on a further round of stakeholder discussion is recommended as a way to reach agreement on which alternative to give higher weight in order to offer objective decision-making.
Keywords

Circular economy, Sustainable Business Model, Indicator Scorecard, Brewery Industry, Water Treatment

1. Introduction and aim

To ensure a sufficient and sustainable supply of raw materials and food, we need a transition from a linear to a circular economy. Whereas Circular Economy (CE) in most industrial sectors focusses on closing cycles by recycling and reusing materials and extending product lifespans, this is more challenging in the food and beverage industry as it concerns products that are inherently meant for consumption. The main hurdle for the food and beverage industry lies in closing biological material, nutrient and water cycles (Breure et al., 2018; Olajire, 2012). While the food and beverage industry has been has made considerable progress in cleaner production, eco-efficiency, pollution prevention, waste management and chain management, a CE perspective will require a systems perspective on biological loops. This will contribute to more efficient reuse and repurposing waste streams through the establishment of industrial symbiosis networks. Cases, such as the Industrial Symbiosis System in Kalundborg, Denmark or the British Sugar Wissington Factory in the UK show that these systems are not only lead to better resource use and less waste and lower environmental impact, but also to a bigger value creation (Sönnichsen, 2018; Ellen MacArthur Foundation, 2017; Short et al., 2014 et al.). Despite ongoing developments in the food production industry, agriculture and consumption are still suffering from high energy usage, nutrient loss, water overconsumption and food waste. As the food and beverage industry is the central link between agricultural production and consumption, this might allow to tackle resource management issues along the entire production and consumption value chain and view CE from a systems perspective.

New CE business models (CEBM) that allow for innovative value creation strategies are needed to explore further in what way different companies in the supply chain of the food and beverage industry can not only contribute, but also benefit from closing loops as much as possible. A set of CE indicators is also needed to evaluate strategies and to support decision making and management on both a company and a product level.

The points raised above are addressed in this paper, as at current, no single framework exists that can be used for creating or measuring CEBM in the food and beverage industry. The aim of this paper is therefore to develop a framework for a novel CEBM canvas including building blocks specifically designed for companies in the food and beverage industry. This is accompanied by a CE indicator scorecard that allows to visualize the company’s progress in striving towards creating a business model based on CE principles. The CEBM should not only be economically, but also environmentally and socially sustainable. Therefore, this paper addresses the following research question: What circular economy business model (CEBM) framework and accompanying set of indicators could support the development of CE strategies.
in the food and beverage industry? To address this question (i) a literature review has been done, followed by (ii) the development of a CE Business Model Canvas for the Food & Beverage Industry in combination with a CE Indicator Scorecard, which is illustrated for (iii) a brewery case in the Netherlands. More details are given in Moeslinger (2019), which is the underlying master thesis for the results presented in this paper.

2. Literature overview on CE for food, beverages and agriculture

2.1. CE in the food and beverage industry

First, a common definition for CE in the food and beverage is needed to bring clarity into what elements business transformations and start-ups need to be based on. According to the Ellen MacArthur Foundation, the Circular Economy entails “principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems” (EllenMac Arthur Foundation, 2017b). This is done by ‘closing, extending and narrowing loops’ through reusing, recycling or repurposing materials (Geissdoerfer et al., 2018; Bocken et al. 2016). An initial literature review highlighted that there are various approaches towards measuring and defining a circular economy in the food and beverage sector, starting from cleaner production methods to focussing on the biological loop of CE and including social aspects of CE (El-Haggar, 2007; Garza-Reyes, 2015; Ellen MacArthur Foundation, 2017b; Siebert et al., 2018). However, here is currently no truly singular measurement system for a CE available. Based on the Best Available Technology reports of the European Commission’s Joint Research Centre (European Commission, 2006) as well as the consideration that for biological resource loops the most important aspects are reduction of pollution, energy use and sustainable and circular usage of resources, several key challenges for the food and beverage industry were defined. These key challenges include (1) nutrient (and organic material, (2) water, and (3) energy usage. Closing material and nutrient, as well as water cycles and reducing fossil fuel usage along the entire production system are major targets (Buckwell & Nadeu, 2016; Breure et al., 2018; Moeslinger, 2019;).

While CE typically focusses on the revalorisation of former waste products as secondary materials through reverse supply chains, a focus on creating a sustainable CE incorporating a more holistic point of view is needed. If these are not incorporated, CE runs a risk to become unsustainable, for instance, by increasing energy consumption and pollution to create circular loops (Kirchherr et al., 2017a; Kirchherr et al., 2017b). A CE should therefore not only include the economic valorisation, but also the environmental as well as social impacts, in line with the triple bottom line of sustainability – people, planet, profit (Elkington, 2004). CE for the food and beverage industry is therefore especially about closing nutrient, material and water cycles, as well as the optimal use of non-fossil fuel energy to reduce pollution. At the same time, taking into account the well-being of employees and consumers, as well as other social aspects, is seen as equally important. In this context, circular loops for essential macro-nutrients such as phosphorus, nitrogen, and potassium needed for plant growth are a focus point, as their overuse leads to pollution in some areas and lack of nutrients in others. For instance, phosphorus is
mined from limited phosphate rock deposits, mainly in China, the Western Sahara region, and Morocco leading to high geopolitical dependency and geopolitical implications. At the same time, two third of the phosphorus applied on European soil is lost and pollutes the environment. (Coppens et al., 2016; Cordell et al. 2009; Buckwell & Nadeu, 2016). Waste in the form of organic material or contaminated water are additional elements in the food and beverage industry that provide a starting point for creating valuable secondary raw material, while reducing the impact on the environment (Metcalf & Eddy Inc. et al., 2003). In order to do that the required energy for creating these circular loops must be taken into consideration, especially with many elements of this sector still using non-renewable based forms of energy. While it was fossil fuel-based technologies that allowed humanity to thrive, to reduce hunger, and to produce food for an ever-growing population, this technology requires large quantities of resources and energy. This dilemma needs to be solved, potentially through the right angle at CE, in order to establish a society that lives in an equilibrium (Vermeulen et al., 2012; Dilworth 2010).

Moreover, firms in the foods and beverage industry can benefit highly from adjusting their business model or develop new ones, when aiming at sustainability (e.g. Short et al, 2014). Different principles and strategies found in other circular business model tools and frameworks (e.g. Lemandowski, 2016; Bocken et al, 2014) are needed for this sector, although the ones existing provide an excellent staring point. Different CE strategies for the food and beverage sector were looked at in more depth to understand the needs of the sector with regards to business modelling frameworks and tools and are discussed below.

2.2. Strategies for a CE

One way to decide on a strategy for reusing secondary raw materials is in the form of the bio-economy value pyramid, that proposes a ranking of revalorisation based on the economic value of the created new products. For instance, the reuse of organic materials in the form of medication receives the highest ranking, followed by reuse as human food, animal fodder, and fertilizer all the way to energy usage at the bottom. (Bezama, 2016; Gontard et al., 2018) This is similar to Moerman’s ladder, which is ordering the possible secondary products on a ladder according to their economic value, again, with energy from organic materials ranked lowest. (PBL Netherlands Environmental Assessment Agency, 2018; Waarts, Sluis, & Timmermans, 2011) While a possible strategy for the food and beverage industry could be built upon high levels of cascading nutrients, using waste flows for energy production should in our view not be seen as a separate strategy. Otherwise, the focus would get to easily on creating biomass, while overlooking the potential for more innovative solutions that would allow a higher value re-use of the product. Therefore, energy creation can be a sub-category of cascading, but in our view, it should not become a separate strategy.

When trying to become more circular, it is not enough to merely look at the company’s production process at its production site. It is the entire production and consumption system that needs to be incorporated, as this is where most of the losses of water, material and energy
occur. Businesses can play a major role in ensuring sustainable practices and in sharing and reusing resources, as they form a leverage point in this system. They should, for instance, support circular or regenerative agriculture in their supply chain (Dahlberg, 2010) and also reduce energy use. New technologies, such as blockchain, could be used in the future to identify the origin of products in the supply chain and gain information on the degree of circularity involved in their production.

Connecting different industries in the form of industrial symbiosis can be one way to allow to make better use of the resources available (Ellen MacArthur Foundation, 2017a). An alternative can be internal symbiosis, when companies use their leftover or waste resources to create new products or as input at other production steps. An interesting example is the British Sugar Factory in Wissington, that due to low sugar prices created an innovative system in using on-site rainwater, fertilizer and waste heat from their sugar production to grow tomatoes in a new greenhouse. Other former waste products, such as CO2 that was liquefied were sold to new customers. This allowed the factory to become more circular and sustainable while at the same time to increase profits (Short et al., 2014). To map and identify these flows companies can make use of tools from the scientific field of Industrial Ecology, which is mapping material and energy flows through industry and society. These tools can help to direct and optimize flows to best close loops (Lüdeke-Freund, Gold, & Bocken, 2019).

2.3. Measuring CE

In addition, existing CE indicators were reviewed and assessed to identify their suitability for measuring process in terms of a CE for the food and beverage industry. The focus was put on meso (region-based) and micro (company-based) indicators relating to a CE (Saidani et al., 2019). An overview of existing indicators in these categories as well as their focus on the technical or biological loop (according to the definition of the Ellen Mac Arthur foundation) can be found in Table A.1 and Table A.2 in the appendix.

What can be seen from the overview of existing indicators on a micro and meso level is that there is a lack of a specific set of CE indicators targeting the biological cycle, in particular, the re-use of nutrients, organic materials, water and energy at a micro-and meso-level as most indicators developed focus on the technical loop of the CE. In addition, only few indicators take into consideration all three pillars of sustainability, to ensure creating a circularity that would not only create financial but also environmental and social benefits. Nevertheless, when a systems approach was included, this was done in the form of an LCA as a basis for the indicator calculation, requiring an expert and detailed data throughout the life-cycle of the product. No existing indicator set suitable for or targeted at the food and beverage industry was discovered during the research step. For this reason, a new set of indicators needs to be developed that takes into account a systems perspective, as well as the three pillars of sustainability, while focussing on the biological loop and the challenges of the food and beverage industry. Some of the existing indicators, such as the MCI for packaging, or social indicators of the C2C certification for rights of workers in the supply chain could be used as sub-set or as complementary indicators. In conclusion, to combine appropriate indicators with the right
strategy for becoming more circular, indicators are needed for a CE business model canvas designed for the food and beverage industry, which is done in the next section.

A set of existing BMCs was reviewed to find a suitable canvas for the food and beverage sector. The widely used classical Business Model Canvas (BMC) by Ostenwalder and Pigneur (2010) is not sufficient to take into consideration sustainability and circular economy (e.g. Boons et al, 2013). For instance, Joyce and Paquin's (2016) proposed a three layer BMC to take into consideration the triple bottom line of people, planet and profit (however, not yet specifically addressing a circular economy). A compact business model suitable to describe a circular economy in one single canvas was offered by Bocken et al. (2014)'s in their conceptual BM framework based on value proposition, value creation and recovery, value delivery and value capture. This framework was chosen to form the basis of the slightly adapted CEBM Canvas for the Food and Beverage Industry.

In conclusion, to combine appropriate indicators with the right strategy for becoming more circular, indicators are needed for a CE business model canvas designed for the food and beverage industry, which is done in the next section.

3. Methodology

To develop a CE Indicator Scorecard and a CEBM canvas three main steps were needed:

First, the literature review of existing BMCs and CE indicators (see Section 2) was used as a basis to determine the requirements of the CEBM canvas and indicator set. The literature review was based on a keyword search, followed by snowballing and additional literature provided by experts, to ensure sufficient awareness of ongoing developments. Based on the gaps identified in the literature review, a CEBM canvas was redeveloped based on the canvas published by Bocken et al. (2014), as presented in Section 3.1. Based on this canvas a set of CE indicators based on questions addressing the main challenges for a CE within the blocks of the CEBM canvas were created.

Second, a brainstorming session with consultants and experts in the food and beverage industry took place to determine a suitable format for the indicators. During these sessions, a scorecard format was picked for the indicators. Based on this, an initial design of a set of CE indicators based on the expanded CEBM canvas was done, trying to cater to the needs of the sector (for instance, by looking at the challenges regarding nutrient use, product creation and water circularity identified through literature and interviews) (see Section 3.2.). This was followed by several peer review and validation sessions on the CEBM canvas and the set of indicators together with experts in the field (from academia, industry, and consultancy). Based on their feedback, some of the questions were adapted, and the indicators were made more user-friendly and compact. The validation sessions resulted in a reduction in the number of questions as well as an acceptance of the 0-6 point rating scheme, as a simple and suitable measure to determine the circularity in the different building blocks. This was done with the aim of providing a simple
tool for companies to measure their circularity within a reasonable amount of time and without external experts. The final result is more closely described in section 3.1. and 3.2.

In a third step, the indicators were tested and applied at a Dutch brewery (see Section 4). The case builds on qualitative and quantitative data analysis, interviews and field trips to the brewery site.

3.1. CE Business Model Canvas and Indicator Scorecard

The CEBM Canvas for the Food and Beverage Industry is based on the canvas by Bocken et al. (2014). To truly be able to reflect a CE in the food and beverage industry, this model was expanded.

Furthermore, having a systems perspective is also essential for this industry. For this reason an additional column was created, named ‘value anchoring’, which resulted in a new CE Business Model Canvas (BMC), developed for the food and beverage industry, as shown in Figure 1. The new category was included to ensure that the business is embedded within a functioning system, comprising of the entire life-cycle of the produced good, as well as a local and a global perspective on the company. The category added focusses on the local challenges the company might face (e.g. water shortages due to local climate, air quality due to deforestation etc.) as well as the global arena, in which the company interacts, e.g. in terms of emissions and when there is a global supply chain.

<table>
<thead>
<tr>
<th>CEBM CANVAS for the food &amp; beverage industry</th>
<th>Value Proposition</th>
<th>Value Creation &amp; Recovery</th>
<th>Value Delivery</th>
<th>Value Capture</th>
<th>Value Anchoring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building Blocks</strong></td>
<td><strong>Product or Service based on waste streams</strong></td>
<td><strong>Key activities &amp; Organisation:</strong></td>
<td><strong>Partners</strong></td>
<td><strong>Costs</strong></td>
<td><strong>System value</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CE Value: Economic value, Environmental value, Social value, Informational value</strong></td>
<td><strong>Acquisition and Production</strong></td>
<td><strong>Involvement in circularity</strong></td>
<td><strong>Including external costs</strong></td>
<td><strong>System Impact (life-cycle)</strong></td>
</tr>
<tr>
<td><strong>Target Customers</strong></td>
<td><strong>Inclusion of customers</strong></td>
<td><strong>Key resources:</strong></td>
<td><strong>Channels and Technology Transport along the lifecycle</strong></td>
<td><strong>Revenues</strong></td>
<td><strong>Long-term Impact</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Waste, processing equipment</strong></td>
<td>from reusing or eliminating (and treating) waste</td>
<td></td>
<td>Accumulation, GHG emissions</td>
</tr>
</tbody>
</table>

**Figure 1. A canvas for a CEBM canvas for the food and beverage processing industry.**

Using a canvas as a BM creation tool allows to easily add multiple product categories below each other to account for and give an overview of the variety of products that can be created or
extracted from one waste stream. The advantage of this canvas is that it incorporates all elements needed for a sustainable CEBM, comparable to the triple business model layer canvas, but with a focus on the value proposition and the condensed representation and connection of elements within just one instead of three tables. In comparison to Ostenwalder’s traditional business model canvas, this canvas is trying to emphasize the additional values a CE can give a company besides economic value, and include environmental and social considerations without the need for additional layers. This CEBM canvas was designed in a way to be applicable for all CEBM strategies in the food and beverage industry. This canvas includes a systems perspective with the new added building block called ‘value anchoring’ focussing on local and system impacts as well as temporal embedding of the CE project. This building block included the company’s involvement in creating a CE along its supply chain until the end-of-life of its product as well as the embedding of CE values in their BM as a whole. To measure the long-term impact, pollution reduction was focussed on. (This could be expanded with social indicators in the future.) The CEBM canvas was designed in a way to fit all the strategies needed for CE in the food and beverage industry and described above.

3.2. CE indicator development

Based on this CEBM canvas, a set of 14 CE indicators was developed in the form of a scorecard to measure the progress of companies in the food and beverage industry in terms of CE for each of the different building blocks of the CEBM canvas (see Figure 2). The indicators are based on the previously identified core elements of a CE for the food and beverage industry within a production and consumption system as well as on the building blocks of the CEBM canvas and are divided into 15 indicators, as seen in table 1.

Table 1. CE Indicators for the Food and Beverage Industry.

<table>
<thead>
<tr>
<th>Value Proposition</th>
<th>Product or Service</th>
<th>Value Creation &amp; Recovery</th>
<th>Key activities</th>
<th>Key resources</th>
<th>Value Delivery</th>
<th>Partners</th>
<th>Channels and technologies</th>
<th>Value Capture</th>
<th>Costs</th>
<th>Revenue</th>
<th>Value Anchoring</th>
<th>System value</th>
<th>Long-term impact</th>
<th>Value Anchoring</th>
</tr>
</thead>
</table>

The detailed reasoning for selecting the indicators and subsequent set of questions and potential answers (graded from 0 to 6) can be found in Moeslinger (2019). The selection of the specific indicators was based on a focus on value creation based on the biological loop using Moerma’s ladder, incorporating GHG emissions similar to the HLCAM indicators (Genovese et al., 2017)
as well as input from C2C indicators, in particular relating to social aspects (C2C, 2019). Elements of CE relating to the technical loop, such as for packaging material, were calculated using the MCI developed by the Ellen MacArthur foundation (2015). Additional indicators were based on the macronutrients identified in the literature review, organic material recovery, water cycling and energy recovery. The format of the scorecard was developed during expert consultation.

The fifteen indicators are evaluated by letting companies fill in a questionnaire of 24 questions. The full range of questions can be found in Moeslinger (2019). The pre-selected responses for these questions are rated 0-6, 0 referring to no effort towards creating a CE, and 6 referring to best possible performance (based on current standards) in creating a CE in this category. This also offers an opportunity to measure social elements. A similar approach as WeSustain towards the technical loop of CE was chosen for this scorecard. (WeSustain, MVO Nederland, & ecopreneur, 2019).

The results are displayed in the form of a radar and measure the performance of the company at the point in time at which they fill out the scorecard and compare it to a BAU (business-as-usual) scenario, in which it is assumed that the company continues its operation without adding new technologies or products to increase circularity. This can show, for instance, relative water savings or energy reduction as compared to BAU of the company. By repeating filling in the scorecard over a longer period of time, the company is able to see its individual progress in the different categories. The indicator results can be shown in a radar and are presented as equal (thus not weighed). While we realize that CE aspects might have to be considered more strongly in some of the blocks, this allows to see available options for all aspects of the business model. The CEBM canvas and the CE indicator scorecard are available for use in Microsoft Excel.

Figure 2 CE Indicator Scorecard for the developed CEBM canvas.

The indicators shown focus in particular on the re-use of the waste streams of a company. Due to the limited scope of the study, some indicators, especially the profit-based ones were covered less in detail. These can be easily supplemented through future add-ons.
4. Case Study of a Dutch brewery

4.1. Case introduction

In a further step, the BMC and the CE indicator scorecard were applied to a medium-sized brewery in the Netherlands that wants to transform its business model in a circular direction by using several technologies from various companies in its effort become circular in its water, energy and nutrient use.

These technologies include:

A. A set of five bioreactors that when fully functioning create a closed water cycle, including anaerobic digestion and nitrification/denitrification. The biogas produced in the treatment process can be used for energy generation. For this study we assumed fully working anaerobic digestion as well as nitrification/denitrification compartments. While currently only applied to the beer waste stream, this technology could include black water treatment and food waste from the on-site restaurant and the abbey’s monks’ living quarters.

B. Metabolic network reactors (MNRs) that cleans the brewery water in several steps using a biofilm reactor for aerobic treatment. Plants in a greenhouse are used to remove and uptake nitrogen, whereas phosphates are chemically removed, and the effluent is treated in an additional step. Water stemming from the MNRs is reused for irrigation. The resulting sludge is used as compost.

When combined these two technologies can function complementary through being used for different waste streams or for producing different outputs (from drinking water to irrigation water depending on the required outputs.)

4.2. Three scenarios for creating a CE

Three scenarios were developed to show the contribution of two technologies in making the brewery more circular. The first scenario assumes that only technology A is applied. In this scenario, the brewery wastewater is treated to a quality that allows its reuse as drinking water as well as extracting nutrients that can be turned into fertilizer. Biogas created can be used as an energy source within the company. CO2 stemming from the treatment process can be used for enhancing plant growth in an onsite greenhouse. Water output is expected to be drinking water quality. In addition, this technology allows for nutrient extraction.

The second scenario assumes technology from company B, which is mainly intended as a natural greenhouse system to increase water quality to allow for reuse as irrigation water. In addition, fertilizer is created from sludge.

The third scenario combines the two technologies and includes potential new products from CO2 being used in the onsite greenhouse, and the sludge being further processed to feed fish in an on-site basin heated through waste heat.
4.3. Results of the scorecard applied to the present situation

![CEBM Indicator Scorecard Performance](image)

**Figure 3 Comparison of Scorecard Results Case Study.**

Due to different products being created as a final result depending on the technologies used (for instance, an inclusion of a fish tank fed with leftover products versus usage of secondary raw materials merely for energy production), different energy demands and sources for the technology’s usage and different approaches to involving employees and supply chains variations in the grading in these categories could be seen.

What the scorecard highlights is the need for trade-offs with respect to degree of circularity in the various sectors and energy usage. For instance, while technology A achieves higher degree of water circularity, it also requires higher energy inputs for its filtration steps. However, as the project is still under development this is expected to change in the future, as industrial symbiosis additions are envisaged and tested on their feasibility. What can be seen is the focus in this project is put on creating a circular water stream, with in this illustration less focus on the highest potential for nutrient and product recovery. It needs to be taken into account that with different companies focussing on different aspects of circularity, this in combination can lead to an overall lower score in one of the categories than a single company might be able to achieve by itself. Scorecards can be easily adapted when elements in the BM require a new score and can be filled out new if additional technologies are added. The scorecard results allow companies to set their own targets and focus points in creating a CE while keeping a systems perspective.

5. Discussion

The paper presents a new way of measure and visualize CE in the food and beverage industry. However, the study was limited in scope, with a research time frame of only six months, and
just three case studies with certain limitations in data accessibility. To increase the robustness of the canvas and scorecard, additional research and an expansion of the indicators is recommended.

What can be seen from recent indicator overviews is the need for a greater focus on examining micro-level indicators as well as their application in the field. (Kristensen et al. 2020). This paper offers a first attempt of providing not only an overview of existing indicators (see table A.1.) but also a novel systems perspective-based set of CE indicators in the form of a scorecard and subsequent application, that helped identify aspects of the scorecard that can be adapted in the future. As a set of CE indicators based on an expansion of Bocken’s CEBM canvas, it links the design of CE business models with a tool that specifically allows to measure performance towards achieving CE for the biological loop, whilst including existing indicators, such as the MCI, for components of the technical loop. By adding social, environmental as well as economic indicators, this scorecard and canvas system allow companies to consider all aspects of a sustainable CE.

What the case study highlighted was the need for measuring the circularity of the supply chain to allow to assess the degree of circularity of the raw materials or secondary materials coming from outside. This would allow to create a better leverage point for the company in choosing products that are as circular as possible, e.g. raw materials that cause lower nutrient losses as compared to alternative raw materials, when entering the firm for further processing. Treatment at the end-of-life stage needs a similar scorecard in order to allow a full picture on the degree of pollution prevention if company-internal treatment replaces, for instance, wastewater treatment at larger scale sites. The case study also highlighted the difficulties in portraying the emissions caused at every step of the production. It is an interesting case of learning and knowledge collaboration (cf Quist and Tukker, 2013).

The scorecard is designed to accommodate companies in the food and beverage industry that focus on creating valuable products from their waste streams. It was specifically tested at a beer brewing facility. What it highlighted for the involved companies was that full circularity in all categories is practically impossible due to trade-offs that are needed. At current, these trade-offs need to be solved on a case-by-case basis. It would be advisable to expand the scorecard with a tool for decision-making and suggestions on how to prioritize certain parts of the scorecard. These decisions, if not combinable, could, for instance, be based on local needs, such as emphasizing water circularity in areas with drought, and energy circularity in areas that are likely to rely on fossil fuels.

Further research is suggested to create more in-depth indicators, especially adding additional economic as well as social indicators to this scorecard. This scorecard should allow to contribute to sustainable and innovative value creation, along the entire production and consumption system of the food and beverage industry. In addition, it is suggested to expand the applicability of the scorecard beyond this particular case. In addition, updating the scorecard when industry standards change is recommended, as well as conducting further research on how to expand the indicator set by, for instance, adding more social and financial indicators.
6. Conclusion

To support the development of a CE for the food and beverage industry an initial literature review revealed existing CE indicators and BMs. Based on these, a new CEBM Canvas was adapted for the Food and Beverage Sector. With expert interviews and validation sessions, a CE indicator scorecard was built based on this CEBM canvas. An application with a case study revealed the need to expand this scorecard to better account for circularity of the supply chain and end-of-life treatment as well as to add more details on social and financial indicators. A decision-making tool allowing for better managing trade-offs revealed in the scorecard is a next recommended step for development. This tool could be developed based on an additional round of stakeholder discussion to reach agreement on which outcomes to give a higher weighing to in the case of a trade-off.

Future development and expansion of the scorecard should allow for integration of sustainable agriculture and production within the supply chain and further along at the consumption phase. New technologies, such as blockchain could be used to collect data for the scorecard and ensure the creation of a CE.

Acknowledgement

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References


<table>
<thead>
<tr>
<th>Indicator Abbrev.</th>
<th>Indicator Name</th>
<th>Target</th>
<th>Source</th>
<th>Comments/Suitability for the Food &amp; Beverage Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCI</td>
<td>Building Circularity Indicator Technical - Building material recycling (Verberne, 2016)</td>
<td>(Verberne, 2016)</td>
<td>Building on the MCI (see below), this indicator was developed for the technical loop, specifically for building materials recycling. It is not fully applicable for the food and beverage industry.</td>
<td></td>
</tr>
<tr>
<td>C2C</td>
<td>Cradle to Cradle (or Material Reutilization Part) Technical &amp; Biological Environmental, Social Single Products - Certification (C2C, 2019)</td>
<td>(C2C, 2019)</td>
<td>To gain an understanding of the environmental impacts of a product throughout its life cycle, this approach is based on life-cycle assessment (LCA). While some of the elements comprising the indicator, such as usage or renewable energy forms, health and social fairness along the supply chain, are relevant for the indicators developed for the food and beverage industry, this set is designed for products that are not consumed. In addition, the certification scheme is highly time-consuming and needs an external assessor. While C2C contains many useful elements for use in CE in the food and beverage industry, they are not fully suitable for application in the food and beverage industry.</td>
<td></td>
</tr>
<tr>
<td>CEI</td>
<td>CE Index Technical Economic</td>
<td>(Di Maio et al., 2017)</td>
<td>It calculates the recycling rate of materials based on their value but does not include products based on the biological loop.</td>
<td></td>
</tr>
<tr>
<td>CEPI</td>
<td>CE Performance Index Technical Plastic Waste (Huysman et al., 2017)</td>
<td>(Huysman et al., 2017)</td>
<td>This indicator was designed for circularity of plastic waste, and thus, not relevant for the scope of the research.</td>
<td></td>
</tr>
<tr>
<td>CEIT</td>
<td>Circular Economy Indicator Prototype (Griffiths &amp; Cayzer, 2016)</td>
<td>(Griffiths &amp; Cayzer, 2016)</td>
<td>This indicator is based on the MCI. While focusing on the technical cycle and material durability, which makes it suitable for the food and beverage industry, it is not fully applicable for the food and beverage industry.</td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>Circularity Index Technical Economic/Env. (Energy) EOL recycling (Cullen, 2017)</td>
<td>(Cullen, 2017)</td>
<td>This indicator gives a value to different recycling options at the EOL stage, taking into account only the technical loop.</td>
<td></td>
</tr>
<tr>
<td>EoL-RRs</td>
<td>End-of-life recycling rates Technical - Metal recycling (Graedel et al., 2011)</td>
<td>(Graedel et al., 2011)</td>
<td>As the focus lies on metal recycling, this indicator set is not applicable for the food and beverage industry.</td>
<td></td>
</tr>
<tr>
<td>EVR</td>
<td>Eco-efficient value ratio PPS (Technical) Economic Environmental, Social CBMs for PSS (Scheepens et al., 2016)</td>
<td>(Scheepens et al., 2016)</td>
<td>Based on LCA and economic data, the CE of a product-service system (PPS) is assessed. It does not focus on real circular economy objectives at the EOL stage, due to focusing only on the technical loop.</td>
<td></td>
</tr>
<tr>
<td>MCI</td>
<td>Material Circularity Indicator (Ellen MacArthur Foundation; Granta Design, 2015)</td>
<td>(Ellen MacArthur Foundation; Granta Design, 2015)</td>
<td>The indicator assesses how restorative the material flow within a company is, e.g., what percentage of the material will be reused or recycled. It takes into account the length and the intensity of use of the product as well as how material losses in the supply chain are not taken into consideration. The indicator comes with a sub-set of complementary indicators that measure risk based on material scarcity and toxicity, based on variations to the Herfindahl-Hirschman Index (HHI) measuring the monopoly of supply of a product’s constituent. It was designed for technical loops rather than biological loops. It could, however, be used for packaging material in the food and beverage industry.</td>
<td></td>
</tr>
</tbody>
</table>
The indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. It could also be used for estimating material use and resource requirements, and aims to the technical loop. This indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. The indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. This indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. The indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. This indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop. The indicator measures the resource efficiency of processes on a meso level. It can be used for estimating material use and resource requirements, and aims to the technical loop.
Collaborative business models in a Base-of-the-Pyramid context
A systematic literature review

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Ariane von Raesfeld1

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Abstract

The collaborative business model literature is increasingly being applied to understand opportunities at the base of the pyramid (BoP). Through a structured literature review, we identify and describe key insights from this literature that guide the creation and capture of both financial and social value in BoP settings. We find that most articles are focused on business models for sustainability in developed countries; only three are specifically situated in the BoP context. Owing to this dearth of studies, we build on the broad collaborative business modelling literature to develop a comprehensive framework that distills the requirements for business modeling at the BoP into five themes. We also present six avenues for future research to explore the frameworks’ applicability in BoP settings.

Keywords

Collaborative business model; Base-of-the-Pyramid; inclusive businesses; developing countries; systematic literature review
Introduction

In recent years a large community of scholars has devoted attention to business modeling (Massa, Tucci, & Afuah, 2017), and this work is increasingly being applied to understand opportunities at the base of the pyramid (BoP), that is the largest, but poorest socio-economic segment (e.g. Dembek, York, & Singh, 2018). This literature describes strategies and approaches that benefit from the economic potential of these often underutilized markets, whilst at the same time providing social benefit for the local communities (Brehmer, Podoyntsyna, & Langerak, 2018; Dembek et al., 2018; Dreyer, Lüdeke-Freund, Hamann, & Faccer, 2017). For example, Simiyu, Masum, Chakma, and Singer (2010) analyze how a Kenyan public research institute overcame BoP-related challenges through adaptation of its business model towards product diversification, partnerships and improving its innovation management capabilities. Bittencourt Marconatto, Barin-Cruz, Pozzebon, and Poitras (2016) show that integration of various traditional and non-traditional partners is crucial to leveraging social networks and gaining legitimacy from local communities.

However, in practice, there is an unresolved tension between firms’ financial objectives and the social value they aim to realize in BoP communities. Noble social motivations may attract subsidy in the short term, but there are many examples of such noble beginnings ending in failure (Bocken, Fil, & Prabhu, 2016). The business modeling literature may not be directly applicable to the BoP context due to specific conditions and characteristics of the local communities, the (lack of) infrastructure, and particularities of their regulatory environment (Matos & Silvestre, 2013). Additionally, scholars and practitioners need to take account of the many stakeholders involved in business development in a BoP context, and account for the alignment of their objectives (Boons & Lüdeke-Freund, 2013; Brehmer et al., 2018; Matos & Silvestre, 2013). If general business modeling theory is applied at the BoP without accounting for the local situation, including such diverse local stakeholders, this may result in conflict and a worsening of local business and social outcomes (Bittencourt Marconatto et al., 2016; Dembek et al., 2018; Oskam, Bossink, & de Man, 2018). The implications of business modeling theory for multi-stakeholder value appropriation at the BoP has not been adequately discussed in the literature. This is important because sustainable impact in the BoP context can only be achieved if the local entrepreneurs, and the broader societies that they serve, appropriate created value so that these communities can experience well-grounded growth, self-determinism and a long-term drive away from poverty and dependence (Dembek et al., 2018; Goyal, Sergi, & Kapoor, 2014).

The purpose of this paper is to synthesize and extend theory on business modeling in the BoP context. Through a structured literature review, we identify and describe key insights that may guide the realization of both financial and social objectives. Two streams of literature provided relevant input. First, from papers drawing specifically on BoP-situated business modeling, we summarize, among other things, how the concept of native capabilities may help collaborations between local and foreign firms. Second, as BoP-centric business modeling inherently adopts a multi-stakeholder perspective, due to its explicit objective of creating a mix of economic, social or environmental value for a range of locally situated actors, we investigate the growing literature on collaborative business modeling. We find that this literature tends to focus on business model forms that jointly create value which is captured by a single organization (Bankvall et al., 2017; Lindgren et al., 2017), and we explore insights from the considerably smaller part of this literature that includes value creation and appropriation by multiple stakeholders.

Through this systematic synthesis of the literature we form a comprehensive framework that distills the broad business modeling literature into five themes: phases to follow, elements to design, impact to evaluate, cooperative capability and native capability. This framework forms the basis for theorizing on collaborative business modeling in the BoP context, which leads to a research agenda. The five themes also offer practical guidance for organizations operating at the BoP.
Methodology
We conducted a structured literature review (SLR) with the goal to identify the state of the art on collaborative business models relevant to the BoP context. A systematic literature review is considered a means of evaluating and interpreting existing research relevant to a particular a topic area or phenomenon of interest (Kitchenham & Charters, 2007) and a literature review represents the foundation to strengthen the research in a particular field of study (Webster & Watson, 2002). In conducting this SLR, we followed the guidelines provided by Kitchenham and Charters (2007) and Webster and Watson (2002). Figure 1 presents the process derived from these guidelines for performing our SLR and applied as a procedure in systematically searching and selecting relevant studies.

![Figure 1: Specific SLR methodology](image)

The starting point (Step 1) for an explorative pilot search was a set of five articles which were considered relevant by the authors for our research topic. Based on these articles an initial search was set out, resulting in 103 articles (Step 2). Preliminary analysis of this set indicated that the overlap between ‘collaborative business models’ and ‘base-of-the-pyramid’ was virtually non-existent. This exploration also revealed that collaborative business models can both indicate that the business model applies to a network, but aimed at value appropriation of a focal firm, or aimed at value capture for multiple actors or society at large. The sweet spot of our study would then be studies that focused on value creation and capture for multiple actors, not those that consider value appropriation for a single organization.

From the pilot search it was concluded that the query had to be broader and the selection of the articles would require more in-depth inspection. All the following steps were therefore executed by a team of three researchers. Each part was reviewed by at least one other researcher and issues were discussed in face-to-face meetings. The query conducted in February 2019 in Scopus (Step 3) searched for articles in which a variation of the term ‘collaborative’ appeared before any variation of the term ‘business model’ in the title, abstract or keyword. The query was not limited in time horizon, but language was restricted to English. After removing eleven duplicates (Step 4), this resulted in 503 studies. In the relevancy scan, 331 articles were eliminated based on abstract only (Step 5) and another 132 were eliminated after reading the full article (Step 6). The articles were analyzed based on the aspects in Table 1. Articles were included if they were labelled as ‘with’ and ‘for’; or ‘with’ or ‘for’ and BoP. To capture quality and recency, for journal articles a positive eigenfactor was required and for conference publications were required to be recent (≥ 2014). By means of snowballing based on backward references (Step 7) another eight articles were added. This resulted in a final set of 48 articles.

The final step (Step 8) in this process is related to synthesizing the contributions of the relevant articles. This step required several iterations of coding and recoding and team discussions. The first round was focused on identifying and coding the contributions into themes. The second round was to identify the specific contributions of each article to the identified themes. This was done by aligning and coding the specific contributions for each theme into dimensions. This process resulted in a framework that...

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captures the state of the art with respect to collaborative business modeling in context of the BoP, see Figure 2. It consists of five themes, containing 3 to 11 dimensions and a mapping of the 48 articles to these dimensions.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>With</td>
<td>The article is related to business models aiming to create value with multiple actors. This may nonetheless be focused on value capture by a focal firm.</td>
</tr>
<tr>
<td>For</td>
<td>The article is related to business models aimed at value capture for multiple actors or society at large. This does not require those actors to be involved in the value creation process.</td>
</tr>
<tr>
<td>BoP</td>
<td>The article contains contributions applied at the BoP</td>
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Table 1: Article assessment aspects

**Findings**

Different conceptualizations of business models exist which in general refer to how value is created, delivered and captured by an organization. In the context of BoP, a combination of economic, social and environmental value must be created and captured for a multitude of stakeholders. Therefore, several authors plea that a more collaborative approach of business modeling is required to support the development of sustainable business in a BOP context (e.g. Bittencourt Marconatto et al., 2016).

As indicated by studies in business network theory (Bankvall, Dubois, & Lind, 2017; Jabłoński, 2015); emerging technologies (Bullinger, Neuhäuttler, Nägele, & Woyke, 2017; Palo & Tähtinen, 2013); and sustainability (Costa & Da Cunha, 2015; Dembek et al., 2018; Karlsson, Hoveskog, Halila, & Mattsson, 2018; Wadin, Ahlgren, & Bengtsson, 2017), most collaborative business models focus on business model forms that jointly create value which is captured by a single organization. These authors hold that a change is needed towards value creation and capture at the collective level. To support this need, we reviewed literature on collaborative business modeling focusing on studies that include value creation and capture by multiple stakeholders.

We retrieved 48 articles on collaborative business models all stressing the importance of an organization’s relationships and networks for value creation and capture. The articles consist of 32 journal articles, the oldest from 2003. Most articles (9) appeared in the Journal of Cleaner Production. Of the total, sixteen articles were conference publications. In 2018, the highest amount of journal articles (11) and conference proceeding (1) were published, potentially indicating an increased interest in the topics.

Some articles focus on network embedded business models in general (Bankvall et al., 2017; Bullinger et al., 2017; Laya, Markendahl, & Lundberg, 2018). Bankvall et al. (2017) propose that there are two types of business models – firm centric and network embedded – that can both be analyzed at the firm, relationship and network level. An analytic framework is proposed to analyze network embedded business models. Laya et al. (2018) follow the network centric business model framework proposed by Palo and Tähtinen (2013). Bullinger et al. (2017) argue that business model development is a collaborative effort and propose some methods to support this.

The largest part of the retrieved papers has a sustainability background focusing on collective business modeling in developed countries (Brehmer et al., 2018; Brennan & Tennant, 2018; Evans et al., 2017; Geissdoerfer, Vladimirova, & Evans, 2018; Karlsson et al., 2018; Mlecnik, Straub, & Haavik, 2019; Oskam et al., 2018; Rohrbeck, Konertz, & Knab, 2013; Wadin et al., 2017). Brehmer et al. (2018) explore and describe the content, structure and governance based on the boundary-spanning perspective of Zott and Amit (2010) of environmental and social sustainable business models. Evans et
al. (2017) present an unified view on sustainable business models based on literature from business model innovation, sustainability innovation, networks theory, stakeholder theory and Product Service Systems. Oskam et al. (2018) study the interaction between network ties and business modeling along five lifecycle phases, ideations, conception, business start-up, early growth and continued growth.

Within the group of articles with a sustainability background some are situated in emerging economies (Dragusin, Welsh, Grosu, Iosif, & Zgura, 2015; Dreyer et al., 2017; Jamasb, Thakur, & Bag, 2018; Simiyu et al., 2010; Yunus, Moingeon, & Lehmann-Ortega, 2010) and three articles have a specific BOP focus (Bittencourt Marconatto et al., 2016; Dembek et al., 2018; Matos & Silvestre, 2013). These studies are mainly explorative and descriptive in nature, with few normative conclusions being derived. Yunus et al. (2010) describe how decades of experience in the Grameen bank, a pioneer in micro-finance and creating 30 businesses aimed at relieving poverty, provided for a number of attractive business models. Jamasb et al. (2018) propose a smart distribution network business model for developing countries. Some normative conclusions are provided by Dembek et al. (2018) who create a BoP business model matrix and explain how the nine business models use different activities, value approaches, value creation logics, value sources and capturing mechanisms to benefit different stakeholders. Also, Dreyer et al. (2017) provide some normative conclusions, they model the three way interactions between local context, collaborative consumption business models and stakeholder value impacts in emerging economies. Finally, Bittencourt Marconatto et al. (2016) show that businesses with a sustainable business model within a BoP context can deal with the government or its programs and regulations through mobilizing native capability. A main conclusion is that research has, so far, provided limited insight into how business models can be made that create and capture value in terms of reducing poverty.

Synthesis

The synthesis revealed five inter-related themes in the literature on collaborative businesses in BoP settings. The resulting framework is presented in Figure 2 and substantively discussed below.

Figure 2. Framework of interrelated themes and underlying dimensions; numbers between brackets represent the amount of articles providing support for this theme/dimension; arrows indicate investigated relationships.
**Phases to follow.** Scholars who study collaborative business models as a process usually consider the steps organizations take in business model innovation. In general, five steps can be distinguished: 1) initiation, 2) ideation, 3) invention, 4) evaluation; and 5) implementation. From this perspective, the new or adapted collaborative business model is seen as an outcome (Geissdoerfer et al., 2018). To be sustainably successful, the business modeling design process requires strong collaboration between organizations (Bullinger et al., 2017; Karlsson et al., 2018). This often proves difficult owing to interaction complexities, conflicts and co-dependencies (Solaimani, Bouwman, & Itälä, 2015). Therefore, scholars have proposed various tools that facilitate joint decision-making (Bullinger et al., 2017; Costa & da Cunha, 2015; Geissdoerfer, Bocken, & Hultink, 2016; Karlsson et al., 2018; Pereira, dos Santos Medina, Gonçalves, & da Silva, 2016; Rohrbeck et al., 2013). An alternative process perspective on collaborative business models is provided by Van der Borgh, Cloodt, and Romme (2012) and Oskam et al. (2018). They consider the collaborative business model as dynamic entity that evolves over time from entry to exit in respectively three and five micro-level processes. From their perspective, a collaborative business model can function as a device creating a viable network, whereas the business model itself is also transformed through interactions between organizations (see also Palo & Tähtinen, 2013).

**Elements to design.** A collaborative business model in a BoP context largely resembles a conventional business model, because it also is a “simplified representation of the value proposition, value creation and delivery, and value capture elements and the interactions between these elements” (Geissdoerfer et al., 2018, p. 402). Yet scholars also distinguish two specificities of the collaborative business model in BoP settings: the value network and the customer community. The customer community represents all actors that are involved in the usage of products and services (Romero & Molina, 2011). To successfully alleviate poverty, poor communities should be actively involved in the development of new products and services. As BoP consumers are very different from conventional consumers, this is necessary to get deeper insights into customers’ behavior and preferences (Dembek et al., 2018; Romero & Molina, 2011). The value network is seen as a set of roles and interactions in which multiple organizations engage to achieve economic, social and environmental good (Evans et al., 2017). So, the collaborative business model goes beyond merely identifying key partners of a single actor (e.g. Paiho, Abdurafikov, Hoang, & Kuusisto, 2015; Pereira et al., 2016) towards a network of organizations that creates and captures value by collectively identifying, developing and exploiting business opportunities (Palo & Tähtinen, 2013; Van der Borgh et al., 2012).

**Impact to evaluate.** A collaborative business model’s impact in a BoP setting is commonly evaluated through a sustainability lens. Sustainable business models “appear to be more suited than traditional profit and customer focused business models to address the specific challenges of the BoP context” (Dembek et al., 2018, p. 1603). This implies that a collaborative business model at the BoP should generate income for its owners and employees by selling a product or service, while protecting the natural environment and increasing social wealth (Brehmer et al., 2018). The work of Overbeek and Janssen (2015) and Rodríguez-Rodríguez, Alfaró-Saiz, and Verdecho (2015) suggests that a business model’s economic resilience, environmental friendliness and social well-being can be translated in to key performance indicators to assess its sustainability based on real recent performance. In this way, organizations can assess whether their joint business model is successful or not in addressing the complexity of extreme poverty in BoP settings (Dembek et al., 2018). Yet the extent to which a business model can create and capture economic, environmental and social value is not only dependent on the business model design (Bittencourt Marconatto et al., 2016; Brehmer et al., 2018; Ciulli & Kolk, 2019; Kortmann & Piller, 2016), but also on the involved organizations’ cooperative and native capabilities (Bittencourt Marconatto et al., 2016; De Bernardi & Tirabeni, 2018; Evans et al., 2017).

**Cooperative capability.** The importance of inter-organizational relationships for successful business models in the BoP context is widely recognized because as “the business model develops, it both shapes and is shaped by the network” (Palo & Tähtinen, 2013, p. 775). Ideally, organizations see themselves
as part of a network that creates economic, social and environmental value for every partner in it (De Bernardi & Tirabeni, 2018). Yet the complexities of social systems and impossibility of ideal societal decisions often make collaboration challenging (Dembek et al., 2018; Matos & Silvestre, 2013). Therefore, organizations need to develop cooperative capability, i.e. the ability of organizations to jointly manage, integrate and learn in the relationship to achieve mutual benefits (based on Kohtamäki, Rabetino, & Möller, 2018, p. 191). Scholars identified eleven capabilities that organizations need to successfully create and capture shared value from a collaborative business model (e.g. Chatterjee & Matzler, 2019; Lozano, Carpenter, & Satric, 2013; Mlecnik et al., 2019; Solaïmani et al., 2015; Wadin et al., 2017): (1) coordinating reciprocal value exchanges; (2) leading interaction processes by a focal actor; (3) influencing partners for the better; (4) celebrating short-term value boosts; (5) aligning individual and collaborative business models; (6) sharing sustainability interests, principles and values; (7) diversifying objectives, from single to multiple; (8) communicating competences, ideas and knowledge; (9) building trust through social engagement; (10) learning new competences; and (11) networking to expand relationships.

Native capability. Although any business model requires adaptation in a new context, the need to carefully (re)design the business model needs special attention in BoP settings. An inclusive business model that does not respond appropriately to its unique local challenges can destroy rather than create value to the poorest (Dreyer et al., 2017). Therefore, it is crucial that organizations take the time to adequately address the governmental, environmental and socio-economic issues associated with BoP contexts (Bittencourt Marconatto et al., 2016; Dreyer et al., 2017; Jamasb et al., 2018; Simiyu et al., 2010). To align the collaborative business model with the BoP contexts’ realities, organizations need to build native capability which is its ability to “develop fully contextualized solutions to real problems in ways that respect local culture and natural diversity” (Hart & London, 2005, p. 30). It consists of five competences: (1) working with non-traditional partners; (2) co-creation of local solutions; (3) development of local expertise; (4) coping with central government; and (5) building social, not legal, contracts (Bittencourt Marconatto et al., 2016; Hart & London, 2005). Through native capability, organizations can manage the two specific aspects of inclusive business models (Yunus et al., 2010). First, it supports organizations in managing the inherent and ongoing trade-off between economic, social and environmental goals (Bittencourt Marconatto et al., 2016; Matos & Silvestre, 2013). Second, it supports organizations in managing the complex and ambiguous stakeholder relationships in BoP settings (Matos & Silvestre, 2013).

Research agenda
The findings and synthesis reveal six areas for further research on collaborative business modeling in the BoP context. First, the five steps of collaborative business modeling are usually represented as a sequential process and the resulting business model is commonly seen as static. In reality, the steps are iterative and entangled, and the business model is subject to continual change (Palo & Tähtinen, 2011, 2013). Further exploration of business modeling’s dynamic aspects would help organizations to create and capture value in ever-changing and uncertain BoP settings.

Second, scholars are primarily focused on the conception of collaborative business models in the BoP context, while their growth only receives marginal attention. Yet “social businesses often fail to make a significant social impact because of the lack of scalability of their business” (Bocken et al., 2016, p. 298). To enable organizations to meet magnitude of the needs to they aim to fulfil, more research into scaling collaborative business models for BoP is clearly invaluable.

Third, collaborative business models are, in terms of Massa et al. (2017), almost always understood as an attribute of real organizations or formal conceptual descriptions. In contrast, scholars are rarely concerned with how they are interpreted by organizational members and their role in social interaction. Additional research into collaborative business models as cognitive/linguistic schemas is
needed to design business models that realign organizations’ search for profits with environmental and societal benefits.

Fourth, theories on inter-organizational relationships are seldomly used, even though relationships are a fundamental aspect of collaborative business models. A few studies use the boundary-spanning perspective (Zott & Amit, 2010), yet this focuses on a focal firms’ interdependent activities rather than the network as a whole (Oskam et al., 2018). The introduction of theory on whole networks (Provan, Fish, & Sydow, 2007) in the collaborative business model literature would deepen our understanding of the interaction between network partners in BoP settings.

Fifth, it is surprising how many scholars give unequivocal recommendations about how to design collaborative business models without assessing their impact. The notable exceptions show that they do not necessarily have positive effects (Ciulli & Kolk, 2019; Dembek et al., 2018) because there exist inherent trade-offs between environmental, social and economic value (Brennan & Tennant, 2018). Therefore, future studies should go beyond mere descriptions of collaborative business models in a BoP context towards explanations of how they create and capture sustainable values.

Sixth, the local context often remains overlooked in research on collaborative business models in BoP settings. However, the local context and organizations’ responses to this context determine how a business model will impact its stakeholders (Dreyer et al., 2017). To develop new business model solutions that truly alleviate poverty rather just increase quality of life for BoP consumers (Dembek et al., 2018), further research on collaborative business model should be carefully embedded in the local context.

**Conclusion**

Our paper’s objective is to synthesize theory on collaborative business modeling relevant to the BoP context. Through a structured literature review, we build on 48 articles to distill a comprehensive framework that captures the knowledge of collaborative business modeling at the BoP. We observed that BoP-centric business modeling inherently adopts a multi-stakeholder perspective due to its explicit objective of creating a mix of economic, social or environmental value for a range of locally situated actors. Therefore, collaborative business model designers should also include the value network and value community in the development process. Also, we learned how the concept of native capabilities and cooperative capabilities may help collaborations between local and foreign organizations. Yet our main conclusion is that research has, so far, provided limited insight into how business models can be made that create and capture value in terms of reducing poverty. Collaborative business model research specifically situated in BoP contexts is mainly focused on the creation of new initiatives, rather than their scaling towards widespread and long-lasting social benefit, and we may therefore conclude that there is currently a lack of understanding about appropriate actions, as well as a lack of suitable tools and methods for joint value creation and appropriation in scaling-up collaborative business models in BoP markets. Therefore, further work on this framework includes the derivation of requirements from the literature to design and validate an actionable approach for collaborative business modeling for BoP in practice. This includes also the identification of tools and support for the different themes.
References


The Role of alternative Business Models and their Narratives in Sustainable Transitions
The Example of Expedition:Raumstation in Wuppertal

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Extended abstract

Sustainable business models can make a major contribution to socio-technical sustainability transitions, both by bringing new technologies to the market and by promoting new consumption and production patterns. The concept of business models is particularly important if it does not only include organizations that are for-profit, but also those organizations that generate value and do not focus exclusively on profit, e.g. not-for-profit organizations with “Organizational Value Models” (Laasch 2018).

Such organizations often offer an alternative to those that are an integral part of the current socio-technical regime (Bidmon & Knab 2018), and yet are successful.

But what role do alternative business models play in socio-technical transitions? What are the logics behind this role? And what triggers this alternative logic in actors who follow a different dominant logic (market, state)?
Through the lens of the theory of institutional logics, we analyze the alternative rules within an alternative business model that pursues urban development, e.g. community business or social business. We explore how they legitimize themselves and what role they can play in (urban) sustainability transitions. Institutional logics are socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules, and have been mapped through the narratives of the Expedition: Raumstation (Expedition:SpaceStation).

The scientific research on narratives draws attention to the fact that language does not simply describe reality, but actively influences it, i.e. that narratives do not simply reproduce events, but also produce and create reality (cf. Gadinger et al. 2014: 4). And also in the business model literature it is discussed that business models are not only based on material aspects, but can also be understood as cognitive entities/phenomena (e.g. Tikkanen et al. 2005). They represent 'how business works' and can be illustrated in narratives (Magretta 2002). In this way, narratives about business models express the patterns of doing business, i.e. the rules by which a company or organisation functions, so narratives are a useful way of making these institutions visible.

The Expedition: Raumstation was a project in Wuppertal, Germany, in which the challenges and opportunities of community oriented development of urban space were tested and reflected in a transdisciplinary setting.

The initiators of the Raumstation, Utopiastadt, were faced with the challenge of actually wanting to implement sustainable and community oriented urban development, but somehow having to finance it according to market logic.

With the expedition, two open laboratory modules docked at the Utopiastadt Campus Raumstation. Two old ship containers could be rented for a period of up to eight weeks for one euro between June and October 2019 and offered space for experiments - both for the container users to test their own ideas and potential new business models and for the alternative business model Utopiastadt itself to test urban, public welfare-oriented, cooperative spatial development on campus. This experiment was examined through participatory observation and 18 interviews with the container users and 21 visitors to the space station with regard to the motivation and experience of participation, as well as the significance of the public welfare-oriented space and the legitimation of the reproductive structure of the Utopiastadt with the help of qualitative content analysis.
First findings show that the Utopiastadt and the Expedition:Raumstation plays five roles in sustainability transition and is thus accepted as an alternative actor in urban development: as (1) a place of retreat and rest, (2) a consumption-free place to stay, (3) a creative space, (4) a meeting place that connects people and (5) a central contact point for networking. It was shown that freedom of consumption in particular is a central component of the alternative logic, which thus opposes the logic of the market and also of the state, which is otherwise often dominant in urban space. For the users of the containers, who actually linked concrete entrepreneurial or political goals as the main motivation for participation, also approached such an alternative logic by understanding Utopiastadt and the Expedition:Raumstation as a space for experimentation and reflection after participation as a benefit of participation. It also shows that it is important to tell positive narratives with and about the alternative business models on the one hand, but on the other hand to ensure that there are certain points where it can be connected to the regime in order to be effective.

Keywords
Alternative Business Models, Narratives, urban Transformation

References


New And Old Businesses Models In the Transition To Circular Building Materials
A case study of the Dutch building sector

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Abstract (50 words)
The transition from a linear economy to a circular economy requires new ways of organizing business. We investigate the business models and organizational forms that are necessary to make the transition towards circular use of building materials, in a single-case study of the Dutch building sector.

Key words: Circular economy; transition; circular business models; collaboration; business model innovation
Introduction
The transition from a linear economy to a circular economy requires new ways of organizing business. We investigate the business models and organizational forms that are necessary to make this transition. We do this for the Dutch building sector as this sector is resource intensive and has a large potential. More than 50% of all resources are used in this sector and 40% of all waste stems from building and demolishing activities (Ministry of Infrastructure and Water Management & Ministry of Economic Affairs, 2016). This current waste contains a lot of materials that could potentially be re-used in new building projects. At the same time, due to policy regulations, there is an increasing demand of ‘re-used’ materials. However, supply and demand are not yet aligned. In this research, we explore which new organizations and new business models are necessary to improve the market for re-used or circular building materials.

Bidmon & Knab (2018) suggest that business models help to achieve systemic transitions (Bidmon & Knab, 2018). However, there is “a big research gap in terms of how to practically transform a linear business model into a circular one, with very few cases implementing circular economy into practice.” (Rosa, Sassanelli, & Terzi, 2019, p.13). To contribute to closing this research gap, we want to answer the following research question: Which business models and organizational forms are necessary to stimulate a transition to circularity in the building sector?

Theoretical background
To be able to answer this question, we need to have an understanding of circular business models. From the rapidly developing literature on circular business models we selected two concepts as theoretical framework for our study. We chose to complement Urbanti et al.’s (2017) taxonomy of upstream and downstream circularity with Bocken et al.’s (2016) concept of slowing/narrowing/closing loops resource cycles. Both frameworks are valuable as they take on a different perspective. Urbanti et al.'s (2017) taxonomy focuses more on the different actors (suppliers and end-user), whereas Bocken et al.’s (2016) framework is more linked to different ways of becoming more circular.

Urbiniati et al. (2017) developed a taxonomy of Circular Economy Business Models based on two dimensions: the value network and the customer value proposition. Based on these they came up with a 2-by-2 matrix in which they distinguish between linear, upstream circular, downstream circular and full circular. These four differ in the degree to which circularity is adopted (Lüdeke-freund, Carroux, Joyce, & Massa, 2018; Pieroni, Mcaloone, & Pigosso, 2019; Urbiniati, Chiaroni, & Chiesa, 2017).

Bocken et al. (2016) categorize business model strategies “according to the mechanisms by which resources flow through a system” (p.309). They define three key strategies for circular economy: slowing, closing and narrowing loops (Bocken, de Pauw, Bakker, & van der Grinten, 2016; Geissdoerfer, M., Vladimirova, D., & Evans, 2018; Lüdeke-Freund, Gold, & Bocken, 2019). Slowing resource loops aim at an extension or intensification of the utilization period of the product. This slows down the flow of resources through the system. It can be achieved by designing more durable goods, service loops such as repair of remanufacturing. Closing resource loops refers to closing the loop between post-use and production, by recycling products. This could result in circular flow of resources. Narrowing resource loops aim at using fewer resources per product, by using resources more efficiently (Bocken et al., 2016). Other authors have since build on or added to this typology, such as (Leising, Quist, & Bocken, 2018; Lüdeke-Freund et al., 2019; Pieroni et al., 2019; Rosa et al., 2019; Zucchella & Previtali, 2018).

Method
We designed a single-case study of the Dutch building sector and applied an iterative research process to identify the business models and organizational forms that are necessary in the transition to circularity in the building sector.

We collected and analyzed our data in three steps. First, we organized two informal focus groups, with 5 and 3 actors respectively. These actors are front-runners in the field of


circular use of building materials and are experts in the re-use of building materials. They have different organizational backgrounds: entrepreneurs, managers in building companies with positions such as sustainability manager, as well as government actors. Furthermore, their organizations have different roles along the building materials value chain: demolition company, garbage collection and recycling company, municipality, timber company, builder, digital platform for re-used building materials, engineer agency specialized in circular building processes, a hardware store that sells re-used materials. In this explorative research stage participants were asked to mention and discuss obstacles and enablers of the transition to circular use of building materials, and the role of their own and other organizations in the sector in this transition. The purpose of this step was to get an understanding of the sector and to be able to construct relevant topics. The two researchers that conducted the focus group sessions discussed their observations and notes. On the basis of that discussion, ideas and concepts about organizational forms and business models were identified. These were compared with the literature on business models for circularity.

The second step was to refine these ideas by means of semi-structured individual interviews with the eight focus group participants. During these interviews, we discussed which business models they used, and tested the concepts of other ‘new’ organizational forms (such as ‘material scouts’) that had emerged from our first analysis step. This data collection step enabled us to distillate the types of organizations that were mentioned as being necessary in the transition to circular building materials. Subsequently, we clustered these types into categories representing organizational forms. Then, we compared our findings to the literature on circular business models.

In the third step, we organized another focus group consisting of 5 actors previously interviewed, as well as 4 academics/researchers. In this meeting we validated and discussed the list and clusters. They generally agreed with the findings. If revenue models of the organizational forms were not yet mentioned, these were added in this step.

A current limitation of the paper is the limited number of participants. We have planned to conduct another round of interviews with around 15 other actors of the industry that work with circular building materials, to validate the business model concepts and organizational forms that have emerged from our research so far.

**Preliminary findings and discussion**

We first listed the organizational forms that were mentioned as necessary for a circular building materials ecosystem. Subsequently, we categorized them into the following three groups: Connectors, supporting organizations and incumbents.

**‘Connectors’** are the groups of organizations that bring supply and demand together. Three types of connectors have been identified to be necessary.

**Digital platforms for materials:** To bring supply and demand for re-used building materials together, a digital platform was initiated. This digital platform is a digital marketplace, on which companies or also private persons can offer ‘harvested’ materials, and where companies or private persons can find used building materials.

**Material brokers:** Currently most of the re-used materials are not traded on digital platforms, but instead off-line. A person called ‘material broker’ connects building projects with demolition projects. This person should be a good networker. From his network and tenders, he has a good overview of new building projects and when there is a demolition project, he will inform the new building project about the materials that will ‘come free’. In this way he connects buyers and sellers of re-used materials.

**Material scouts:** Material scouts are experts in building materials. They search for reusable materials, they evaluate the quality of materials, they estimate the value of materials, and they can add technical specifications to prepare a description. Material scouts can also be material brokers.

In sum, we define ‘connectors’ as organizations that help to connect supply of used/second life building materials, with users who demand ‘circular’ or used building materials.
The second category is what we call ‘supporting organizations’. Supporting organizations are the groups of organizations that enable the process of circularity by providing services that support the re-use of materials. The following types of supporting organizations were mentioned to be necessary:

**Companies which upgrade materials:** There is a big need for companies who upgrade materials. Most of the harvested materials from demolished buildings need to be treated before they can be used again. This is a step that the existing companies such as building companies, recycling companies and demolishing companies would rather outsource.

**Companies which provide guarantees for the materials:** New materials - so called virgin materials - always come with a guarantee. This makes them more attractive for buyers. It is a way of minimizing the risk in terms of financial compensation and reputation damage. Two organizational forms to reduce this risk were mentioned:

- **Testing & certification:** Depending on the material, different forms of tests could be applicable, and specific organizations may be dedicated to this activity. It would be good if these organizations could also certify the materials.
- **Finance:** Another way of helping to minimize the risks that occur due to a lack of guarantees, would be to offer the products as a service. Most building companies do not have the financial resources to do so. A financial institution could take over this task, and thereby also the financial risk.

Thus, we define ‘supporting organizations’ as organizations that provide services to other companies in the sector which allow them to re-use building materials, such as process to upgrade materials, certification and guarantees of materials or minimizing financial risk of using second life materials. These are extra services, which are not necessary in the linear economy.

The third category are the 'incumbents'. Which are the existing companies in the building sector that are, to varying degrees, already busy with circularity. Different types of incumbent organizations have been identified:

**Demolition companies:** Demolition companies have a crucial role in the transition towards circular building materials. They are the ones demolishing buildings and can either destroy materials or discharge them as waste. Or they can try to ‘harvest’ as many materials as possible for re-use. Most of the big Dutch demolition companies are already busy with re-using materials. Primarily, because of their financial value. Moreover, developing circular concepts is a strategic move. Due to policy regulations, they know that there will be an increased demand for re-used materials. Moreover, they now have to pay for each ton of waste. Re-using materials means reducing costs for waste, and possibly generating extra revenue from the sale of materials.

**Waste and recycling centers:** A point where old building materials are collected are waste and recycling centers. These are run by the municipalities or waste management companies contracted by municipalities, and households/consumers can discharge waste here. A lot of materials that could be re-used are deposited here. Someone needs to evaluate the materials. This person cannot just be a regular employee, but needs to be an expert on materials. The waste and recycling centers are thinking of collaboration with a material scout to solve this latter problem.

**Timber companies:** The interviewed timber company has waste disposal facilities outside their retail shop. Customers who buy new wood products, can bring their construction waste or old furniture and dispose them at the shop. Not only wood waste, but also other building waste materials. An expert from the store can evaluate the value of materials disposed, and if it is a positive value, customers can get discounts on their purchases. They collaborate with garbage collection companies.

**Contractors:** Contractors are the parties that organize the building process and all parties involved. They are the ones who could have a big leverage in the transition to the circular economy. They incorporate upstream and downstream activities and could contribute to closing loops. However, so far, they are not circular yet.
Architects/design bureaus: Another type of organization that could have a big impact on the transition are architects and design bureaus. They are the ones who could consult clients and convince them to choose circular designs. Also, in collaboration with the value network, they could design processes in a circular way, and work from the materials and turn it into aesthetic concepts, instead of from an aesthetic idea for which the right materials need to be sourced.

So, we define ‘incumbents’ as the existing organizations that try to integrate aspects of circularity (and sustainability) into their businesses. They do so by extending their business models by providing an additional service related to circularity. A next step would be to adjust their business models by trying to make their core business more circular.

In Table 1 we connect our findings to the literature. In column 1 we show the organizational forms, in column 2+3 we indicate the level of circularity they have on Urbanti et al.’s (2017) taxonomy. In column 4+5+6 we indicate the type of resource loop according to Bocken et al.’s (2016) framework. “c” means current situation. “d” means this would be the desired situation.

<table>
<thead>
<tr>
<th>Organizational forms</th>
<th>Urbanti’s taxonomy</th>
<th>Bocken’s resource loops</th>
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<td>digital platforms</td>
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Table 1: Organizational forms connected to the literature: c= current situation; d= desired situation to stimulate the transition to more circularity in the building sector

Analyzing our findings on the basis of Urbanti et al.’s (2017) taxonomy, we deduce the following: So far, adjustments to business models that stem from a linear economy often occur either upstream or downstream the value chain. New organizations necessary to connect supply with demand - electronic platform and material brokers. That would increase circularity and can lead to fully closed loops. More and closer collaboration along the supply chain is necessary to reach ‘full circularity’.

Currently, most of the incumbent companies have adopted ‘upstream circular’ activities; to stimulate transition they should add ‘downstream circular’ activities, meaning that they would be ‘fully circular’. To reach ‘full circularity’ they need to integrate the customer and end-user in the design process, and to collaborate closely along the whole value chain in value networks. This is in line with Bocken et al (2018)’s argument that in contrast to traditional business models, circular business models require a systemic point of view around projects; and that companies need to collaborate with stakeholder in the innovation process as collaborative partners (Bocken, Schuit, & Kraaijenhagen, 2018). This is also in line with Zucchella & Previtali (2018) who mention the importance of networking (Zucchella & Previtali, 2018).
Comparing our findings with Bocken’s framework, we found the following: Most organizational forms only ‘slow the loop’, because materials are being used longer. ‘Closing-the-loop’ is not yet happening. In interviews, it was mentioned that architects and contractors would be the ones who could do this, when they design the building process in a different way. Instead of designing a building, and then searching for materials that fit with their design, they should inventory which materials are available or ‘will become free’ for their building, and then design the building based on these materials. A different way of working would be necessary. Of course, architects will only design circular buildings when clients ask for it and are willing to pay for it.

Another important finding is that businesses often try to adjust their business models to fit with the circular economy - yet sustaining ‘linear’ business processes. The ‘circular product design’ described by Bocken et al. (2016) is not yet happening. They argue that companies should not only adopt circular business models, but also circular product design strategies.

Preliminary conclusion
Preliminary results show that new organizations are necessary for the market for re-used building materials to emerge. The new or ‘additional’ types of organizations that are necessary for the market to emerge, are digital platforms for materials, material brokers, material scouts and supporting organizations that upgrade materials or provide guarantees. These new organization often still use ‘old’ business models that are applied in the linear economy. Some of them do use new business models. In addition, we found existing organizations that use new business models to adapt their business to circularity. Existing companies can extend or adjust their business models by offering additional services. Another important finding is that businesses often try to adjust their business models to fit with the circular economy - yet sustaining ‘linear’ business processes. Fundamental changes, that would lead to systemic change and new business paradigms, could make circular materials more affordable and more attractive for users. These can only be achieved in collaborative efforts.
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Rethinking value creation
How peer-to-peer transactions create multiple values on individual and community level

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*Based on master thesis 2019

Abstract

The human population living on planet earth is suffering from a variety of ecological, social and economic messy problems. To develop a safe and sustainable space for humanity within ecological ceilings and social and economic thresholds, mankind needs to reconsider its economic and social systems. Since these systems are built up from a continuous stream of transactions, sustainability must be anchored into transactions. In this article, the literature on how peer-to-peer transactions create multiple values is analysed and to develop a multilevel framework on multiple value creation through transactions. Transactions enable individuals to increase the subjective utility of their stocks of individual capitals by exchanging assets. Externalities from transactions affect the stocks of community capitals, whereby the surplus or deficit is shared with the individual community members. Multiple value creation represents to design a transaction that simultaneously creates social, economic and ecological values on individual- and community level. The ultimate goal of multiple value creation is to create a balance between social, economic and environmental values on and between individual- and community level. The multilevel conceptual framework provides insight into how transactions contribute to building individual capitals and developing stronger and sustainable communities.
Keywords

Multiple value creation, Transaction, Sustainability.
AESTHETIC VALUE
Moving beyond the triple bottom line in SBM research and practice

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How multiple is multiple value creation?
In a world experiencing financial crises, resource scarcities, wealth inequalities, and climate change, sustainable business models (SBM’s) offer more effective ways of sustainable economic development. The heart of any business model is its value creation logic (Laasch, 2018). New business models aiming at contributions to sustainable development build on the principle of multiple value creation, taking the shape of various business model patterns (Lüdeke-Freund et al., 2018). 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 et al., 2016: 268). The problem encountered when studying sustainable fashion entrepreneurs is that the field of sustainable entrepreneurship is commonly approached from a blended value logic of people, planet and profit (Zahra & Wright, 2016). Even when other types of value are detected - i.e. sourcing value (Schenkel et al., 2015), information value and customer value (Koppius et al., 2014) - the discourse focuses on technical aspects such as supply chain management and cleaner production systems where cognitive knowledge creation is favored over intuitive and emotional development (Shrivastava, 2011: 1-2). Conversely, the aesthetic turn in organization studies has ‘highlighted shortcomings of causal theories of organizing’ (Strati, 1999: 13) and focuses on corporeality (Linsestad & Höpfl, 2000), sensory experience (Taylor & Hansen, 2005: 1212) and ‘the beautiful’ (Strati 1999). We found that the triple bottom line does not do justice to the rich and complex realities of sustainable fashion business (Poldner et al., 2015). Thus, we propose opening up our interpretation of multiple value creation beyond ‘only’ the social, economic and ecological towards embracing aesthetic value.
Learning with the Business Model Template

We analyzed 55 BMT’s created by learners of the MOOC Circular Fashion; Design, Science and Value. After launching it on January 22nd, 2020 the MOOC attracted over 2’900 learners from all over the world of which 166 were verified learners who paid for a certificate. The majority of the learners was based in the Netherlands, then the US, UK and India and most learners had a bachelor’s degree. The average age was 30 years old with 80% of the learners being female. The main assignment for the learners in the MOOC was to develop a project or business case around circular fashion through making use of the Business Model Template or BMT (Jonker & Faber, 2020). The students engaged in sustainable business model experimentation thereby exploring diverse possibilities of creating value and understanding what works in which particular situations in a real-life business context (Bocken et al., 2017; 2018). Out of the 166 verified learners, 55 had made a real start with their BMTs, which was the sample we studied. We first systematically went through all 55 BMT’s to see where learners got stuck in the process of filling out the BMT. We wrote down questions for the learners about things that were unclear to us and/or aroused our curiosity about their project. We documented how many building blocks they had filled out as well as the quality of explaining the different building blocks. In addition, we wrote down the name of their business / project and the elevator pitch in one sentence to be able to capture their core proposition. On February 26th, 2020 we organized a livestream webinar with verified learners of the MOOC to discuss their BMTs. During this 1,5-hour webinar we engaged in a live conversation with our learners, which enabled us to validate our initial findings and sharpen our understanding of how they had employed the BMT for capturing the multiplicity of values they had in mind for their circular fashion business.

Valuing a diversity of values

We found that the majority of projects evolved around developing a sustainable fashion brand, store (brick & mortar/ online) or consultancy services. Interestingly, all these business cases were meant as vehicles for raising awareness around circular fashion; they served as an educational campaign to make consumers/ companies more conscious about the problems in the fashion industry and how to make it more sustainable. Learners suggested that when they would for example recycle old clothes into new designs, the only way to make a business case was when the novel products would be attractive and comfortable to wear. Learners confirmed that they struggled with capturing aesthetic aspects of their business in the BMT. Even though the tenth building block of the BMT is defined as ‘values created’, the explanation of this building block is centered around financial value and not a multiplicity of values. Other building blocks such as the strategy or the business model archetype do
not invite capturing aesthetic value either. Preliminary findings suggest that even though the 55 BMTs could be categorized according to for example closing-the-loop-patterns (i.e. repair and recycling of clothing to retain its value), the aesthetic value – that inspired many learners to come up with their business idea in the first place - could not be properly captured by existing SBM patterns. Practical implications are that when we design business modelling tools, we might need to be sensitive to the multiplicity of values beyond the triple bottom logic of people, planet and profit. Suggestions for further research might be to inquire whether different businesses experience distinctive values; whether diverse values are 'valued' differently in a variety of businesses, and if and how this can be captured in SBMs.

**Keywords**
Aesthetics, multiple value creation, business models, sustainability

**References**


Product-Service Systems As Circular Business Models in Built Environment: An Expert Study From The Netherlands

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Extended abstract

This paper focuses on products as a service business models for realizing Circular Economy in the built environment, based on the thesis work by Foteini Koukopoulou (2020). The current industrial system is established on one fundamental characteristic: a linear model of resource consumption that follows a ‘take-make-dispose’ pattern. However, the emerging concept of Circular Economy (CE) is proposed to change the current production and consumption patterns that put a significant burden on our planet and its environmental capacity. It has been argued that the built environment is one of the key sectors that can benefit maximally from the development of CE. In order to support the transition towards a circular built environment, experts from academia, policy, and business advocate that innovative Business Models (BMs) that allow new ownership relationships are required. The main research question formulated to guide this research is “What is the current state of product-service systems as circular business models in the built environment and how can its application contribute to a circular built environment?”

For answering the research question a literature survey was conducted in order to examine the relevant concepts, followed by expert interviews with the aim to explore the barriers, enablers and opportunities of the application of the PSS CBM. Totally 10 experts were interviewed from policy, business and academia.
In the literature review CE in the built environment and its constituting elements are studied while significant focus is paid on the Dutch context, where CE practices are not yet accepted. The review showed that PSSs as CBMs slow resource loops through product life extension, and close resource loops through disassembly, recovery at the End of Life (EoL) and reuse. However, PSSs are neither inherently circular, nor sustainable unless intentionally designed in accordance to CE principles. Moreover, the application of PSSs as CBMs in the built environment was examined by looking into the associated barriers and enablers. For this, literature on the barriers and enablers concerning (i) CE thinking in the building sector and (ii) the implementation of PSSs as CBMs was studied. In total, 30 barriers and 33 enablers were identified related to the first aspect, whereas 25 barriers along with 13 enablers were recognized concerning the second aspect. Subsequently, six categories of barriers and enablers could be defined: (i) knowledge & culture, (ii) policy & legislation, (iii) finance & economic, (iv) supply chain, (v) design, and (vi) technology. The comparison of the barriers identified showed that the lack of knowledge and supporting regulations, the fragmented supply chain, along with the high investment cost, the difficulty of designing for EoL, and the design complexity were indicated in both literature related to CE in the built environment and PSSs as CBMs. As concerns the enablers the ones which were in common are related to the Internet of Things and its implementation for data collection.

From the expert interviews, it was highlighted that product-service systems as circular business models are mainly perceived valuable and interesting for suppliers of technological products or start-up companies. Additionally, the application of PSSs as CBMs was examined for the structure, skin, and services layers separately, and it was observed that experts consider it interesting for all three of them; however, as concerns the structure layer of the building it was considered valuable under conditions. In addition, the barriers and enablers regarding the application of PSSs as CBMs in each layer were investigated. The main barriers in all three layers were financial and economical. As concerns the enablers, the main ones for the structure and services layers were related to the design and engineering of the PCMs involved, whereas in the case of the skin layer experts considered as the main enablers solving the financial and legal issues. Overall, common barriers identified in all three layers are the lack of financing the business model due to its high risk because of the layers’ long lifespan, and the Dutch property law. By investigating the enablers it can be observed that the common ones were related to design for easy maintenance, assembly and disassembly. In addition, the materials and products utilized in the layers are important and the analysis showed that the ones which are easily reusable, raw material with high value in the long term, and
the ones which have technology embedded may be more suitable to be serviced. Moreover, for all three layers building management and information systems facilitate the application of the PSS as a CBM. Furthermore, defining the services which can be provided or combining a performance model was considered important. Finally, the examination of the opportunities showed that the most important one was the lack of the burden of ownership products, and for the company being responsible for the products, components, and materials.

It is concluded that the PSS CBM may contribute to a circular built environment by slowing resource loops through product life extension, and closing resource loops through disassembly, recovery at the end of life, and reuse. However, it must be noted that for it to become a mainstream business model in the building sector there are numerous barriers which still need to be overcome.

Keywords
Circular Economy, Built Environment, Business Model, product-as-a-service, expert study

References
Circular business models in the olive oil sector

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Extended abstract

The Mediterranean area is currently facing pressing environmental and socio-economic problems, in particular climate change, water scarcity, population growth, food security (dependence on food imports), and waste. The main challenge is to increase agricultural production by using fewer natural resources (CIHEAM, no date). As one of the key economic sectors in the Mediterranean region, olive oil production is largely impacting the landscape: with intensification of olive grows, need for irrigation, diminution of biodiversity due to intensive and super intensive varieties, and with the large amounts of waste water and by-products. With a total annual production of olive oil ranging from 2.2 to 3 million tonnes (IOC, 2018), the estimated amounts of waste are between 10 and 30 million cubic meters per season (Topi et al., 2014; Hansen, 2019). Olive waste often remains unused, and the disposal of olive mill wastewater into surface waters is even dangerous as it reduces the biodiversity and leads to contamination due to a high organic load and
toxic substances such as polyphenols (Paraskeva and Diamadopoulos, 2006). However, olive waste and by-products have a large potential to be valorised and upgraded into value added products, such as bioenergy, bio-fertilizers, food and feed ingredients or bio-molecules (Roselló Soto et al., 2015). For doing so, new and circular business models are required offering multiple benefits (Jonker, 2012) such as turning waste into value, environmental improvement, costs reduction, innovative projects, new jobs creation and investment opportunities (Paes et al., 2019). While the topic of olive waste and by-product valorisation has often been considered from a chemical or bio-technological perspective (Federici et al., 2009; Roselló-Soto et al., 2015), insights into socio-economic issues and particularly into business models are lacking. These are needed in order to understand how to bring technological innovations to the markets and to increase economic growth while reducing negative effects on the natural environment and society via principles of closing loops and cascading (Donner et al., 2020; Lewandowski, 2016).

The objective of our review is to investigate what kind of circular business models currently exist that create value from olive waste and by-products, in order to get first insights into a yet unexplored research domain. We aimed at initiatives that enhance the use of functionality of the olive tree beyond the traditional patterns for value creation (spreading on the land, composting). Our focus was on the drivers and value creation mechanisms, and specifically on the business model element resources (agricultural resources) and their conversion pathways towards value proposition, in terms of problem solutions and products offered.

We collected the data via an extensive online search and review of company websites, online articles and specialised newsletters, using the following key words: olive waste, olive by-products, olive biomass, waste valorisation, olive waste water, olive cake, olive pomace, olive kernel, olive leaves, olive cosmetic, olive pellets (in English, French, Spanish, Italian, German and Serbo-Croatian). In total, 50 cases of olive waste valorising business were found, but 11 had to be rejected because they focused on food instead of agricultural waste or information was insufficient. 39 cases were selected and analysed with the software tool NVivo. We synthesised the key data of each initiative: name and type of initiative, country and region, principal or side activity, context / triggers / objectives for implementing the initiative, type of resource valorised, valorisation pathway and outputs (products), source or website. We focused on the value creation (resources) and value proposition (outputs) elements of the business model canvas, and not the value capture (costs and revenues).
The main drivers for starting olive waste valorisation activities are the high amounts of unused and partly environmentally harmful residues. While all resources of the olive tree and olive oil production process have the potential to be valorised, value-adding activities are currently still limited to one or several resources. Beside the fruit being used for olive oil production, all other parts of the tree are valorised: branches, leaves, flowers, wood, and seed. Olive waste and by-products are currently mainly converted into low added value products (bioenergy or fertilisers), but there are also several initiatives, which successfully market high added value products (cosmetics, artisanal products).

The biomass can be used for the purpose of heating with pellets and for generation of electricity. Molecules are extracted either from the wastewater, from the leaves or from the flowers and further used for different industry purposes: as antioxidants for cosmetics, as tanning agents in the ecological leather processing, or as active ingredients for medical compounds. Wastewater is purified and then normally used in the field for irrigation. Such circular economy practice is not only tackling environmental issues in terms of reducing the waste but also in terms of lowering the needs for fresh water for irrigation, which is a crucial challenge in the Mediterranean area. Olive pomace and olive cake as well as waste water are transformed into fertilizers. Olive pomace is used as a resource for olive pomace oil, edible oil for human consumption. Another purpose of olive pomace is for the transformation of the olive soaps, traditionally known as Marseille soap. Further, olive pomace and olive cake are used for animal feed. Olive wood is used as a resource for making artisanal products, such as spoons, bowls, figurines, as well as artisanal knives with olive wood handle. Finally, olive flowers are used for extraction of molecules used for cosmetics.
Results show that all types of olive waste can be converted into value and some businesses have started to valorise and commercialise olive waste-based products in the Mediterranean area. However, seen the large amounts of olive waste and the high number of olive growers and oil producers in the Mediterranean region, the potential yet seems to be little exploited. The question is why. Agro-waste conversion technologies exist but do not yet always go hand in hand with business innovation. This may imply that a more radical and systemic change will be needed for an effective implementation of circular business models in the olive sector, with adequate policies and subsidies, laws and regulations, consumer awareness and willingness-to-pay for bio-based products. Further research is needed into the larger business ecosystems as well as into the marketing and value capturing components of the existing circular business models.

**Keywords**

Circular economy, business models, Mediterranean area, olive oil waste and by-products
References


Entrepreneurial Universities: Tackling social, environmental, and economical challenges

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Extended abstract

Most of the relevant studies in Academic Entrepreneurship attempt to explain the importance of the role of universities in economic growth. A reason for the above is that universities generate research-based intellectual property, which can be later transferred to the industry or transformed into a university spin-off company. However, the scientific literature on Academic Entrepreneurship is limited when it comes to explaining what is the role that universities have when academic entrepreneurial initiatives seek to tackle social and environmental challenges without looking for economic growth. With this research, we want to contribute to the scientific literature on Academic Entrepreneurship by explaining how social and environmental challenges can be met by universities through entrepreneurship. We do this by using the theoretical lenses of Social Identity, Deontic Justice, and Legitimacy in the context of university entrepreneurship to argue that universities can address environmental and social challenges, by promoting not only commercial entrepreneurship based on research results, but also non-commercial entrepreneurship from university students. Based on empirical qualitative data obtained from semi-structured interviews (39), focus groups (6), observation panels
(1), and surveys conducted among university staff, located in the countries of Bolivia, Colombia, and the Ecuador, we highlight future research opportunities, and discuss how stakeholders in the social entrepreneurial ecosystems as well as policy makers, can leverage our findings.

**Keywords**

Social Entrepreneurship, Academic Entrepreneurship, Sustainable development, environmental challenges, Entrepreneurship.

**References**


Enabling transition with business modelling of chemicals traceability along the supply chains

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Extended abstract

Accelerating Circular Economies requires efficient chemicals management. Establishing traceability of all chemicals used in supply chains allows industries responding appropriately to ensure material cycles are not contaminated with substances that are toxic or otherwise of concern. One company alone however cannot set up and control a governance framework for traceability. Rather, this solution implies a collective task of supply chain actors, cooperating both at the horizontal and at the vertical level – i.e. a transition of production patterns is needed, underpinned by supply chain management innovation. Our work in progress study based on empirical data from the textile and leather chains assesses how to incorporate traceability into business models. The study thus addresses Conference Theme 1 with Track 1 “Collective Business Models for Transition.”

In March 2020, the European Commission published the “Circular Economy Action Plan” (European Union 2020) as one building block of “The European Green Deal”, the Union’s latest strategic framework to organize the transition of societies in the direction of sustainable development. According to that plan, the Commission will launch an EU Strategy for Textiles aimed at “boosting the EU market for sustainable and circular textiles” (European Union 2020: 13).

One of the major challenges on this path is that producing textile products such as fashion and home appliances requires heavy chemical inputs; more than 7.000 chemical products are available for use in the textiles industry, many of which having hazardous and other problematic properties (Nimkar 2018). Accordingly, legislators worldwide are addressing chemicals in products such as textiles by stipulating substance bans and communication requirements. This creates a dynamic legal environment, e.g. every 6 months chemicals are added to the list of “substances of very high concern” (SVHC) according the EU REACH Regulation, thus triggering communication requirements for these SVHCs in products such as textiles.

At the same time, the supply chains for these products are a very complex managerial object since they are often stretched across various continents, and common short-term supplier agreements imply a high volatility for the actors involved (Carter & Rogers 2008). Hence, controlling the chemicals in processes and products, thereby ensuring compliance and avoiding reputational damage is a major challenge for industries. However, suppliers
often do not comply with their customers’ requirements regarding chemicals declarations as they (1) lack the data they should provide themselves, due to insufficient cooperation of the upstream actors in the chain, (2) are not aware of (all) relevant legal obligations, (3) lack resources to collect data, link it to individual products and provide it, and (4) hesitate to provide information because they perceive it confidential (Reihlen & Halliday 2017). In addition, because every customer formulates individual requirements the suppliers face request overload as another impediment, closely related with lack of resources.

The literature discusses the development of sector or even cross-sector wide structures to ensure the traceability of chemicals used in products and processes as promising solution for industries (Kumar et al. 2017; Schenten et al. 2019). This is now also reflected by another intention enshrined in the Circular Economy Action Plan, aimed at circularity in a toxic-free environment: to develop “harmonised systems to track and manage information on substances ... present along supply chains” (European Union 2020: 17).

Traceability, is understood as “the ability to trace the history, application or location of an object” in a supply chain (ISO 2015); and “the process by which enterprises track materials and products and the conditions in which they were produced through the supply chain” (OECD 2017), whereas we focus on the chemicals inputs into those materials. In other words chemical traceability allows each actor in the supply chain to evaluate which substances are present in the products and materials supplied downstream, so he can control quality (and e.g. compliance) of the products he is placing on the market.

In order to establish traceability structures, new business models will be needed that take into account more than the typical monetization logic. In other words, business models need to be transformed or “re-modelled”. We understand business modelling as the set of activities that cognitively manipulate a business model (i.e. a simplified model of (complex) business activities) to evaluate alternative ways in which it could be designed (Aversa et al. 2015). Previous studies show that changing these business models is a characteristic feature and even a necessity adapting to new environmental conditions. Thus, the guiding research question of this study is: How can existing business models in the textile industry and similar sectors be transformed incorporating elements of chemicals traceability.

Starting point for the analysis is a traceability framework developed in a transdisciplinary research project with actors from the (German) textile industries and their chemical suppliers (Kleihauer & Lennartz 2019). In a follow-up project we are currently investigating the preconditions of establishing traceability in the leather supply chains, i.e. an industry sector with structural similarities to the textile field. Qualitative, longitudinal data has been collected by participant observation and qualitative interviews over three years (2017 – 2020). Data is analysed using a bottom-up approach aggregating raw data into more abstract categories and dimensions (grounded theory methodology). Primary focus of the data analysis is:

- Gaining an understanding of how traceability applications can be integrated into existing business models. Traceability allows downstream
companies to know exactly which chemicals are present in their products (and processes). They will be thus in a position to develop a more strategic approach to chemicals management, proactively targeting future regulated substances, enhancing competitiveness. This perspective might be particularly relevant for brands and retailers at the end of the supply chains.

- Gaining an understanding of the role of inter-organizational cooperation for business modelling. Cooperation occurs both horizontally (e.g. brands level) as well as vertically along the supply chains. Sector representatives have to create a governance framework based on agreed common standards to communicate chemicals related data. This will increase efficiency of the communication, notably by lowering the burden for suppliers. Compared to the status quo where companies perceive most production data, including chemical inputs, as confidential, the traceability concept requires a mind shift. Yet, the system will yield the most benefits if all actors cooperate by accepting the same reporting rules.

First results of the study indicate a rising potential of traceability applications in business models. More precisely, traceability may be incorporated in two ways: First, existing business models may be enriched with traceability offerings that have not been in place in the past. Second, traceability services can be offered as a stand-alone business model, e.g. by entrepreneurial firms or innovative services by incumbents.

Keywords
Traceability, Chemicals Management, Supply Chain Management, Business Modelling, Circular Economy

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The Motivation for Sharing
Individual and Interpersonal Reasons of Using Sharing Economy Services

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Extended abstract

Today, sharing economy models are gaining ground in various sectors of the economy and are therefore increasingly affecting the economy, environment and society. Over the past decade and a half, researchers have analysed different aspects of the sharing economy: definitions, operational models of different businesses, their impact on the economy, social interactions and their environmental impact, with particular reference to different types of rebound effects. Our present study examines the social aspects of the sharing economy using theories of human motivation as a backdrop such as Maslow’s Hierarchy of need pyramid (Maslow, 1942, 1970), Herzberg two-factor theory (1959), Alderfer’s ERG theory (1969, 1972), the theory of reasoned action (Bandura, 1986), the theory of planned behavior (Ajzen, 1991) and the intrinsic and extrinsic motivation of individuals (Ryan and Deci, 2000). Using these approaches, we developed a survey to explore individual motivation factors behind the use of a regional drive share company.

This is necessitated by the fact that the current literature mainly takes a theoretical perspective and empirical surveys are still rather rare in the field. Motivation and barriers of users of alternative ways of consumption were explored by Gullstrand et al. (2015), who concluded that the economic reasons are the most important motivations behind these purchases while environmental aspects are less important among the users. Böcker and Meelen’s (2017) research shows different types of sharing and their motivation. They conclude that social and economic drivers strongly motivate users of ride-sharing platforms.
Our results are based on a questionnaire distributed among the users of a Hungarian ride-share company, Oszkár, and completed by more than 1600 users. The survey is structured around two major topics: environmental impacts and motivation factors of use. We identified four groups: those who predominantly act as passengers, private drivers, professional drivers (launching scheduled rides) and inactive users (who registered, but did not use the service during the past year).

Based on previous research (Soltész and Zilahy, 2017), we agree with Böcker and Meelen (2017) and assume that some users are using the system not only for economic reasons but for positive social externalities of ride-sharing (e.g., the possibility for good conversations in the car). Based on our recent research (Soltész and Zilahy, 2020), we found that there are users (e.g., students with a student discount) who do not use the system primarily because of cost-sharing or economic gain, but because they gain social benefits during use. They prefer to use Oszkár over previously used solutions (e.g. public transportation). We assume that there are different motivations during pre-registration and during use. To prove this, Ryan and Deci’s (2000) theory of extrinsic and intrinsic motivations was used. According to our hypothesis, we can distinguish the intrinsic and extrinsic motivation of users and their motivation factors that appear at a different time of participation. Intrinsic and extrinsic motivations explain the difference between social and personal reasons for choosing ride-sharing (e.g. instead of public transportation). Understanding Ryan and Deci’s (2000) theory among Oszkar users, extrinsic motivation is related to the economic benefit of users, while social patterns appear as intrinsic motivational factors. Thus, as in Böcker and Meelen’s (2017) study, we can identify both the economic and social components of individual motivation, but at different phases of the use of the system.

Apart from users, we also examined the motivation factors of inactive users regarding their joining and – later – not using the ride sharing system.

Our research can contribute to a better understanding of the sharing economy and can provide valuable input to both sharing economy businesses and policy makers regarding the behavioural patterns of sharing economy users. This, in turn, can help better exploit the environmental, social and economic benefits of the sharing economy and avoid its negative effects on society.

**References**


Towards paperless business models in the healthcare sector

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Abstract

Digital transformation contributes to more accessible information, time reduction and have better communication. Those could be a new process or modify the existing in the company, achieving to change the business models of companies by going manually to digital. The use of digitalization in business models digitally contributes also to sustainability. In order to join the digital world and be sustainable, organizations must start implementing digital transformation strategies within their administrative processes. Through a quantitative study within a nutrition clinic in Mexico City, this document aims to propose digital transformation strategies to make administrative processes efficient by reducing paper consumption within companies. The preliminary findings can be implemented by policymakers, business owners, entrepreneurs, and the interesting parts aiming towards sustainable business models, so it will be aligned to the sustainable development goals of the 2030 agenda.

Introduction

Digital transformation contributes to more accessible information, time reduction and have better communication (Didem Gürdür et al., 2019). Technological digitization has become our daily life, people live in a world where being connected to a mobile device has been of a vital importance, achieving to change the business models of companies by going manually to digital (Nasiri, 2019). The use of digitalisation in business models digitally contributes also to sustainability (Antikainen et al., 2018), this strategies will support the sustainability of business models by establishes the skills that the company needs to compete in the market (Casadesus-Masanell & Ricart, 2010). In order to join the digital world and be sustainable, organizations must start implementing digital transformation strategies within their administrative processes.
Some researches indicate that in the last three decades, companies have been trying to join the digital age with the help of digital transformation strategies (Bharadwaj et al., 2012). However, the literature in the field provides limited information on digital transformation strategies in fusion with sustainability and circular economy, which only indicate some arguments about how a company can join the digital transformation. According to Demartini, Evans, Tonelli (2019):

“It would be beneficial to analyse further case studies (may be from different countries), which can improve the evaluation of the conceptual framework and provide additional information about the impact and related benefits of digitalization. In addition, further research into the potential net impact of these emerging technologies for a low carbon economy can enable to minimize challenges and maximize opportunities, particularly in big data and predictive analytics where little research exists. A suggested possible framework could be split into private and social benefits, with various scenarios assuming no adoption of firms using new digital technology to improve sustainability” (p.270).

Therefore, this paper approach will evaluate the impact of digital transformation to the business model of a nutrition clinic in Mexico City. The aim of this paper is to propose digital transformation strategies for a new digital business model for companies that want to make their administrative processes more efficient and become a paperless company. Digital transformation strategies can be implemented by policymakers, business owners, entrepreneurs, and any type of organization that wants to improve the sustainability of its business model.

**Digital transformation and paperless forward sustainable business model**

There are different definitions about digital transformation. In a broader sense, digital transformation is doing things differently, creating new business models through the use of technology incorporating in all aspects of humanity (Ziyadin et al., 2020).

The digital transformation of organizations is rather challenging, since it completely changes the operations of employees (Tresp et al., 2016). It requires a change in the way of thinking. Yet, digitalization makes it possible to reduce paper consumption following six major steps: a) use of knowledge, b) change the culture, the way it works and thinks, c) create a new digital company or transform digitally, d) matrix of new digital technologies, e) struggle with resistance to change by staff, f) all processes must be digital (Savic, 2018).

The digital transformation can help individuals and organizations to maintain a more sustainable planet guided by sustainable development goals of the united nations (Seele & Lock, 2017), to achieve this, companies should implement as part of their digital transformation strategies the circular economy, which has the potential to reduce resources, facilitate circular systems and efficiency (Antikainen et al., 2018). A leading European business network in sustainability and corporate social responsibility (CSR Europe) believes that digital transformation and the circular economy can encourage organizations and the economy to be sustainable and change the way businesses are operated (CSR Europe, 2019).
Although there is still no further research where digital transformation has been implemented with Circular Economy, it is considered that by creating a new business model for digital transformation and paperless, companies will be able to do more with fewer resources.

A key player in digital transformation is paperless office and if managers do not start to change internally in companies, will not be able to achieved a new business model (Andrés et al., 2014), “If you simply scan some paper files but don’t change anything else, you will obtain only a fraction of the benefits” (Friedman, 2005), companies have more difficult challenges to meet, they must not only think about internal needs and satisfaction of their collaborators, but they must have to think abroad, what their final consumer wants from a company (Porter, 1982).

Paperless office is a concept on which it has been based that technological advancement makes it easy for paper use and consumption to be replaced by digital systems (Stockel & Karlsson, 2017). However, with email and software companies still use the same amount of paper or has even increased (Sellen & Harper, 2002), technology is supposed to lead companies to be paperless but it is still far from being achieved. To being a paperless office, they should implement document management and digital transformation strategies (Outram, 2016), at the same time it will be struggling with the need that people have to use paper and change it for technology (Stockel & Karlsson, 2017), nowadays computers are used in companies to process, share and save information, helping to improve internal business processes (Raymond, 2014), to make administrative processes more efficient and reduce some costs for companies (Shah et al., 2019) with technology will help reduce the environmental impact and health that exists for the consumption of paper (Andrés et al., 2014).

**Environmental impact: argument to reduce paper consumption and join the digital transformation**

Consumption and use of paper is one the biggest environmental impacts, as excessive consumption of resources, deforestation, pollution of air, land and water is generated (Sarma, 2014). In the pulp and paper capacities report by FAO, indicates that by the 1950s and 1960s the world's paper industry had grown 5.7% per decade. (FAO, 2017), The international problem that most affects the use of paper is deforestation, fauna and biodiversity of species worldwide are ending, causing climatic changes (FAO, 2009).

In 2019 the Insurance Export Credit Spanish Company (CESCE), conducted a study about the paper industry in Spain and worldwide, estimates that by 2030 the global increase in paper and cardboard will grow in emerging countries to 490 million tons representing an annual increase of 1.3% and in developing countries estimate that paper consumption decreased 0.8% annually.
On the other hand, they mention that world consumption of paper and cardboard is led by Asia with 46%, Europe with 22%, North America with 18% and Latin America with 7%.

FAO’s indicated that paper consumption is the main driver of the forest industry, half of the trees that are cut worldwide end up in paper products (FAO, 2018). However, much of the consumption of paper is unnecessary, the use of paper has increased more in the age of computers despite technological advances such as electronic communication, which should offer good alternatives. A study conducted by the EPN role in 2018 indicated that 45% of impressions office end up in the trash at the end of the day considering that it is not only a waste of trees also money, also notes that the average of Europeans and Americans use more paper in one day than people in poor countries have access every year(Environmental Paper Network, 2018).

**Methodology**

The framework of sustainable business model is based on five dimensions with a coupling relationship between economic, social and environmental, that combine value proposition, value creation, value network, financial model and customer interface. (Li et al., 2020) The research methods consisting in the analysis of different articles and research reports related to digital transformation, paperless, digital sustainability and circular economy, it is planned to conduct a study in a nutritional clinic in Mexico City, seems in the literature review it was observed two factors; a) the companies have conflicts to join their process in digital world and b) health sector is one of the sectors that causes the most environmental damage with paper consumption from their administrative processes. The nutritional clinic is ideal to carry out the study, because the nutrition clinic want to improve their administrative process joining to digital transformation and is a corporate social responsibility. The study consists in three steps:

a) Analysing administrative processes that use paper, guided by the following research questions that are part of the methodology; How to determine paper consumption?, What causes paper consumption?, What are the main barriers that prevent the decrease in paper consumption?, What digitization strategies are suitable to reduce the paper consumption?,

b) These research questions will be answered by surveys and semi-structured interviews that will be carried out to the staff of the clinic nutrition in the health sector, the interviews to the staff will be for an hour, with the goal to understand the staff’s necessity of digital technology, administrative process that use paper, and their interest of being part of a sustainability business, once the final results of the survey and the interviews are available,
c) It will be proposing new digital transformation strategies to make administrative processes efficient, moving to a digital and paperless business model forward sustainability for clinic nutrition.

**Preliminary findings**

In this paper we shed light on the impact of a digital transformation and paperless in a business model towards sustainability. Our paper has implications for policymakers, business owners, entrepreneurs, and the interesting parts aiming towards sustainable business models, making them contribute with the goals of the 2030 agenda.

**References**


Towards Circular Business Models in the Solar Power Sector

A framework and Guide to Support the Design and Execution of Business Experiments

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Extended abstract

Amongst the various renewable energy technologies, solar photovoltaics (PV) is anticipated to become one of the fastest growing sectors. Despite its significant potential in contributing to low-carbon power generation, the industry’s reliance on linear business model logics restricts its full sustainability potential. Specifically, as PV markets continue expanding, so will the volume of discarded PV products, entering the waste stream. End-of-life PV module waste is projected to increase to over 60-78 million metric tons cumulatively by 2050 (IRENA, 2016).

Although interest in the research and policy community towards more circular practices in the PV sector has gradually increased, implementation remains constrained by a bundle of policy, economic, social and market barriers. Specifically,
lack of profitability, absence of regulatory incentives, weakly developed collection and recycling infrastructures, as well as missing coordination between market stakeholders, inhibit material flow looping in the PV sector (Salim et al., 2019). Hence, there is a great potential to develop circular business models for the solar industry that allow for closing and slowing resource loops, through strategies of repair, reuse, remanufacturing and recycling (Bocken et al., 2016; Strupeit & Bocken, 2020). More recently, attention has also been directed towards the role that service-based business models could play in enabling circular material flows in the PV sector. The European H2020 project CIRCUSOL (“Circular Business Models for the Solar Power Industry”; see www.circusol.eu) aims to develop novel circular business models through a co-creative approach with end users and the entire value chain, and specifically validate the market viability of second-life PV products.

Yet, the process of business model innovation (BMI) is not straightforward. Business experimentation has been proposed as one approach to BMI (Chesbrough, 2010). Business experiments enable firms to learn about their customers, the associated “business ecosystem”, and test the viability of new business propositions. Novel circular business models also critically rely on redefining the roles of and interactions between value chain partners (Roome & Louche, 2016; Velter et al., 2020). As such, business experiments can help business developers gain internal and external support by providing empirical data on novel business model alternatives (Bocken et al., 2018). Besides, business model experiments can be low-cost and help to reduce risks in a firm’s business strategy (Ries, 2011). Yet, the process of experimentation needs to be more fully understood and insufficient guidance exists on how to operationalize experimentation methods like the Lean Startup approach (Ries, 2011) in practice (Felin et al., in press).

The design and use of business experiments for enhanced circularity is highly dependent on the specific character of an industry’s value chain and the nature of its products and services. Solar PV systems are durable capital goods with a designed economic lifespan of 20-30 years. Furthermore, key industry development such as product innovation and economies-of-scale in manufacturing, distribution and installation have led to major reductions in the price of new PV systems. However, these cost trends pose a challenge to the economic market viability for second-life PV products. The solar power sector can be characterized by a number of distinct features. Overall, the sector is dominated by firms with a strong culture in technology, engineering and craftsmanship. In the installation business, firms are often small- and medium-sized enterprises that lack experience in taking a structured
and strategic approach to business model innovation. Solar end-user groups (e.g. residential, commercial, utility-scale, e-mobility users) have varying degrees of professional knowledge and experience in PV, and consequently need to be targeted with customized value propositions. Solar manufacturers and installation firms also tend to have a restricted relationship with the end-users of PV after purchase, which constrains knowledge exchange as well as coordinated actions to enable more circular product flows. Finally, PV deployment has been heavily dependent on policy frameworks, which due to their volatility have repetitively led to unstable market conditions, a situation for which solar firms were often weakly prepared for. In this particular industry and market context, customized tools are needed to support solar firms in the process of business model innovation, specifically experimentation.

The objective of this paper is to develop a framework and step-by-step guide to support solar firms in systematically developing business experiments that aim to provide enhanced understanding of the viability of new business propositions, with a specific focus on developing and validating circular value propositions. The framework is developed, based on an in-depth review and analysis of the academic and practitioner’s literature on business experimentation. Literature has been identified by search in scholarly databases by using search terms such as business experimentation, co-creation, and Lean Startup (Ries, 2011), and then backward and forward snowballing to identify key papers. Following guidelines on business model innovation tool development (Bocken et al., 2019), the framework will be tested multiple times with potential users, evaluated and iteratively developed into its next version.

The proposed framework has seven stages to support the design and execution of (circular) business experiments in the solar power sector. Stage 1 focuses on the identification of the specific purpose of business experiments (e.g. testing traction of a circular proposition with customers). In Stage 2, practitioners are provided with guidance to identify the parameters to be measured and to define and select the informants (e.g. customers, value chain partners) that will participate in the experiment. Following, the framework offers guidance on the practical planning for the first learning cycle x (Stage 3) and its execution (Stage 4). Stage 5 addresses the evaluation of learning cycle x and the design of the subsequent learning cycle x+1. Stage 6 involves several repeated iterations of Stage 3-5 until the envisioned results of the entire business experiment have been achieved. In Stage 7, the framework offers guidance on how to utilize the findings of the business
experiment in designing a new (circular) business model. Along this 7-stage process, the framework provides a set of guiding questions and a related portfolio of variables that have been identified as particular relevant for the solar power sector. The step-by-step guide provides a transparent procedure and guidance with the intention that practitioners from solar firms will be able to independently use it.

This paper contributes with a framework and step-by-step guide for business experimentation for a group of products that has yet not received much attention in the relevant literature: a cleantech investment good with a long lifetime. Using the solar power sector as a case study, the framework provides PV practitioners with detailed guidance on designing a sequences of business experiments. Yet, the framework and step-by-step guide is of conceptual character. For its further development, feedback on the first version of the framework will be obtained from business partners of the CIRCUSOL consortium during project meetings. Subsequently, the framework and step-by-step guide is planned to be tested and validated with firms involved in the CIRCUSOL project. Specifically, a minimum of three cycles of business experiments, involving solar firms from the consortium, are planned to be carried out. An evaluation procedure to assess the use and usefulness of the framework will be set up. It is anticipated that these lessons learned within the solar power sector will be of value to also support the design of business experiments for enhanced circularity for a broader category of cleantech investment goods.

**Keywords**

Circular business model; business model innovation; circular economy; business experiments; business experimentation; solar PV.

**References**


An interaction driven approach to sustainable business model development
Insights from eight sustainability-oriented start-up experiments at music festivals

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Extended abstract

Sustainability-oriented start-ups are micro-enterprises that develop a business with the intention of creating economic, environmental and social value through an entrepreneurial process (Schaltegger & Wagner, 2011). This study focuses on start-ups in the category of what Schaltegger & Wagner (2011) call ‘ecopreneurship’; entrepreneurs that commercialize solutions for social or environmental problems through a good understanding of their market potential. Entrepreneurship in this perspective is the process of developing the necessary radical solutions for the market through commercially viable business models to address socio-environmental problems (Dean & McMullen, 2007; Schaltegger, Lüdeke-Freund & Hansen, 2016). In this paper, it is investigated how experimentation in a festival context can support ecopreneurial value creation through interaction with the public.

The concept of entrepreneurs presented above fits with the Schumpeterian understanding of entrepreneurship as the process of leading inventions to market (Schumpeter, 2017/1938). This process is generally understood as a process of opportunity recognition, development and exploitation (Eckhardt & Shane, 2003; Shane & Venkataraman, 2000). Entrepreneurial opportunities are defined here in the words of Eckardt & Shane (2003:p.336) as: ‘situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships’. Entrepreneurship in this regard is explicitly about innovation and not about optimization.

It is commonly understood that successful business models require insight into customer needs and problems (Teece, 2010). It has also been previously established that multi-stakeholder management is key in sustainable business model innovation (Geissdoerfer, Vladimirova & Evans, 2018). Opportunity development for ecopreneurial start-ups may thusly be expected to be
especially complicated due to the challenge of managing a wide value network of stakeholders, including society and environment (Evans et al., 2017; Velter et al., 2020). Additionally, sustainable business modelling may address a market failure (Dean & McMullen, 2007), but not necessarily an extant market demand. It follows that a process of market innovation is likely required for the commercialisation of sustainable solutions.

The success of sustainability-oriented business models often depends on a change of current behaviour, value perception or expectations from consumers (see for example the social sustainable business model archetypes defined by Bocken et al. (2014)). Entrepreneurial innovation researchers (Autio et al., 2014; Akrich, Callon & Latour, 2002) propose a co-evolutionary process, offering a market-creation perspective through actor-interactions. Effectuation literature has conceptualized how the engagement of stakeholders may inform an entrepreneurial development process and lead to new market creation through the joint development of aims (Sarasvathy, 2001; Sarasvathy & Dew, 2005; Read & Sarasvathy, 2005).

Effectuation presumes a co-creative logic, entailing a perspective that value created through the entrepreneurial process is a collaborative activity (Read & Sarasvathy, 2012; Vargo, Maglio & Akaka, 2008). The interaction driven co-creative approach that is proposed by the effectuation model seems to be particularly appropriate in processes that deal with highly uncertain conditions (Read & Sarasvathy, 2005). A characteristic also ascribed to the entrepreneurial development of sustainable solutions (York & Venkataraman, 2010; Dean & McMullen, 2007). It is therefore assumed that an effectual approach can support ecopreneurial start-ups in managing the complex and uncertain process of sustainable value proposition development (Keskin, 2015).

Literature on innovative business-modelling ascribes a pivotal role to early and frequent experimentation with customers when market development is required (Osterwalder et al., 2014; Ries, 2011; Blank, 2003). Bocken, Schuit & Kraaijenhagen (2018) found that experimentation in corporations could lead to both internal and external stakeholder engagement to a sustainability cause. Collaborative value creation has also been studied under the header of design research, positing that experimentation and engagement with users early on enables a better understanding of the customer, which can help redefine the problem and lead to superior solutions (Liedtka, 2018). In this study, the focus is on the potential of co-creative experimentation with others within a festival context as a tool for developing sustainable business models.

The focus on the festival context is motivated by the emerging practice of music festivals hosting entrepreneurial innovation experiments. Furthermore, festivals have been conceptualized as ‘existing sustainability experiments’ (Browne, Jack & Hitchings, 2019). Additionally, arts and music festivals have been proposed to function as forums for the introductions and circulation of new ideas, products and services because of their curator role (Potts & Cunningham, 2010; Schulte-Römer, 2013; Potts, 2012). As such, festivals may be regarded as relatively protected spaces in which innovations may develop under more favourable selection criteria than in the mainstream (Smith & Raven, 2012; Schot & Geels, 2008). As pointed out by Loorbach (2010), such protected spaces are important because they can nurture a process of joint learning and development across multiple stakeholder groups.
It is investigated here, how the interaction with the public through a festival experiment may inform entrepreneurial development processes. The study follows an exploratory multiple case study design (Yin, 1984). Eight sustainability oriented start-up entrepreneurs that conducted an innovation experiment at a music festival with the intention to develop their business model were followed. The eight experiments took place in three different multi-day festivals, in respectively Sweden, Denmark and the Netherlands. The maturity of the product or services that were tested ranged from an idea to a business model; all participants organized their test around a prototype.

The start-ups took part in a semi-structured interview before the test and were interviewed again after approximately 6 months. They were also followed on-site as they conducted their experiment. The interviews capture the entrepreneurs’ development phase, their motivation for conducting experiments, the set-up of the experiment, their evaluation of the experiment and their interpretation of the outcomes. The observations cover the context of the experiment, the interactions on-site, and the execution of the experiment. The data is analysed through an iterative process of coding, in-case analysis and cross case comparison (Eisenhardt, 1989).

It is aimed to understand how sustainability-oriented start-up entrepreneurs engage in interactions with the public and if and how such interactions may lead to implementable knowledge for sustainable business model development. A preliminary overview of the data suggests that entrepreneurs recognize the relevance of engaging in experiments with the public, but that there are multiple challenges regarding experiments in a public festival space. For example, participants reflected on the authenticity of the response of the public in a festival context. Another related consideration raised by participants was the applicability of the developed insights beyond the experiment in a different context.

In broad strokes, it has been outlined in this manuscript that music festivals are a potentially interesting context for dialogues between ecopreneurial start-ups and (a segment of) the public. In these cases, those dialogues were organized through experiments. While business model literature in general, and within the scope of sustainable development, has addressed the importance of stakeholder interaction and experimentation, this study contributes by investigating the sense and non-sense of an upcoming tool (festival experimentation) for ecopreneurial market development. It is found that in order to be successful as a business development tool, there are some limitations that should be clarified in order to design effective experiments. The contribution of this research is to the development of knowledge on entrepreneurial sustainable business model development strategies as well as to knowledge on the development of experimentation spaces, specifically relating to engaging the public.

**Keywords**

Experimentation, sustainable business model development, ecopreneurial innovation, start-ups, music festivals
References


An Extended Abstract Submitted to the NBM Conference 2020

The role of buyer-supplier relationship management as a means to enhance the implementation of circular business models

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Extended abstract

Background and problem statement
Circular economy (CE) is one of the most recent societal initiatives to enhance environmental sustainability (Witjes & Lozano, 2016). It addresses economic growth but at the same time it deals with the shortage of raw materials and energy by providing a new, growing business construct. CE relies amongst others on closed loop supply chains (CLSCs) that, through different types of recovery, transform returns into useful goods and services with high resource efficiency. Switching from a linear economic model to a circular model not only reduces the negative impact on the natural environment, it also brings significant cost savings (Lewandowski, 2016). Yet, despite its relevance and global popularity of CE, CLSCs are far from reaching their full potential (Schenkel, Krikke, Caniëls, & Lambrechts, 2019). This gap may be closed by managing success factors well. There are four known strategic success factors for value creation in CLSCs: product design, customer services, information management and circular business models or CBMs for short (Schenkel, Krikke, & Caniëls, 2016). Success factors are in the hands of different actors. One might even argue that successful CBMs require co-creation (Antikainen & Valkokari, 2016). From the literature it follows that due to the importance of co-creation, CBM implementation and the upstream role of brand owners in CLSCs, research is aiming for ways to break the so called vicious cycles hampering CLSC processes. For example, the (potential) trade-in rate and return rate after customers’ use increases when more products and parts are produced, sold and placed in the installed base. Often old products are traded-in by the brand owner because of market/quality demands (Schenkel et al., 2016). Yet brokers may be more active in buy back and thereby prevent high quality recovery by the brand owner, creating a vicious cycle. Breaking these vicious cycles is strongly dependent on circular business models. However implementing circular business model is no sinecure. This paper focuses on the role of buyer-supplier (BS) relationship management as
a supplier tactic to enable the implementation of circular business models of brand owners. CBMs involve at least two actors: a customer and a supplier. In this paper this equals a Transmission System Operator as customer and a brand owner in Large Power Transformers as supplier. Note that other supplier tactics and enablers are also included in the research as it impacts BS relations of stakeholders and ultimately circularity.

**Methodology**

An explanatory qualitative research was done by looking into the causal relationships of key variables (Saunders, M. N. K., Lewis, P., & Thornhill, 2012) that influence CLSCs implementation by brand owners in their role as supplier. The causal relationships between the tactics BS relationship management, incentive management (Schenkel et al., 2019), the functional integration of stakeholders (Guide, Harrison, & Wassenhove, 2003) and their enablers on the one hand and the implementation of the strategic success factor circular business models on the other hand were established by conducting a single case study combined with literature/desk research. A GAP analysis of the current situation of the single case (IST) and the desired situation (SOLL) based on literature review was done to generate a redesign of supplier tactics feasible for CLSCs. Three data sources are used: internal documents, interviews and participant observation. A content analysis was done on obtained secondary data from an internal research project, sustainability reports and presentations as well as internal documents obtained from interview respondents. Eight semi-structured interviews were held with key-stakeholders of the brand owner and three participative observations were done by taking part in the circularity project team. After the data collection and the validation of the data encoding was applied for further analysis.

**Results**

IST:
Incentive management enhances the implementation of CBMs of brand owners under the restriction that buyer incentives are present at/used by strategic customers and circular knowledge is available. It is also constrained yet less, by a lack of willingness to adopt circularity. Regarding personal incentives the lack of benefits is constraining key-players.

Different interests of internal stakeholders, a lack of ownership and a lack of an internal leader constrains the internal coordination and implementation process. Functional integration of stakeholder groups has no direct impact on BS relationship management.

SOLL:
Good incentive management has a positive effect on the BS relationship management, because it creates opportunities for strategic partnerships, it strengthens the current BS relationships and it creates a bigger network. Functional integration of stakeholder groups also enhances the implementation of CBMs of brand owners yet only if incentive management is present at all stakeholders. Joint decision making, information sharing, the availability of contracts (Arshinder, Kanda, & Deshmukh, 2008), the availability of internal and external channel leaders (Choi, Li, & Xu, 2013) and clearly defined tasks and responsibilities of all stakeholders related to companies’ circularity goals are a tactic too for the implementation of CBMs.
BS relationship management enhances the implementation of CBMs under restriction that strategic partnerships are in place and incentive management of all stakeholders is present. BS relationship management has an opposite impact on incentive management. If the brand owner is satisfied with the current quality outcomes of their strategic partnerships with customers (Schiele, Calvi, & Gibbert, 2012) BS relationship management will have a positive effect on incentive management. It also has positive impact on the functional integration of stakeholder groups. Customers are leading the channel since they have the power and they lead mostly based on trust. If more strategic partnerships are established then the coordination among stakeholders will change into more joint decision-making and information sharing.

Three important enabling factors, namely: the availability of buyer incentives, circular knowledge and strategic partnerships make supplier tactics feasible and enhance the CBM implementation. As a result of the GAP analysis between the SOLL and IST situation a redesign of feasible supplier tactics is given in figure 1.

![Figure 1: the redesign of feasible supplier tactics](image)

**Conclusions**

Circularity is a very complex topic that requires consideration by a buyer, a supplier and other stakeholders in the supply chain. This should be viewed holistically by gathering the visions of all stakeholders to finally achieve the reduction of resource scarcity. The tactics that enhance the strategic success factor ‘circular business models’ are incentive management, buyer-supplier relationship management and functional integration of stakeholder groups. All these tactics are relationship oriented, which confirms that circularity requires co-creation. Hence, without proper BS relationship management no circular business models will be implemented by brand owners. Brand owners prove only responsive to customer initiatives of strategic partners. And even when strategic partnerships are in place there are constraints for implementing CBMs. BS relationship
management can break through these constraints and counter vicious cycles by truly acting as strategic partners instead of having captive supplier relationships (Bensaou, 1999). This implies sharing clear visions on circularity, being transparent in possibilities, joint experimenting and developing circular knowledge are needed to enhance the implementation of CBMs. New insights obtained in the field study compared to the body of knowledge do not so much concern the factors themselves but rather their relative importance and the relations between them. Also, we detailed a model of the IST situation in a way not yet found in the literature. This model is given in figure 2.

Figure 2: Detailed model of the IST situation

Keywords

Circular business models, Buyer-supplier relationship, success factors, constraints, tactics.

References

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Circular Economy in Hospitality

a study on how small hospitality firms understand the social dimension of circularity

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Extended abstract

This paper aims at exploring to which extent the understanding of Circular Economy in the tourism and hospitality industry embraces the creation of value in the social dimension. This research is conceptually driven by notions of sociology of space, specifically by the theorisations of ‘space’ of Doreen Massey in ‘For Space’ (2005). For Massey, space is the dimension of multiplicity and the result of relations, connections, networks, and exchanges. Space is the dimension of the social, imbued with relations of power since power is in itself relational and – according to Massey (2005, 2009) - spaces have power-geometries. Circular Economy is largely understood as a paradigm aiming at prompting the shift from a linear model of produce – use – dispose to a circular model of produce – use – upcycle. This shift implies challenging the power-geometry of the linear model by exploring the power-geometry of the circular one. Therefore, Circular Economy can be investigated with regards to its capacity to take place in the socio-relational 'space' of the tourism and hospitality industry and for its capacity to challenge predefined power-geometries, establish new ones, and create new value not only in the
environmental but also in the social dimension by enriching it with a multiplicity of relations, connections, and networks. This is the theoretical framework guiding this investigation.

This explorative research is organized as a case study focusing on six small hospitality firms from Friesland (The Netherlands). The aim is exploring to which extent small hospitality firms of this rural province understand the implementation of Circular Economy as a way to create value in the social dimension of the hospitality industry by prompting multiple connections and relations in their facilities and setting novel power-geometries in their territory. The firms have been purposively selected for their previous commitment to the implementation of pro-sustainability practices and their interest in exploring Circular Economy interventions in their facilities. The rational for this sampling also considers that current initiatives aiming at integrating Circular Economy in hospitality largely focus on big cities, urban contexts, and big hotels. Conversely, this study aims at exploring the understanding of Circular Economy in non-urban areas embracing a wider spectrum of small hospitality firms forming a significant portion of hospitality industry (e.g. small hotels, camping sites, bed & breakfasts, and restaurants).

Circular economy is at the center of a growing debate and of legislative initiatives at European level, at national level within the Netherlands, and at local level within the Dutch Province of Friesland. At European level, the European Commission adopted in 2015 the “Circular Economy Action Plan” to help and stimulate Europe’s transition towards a circular economy (https://ec.europa.eu/environment/circular-economy). In the Netherlands, Circular economy is at the center of a growing national debate and legislative initiatives with echoes also in Northern Netherland and Friesland. At national level, the Dutch Social and Economic Council (SER) published in 2016 the report “Werken aan een circulaire economie: geen tijd te verliezen” to support the transition of The Netherlands towards the circular economy with the ambition to become a global leader in the implementation of circularity (https://www.ser.nl/nl/publicaties/werken-aan-een-circulaire-...
At local level, the association “Circulair Friesland” was founded in 2016 with the aim to make Friesland the most circular province by 2025 and a paradigmatic leading example for the next generation (https://circulairfriesland.fr/). Within this context, Circular Economy is broadly understood as a disruptive paradigm combining ‘old’ strategies like reducing, reusing, and recycling with ‘novel’ strategies such as renting rather than owning products. The combination of both strategies would mean re-thinking and re-designing the global economy, its patterns of production and consumption. Nevertheless, despite this growing interest on Circular Economy, industry and academia seem not taking part in the discussion, leaving the theorization of Circular Economy and its implications on a fast-growing industry like tourism and hospitality still largely under investigated and under theorised, especially with regards to its capacity to generate value in the social dimension.

Being originally conceived as a process of materials regeneration in a product-oriented industry, the Circular Economy seems still far away from reaching the multidimensional nature of the sustainability discourse. Within the actual academic and industry debate, in the Netherlands, the Circular Economy has been predominantly understood in terms of eco-efficiency and recycling, neglecting to incorporate a critical reflection on its social dimension. Therefore, in a service-oriented industry like tourism and hospitality, the investigation of Circular Economy appears still limited to the re-cycle and - in some cases - to the re-design of the product used in the service, rather than re-thinking the whole structure of the service. This is the knowledge gap addressed by this research in which we pay a specific attention to the understanding of the social dimension of the circular paradigm. In doing so, the study explores how owner-managers of small hospitality firms understand Circular Economy and the implementation of ‘circularity’ as the capacity of prompting multiple connections, relations, and networks while establishing new power geometries through their business operations in the space they operate in. The geographical setting is Friesland, a province proactively committed in...
implementing Circular Economy in compliance with the European, national, and local policies.

The investigation is organized as a case study based on six hospitality firms purposively chosen, as described above. Data are collected via semi-structured interviews and focus groups. The resulting qualitative data set is analysed combining techniques of narrative analysis like thematic narrative analysis and content analysis. As part of the research findings, we establish a first explorative understanding of how circularity is conceived by small hospitality firms and identify a set of cross-cutting main discourses on circularity in small hospitality firms together with shedding lights to the implications on the power-geometries and sociological space in which these small hospitality firms operate.

Keywords

Circular Economy, Space, Power-geometries, Small Hospitality Firms, Sustainability

References


Make Things. North Point Press


**Identifying sustainable business models for urban nature-based solutions**

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**Abstract**

The term urban nature-based solutions (NBS) shifts the urban nature narrative from it being a public cost towards the multiple values it creates for public and private actors. This multiplicity of benefits provided by urban NBS create opportunities for business models to facilitate their delivery and upscaling by (collaborations between) different actors. We analyse what type of business models exist or are emerging in the context of urban NBS by first carrying out a literature review and relating NBS found in different ecological domains to the sustainable business model literature. Second, we analyse empirical case studies of 54 urban NBS interventions to understand what business models are being employed by different stakeholders to (co-)deliver urban NBS. We identify eight business models for NBS, ranging from green densification to local stewardship models, while articulating different roles for public and private actors to fund NBS uptake through these models. We contribute to the sustainable business model literature and urban NBS literatures by being the first to formulate specific nature-based business models and by providing an understanding the role of public and private actors in realizing them collaboratively. This paper also illustrates the added value and potential impact of formulating ‘niche’ sustainable business models that arise in a specific sustainability context, with unique actor-benefit constellations.

**Keywords**

Sustainable business models, urban nature-based solutions, urban nature, green densification
References


Reconfiguring Organizational Boundaries in Sustainable Business Model Innovation: lessons from a Dutch intermediary
Extended abstract

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**Abstract** (250 words)
Despite excitement about sustainable business models for sustainable development, their development in practice is not yet widespread. One reason for this is that sustainable business model innovation requires the long-term reconfiguration of organizational boundaries in multi-stakeholder networks. While intermediaries have played a pivotal role in sustainability transitions, their potential in sustainable business model innovation is not yet well explored. This paper addresses this gap by studying the use of boundary objects to explore how intermediaries identify and deal with tensions for the different organizational boundary changes, posing the research question: *How do intermediaries use boundary objects in helping stakeholders to change their organizational boundaries when innovating towards sustainable business models?*

We use three case studies to describe the experiences of a Dutch intermediary that engaged external companies in collaborative innovation for circular plastics. We study the character (tools, texts, subjects), structure (ill structured, well structured), attribution (what issues do the objects refer to?) and distribution (who is guiding action based on the boundary object) of boundary objects used to negotiate changes in organizational boundaries. Data is gathered through working sessions, interviews with the different stakeholders, documentation, and on-site collaboration with the intermediary. This work aims to provide insights in: 1) the existence of boundary objects in SBMI, 2) the use of boundary objects in relation to their attribution 3) the information needs and work requirements on different organizational boundary levels. This helps to further our understanding on how boundary objects can explore and address (tensions for) multi-stakeholder organizational boundary changes.
Extended abstract (1011 words)

Introduction
The development of sustainable business models in practice is not yet widespread (e.g. Ritala, et al., 2018), despite excitement about sustainable business models for sustainable development (Lüdeke-Freund & Dembek, 2017). One reason for this is that sustainable business model innovation (SBMI) requires the long-term reconfiguration of organizational boundaries in multi-stakeholder networks (Diepenmaat et al., 2020; Velter et al., 2020). Organizational boundaries relate to boundaries of identity, competence, power and efficiency, and are being reinforced or changed based on interactions with other stakeholders (Abbott, 1995; Santos & Eisenhardt, 2005; Schreyögg & Sydow, 2010). While intermediaries played a pivotal role for system building in sustainability-oriented network innovations (Kivimaa et al., 2019; Planko et al., 2016), their potential role in SBMI is not yet well explored.

This paper addresses this gap by focusing on the use of boundary objects to explore how intermediaries identify and deal with tensions in the different organizational boundary changes, posing the research question:

How do intermediaries use boundary objects in helping stakeholders to change their organizational boundaries when innovating towards sustainable business models?

Conceptual background
Boundary Work in SBMI involves the exploration, negotiation and implementation of organizational boundary changes in relation to business model opportunities. However, changes in organizational boundaries are subject to tensions emerging from a diversity of phenomena and mechanisms illustrated in table 1.

Table 1: Typical reconfiguration and tensions of organizational boundary change for SBMI

<table>
<thead>
<tr>
<th>Boundary of Identity</th>
<th>Boundary reconfigurations</th>
<th>Identified tensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Based on multiple value creation</td>
<td>Value frames and perceived value creation and benefits, mindset, culture</td>
</tr>
<tr>
<td>Boundary of Competence</td>
<td>Development of novel competencies and external relations</td>
<td>Dynamic capabilities, financial trade-offs, lengthy experimentation, technology innovation</td>
</tr>
<tr>
<td>Boundary of Power</td>
<td>Re-alignment in network context, empowerment of particular actors</td>
<td>Compromising current power division, competitiveness</td>
</tr>
<tr>
<td>Boundary of Efficiency</td>
<td>Adoption of novel roles, processes and activities</td>
<td>Division of material interests, resource division and costs</td>
</tr>
</tbody>
</table>
Boundary reconfigurations among different stakeholders therefore necessitate a collaborative business model innovation process, wherein intermediaries help firms and their stakeholders to express their perspectives, interests and incongruities for organizational boundary changes. Intermediaries use boundary objects as working arrangements for interaction and collaboration across actors (Bowker & Star, 1999; Star, 2010). While often misinterpreted as objects of solely interpretive flexibility, boundary objects are to be characterized by three components (Star, 2010):

1. Interpretive flexibility, meaning the use and interpretation of the object differs per actor. Boundary objects therefore “reside between social worlds (or communities of practice) where it is ill structured” (p. 604).

2. The material or organizational structure of different types of boundary objects. Boundary objects are not, by definition, material objects. Their materiality derives from the actions users appoint to them. A concept used by different actors could be a boundary object, whereas a physical phenomenon, which is only used by one actor, is not.

3. Dynamic between ill-structured and more tailored uses of the objects (scale/granularity). Boundary objects facilitate local tailoring in ‘back stage work’, and thus are purposefully quite vague and useful, and other times specific and well-structured. The structure of the objects determine the knowledge produced; well-structured objects shape knowledge production according to the elements of the object (e.g. quality standards), whilst ill-structured objects invite users to contribute to the knowledge production in a more open way.

Boundary objects evolve back and forth from ill-structured to well-structured along SBMI (Velter et al., 2020). When standardized, the boundary object begins to transform into, for example, novel infrastructures, processes and configurations (Figure 1). The difference between a phenomenon being a boundary object and not a boundary object depends on its scope and scale of analysis; they comprise a certain functionality for guided action on a certain level (in SBMI, action on the organizational and inter-organizational level). To avoid ‘any’ object to be a boundary object, this study further deepens the character, structure, application and distribution of boundary objects. It thereby responds to the call from Star (2010) for the need for new methods for capturing boundary objects and the forming of new boundary objects.
Method
The research uses a case study method to describe the experiences of a Dutch intermediary that engaged external companies in collaborative business model innovation for circular plastics. We study the character (tools, texts, subjects), structure (ill structured, well structured), attribution (what boundary issues do the objects refer to?) and distribution (who is guiding action based on the boundary object) of boundary objects used to negotiate changes in different organizational boundaries in three cases. The case study method was chosen because this allows for the generation of rich data that integrates multiple realities and feeds into the development of a novel and empirically valid theory on boundary work for SBMI (Eisenhardt, 1989; Stake, 1995). The cases were sampled on those that engaged in collaborative SBMI with the focal intermediary.

Data was gathered through working sessions, interviews with the different stakeholders involved in the project, documentation, and on-site collaboration with the intermediary. Data will be analyzed using focused coding of the boundary objects and its elements as described above.

First findings and conclusions
The results will comprise an analysis of the boundary objects in terms of their character, structure, distribution and attribution in relation to the different organizational boundary changes. This work aims to provide insights in: 1) the existence of boundary objects in SBMI, 2) the use of boundary objects in relation to their attribution 3) the information needs and work requirements on different organizational boundary levels. This helps to further our understanding on how boundary objects can explore and address (tensions for) multi-stakeholder organizational boundary changes. It possibly leads to a typology of boundary objects for SBMI as called for by Star (2010). The linkage to the different organizational boundaries provides insights for different types of innovation known from the business model literature, e.g. effectuation starting at efficiency boundaries, value-based
network innovation starting with identity boundaries (Breuer & Lüdeke-Freund, 2017; Sarasvathy, 2001). Additionally, the study contributes to the development of boundary work methods and tools that assist in multi-stakeholder alignment for SBMI (Velter et al., 2020).

Keywords: Boundary Work, Sustainable Business Model Innovation, Collaborative Business Model Innovation, Organizational Boundaries

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Value Proposition Design of Circular Business Models: A Study of Consumer Acceptance

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Extended abstract

Introduction

E-waste, i.e. discarded electrical or electronic devices, is the world’s fastest growing source of waste (WEF and PACE, 2019). Although this waste type represents a valuable resource, only 20% of it is disposed appropriately and this approach of mainly ‘taking-making-disposing’ has consequences for society, negative impact on health and contributes to climate change (ibid.). Opportunely, there is an alternative to this predominately linear model: the circular economy (CE). For a CE, technological innovation, new business models and changes in consumer behaviour are needed (Hoffmann et al., 2020). Regarding technological innovation, it appears to be a contradictory situation since digitalization holds a key to a rapid transition towards a CE (Climate-KIC, 2018), making it both a cause and potential solution to the E-waste problem.

In terms of business models, circular business models (CBMs) hold potential for businesses to profitably support a CE, however widespread adoption has still not taken place (Linder and Willander, 2017). Guldmann and Huulgaard (2020) argue that the uptake of CBMs are delayed since the implementation of CE at the company level, including the challenges associated with a transition to CBMs, are under-researched, e.g. resulting in a lack of knowledge about circular business model innovation (CBMI).
Finally, Planing (2015) argues that consumer behaviour will play an important, if not the most important role in the shift towards a CE, and that empirical research on consumer behaviour in the acceptance process will be highly beneficial for designing new CBMs. The overall aim of this study is therefore to contribute with understanding about CBMI from a consumer oriented perspective, by focusing on value proposition design of different types of CBMs. The following research question will be addressed:

_What consumer pains and gains impact the acceptance of different CBM types in the context of consumer electronics?_

**Theory**

CBMs are types of sustainable business models (Guldmann et al., 2019) with the overarching goal of enabling companies to create value by using resources in multiple cycles and reducing waste and consumption (Lüdeke-Freund et al., 2019). It is an emerging concept (ibid.) and a uniform and complete definition has according to Guldmann et al. (2019) not yet been established, whereas they suggest the following: “In a circular business model, the business model elements are joined together to provide a compelling value proposition to customers, generate economic profit to the value network, and minimise environmental impacts by means of slowing, intensifying, dematerialising, closing and narrowing resource loops” (p. 43). Different types of CBMs exist, however with lack of consensus around archetypes and Pieroni et al. (2019) therefore suggest seven types (from the British standard BS8001:2017) to be used as a first step towards terminology convergence. Further, Charter and McLanaghan (2018) clustered them into the six types which will be explored in this paper: on demand; dematerialization; product life extension/reuse; recovery secondary raw materials/by-products; product as a service/product-service systems (PSS); sharing economy/platforms/collaborative consumption.

For a company to attain a CBM, it needs to go through the process of CBMI. Bocken et al. (2019) describe this process as “innovating the business model (i.e., updating the elements of an existing business model, or establishing a new organization and associated business model) to embed, implement and capitalize on circular economy practices” (p. 3), and further state that an iterative approach covering several phases (including ideation, implementation and evaluation) is required. In particular incumbent firms with large market shares could really make an impact...
if transforming their BMs, since even moderate sustainability upgrading can result in enormous environmental effects (Frishammar and Parida, 2018).

However, CBMs are not widespread in business practice yet, which according to Bocken et al. (2019) is due to the associated needs to change the fundamentals of how businesses operate and to go against dominant business logic. Limited consumer acceptance is another reason to the slow CBM adoption, and a core challenge is to find ways to reduce the overall resource consumption meanwhile meeting the needs of a growing consumption class (Hankammer et al., 2019). The value proposition is the core component of a CBM, and the offer must allow the users/consumers to do what is needed, reduce inconveniences and provide additional benefits (Lewandowski, 2016). The value proposition is the very reason for why consumers turn to one company over another (Osterwalder and Pigneur, 2010), making it vital for a company’s success and consequently its ability to support a CE. Lewandowski (2016) suggested future research to empirically investigate the value proposition design in the CE context, e.g. by studying consumers’ pains and gains related to the CE and how a fit with value proposition could be achieved. However, Vermunt et al. (2019) found that implementation barriers and reasons for consumers’ non-acceptance differed between CBM types, and therefore argue that there is a need for bespoke strategies for optimizing the value propositions.

Against this theoretical background the current paper suggests to empirically study consumer pains and gains in relation to the six mentioned CBM types, in order to get a consumer perspective on designing value propositions.

Methodology

Empirical data will be collected through an exploratory case study (Collis and Hussey, 2009) about consumer pains and gains related to each CBM type within the consumer electronics context. To uncover consumer needs, the data collection will be guided by design thinking which is a human-centered approach for creative problem-solving (Brown and Katz, 2011) that previously has been shown relevant for CBMI (Guldmann et al., 2019). Design thinking covers three innovation spaces: inspiration (the problem or opportunity that needs to be solved), ideation (generating, developing and testing ideas) and implementation (going from a project to the market) (Brown and Katz, 2011). The first research phase will be guided by ‘inspiration’, where semi-structured in-depth interviews and observations of consumers in their real life context will be used to openly explore
pains and gains. The respondents will be citizens from five diverse residential areas in south of Sweden. In the second phase, ‘ideation’ will take place through workshops with consumers and key-stakeholders to create CBM value proposition prototypes that address the associated pains and gains. The theoretically founded concepts will thereby be re-framed into consumer oriented applications. Finally, the prototypes will be evaluated in consumer focus groups to gain understanding of the relative level of pains, gains and acceptance that the underlying CBM types are associated with.

Content analysis (Collis and Hussey, 2009) will be used to codify data and identify recurrent pains and gains from the first phase. The findings from the second phase will be analysed through the use of data displays (Collis and Hussey, 2009), by creating diagrams visualizing the range as well as level of pains and gains of each CBM type.

Contribution

The overall aim of this study is to contribute with empirical findings regarding how companies can design CBM value propositions that are relevant to consumers. By identifying pains and gains connected to each CBM type, and the relative degree of pains and gains, the goal is to provide guidance on the value proposition design activity of the CBMI process. In particular, the paper will indicate what is important for achieving consumer acceptance for each CBM type, and how important it is to involve consumers in CBMI in order to succeed with the value proposition design.

Key words

Circular Business Models, Innovation, Value proposition, Consumer orientation
References


Healthcare for sustainable society
Using sustainable business models and societal interactions for healthcare transition

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Extended abstract

Sustainable business models are key for the transition toward a more sustainable society as they benefit multiple involved stakeholders (Schaltegger et al. 2016). This transition requires profound changes across multiple sectors of the economy. One sector vital for societal sustainability that requires such changes is healthcare. Over the last one hundred years, infectious diseases were the main health concern. In response, healthcare systems have focused on diagnosing and treating diseases by using drugs and specific medical instruments and using a passive approach by responding to disease control and treatment rather than active healing and prevention. Today, the epidemiological picture has changed. The primary medical challenges now are the conditions related to lifestyle and environmental degradation such as obesity, diabetes, cardiovascular conditions, cancer, and mental health issues (Egger, Binns & Rossner, 2011). Although the focus of our public health has transitioned from infectious diseases to lifestyle related medical conditions and degenerative diseases, the current healthcare systems have yet to adapt to match this epidemiological shift. Without profound changes current healthcare systems jeopardise both the social (health) and economic sustainability of societies with ever growing costs and low effectiveness in dealing with the increasing spread of serious health issues.

Sustainable business models can help implement the required changes in healthcare systems contributing to all three (social, environmental and economic) aspects of sustainable society. In this paper we analyse a single case of best practice example of how sustainable business models involving societal stakeholders can help transition towards healthcare required for building sustainable society. In doing so, the purpose of the paper is to analyse the links between sustainable business models and societal interactions. In particular, the paper
contributes to the session by shedding light on how societal interactions can be included within business model operations, and by showing the ways in which the integration of societal perspectives can be linked to enhanced business model success and societal benefits.

Methods

To address the study purpose mentioned above we used a single case study method (Yin, 2014). Primary and secondary data were used. Primary data included interviews with the company top executives. Secondary data included published case studies, books, press articles, and the company website. Two-stream analysis process was undertaken to address the two aspects of the study purpose. First, to examine how societal interactions can be included within business model operations, the different data sources were used to identify and analyse the specific operations in the company business model and map where societal interactions occurred. Second, to examine the ways in which the integration of societal perspectives can be linked to enhanced business model success and societal benefits, analysis based on Corley and Gioia (2004) method was conducted. First, event history with timeline was created from various primary and secondary sources, followed by the round of open coding. Then axial coding was used to relate first order codes in a process of deductive and inductive thinking (Strauss and Corbin, 1990).

La Fageda

While Spanish company La Fageda, is known to most its customers as a provider of good quality dairy products and jams, it is indeed an excellent healthcare institution that provides care, employment and inclusion for 100% of mentally ill and disabled people in the Catalan region of La Garrotxa where it is based. The company was created by Cristobal Colon, a psychiatrist focused on using work as therapy for dealing with mental health and disability. For therapeutical purposes the company is located in a picturesque forest settings rather than an industrial zone. While it looks after all people with mental disability in the region it is also third largest company by market share on the Catalan dairy market surpassed only by Danone and Nestle.

La Fageda uses a repurpose for society sustainable business model as illustrated in Table 1 below.

<table>
<thead>
<tr>
<th>Defining elements of re-purpose for</th>
<th>Value proposition</th>
<th>Value creation and delivery</th>
<th>Value capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritising delivery of social and environmental benefits (i.e. shareholder value) maximisation</td>
<td>Creating societal benefits (e.g. secure livelihoods), and environmental benefits (e.g. regenerating flora and fauna) through</td>
<td>A meaningful enterprise, which delivers nutrition, health, and education at a low environmental cost,</td>
<td></td>
</tr>
</tbody>
</table>
society business model (Bocken et al 2014)  
misation, through close integration between the firm and local communities and other stakeholders.  
activities, channels and partners. Integrating business with stakeholders through participatory business approaches, which may include non-traditional business partnerships (e.g. NGOs) and embracing employee ownership.  
while being embedded in community and employment rich. This may provide resilience by supporting stakeholders in times of growth and downturn.

La Fageda business model  
The company was created for therapeutic purpose and delivering healthcare and benefits for people with mental disability and illness is the key goal above profits and other economic outcomes (like market share). Strong integration with local community and the government.  
Activities designed with focus on including and caring for people with mental illness and disability. Animal, farming, and production activities designed with care for the environment. Partnership with government.  
Delivers healthcare through employment and work focused activities. Careful about low environmental costs.

This business model involves multiple stakeholder groups including entire community of people with mental illness or disability and their families, clients, and government. It provides value in different form for all these groups and impacts the broader society in the region by making it a fully inclusive for people with mental disability as well as focused on wellbeing and receptive to environmental sustainability and aware of the value of healthy natural environment.

Findings

The analysis of La Fageda business model revealed a number of specific ways in which societal interactions can be included within its operations. These findings are summarised in Table 2 below.

Table 2  
Inclusion of societal interactions in La Fageda operations

<table>
<thead>
<tr>
<th>Operation</th>
<th>Inclusion of Societal Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming, animal care, production and other key activities</td>
<td>Integration of people with mental disability and illness</td>
</tr>
<tr>
<td>Visits to the company</td>
<td>Interaction with people outside of the region and inclusion of people with mental disability and illness</td>
</tr>
<tr>
<td>Onsite housing and care</td>
<td>Inclusion of people with mental disabilities and illness</td>
</tr>
</tbody>
</table>

Further, the integration of societal perspectives has clearly enhanced its success in terms of both health and economic outcomes. The study identified two key
ways in which societal perspectives and success were linked. First, taking the perspective of community suffering from mental problems and integrating it in the organisational purpose provided direction that allowed for flexibility in the business model and delivered resilience. For example, the company ran a nursery but when the market for nursery products collapsed is swiftly used the skills and infrastructure to switch to fruit farming and jam production, guided by the therapeutical requirements of its key stakeholder. Local Embeddedness allowed for integrating perspectives of multiple groups and led to deep impact and strong market position. It is important to note that both purpose and local embeddedness resulted in a very specific approach to growth. The company followed strictly the strategy of remaining local and focused exclusively on market in Catalonia autonomy. It was not interested in growing its operations and markets to other regions in Spain or to other countries. This did not limit its economic growth in terms of turnover, as the company outperformed market on a regular basis.

Conclusions

The results of this study indicate that repurpose for society business model can help transition towards a more sustainable society by making the healthcare system more suitable for current societal needs. Lifestyle related medical conditions and degenerative diseases require a long-term, holistically integrated wellness-oriented approach that stretches to almost every area of a patient’s life, new forms of healthcare organisations are needed to address the new demand (Egger, Binns & Rossner 2011). Organisations like La Fageda using sustainable business models can form part of the new healthcare system. Second, integration of societal perspectives and involving multiple stakeholder groups enhances success of such organisations by providing required flexibility for the business model and enabling creation of deep systemic impact. The findings of this study provide examples of best practice in how sustainable business models and societal interactions can be used for healthcare and economic benefits. They point at area that should be further explored extending the research to other health conditions and country contexts.

Keywords

Repurpose for society, Sustainable business models, La Fageda, Healthcare, case study

References


How to Better Educate for More Sustainability: Entrepreneurship for Sustainability in Business Schools
An Explorative Multi-Perspective Case Study

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Abstract
With business schools as critical pillars in the entrepreneurial eco-system, this research was guided by the question of how education can be improved in business schools for students to acquire the necessary knowledge, skills, and attitudes to practice entrepreneurship for sustainability. This study emphasizes the integration of sustainability with competence-oriented pedagogical approaches that provide real-world, self-directed, and reflective learning experiences, to foster and support the move towards sustainability-oriented business models.

Keywords
Sustainable Entrepreneurship, Systems Thinking, Education, Business Schools, Entrepreneurial Ecosystem

Introduction
Mounting concerns over environmental and socio-economic problems have increased the call for businesses to move beyond the pursuit of mere profit maximization. However, despite efforts to lower the negative impact of business activities, the necessary transition has been very slow. What is needed today, more than ever, is a monumental shift from focusing on merely “reducing unsustainability” to actually “increasing sustainability” (Ehrenfeld, 2009; Hoffman & Jennings, 2018). This shift requires a critical reflection and re-learning on the mental models that underlie the prevailing “business as usual” approaches, to develop different business models for a more regenerative society.
Entrepreneurs can play a crucial role by acting as change agents and realizing opportunities for sustainable development (Belz, 2013; Hall et al., 2010; Ploum et al., 2018; Svanström et al., 2008). However, in order for sustainability-driven entrepreneurs to discover, evaluate and exploit opportunities that contribute to preserving the environment and social equity, access to information and specific cognitive capabilities are required (Fuduric, 2008; Shane & Venkataraman, 2000). Higher education institutions, like business schools, are seen as critical pillars in the entrepreneurial eco-system (Isenberg, 2010), and can aid in advancing opportunity-based entrepreneurship for sustainability, prepare these entrepreneurs to redesign business models for sustainability and support new venture creation (Gast et al., 2017). However, they have been criticized for putting too much emphasis on shareholder value and profit maximization while neglecting the broader social and environmental contexts surrounding business operations (Adomßent et al., 2014; Dyllick, 2015; Hoffman, 2018; Rasche et al., 2013). Furthermore, educational scholars have most often focused on education for sustainability and entrepreneurship separately, and little work has been done to cross the boundaries of these two educational disciplines (Fichter et al., 2016; Fichter & Tiemann, 2018; Lans et al., 2014; Mindt & Rieckmann, 2017; Ploum et al., 2018).

Currently, research on how to teach and provide education for sustainability-driven entrepreneurship (SE), and on the adjustments needed in current curriculums and learning environments is scarce (Gast et al., 2017; Halberstadt et al., 2019; Lans et al., 2014; Mindt and Rieckmann, 2017). Furthermore, research has thus far explored only single aspects such as key competencies for SE, which encompass knowledge, skills, and attitudes (Lans et al., 2014; Ploum et al., 2018) and applicable competence-based learning and teaching methods (Mindt & Rieckmann, 2017). What seems missing, however, is research on how these can be combined in education for SE. Thus, the purpose of this research is to provide insights from multiple perspectives on how education can be improved in business schools for students to acquire the necessary knowledge, skills, and attitudes to practice entrepreneurship for sustainability. More specifically, researching exploratory case studies for best practice approaches on how education for SE is done and how barriers can be overcome.

**Research Design**

Considering the shortage of research addressing the “how” in providing education for sustainability-driven entrepreneurship (SE) (Gast et al., 2017, Lans et al., 2014, Mindt & Rieckmann, 2017) and the objectives of this research, a two-step approach was followed. First, the existing literature was consulted to better define and delimit the concept of SE and to specify the key aspects of the study. Second, a total of
six cases were studied, situated in the USA and Europe, with the European cases including business schools from Spain, the Netherlands and the UK. Each case consisted of a “good practice” example, which can be understood as cases that were selected based on their degree of advancement in both sustainability and SE education. Within each case, two to three interview partners were selected per case to gather different perspectives, ranging from program heads to lecturers and professors in the entrepreneurship and sustainability disciplines. Further education experts were interviewed from the fields of corporate social responsibility and social entrepreneurship. Furthermore, active sustainability-driven entrepreneurs were interviewed to add an external perspective. In total, 22 in-depth semi-structured interviews were conducted and were transcribed and analyzed using coding and analysis with Atlas.ti.

Leveraging Entrepreneurship for Sustainability Education

The following structure will be used to present and discuss our main findings from the literature review and interviews. Firstly, we discuss the competences of importance for sustainability-driven entrepreneurship (SE), which encompass the knowledge, skills, and attitudes (KSA) to be learned. Secondly, we emphasize the appropriate competence-based learning methods combined with curriculum possibilities, as used by the interview partners, to determine the “how” in teaching SE. Thirdly, building on the insights from the interviews, we discuss how barriers can be overcome to enable SE education in business schools.

What should be learned – To consider what should be learned, this research first inquired into the KSA deemed essential for SE. Then scrutinized the importance of two competences, in particular, namely systems thinking and foresighted thinking, which represents two of the six key competencies for SE, in a framework developed by Lans et al., (2014) and later validated and adapted by Ploum et al., (2018). Furthermore, this research aimed to establish the focus and development of systems thinking and foresighted thinking competence in practice, as research has shown both competences to be either absent or dealt with only marginally in study programs (Arnold & Wade, 2015; Halberstadt et al., 2019; Lambrechts et al., 2013).

The interview partners highly emphasized KSA that empowers the ability to understand and make sense of complexity. Also, great importance is given to integrating, informing, and contemplating alternative economic frameworks and business models inclusive of social and ecological contexts. Furthermore, since sustainability issues cannot be solved unilaterally by single parties and due to it affecting a net of different stakeholders, developing the abilities to identify, understand and collaborate with all kinds of stakeholders is seen as critical to
finding solutions collectively. The ability to understand and assess the impact and long-term consequences one’s actions will have on various stakeholder groups and to challenge one’s values and beliefs is also key. When compared to the literature, a connection can be formed between the KSA mentioned and the competences above, where systems thinking is seen as critical for understanding and dealing with the complexity of the problems related to sustainability and the net of interdependencies among different stakeholders (Biberhofer et al., 2019; Dentoni et al., 2012; Meadows, 2008; Senge, 1990; Thomas, 2018). Furthermore, foresighted thinking enables an understanding of the impact of decisions on environmental, social, and economic issues over different time-, geographic- and generational scales (Biberhofer et al., 2019; Wiek et al., 2011). However, the KSA mentioned also pointed to the other competences in Ploum et al.’s (2018) framework and merits their additional attention.

Overall, interview partners emphasized the importance of systems thinking and foresighted thinking competence for SE. However, they stressed that these competences are essential for all kinds of business and management and not specific to SE. The majority of the educators actively work on developing these competences over several courses and activities. However, slight differences were detected, and their development appeared to be more explicit in the USA cases than the European cases.

Nevertheless, the findings emphasized that systems thinking, and foresighted thinking competence can be seen as essential for empowering the ability to understand and cope with the complexity of sustainability challenges and would warrant their explicit attention to improve education for SE.

**How to educate for SE** – Teaching and learning methods provide the setting for learning and development of the aforementioned KSA and competencies. Mindt & Rieckmann (2017), in their work, established teaching and learning methods that are relevant for both sustainable development and entrepreneurship education, of which experiential, collaborative, and problem-based approaches were emphasized. However, although their study provides a great overview of how sustainability and entrepreneurship are taught and learned, it does not further elaborate on the forms these methods could take.

The findings support the relevance and use of the aforementioned methods, and their effectiveness is greatly enhanced when used in combination. Furthermore, in congruence with the literature, these methods are also seen as suitable for developing systems thinking and foresighted thinking competence, among the others (Biberhofer et al., 2019; Dentoni et al., 2012; Halberstadt et al., 2019; Molderez & Fonseca, 2018). The most used forms of experiential methods included in-class experiences with simulations and active sustainable
entrepreneurs as guest speakers. Simulations can greatly aid in developing systems- and foresighted thinking competence by offering a learning environment with immediate feedback (Rooney-Varga et al., 2019). Out-of-class experiential methods took the form of action and service-learning projects with a focus on allowing students to work on real-world sustainability-related challenges that organizations and communities face. As the entrepreneurs interviewed expressed, experiencing sustainability problems first-hand is often what inspires new ideas and action, and when combined with knowledge on alternative economic and business frameworks have the potential to spark new business models for sustainability. However, as in the literature participants stressed that the effectiveness of these methods heavily depends on their didactical format (Halberstadt et al., 2019) and that longer-term projects, over several weeks rather than days are considered more effective.

The choice in methods is affected by the way SE is introduced into the curriculum, and the findings present two perspectives. The first perspective considers to what extent to integrate sustainability, and the second perspective considers to what extent to explore the subject matter.

Firstly, the literature provided three possibilities and include full integration of sustainability into entrepreneurship courses, integration across various courses, and a stand-alone course or program dedicated to SE. The findings emphasize not only full integration of sustainability into entrepreneurship courses, as argued by Nadim & Singh (2011) but for full integration across all courses in business degree programs. Full integration of sustainability provides a holistic multidisciplinary view on how it connects with the various business disciplines. Here, both the literature and the participants emphasized “integration” as opposed to “insertion”, which, would be seen as a superficial tacked-on approach (Figueiró & Raufflet, 2015). Furthermore, participants and the literature argued that stand-alone courses can create a disconnect, potentially resulting in the topic being seen as a separate issue (Stubbs & Cocklin, 2007), and that it may not help students build theoretical linkages with different disciplines and management functions (Thomas, 2018; Raufflet, 2013). Therefore, a stand-alone course is best used only to enhance existing courses with a more in-depth exploration of the subject matter.

Secondly, considering to what extent to explore the subject matter. The findings showed curriculum possibilities based on the layer of students’ interest in SE. To demonstrate this, Table 1 provides an overview connecting the layers of interest to curriculum possibilities and methods. In Table 1, layer zero was placed to emphasize the importance of including systems- and foresighted thinking at a basis level for all students. Furthermore, the example in Table 1 further assumes the full integration of sustainability across all courses.
<table>
<thead>
<tr>
<th>Student Interest</th>
<th>Explanation</th>
<th>Curriculum</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layer 0</td>
<td>Explicitly develop systems- and foresighted thinking competence of all students</td>
<td>Infuse across various courses, or offer a compulsory focused course on Systems Thinking and Dynamics</td>
<td>Simulations Systems &amp; Stakeholder mapping Future scenario planning Trend analysis Counterfactual exercises</td>
</tr>
<tr>
<td>Layer 1</td>
<td>For students exploring the topic of sustainable entrepreneurship</td>
<td>Offer an introductory course</td>
<td>Add guest lectures from active sustainable entrepreneurs</td>
</tr>
<tr>
<td>Layer 2</td>
<td>For students who are more interested</td>
<td>Offer an additional focused course for deeper exploration of the subject matter</td>
<td>Include action and service-learning projects (focused on sustainability challenges)</td>
</tr>
<tr>
<td>Layer 3</td>
<td>For students with a deep interest</td>
<td>Offer a series of courses or dedicated program</td>
<td>Include all the methods above. With or without a sustainability focused incubator or accelerator</td>
</tr>
</tbody>
</table>

Thus, what is emphasized is the full integration of sustainability across all courses and programs, in combination with carefully designed teaching and learning methods that take students into the “messiness” of the world. Where they can experience for themselves how sustainability issues affect different stakeholders in different contexts and work collaboratively with these stakeholders and their peers toward solutions. A combination of the in- and out-of-class experiential methods addressed in this study, with explicit integration of sustainability, provides a means by which business schools can support and advance opportunity-based entrepreneurship and business models for sustainability, and also prepare these entrepreneurs for the added challenges posed on them, and provide access to networks of support for new venture creation. To further deepen these learning experiences, both participants and the literature assert that students should be provided with the space to critically reflect, discuss, and articulate their experiences, beliefs and values (Biberhofer et al., 2019).

Although these findings provide insights on specific forms of experiential methods, a valuable line for further inquiry would be on how best to design and implement these methods. Furthermore, reporting on both the successful and less successful attempts on implementing these methods and the integration of sustainability.
Enabling the provision of education for SE – Business model innovation starts with thinking differently, and business schools would be a potential place to do so. However, they are complex systems (Sharp, 2002) and to meet new demands in teaching and learning would require structural changes in their organization (Cincera et al., 2018). These changes are often met with resistance, and research has shown several possible barriers to the integration of sustainability into higher education, forming three clusters that relate to a lack of awareness, the structure of institutions, and a lack of resources (Verhulst & Lambrechts, 2015). Although current literature provides recommendations for overcoming barriers, this research set out to gain further insights into both the barriers specific to providing education for SE, and educator’s direct experiences in overcoming these barriers.

The findings revealed that definitional and terminology challenges pose a specific barrier, which has implications for what is taught and understood about SE. Several terms have emerged in practice, and despite distinctions made in research, the terms social, environmental or sustainable entrepreneurship are often used interchangeably. Researchers are beginning to argue for a higher convergence of the terminology (Gast et al., 2017; Muñoz & Cohen, 2018) and the educators interviewed are moving towards changing the rubric, focusing on organizations of the future and their role in making a positive impact and overall value creation for social and environmental justice.

The interview partners raised further key strategies for overcoming barriers. Firstly, calling for educators themselves to act entrepreneurially, and for top-down support to encourage and support their initiatives. Furthermore, that collaboration is essential, both inside higher education institutions with inter-disciplinary work, and outside the institution with organizations and communities. Offering not only opportunities for action and service-learning projects (Mindt & Rieckmann, 2017; Biberhofer et al., 2019), but also support for SE’s through cultivating a healthy ecosystem (Fichter & Tiemann, 2018), and benefits for universities’ third and fourth mission (Trencher et al., 2014). Lastly, to push for sustainability to become part of the DNA of the institution and permeate through every study program. As Painter-Morland et al. (2016) also stated, it requires “systemic institutional integration /.../ the sustainability agenda must move beyond individuals towards broad institutional buy-in and integration, which yields its own change dynamic” (p. 743). Although these recommendations align with the literature, research has also shown that change in this area has been slow (Fichter et al., 2016; Fichter & Tiemann, 2018). Nonetheless, giving priority to implementing these strategies will significantly aid in enabling education for SE.
Conclusion

New business models for sustainability need entrepreneurs as change agents in the global transition towards a more sustainable society. However, to engage with complex sustainability challenges requires specific competencies, access to information, and networks of support. Business schools as critical pillars in the entrepreneurial ecosystem (Isenberg, 2010) can enable this and thereby foster and support the move towards sustainability-oriented business models. This research set out to offer insights into one aspect, in particular, how education can be improved in business schools for students to acquire the necessary knowledge, skills, and attitudes to practice entrepreneurship for sustainability.

The findings emphasize the holistic integration of sustainability across all courses and programs with pedagogical approaches that are competence oriented. Also, it argues a more explicit emphasis on developing systems and foresighted thinking competence. The study highlights specific experiential learning approaches that are real-world oriented, self-directed, and reflective, and in collaboration with peers and external partners, which will be significantly facilitated by collaborations, both inside higher education institutions with inter-disciplinary work, and outside the institution with organizations and communities. Furthermore, experiential learning methods in the form of action and service-learning projects have the added benefit of providing bridges to collaborating with industry, government, and civil society to advance sustainability, also benefiting the institutions’ third and fourth mission.

To move towards new business models that take social and environmental contexts into account, will require future business owners and managers with the capabilities to think and act entrepreneurially and deal more creatively with complex sustainability challenges. As one educator said, “we need everybody to think like a sustainable entrepreneur even if they are not going to specifically be one” (Participant response cited in Wyss, 2019, p.61). Higher education institutions play a critical and multifactor role in an ecosystem for SE by providing future entrepreneurs with the capabilities and mindsets to pursue entrepreneurship for sustainability and connecting them to networks of support. To change the way businesses are run, requires a change in the way we think about business and its purpose. Business schools can take the role of thought leaders to lead by example as they move beyond “business as usual” themselves.
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Circular Business Modeling For The Process Industry: The Case Of EU Project ZERO BRINE

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Abstract

Saline impaired effluents (i.e. brines), resulting from industrial wastewater in the process industry, represent an environmental challenge, since they are harmful for aquatic ecosystems, but also an economic opportunity, because they contain valuable materials that can be recovered and put back on the market. ZERO BRINE is a EU-funded project on circular business model demonstrators to reduce industrial saline wastewater streams, valorize “wastes” and “close the brine loop”. To this end, a large-scale demonstration plant has been developed in the Energy Port and Petrochemical cluster of Rotterdam, involving local large industry players. The demonstration plant is able to treat part of the brine effluents generated by the demineralized water supplier, Evides Industriewater, while waste heat will be sourced by neighbouring factories. Furthermore, a circular business model around the technical innovation is being developed using an iterative approach based on business experimentation and strategic co-design practices. The preliminary results from this approach are presented in this article, providing recommendations for the transition of this sector into circular economy practices.

1 Background

This work relates to the large-scale demonstration of ZERO BRINE project, which aims to recover materials from wastewater effluent generated by industry players that are active within the manufacturing sector. The manufacturing sector (“process industries” hereinafter), is understood as defined by the Nomenclature of Economic Activities (NACE) classification “Section C – Manufacturing” as established with the EC Regulation No 1893/2006 and includes a variety of sectors from paper and plastic to clothing and furniture manufacturing. Within ZERO BRINE, a technical innovation is implemented at the industry water supplier located in Rotterdam Port, namely Evides.
Industriewater. Around that, a circular business model is developed in order to engage the complex network of involved stakeholders and to facilitate eventual market implementation of the technical innovation. In this section, we introduce the technical problem associated with industry water production (Section 1.1), and theoretical foundations of circular business modelling (Section 1.2).

1.1 Industry (waste)water: flows, needs and players

All process industries (e.g. manufacture of food products, beverages, textiles, chemicals and chemical products etc) need water to perform daily operations. The global water withdrawals for the industry are estimated at 846.7 km³ (2012 data) (GWI, 2015), while the total withdrawals for all economic sectors are estimated at 3,928 km³ per year (WWAP, 2017). The respective EU data are as follows: 243 km³ (total water withdrawals) with major consumers being the agriculture (40.4%), the power sector (27.8%) and the mining and process industries (17.7%) (EEA, 2018). Out of this water withdrawn, only a small percentage is used (in the order of 20%) and the vast majority is discharged back to the environment as wastewater. Another flow that is generated by industrial operations as a by-product and is of particular interest for this paper, is waste heat. It is estimated that 20-50% of the energy used in industrial processes is lost in the form of hot exhaust gases, cooling water and heat losses from equipment and products (SPIRE, 2012).

The (waste)water management services can be offered either within the industrial unit or within an industrial cluster, if the industry is operating within a cluster, or can be outsourced to third parties such as utility service companies. This paper is focusing on the concentration of process industry facilities in industrial parks or clusters.

1.2 Circular business modelling

In addition to the technical aspects, one core challenge of implementing a water management service (or a sustainable technology in general) in a cluster is the need of aligning the interests and the commitment of a variety of involved stakeholders (i.e., organizations). Developing a viable business model around the technology can make the economic benefits of the technology explicit and trigger stakeholders’ commitment.

A business model is a theoretical conceptual framework that organizations can use to execute their strategy (Richardson, 2008; Teece, 2010). The framework is
based on the following 3 pillars: (a) a **value proposition** that describes what an organization provides to customers (e.g. a product, a service, a process, etc.); (b) a **value creation and delivery system** that describes how the proposition can be created and delivered to customers; and (c) a **value capture system** that describes how entailed costs and revenues allow the organization to profit (Osterwalder & Pigneur, 2010; Richardson, 2008; Teece, 2010).

Sustainable innovation researchers have leveraged the business model framework to embed sustainability into firms’ objectives and operations (Bocken, Short, Rana, & Evans, 2014; Boons & Lüdeke-Freund, 2013; Stubbs & Cocklin, 2008). Consequently, Sustainable Business Model Innovation has been emerging as a field of research and applied discipline (Lüdeke-Freund & Dembek, 2017). In parallel, the Circular Economy arose as a sustainability paradigm and as an umbrella concept for sustainable innovation, gaining traction in the business, policy and academic arenas (Blomsma & Brennan, 2017; Bocken, Olivetti, Cullen, Potting, & Lifset, 2017; Geissdoerfer, Savaget, Bocken, & Hultink, 2017; MacArthur, 2013). The Circular Economy can be defined as “a regenerative system in which resource input and waste, emissions, and energy leakage are minimized by slowing, closing and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing and recycling (Geissdoerfer et al., 2017; Lüdeke-freund, Gold, & Bocken, 2018; MacArthur, 2013). More recently, academic research has investigated how these business models might be developed and implemented in practice through practical demonstrations (Baldassarre et al., 2020) in order to support the creation of more eco industrial parks towards a real circular economy (Baldassarre et al., 2019).

A circular business model is being developed and implemented around the technical innovation. A circular business model is a business model aiming to drive sustainability across a network of business partners through the circular economy principles and strategies mentioned above (Lüdeke-freund et al., 2018). The framework is based on the business model pillars integrated with Circular Economy principles: (a) a **value proposition** aimed at concurrently generating economic value and measurable environmental benefits; (b) a **value creation and delivery system** characterized by the collaboration between multiple stakeholders, reverse logistics and valorisation of waste streams, stakeholder-centred service provision as well as the
sharing of land, infrastructure and information; and (c) a value capture mechanism characterized by cost structures, multiple (and recurring) revenue streams and long term strategic benefits shared across participating stakeholders; value missed and destroyed opportunities for key stakeholders including society and the environment (Bocken, Schuit, & Kraaijenhagen, 2018; Bocken, Short, Rana, & Evans, 2013; Bocken et al., 2014; Lewandowski, 2016; Lüdeke-freund et al., 2018).

One of the concrete applications of circular business model innovation is industrial symbiosis (Baldassarre et al., 2019). The concept of industrial symbiosis has its roots in the discipline of industrial ecology and is defined as the interaction of separate business entities cooperating to achieve competitive advantage by exchanging materials, energy, waste, by products and infrastructures (Chertow, 2000, 2007; Ehrenfeld, 2004; Massard, Jacquat, & Zürcher, 2014). From a practical perspective, industrial symbiosis manifests in eco-industrial clusters: physical communities of manufacturing and service businesses seeking enhanced environmental and economic performance through collaboration in managing environmental and resource issues including energy, water, and materials (Ehrenfeld, 2004; Massard, Jacquat, & Zürcher, 2014).

2 Material and methods

This study revolved around the ZERO BRINE (zerobrine.eu) project which is about re-designing the value and supply chain of water and minerals and taking a circular economy approach for the recovery of resources from brine generated by process industries. The aim is to advance circular economy business model solutions to reduce industrial saline wastewater streams by recovering and reusing the minerals and water from the brine in other industries, thus ‘closing the loop’ and improving the environmental impacts of production’ (https://zerobrine.eu).

The research methodology for the present study based on project ZERO BRINE is based on the following steps.

The first step is an intelligence research phase. This is based on the analysis of existing literature from research and practice about technical solutions for industry water production and treatment, and circular economy business models. The aim of this step is to identify, select and incorporate additional theoretical elements into the
discussed framework in order to tailor it to the ZERO BRINE project, its objectives and specific technical aspects.

The second step is a business experimentation phase (Bocken, Schuit, et al., 2018; Weissbrod & Bocken, 2017). The aim of this step is to co-define the circular business model for the large-scale demonstration together with the ZERO BRINE stakeholders, by taking into account their current business model, objectives and priorities (Baldassarre, Calabretta, Bocken, & Jaskiewicz, 2017). The circular business model is gradually and iteratively defined by using several empirical research methods in line with qualitative action research and strategic design (Calabretta, Gemser, & Karpen, 2016; Patton, 2002; Stappers, 2007; Swann, 2002). Such methods include, but are not limited to, conversational interviews, brainstorming sessions, co-creation workshops and field observations (Baldassarre et al., 2017; Bocken, Boons, & Baldassarre, 2018; Calabretta et al., 2016; Patton, 2002; Sanders & Pieter Jan, 2012; Schuit, Baldassarre, & Bocken, 2017; Stappers, 2007). Thus, this step concretely takes place through a set of stakeholder interviews and collective consultation events where the main stakeholders involved in the large-scale demonstration and other potential partners get together and engage with each other. In the framework of ZERO BRINE, at least 4 consultation will take place. Additional contact moments with individual stakeholders are also planned ad hoc.

The third and final step of the methodology is condensing the outcomes of the previous two steps into a final circular business model, along with a plan to implement it on the market after its large-scale demonstration in the industrial area of the Port of Rotterdam.

3 Results & Discussion

In this paper, we present the first results from the literature review on the recovery of resources from industry water production (Section 3.1) and selected results from the 1st stakeholder event that was carried out in March 2018 in Delft (Section 3.2).

3.1 Preliminary findings from intelligence research phase

Technical innovation: Treatment of ion exchange regenerate

For demineralized water production, softening of raw water is required. This is often performed by ion exchange units. During this process, hardness ions, namely
calcium and magnesium, are exchanged with sodium ions. The ion exchange unit needs to be regenerated before being used again, using a solution of sodium chloride (NaCl). In the demonstration plant, the chemicals needed to regenerate the softening units will be recovered from the brine effluent (i.e., internal valorisation) by applying the innovative treatment technique discussed below. Significant external valorisation opportunities of the same technique for other sectors (seawater desalination brine) have been studied elsewhere (Xevgenos et al., 2017), estimating a value of the brine effluent at approx. 6 euro per m³.

This paper discusses the treatment of ion exchange regenerate in view of its subsequent use for the regeneration of the resins. This requires the purification of the regenerate effluent and its concentration up to the required levels. The compounds that need to be purified are mostly hardness ions, namely Calcium and Magnesium. It has been shown that nanofiltration can yield very good results for the rejection of these compounds and thus comprises a suitable technique, especially for closing the brine loop and reach Zero Liquid Discharge (Van Linden, 2016). Hassan et al. (1998) has shown that nanofiltration is a suitable technology for the removal of hardness ions such as Calcium and Magnesium, by 89.6% and 94%, 97.8% respectively, applied in seawater. Ceulemans et al. (2015) demonstrated that similar results can be obtained for the application of nanofiltration in ion exchange regenerate. Their results indicated that NF can reject Calcium and Magnesium rejection by 83% and 94% respectively. The permeate, almost free of scaling compounds, can be then concentrated using a suitable evaporator technology. In the SOL-BRINE project (LIFE09 ENV/GR/000299) a multiple effect distillation evaporator was designed (Xevgenos et al., 2015), attaining promising results for concentrating the brine effluent up till crystallization of sodium chloride with the use of low-grade heat (Xevgenos et al., 2015b). In the ZERO BRINE project specifically, this type of evaporator will be developed. Waste heat will be used to drive the evaporation process to further promote cost-efficiency, but also sustainability. This evaporator has been designed in a way to be easily coupled with low-grade heat, including waste heat and renewables (solar energy) (Xevgenos et al., 2016).

In terms of replication potential, according to the European Pollutant Transfer and Register (E-PRTR) there are 608 industrial facilities in Europe, generating brine effluents, with the chemical sector accounting for almost 53% of the total brine discharge (Xevgenos et al, 2018). One key application within the chemical industry is
the chlorine sector which accounts both for most of the salt consumption and the chloride releases in Europe. This raises the question whether circular economy business models in the chloralkali sector could close loops and decrease emissions of chlorides in brine and contribute to the reduction of virgin salt extraction through circular economy.

**Circular business model innovation**

Provisional findings are related to the theoretical connection between circular business modelling and industrial symbiosis (e.g., Bocken et al., 2017; Chertow, 2007; Short, Bocken, Barlow, & Chertow, 2014; Walls & Paquin, 2015). In particular, industrial symbiosis is often discussed as process to create eco-industrial clusters, which unfolds through a chain of interrelated institutional, financial and technical actions (Boons, Chertow, Park, Spekkink, & Shi, 2017; Boons, Spekkink, & Jiao, 2014; Chertow, 2007). On the other hand, circular business model views focus more on describing the operational and financial architecture underlying how an eco-industrial park works (Albino & Fraccascia, 2015; Bocken, Short, Rana, & Evans, 2014; Fraccascia, Magno, & Albino, 2016). These two perspectives can be combined into a business model design process for eco-industrial clusters (Baldassarre et al., 2019). This process may be based on the iteration of three steps: defining a shared strategic vision for the clusters with all the stakeholders involved, co-designing (and gradually testing) the business model, and assessing impact, which in turns inform a continuous (re)definition of the strategic vision over time. This conceptual approach might indeed be applied in practice in the ZERO BRINE project, in order to turn a cutting edge technology into a new eco-industrial cluster operating on the market.

**3.2 Results from business experimentation phase**

**The case of Evides Industriewater, The Netherlands**

While countries in Eastern Europe (e.g., Poland and Czech Republic) are promoting the development of industrial parks, in the western part there are limitations, since these are already developed; there water management services are offered either by the company owning the park or by water utility companies (GWI, 2015). As an example, there are more than 5,500 industrial parks in China but less than 50% have installed centralized (waste) water treatment plants, with those having a central WWTP around 15% are performed by third parties instead the industrial park...
developer. The latter is the case with Evides Industriewater in the Port Industry cluster in Rotterdam, the Netherlands.

Evides Industriewater (EIW) is supplying with ultrapure demineralized water (average conductivity < 0.2 μS/cm) a large number of (petro) chemical industries located in the port-industrial complex of Rotterdam; over 20 industries are connected to the demineralized water pipeline, to date. With its capacity of 1,400 m³/hour, DWP Botlek is one of the biggest demineralized water plants in the Benelux area. To regenerate the ion exchange units, EIW is consuming approx. 2,000 tonnes of solid salt per year; this salt is produced and transported from a salt mining site 300 km away. Energy is required for production of this salt quantity (~300 MWh) through solution mining (evaporation of brine) and for transportation of the salt at the site of EIW at the Botlek. The salt is then diluted to produce a salt solution of 9% w/w, to regenerate the ion exchange resins. In this value and supply chain, large amounts of energy are consumed to evaporate a brine (at the production stage) which is again diluted (at the consumption/end-user stage), releasing also greenhouse gas emissions. This can be avoided.

A large-scale demonstration plant will be developed in the Energy Port and Petrochemical cluster of Rotterdam, involving local large industries in order to recover waste heat. The demonstration plant is able to treat part of the brine effluents generated by the demineralized water supplier (Evides Industriewater), while waste heat will be sourced by neighbouring factories as a potential good example of Industrial Symbiosis. The evaporator should concentrate the stream up to 9% TDS, so that it can be used for regeneration of the ion exchange resins. The waste heat can be either low pressure steam or hot water at a temperature higher than 90°C. Using a process simulator developed in BRINE-MINING project, it was estimated that approximately 50-100 kW of thermal energy is required to drive the process (depending on the number of the evaporator effects – to be determined after the finalization of the engineering designs); this can be in the form of low-grade waste heat.

**Stakeholder interviews and first three consultation events**

The business experimentation phase has started early in 2018 and until now a few project stakeholders have been approached individually to discuss their objectives and potential role in the circular business model through conversational interviews. This allowed to start extrapolating their individual perspectives and priorities concerning the
development and implementation of the circular business model. Furthermore, a collective stakeholder event took place. During this event, twelve ZERO BRINE stakeholders worked together in a co-creation session (Calabretta et al., 2016). This session was conducted with the support of the sustainable business model canvas tool (Bocken, 2015; Bocken et al., 2018). Specifically, this tool is a poster template based on the original business model canvas (Osterwalder & Pigneur, 2010) and integrated with sustainability and circularity principles (i.e. triple-bottom-line thinking, impact assessment, multi-stakeholder perspective), which allowed involving multiple stakeholders into a co-design process aimed at conceptualizing circular business model ideas for the large-scale demonstration and ultimately for the creation of a ZERO BRINE eco-industrial cluster. Provisional findings of these business experimentation activities consist of key elements that lay the foundations for developing and implementing the circular business model. The first element is the selection of a specific test bed location within the Port of Rotterdam; this is provided by PlantOne. The second element is the provision of waste heat on behalf of PlantOne. The third element is the provision of industrial wastewater as a main input for the ZERO BRINE process technology, which is on behalf of Evides Industriewater. The fourth element is that Europiren may play the role of reselling the magnesium recovered through the ZERO BRINE process to end customers. The fifth element is related to the question about the ownership of the ZERO BRINE process technology. The latter remains an open question and future business experimentation work will place a major focus on co-defining with stakeholders a suitable solution. In 2019, a 2nd stakeholder consultation event took place in Zaragoza within the framework of the EIP event, where ZERO BRINE had the opportunity to discuss the project findings with local stakeholders (local salt suppliers, process industries etc), other EU projects and policy offices. The Online Brine Platform that has been developed within ZERO BRINE project (Bakogianni et al., 2019) was also discussed and how this could have potential value on brokering brine effluent producers with salt consumers, also potentially in Spain. Additional individual stakeholder interviews were performed and a collective consultation event took place, in order to iteratively discuss and map the ideas previously emerged. Provisional findings of these business experimentation activities include the definition of a clearer value proposition to Evides Industriewater as a prospective customer of the technology solution based on a leasing scheme. Around this value proposition, early ideas on how to set up a spin off venture from the
consortium of stakeholders were identified and discussed. Finally, potential metrics to assess the environmental impact of the circular business model (e.g. Kg of minerals recovered, litres of water saved in the process) were identified.

4 Conclusions

The Circular Economy can bring significant economic benefits in several economic sectors, including the industry water sector, but yet is difficult to achieve. The transition towards circular economy requires innovation not only in technical, but also in business model innovation terms. In ZERO BRINE, both aspects are being addressed in conjunction through an iterative approach based on business experimentation and strategic co-design practices. One of the particular challenges in this case is that the business model is not referring to a single company but involves multiple stakeholders.

The contributions of this ongoing work are twofold. First, this work adds to Circular Business Modelling theory by showing a connection with Industrial Symbiosis, which is essential to work on projects where multiple industrial stakeholders collaborate around a technical innovation. Second, this work adds to Circular Business Modelling practice by showing how theory can be applied in the context of collaborative projects aiming to shift the EU economy from a linear to a circular paradigm. Specifically, this has been done through a business experimentation process. In this process the main stakeholders were contacted on an individual but also in a group setting (1st stakeholder consultation event) to discuss and co-design an initial business model that can be implemented for the case of industry water production in Botlek area, Rotterdam. We used a business model prototyping tool to start the discussion on the circular business model and to develop hypotheses on three main points: (a) waste heat possibilities; (b) use of products that will be recovered; and (c) legislation barriers and environmental permitting. We found that: (a) the waste heat can be supplied by a neighbouring industry in the form of condensate or low pressure steam and can be sufficient to cover a large part of the thermal energy needs of the evaporator; (b) the main raw material to be recovered from the wastewater effluent, that is sodium chloride, can offer opportunities but mostly for internal valorization options, that is for the regeneration of the ion exchange units. External valorization options could include supply to neighbouring salt consuming industries, but the quantity is not sufficient to raise interest.; and (c) the environmental permitting can be facilitated if the large
demonstration is being implemented in a special testing facility offering an umbrella permit. These findings will be subsequently used to construct a second prototype of a circular business model for the next stakeholder iteration. During the event we also observed a growing engagement of the participating stakeholders, who gradually opened up in discussing their interests and challenges in relation of the technology and expressed interest in a further iteration of this kind.

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THEME II  ORGANISATIONAL TRANSFORMATION (SECTORIAL AND ORGANISATIONAL LEVEL)

Theme coordinator: Jan Jonker en Niels Faber

On route towards a new business model, sectors and organisations are confronted with questions on what this means for their current organisational systems and what needs to be done to realise this. Theme two aims to understand the issues that arise at sectoral and organisational levels when adopting NBMs. The focus thus lies on the topic of organisational transformation towards the adoption of NBMs.

Chairs
Monique Kamm, Romana Rauter, Yulia Snihur, and Bartjan Pennink
Learning Towards a Circular Economy
A New Research Direction for Circular Business?

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Abstract

The transition from a linear to a circular economy encompasses a rethinking of business models and practices. This paper explores the educational side of circular business model innovation and shares the development of a tool designed to facilitate learning for circular-oriented innovation (Brown et al. 2020). The tool starts from a material flow perspective and integrates this with circular business models to identify improvement opportunities to achieve eco-system level circularity. While other tools for circular business model innovation exist (Bocken et al., 2019), this tool incorporates learning as the focus of design instead of a byproduct or happenstance. It attempts to bridge inner- and cross-organizational analysis for learning and development of circular thinking. The circular business model innovation tool was developed through four workshops, in higher education contexts with representation and collaboration of local businesses to stimulate learning about circular economy and generate innovative circular business opportunities. While the tool requires further testing to empirically validate if it can be used as part of a learning-based ecosystem transition towards circularity, it has generated advice for circular-oriented innovation for local businesses and facilitated the development of circular thinking for business and engineering students in higher education. This paper therefore explores the potential of learning and education as a new strategic direction for circular business research. The results of this research show promise that incorporating learning as a key design principle can facilitate the development of circular thinking.

Keywords

circular oriented ecosystem innovation, education for circular economy, circular innovation, learning-based circular transition, circular thinking

References


Towards a Bioregional Model of Regenerative Communities and Transformative Learning

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Abstract

Regional, social and business models and communities are the foundation for sustainable transition. But what makes these communities and models truly tick? And what makes them truly sustainable and transformative? In this conceptual paper we unify two main concepts: bioregions and transformative learning, linking both to the regeneration of local social and ecological living ecosystems, going beyond sustainability. We advocate to use the landscape of regenerative bioregions as the place-based strategy context of multi-stakeholder organisational systems and the design of regenerative cultures.

We describe the design of a “support system” needed to help provide the connecting tissue for transformative change at a bioregional level. At its center is a Bioregional Regenerative Hub with a “Conversation as a Service” model (CAAS), facilitating “conversations that matter” in knowledge creation, learning, innovation and policy making. It facilitates the ecosystem of transformative movements, networks, communities, organizations etc. We describe how practitioners may co-create and collaborate in new movements, networks and communities and shift from individual to collective learning, supported by platforms designed for this purpose.

We propose three vital areas of shared commitment, needed to enact the radical, whole-system change needed: (a) consciousness (the Inner Work), (b) relationship (the Inter Work) and (c) impact (the Outer Work). We envision that learning will evolve from the individual to the collective, based on a next stage in human consciousness. And we promote Transformative Communities of Practice (TCoP) as a novel way of transforming ‘new business models’ towards regional regeneration.

Keywords

Bioregions, Regeneration, Transformative Learning, Hub, Transformative Communities of Practice

1. Introduction

Regional, social and business models and communities are the foundation for sustainable transition. There are many examples of these models and communities. For instance, regional circular economy business models and communities that work on policy issues.

But what makes these communities and models truly tick? And what makes them truly sustainable?
In this paper we will explore two additional aspects for regional business models: bioregions and transformative learning. We will clarify how the concept of regeneration has led us to these two aspects and we will introduce them based on knowledge and thinking of several thought leaders in this area. We will include some first concepts of our own, with the notion that we – just like regeneration and transformation movements - are just at the beginning of this process of gathering, learning and conceptualizing.

Parallel to design efforts on new business models, new thinking and knowledge in the field of sustainability - regeneration – has arisen. Regeneration is ‘The New Sustainability’ (J. Walter Thompson Intelligence, 2019). Doing no more harm to communities and ecosystems is no longer good enough. Regeneration is about the aim to have a positive - a regenerative - impact on the living complex adaptive (eco)systems we participate in.

Regeneration and regenerative leadership goes beyond ecosystem thinking. It also involves “the process of aligning one’s own way of being, one’s actions, ways of communicating and being in relationship with the wider pattern of life’s evolutionary journey towards increasing complexity and coherence within the nested wholeness of community, ecosystems, biosphere and Universe we participate in” (Wahl, 2019).

Government policymaking is starting to look upon regenerative networks and communities addressing wicked problems, as key players in a transition and transformation to a more inclusive, green and open economy, wise democracy and sustainable society. National (Kennisprogramma Duurzaam Door) and international programs such as the Green Deal (European Commission) and the Sustainable Development Goals (United Nations) emphasise the importance of and actively support collaboration between entities from different realms of society to address wicked problems (Kamm, 2019).

Re-patterning the future regeneratively requires the transformation of the whole playing field, the redesign of our economic system and our monetary system, and — ultimately — the collective redesign of the human presence and impact on Earth. The path towards achieving this is through myriads of locally attuned projects carefully adapted to the bio-cultural uniqueness of the places and bioregions we inhabit, and this requires global collaboration and solidarity (Wahl, 2016).

Regeneration increases the importance of regional approach. It also increases system complexity and the importance of interrelationship and intersubjective collaboration, for which individual and collective consciousness, learning and transformation is needed.

2. Landscape of Regenerative Bioregions

A regional approach involves not only geographical boundaries. It includes ecology, organizing principles and human behavior and consciousness.

Companies, governments, and civil society organizations all face the abyss of three great divides: the ecological divide, i.e., the disconnect between self and nature; the social divide, i.e., the disconnect between self and other; and the spiritual divide, i.e., the disconnect between self and self. We need to enter in the spirit of practice in all key dimensions of our lives, inner, interpersonal and outer. Innovations on the scale of the whole system are needed in order to address these divides (Scharmer, 2019).

We can’t face today’s disruption by turning backwards (“making X great again”) but by leaning forward, by sensing and actualizing the future as it emerges. At the core of such a profound transformation is the awakening of curiosity (open mind), compassion (open heart), and courage (open will) as powerful antidotes to the self-limiting voices of doubt, cynicism, and fear that tend to keep us in the grip of the old. We need to come together with a radical
commitment to co-create and live on the basis of entirely new patterns as we emerge from networks to communities into systems of influence (Weathly, 2019)

Against this background, the sustainability discipline is also shifting its focus from sustainability towards regeneration, from organizations (= microlevel) towards bioregions as complex living systems at the meso level (Reporting 3.0, 2019), from mono-capitalism to multi capitalism (McElroy & Van Engelen, 2012) and from context-free to context-based measurement and reporting (UNRISD, 2019)

But what is a bioregion? A bio-region is a land and water territory whose limits are defined not by political boundaries, but by the geographical limits of human communities and ecological systems. A bioregion is a way to describe the natural geography where one lives. It also identifies a locale for carrying out activities that are appropriate for maintaining those natural characteristics. Bioregions have distinct features such as climate, soils, landforms, watersheds, and native plants and animals. They have also been sites for adaptive long-term inhabitation by native peoples in the past, and they can be re-inhabited by their present occupants.

Bioregion refers both to a geographical terrain and a terrain of consciousness — to a place and the ideas that have developed about how to live in that place. Within a bioregion the conditions that influence life are similar and these in turn have influenced human occupancy.

We advocate to use the landscape of regenerative bioregions as the place-based strategy context of multi-stakeholder organisational systems and the design of regenerative cultures in complexity. The time is now to co-create a future where humanity has a regenerative impact on the planet while we also regenerate social cohesion, vibrant regional economies, and a rediscovered sense of meaning and purpose. At the bioregional level, the social contract between Market (business), State (government) and the Commons is broken (Faber & Hadders, 2019). This setting of multi-actors/multi-stakeholders needs a new multicapital social contract for sustainability, with science as a fourth partner, where the focus is on “relational justice and fairness”: distributive justice, procedural justice and interactive fairness for all. A bioregional social contract is all about collaboration and shared goals, shared measurement and shared tools between stakeholders. Multi-capital social contracts need multicapital accounting, multicapital reporting and multicapital scorecards.

Bioregions that can demonstrate a strong commitment to a long-term, self-organizing collaboration among the ecosystem of movements, business, non-profit, governmental, academic, and other sectors are encouraged to explore becoming a Regenerative Hub within a regenerative communities network. This collaboration should include a basic commitment to the principles of a regenerative economy. Participation in the network and its services should come at no cost to those demonstrating a strong commitment to regenerative development. We propose a - “Conversation as a Service” (CAAS) model for such a hub facilitating services around “generative conversations that matter” in knowledge creation, deep listening, learning, innovation and policy making. The hub might use the concepts of a Table Democracy (Noorden Duurzaam, 2019) and perform functions like: transformational leadership support, community-based storytelling, hosting Regenerative Communities Platform, data mapping, measurement and metrics, learning, workshops and training etc.

To connect such a transformative ecosystem of entities, an ecosystem of transformative platforms is often needed and to be built with tools like the Platform Design Kit (Cicero, 2019). Smart ecosystem or bioregional (re)engineering needs the use of smart IT (Regen Network, 2019). Most of all, we need to reinvent democracy at the regional level by giving all stakeholders a voice and a vote to self-organize around sustainability agendas, laws,
electing representatives etc. Smart IT or blockchain has to provide the technical architecture for a Global Social Network for Voters, as a meta-layer for restoring democracy and open society (Firestone & Hadders, 2012). This network has to combine learning, innovation, knowledge creation, sustainability management and policy making at both the meso- and macro level.

3. Regenerative Learning in Landscapes of Practice

Out came a vision of a number of centers where information and models about resources and the environment are housed. These would need to be many of these centers, all over the world, each one responsible for a distinct bioregion. Donella Meadows (1983)

We are in a learning and educational crisis. The general structure of this crisis, the mismatch between the demands made on us by the world and the capabilities we have to work with is the greatest metacrisis of our time, characterizing the struggle of individuals, organizations and nation-states (Stein, 2019)

Many key challenges are primarily educational in nature. This is just another way of saying that changing the trajectory of the world-system requires changing how people think and act, which can only be done by finding ways to affect valued and needed transformations of human capabilities. Human development, learning and education are often the elephant in the room when it comes to calls for system-level change.

Sustainable systems are bioregional, local, and self-organizing, and we need a way to practice dancing with emergence in service to life systems on Earth. We need to "unlearn" and to learn anew the ways to live regeneratively even when there are not enough social support-systems available at present to make this transition (Brewer, 2019). Humans are built to learn; education, learning and human potential are infinite resources. The world we live in now is hypercomplex and crisis-ridden; this calls for new self-understanding and new forms of human capability. These require new forms of learning and education.

Do we love life deeply enough to have the curiosity to look into those complex conditions, to have the courage to turn towards each other in transformative communities of practice, and to have the competence to build a better future? We need a new trinity for our time: soil, soul and society to be brought about with our heads, hearts and minds.

We need to enter into the spirit of practice in all key dimensions of our lives. How to relate to life as practice as seen through the lens of wholeness instead of the perspective of the isolated, separate self-sense (the inner work)? How to deepen and intensify as a we-tribe (the interpersonal work). How to make a practical difference in our world (the outer work). Making the radical commitment necessary to awaken together from the consensus trance to co-create a new pattern.

The world we have known is disappearing and a new world is being born. Practitioners start to co-create and collaborate in new movements, networks and communities and start to shift from individual to collective learning (collective awakening, awareness and action): from communities of learners towards communities that learn, sense etc. We need to grow the competencies necessary to develop the "more beautiful world that our hearts know is possible.” How to support and help facilitate this transformative vertical learning in small groups? In the early 1980’s Donella Meadows described how the only way she could find to make the transition to sustainability was to create bioregional learning centers around local living economies that respect ecological limits.
Within many bioregional initiatives we see people help design new forms of regenerative education and transformative learning by means of a bioregional Regenerative Learning Center (as part of the regional Hub) to help facilitate transformation of self, organizations/communities and societies. In the province of Drenthe with its two bioregions we collaborate with thought leaders like Noorden Duurzaam (Bootsma, 2018) and Politiek Netwerk Drenthe to help co-design such new concepts, constructs and innovations in the educational infrastructure (next to other innovations in the economic and governance infrastructure).

To meet the new challenges we face, we need social support services to equip people with the skills to cope, and to give priority to participatory discovery, and experiential learning. Within the bioregional knowledge ecology, the learning center often provides ecoliteracy education for children and schools, courses for adults etc. It also provides a safe learning and practice space for pioneers such as evolutionary change agents and ecosystem catalysts to help and support them to become better at what they do.

We need to transform the way we learn together in the future. Education is the cornerstone of democracy not because it produces human capital, but because it enables participatory citizenship and the full actualization of self. The focus is shifting towards teal and vertical learning (Laloux, 2014) and transcontextual and mutual learning (Bateson, 2017).

A special point of attention in our research is the shift from Communities of Practice (CoPs) (Wenger, 2015) towards Transformative Communities of Practice (TCoPs) (Por, 2019). We believe that TCoPs are going to play an important role in this transformation and transition. Relationships happen one on one. Relationships don’t scale up, they scale sideways, from networks to communities to systems of influence as an attractor for a massive Game B tipping point. We need more of these inter-movement and cross-boundary learning conversations until the whole ecosystem of transformative “symmathesies” (Bateson, 2017) awakens with the buzzing joy of growing new capabilities for replacing our obsolete institutions. We need intersubjective awareness, awakening and aliveness; how would we act, if that intersubjective space has eyes?

4. Discussion

How can that happen? I wondered. How does a society develop the capacity to invent institutions and technologies that truly fit its own culture and environment? How can it filter through the inventions and impositions of the rest of the world and choose what really works in its own context? How can it learn enough about its own resources, environment, needs, and potentials? Does any society now have that capacity? What does such a capacity even look like? Donella Meadows (1983)

In this short paper we made an attempt to better grasp a bioregional approach to regenerative hubs, regenerative communities and regional learning centers, combined with the domain of learning. In a context of multi-stakeholders collaboration and co-creation, we envision that learning will evolve from the individual to the collective, based on a next stage in human consciousness.

More serious research is needed to understand how people in collaborative hubs and communities work, play, learn and govern together in new settings of value co-creation. Further investigation is needed with a more systemic theoretical comparison of newly emerging regenerative hubs, learning centers hubs and TcoPs versus more traditional ways of organizing to illustrate in what way and to what extent these constructs are more appropriate to enhance new economic, governance and learning models. In our research we are especially focused on a shift of CoPs to Transformative CoPs and their role in the bioregional transformative journey. TCoPs are a novel way of next stage organizing and combined with new business models, we think they will help facilitate transformation towards regional sustainability and regeneration. Clearly, all this is an example of “work in progress”. 
Our findings and knowledge claims to date are fully open for debate and in need of a most
critical knowledge-claim evaluation.

The conceptual framework we proposed is linked to other international initiatives and it can
come only alive if tested and applied in a “laboratory” of committed participants. In close
collaboration with thought leaders like Politiek Netwerk Drenthe and Noorden Duurzaamwe
we aim to create a living lab in the province of Drenthe. This contribution provides a number
of theoretical/conceptual issues around bioregions and learning. We end this paper with a
high level specification of three radical transformations needed and three critical “front-lines”
to be further detailed later.

Communities of serious practitioners are needed in an existential inquiry that integrates the
three vital areas of shared commitment, needed to enact the radical, whole-system change
needed to bring our world back into balance: (a) consciousness (the Inner Work), (b)
relationship (the Inter Work) and (c) impact (the Outer Work) (Patten, 2019)

(a) Consciousness (the Inner Work)

A conscious mind is an essential stepping stone for whole-system change. With a conscious
mind individuals in the process continuously are in contact with their purpose and meaning
and open to evolve as an individual. This is a precondition for developing a collective
consciousness and evolving in bioregionalism. Unless our individual and collective
consciousness are evolving, any new system will only reproduce the old problems in new
ways (G.Por)

How to relate to Life as practice ? How to shift from the perspective of the isolated, separate
self-sense to Life as a practice seen through the lens of Wholeness (Capra & Luisi, 2014) ?
And to start appreciating and valuing the diverse values and points of view that contribute to
our fullest and deepest expression, cooperation and service. These are amongst many
others, essential self-reflection questions for the necessary inner work.

(b) Relationship (the Inter Work)

Building communities (regional, social, business) is all about inter-relationships. We tend to
look at these inter-relations from a horizontal, linear ‘value chain’ perspective. However, we
need to deepen our we-space. We need to learn, practice and understand how it is affected
by meditative depth, sensitivity, trust and intimacy as well as shared perspectives, values,
agreements, and intentions. We need to cultivate and strengthen capacities to be with
others, to see and be seen. Besides the horizontal development we are used to, we need
this vertical development as well.

In order to make bioregional models ‘tick’, the dimension of inter-relationship between
(conscious) human beings needs to be taken into account as well. Bioregionalism involves
relational aspects and concepts. True transformation takes place when there is a shift from
individual sensing and learning to collective sensing and learning …. while shifting from a
community of learners to a community that learns collectively. The question is: How to
participate in a “we” that is itself learning, evolving and awakening ?

(c) Impact (The Outer Work)

We live in a complex and uncertain world, and here we explore action and what it takes to
make a meaningful practical difference in our world. How do you impact your world ? It is
about commitment, responsibility, integrity, duties and obligations. Often the “outer “
dimension of transformation is more often described than the interior “inner” one.
No system can be transformed in isolation from the other. We also need to learn to host platforms for galvanizing the vast ecosystem for change: platforms with cross boundary crossing collaboration. Making practices worth replicating accessible to other movements so they can give wings to the new story. No system can be transformed in isolation from the other. With outer work all this comes together.

**New Patterns**

Through bioregional models of regenerative communities and transformative learning new patterns emerge. People come together in small groups (Block, 2007) to live on the basis of an entirely new emergent pattern and to constructively reassert wholeness. These patterns will make us choose to both (1) relate creatively and positively to an emergent future as practitioners through whom emergence might become possible, and (2) to engage change not just in political terms, but integral - on psychospiritual, relational, cultural and ecological terms as well. Here we co-create a new pattern and explore radical commitments. We will declare ourselves aspiring citizens of the heart and inhabit it together, and in the process learn what it takes.

We -as authors- see the contours of a new discipline arising that would emerge from the mutual learning across “symmasthesy - learning together in living systems - and warm data” (Bateson, 2017), Platform Design Toolkit (PDT) -inspired "ecosystem catalyzing" (Cicero, 2018) and "Learning in Landscapes of Practice" (Wenger, 2015). Activists using warm datalabs to ground their collaboration in a broader, more interconnected view of reality could well be the source from which a truly new bioregional story may emerge.

Our closing statement: a bioregional approach and transformative learning, including inner, inter and outer work are important stepping stones towards ‘ticking’ regional business models and communities and true sustainable- regenerative- regions.

**References**


The Coevolution of Traditional and Sustainable Business Models

A Paradox Perspective

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†This paper is based on the master’s thesis of Niklas Endregat

Abstract

This paper aims to rectify a dearth in current research and investigates the coevolution of traditional and sustainable business models under one corporate roof. By taking on a paradox perspective, firms’ solutions and mechanisms to cope with the paradoxical situations that arise throughout the coevolution are determined and analyzed. This is executed by conducting seven case studies of Western-European firms, consulting firms, and governmentally owned consulting institutions. Results show the array of responses firms deploy to address paradoxical areas of competing demands of economic, social, and environmental foci, organizational culture and mindset, training and staffing, resource allocation, and the stakeholder environment during the coevolution of traditional and sustainable business models, and four distinct strategies are derived from the data.

Key words:
Traditional business models, sustainable business models, coevolution, paradox lens, international business, sustainability
Business models as systems of 'practice patterns'
A new conceptual framework

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Extended abstract

Problem statement and current understanding

Humanity’s activities, especially socio-economic ones, are a root cause of and severely shaped by a fundamental societal transition (Jonker and Faber, 2019; Loorbach and Wijsman, 2013; Marcus et al., 2010; Schaltegger et al., 2016). This brings to the fore Zott and Amit’s (2007, 2008, 2010) conception of business models as systems of interdependent activities – systems that transcend their focal organisations as they weave together value creating, and possibly also value destroying, activities of multiple actors to function, exist, and develop within their socio-ecological environment (Bocken et al., 2013; Bolton and Hannon, 2016; Freudenreich et al., 2019; Zott and Amit, 2010).

The activity system perspective presents a point of departure encouraging and embodying rich possibilities to delve deeper into the ontological nature and epistemological value of the business model. This endeavour must create a theory-based, practical, and normatively open approach for delving into the functional
logic, the how and why, of activities and systems thereof to facilitate the study and
design of new, more sustainable forms of economic activity (Arend, 2013; Laasch,
2018; Randles and Laasch, 2016; Ritter and Lettl, 2018).

This is where approaches incorporating insights from practice theories or Alexan-
drian pattern theory come into play. Originating from design and architecture, pat-
tern theory offers a specific notation system to study successful ‘problem-solu-
tion-combinations’ in such a way that solutions can be used “a million times over
without ever doing it the same way twice” (Alexander et al., 1977: x). Thus, busi-
ness model scholars have applied this theory to integrate and classify the growing
body of knowledge on business models (e.g., Lüdeke-Freund et al., 2018; Remane
et al., 2017). Sociological theories of practice, on the other hand, make sense of
the social and its ongoing development by viewing it as a mesh of interrelated
practices. Practices – for example, certain ways of teaching or cooking – are rou-
tinized forms of behaviour evincing stable combinations of particular meanings,
competences and materials (Shove et al., 2012). Correspondingly, business models
have been conceptualized as assemblages of social practices enabling human need
provision (Boons and Laasch, 2019; Mason and Spring, 2011). However, theoreti-
cal development is called for. For instance, originating from architecture and de-
sign, pattern theory faces the challenging question of how to consistently and sys-
tematically conceptualize human activities and their dynamic interrelations (Lü-
dekte-Freund et al., 2019). With a view to such open questions, Alexandrian pat-
tern and practice theories have much to offer to their respective counterpart.

Research objectives and question

Aiming to make a conceptual and methodological contribution to the research on
business models the research objectives are: (1) to analyse the compatibility of
the activity-system, practice, and pattern perspective on business models, and (2)
to develop a new conceptual framework for opening the ‘black box’ of business
model activities. Thus, the central research question is: How can the processual
perspective on business models stemming from theories of practice be used to
enrich the Alexandrian pattern perspective on business models and vice versa in an integrating conceptual framework for studying business model activities?

**Research design**

To develop such conceptual frameworks, Jabareen (2009) has proposed a grounded theory approach. First, literature on practice theory, pattern theory, as well as scientific endeavours combining these theories with research on business models has been systematically collected. This body of literature is analysed and synthesized in an iterative coding process using MAXQDA. While doing so, specific attention is given to whether the ontological, epistemological and axiological premises of pattern theory and theories of practice are consistent. Conceptual building blocks are extracted, compared and related to develop a new conceptual framework. This process entails abductive thinking to allow for the creative jump needed for theoretical synthesis and advancement. The developed framework is applied and thereby tested in a comparative study of extant case studies on degrowth businesses. Here, principles of template analysis laid out by King (2012) are applied. Finally, presenting the framework at the NBM2020 is an inherent part of the research design required for validation and refinement (cf. Jabareen, 2009).

**Findings**

The theories add new dimensions for studying and depicting social phenomena to their respective counterparts. For example, when studying practices, pattern theory facilitates reflections on their social, ecological, and/or economic function. Practice theory, in turn, adds well developed concepts on how human activities interrelate and bring about institutionalization and continuity (e.g., due to co-dependencies, sequencing, or synchronization) as well as innovation and evolution (e.g., due to overlaps, conflicts or mutual influences) (Nicolini and Monteiro, 2017; Shove et al., 2012). Eventually, the practice pattern framework emerged consisting of specific elements to research, present and discuss business model activities as ‘practice patterns’ (left ride of Figure 1). It facilitates zooming in on activities function and zooming out on their context and interrelations. The solution
element, for example, refers to archetypal and reusable depictions of activities that untangle a problem by weaving a new, less conflictual but more self-sustaining practice mesh. Solutions are presented by indications of involved actors, sequence or synchronization of actions, and practice elements (meanings, competencies, and materials).

**Figure 1: Practice pattern lens and corresponding practice pattern framework**

Ultimately, practice patterns represent a theory-laden ontology and corresponding lens to study activities (left side of Figure 1): Due to a recursive relation, activities are practice pattern-performances which are mediated and organized by, and simultaneously reproduce and redesign as, practice pattern-entities. Combining this lens with Zott and Amit’s (2010) activity-system perspective results in a conception of business models as boundary-spanning and continuously evolving systems of practice patterns exhibiting unique value creation logics.

The developed framework is applied in a comparative study of extant case studies on degrowth organizations (e.g., Bloemmen et al., 2015; Houtbeekers, 2018; Schmid, 2018; Wells, 2016). From this, practice patterns related to commons-based peer production were derived and will be presented as illustrative examples of the framework at the NBM2020.

**Contribution and conclusion**

The ‘practice pattern’ framework provides a specific perspective on business models that is inherently relational, recursive, and processual. The framework draws
attention towards the conditions, interrelations, and functional logics mediating and organizing human capacity to perform business model activities competently. Paraphrasing Giddens (1984: 25), analysing the structuration of business models then means studying the modes in which such activity systems grounded in the knowledgeable activities of situated actors who draw upon rules (i.e., contextual problem-solution logics) and further requirements (i.e., actionable meanings, competencies, and materials) in the diversity of action contexts are produced and reproduced in interaction.

Moreover, the developed framework is an invitation to other business model researchers to study and collate practice patterns. Collections of practice patterns bear the potential to facilitate the generation of actionable knowledge that is relevant for research and practice— for example, the design of business models for sustainability.

**Keywords**

conceptual framework, practice theory, Alexandrian pattern theory, activity-system perspective, business models for degrowth

**References**


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Community-Based Social Enterprises and Social Innovation: The Case of Women's Cooperatives in Turkey

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Extended abstract

A social entrepreneurial organization (SEO) is an innovative and social value-creating organization, that is not defined by its legal form (Austin, Stevenson, & Wei-Skillern, 2006), but chooses the primacy of the individual and social objectives over the capital, reinvests surpluses and applies democratic governance principles (Monzón & Chaves, 2017). SEOs create new business models, called hybrid organizations, which deviate from traditional forms by blurring the boundary between for-profit and non-profit organizations. They build solutions into their business models for finding solutions to pressing social issues (Haigh & Hoffman, 2012). SOEs firstly aim for value creation rather than value capturing in strategizing their business models (Santos, 2012).

A subset of SOEs is a community-based social enterprise (CBSE) that is managed by a group of community members to provide long-term benefits to local community members (Kleinhans, Bailey, & Lindbergh, 2019). They emerge in areas where there is dissatisfaction with the governmental services in the community or where governments have reduced their public services (Van Meerkerk, Kleinhans, & Molenveld, 2018a). CBSEs are locally rooted; they aim to maximize their benefits to the broad community and consequently are accountable to their local
communities (Bailey, Kleinhans, & Lindbergh, 2018). As social enterprises can be found in many different legal forms, CBSEs may also adopt various organizational types depending on their setting.

Non-profit women's cooperatives are one of many forms that CBSEs can structure their enterprises. In patriarchal societies, where women have limited opportunities for finding meaningful work, women's cooperatives can enable them to engage in collective entrepreneurship and attain economic and social power (Datta & Gailey, 2012). In Turkey, the labor force participation of women is low (33.5%), especially in groups with low levels of educational attainment (UNDP, 2019). Typical of societies with traditional family structures, women are involved in unpaid housework and informal work due to the persistence of culturally embedded gender roles (World Bank, 2014). Indeed, being self-employed can enable women to be less dependent on their families, which is specifically crucial for those women who do not have access to the formal labor markets (Gündüz-Hoşgör & Smits, 2008).

Women's cooperatives are a relatively new concept in Turkey, with the first cooperatives forming in the early 2000s in and around Istanbul. After that, the number of cooperatives has increased rapidly, expanding to other regions in the country. By law, the women's cooperatives are established as for-profit entities, and therefore they are legally bounded by the same rules that apply to a for-profit business. Thus, even though they have social goals, women's cooperatives are set apart from non-profit organizations or foundations (KEIG, 2018). A comprehensive research based on data from over a hundred women's cooperatives in Turkey, list the primary motivations for their establishment as the provision of jobs for women, supporting their social empowerment and finding solutions for their shared problems (Duguid, Durutaş, & Wodzicki, 2015). The most common economic activities the cooperatives are involved in are the production and sales of food-based and handicraft products and providing care and education services. Even though the number of women's cooperatives reached to more than 160 in the country, a notable percentage of them (40%) ceased operations after establishment (Duguid et al., 2015). The challenges are both internal due to their lack of expertise and know-how in business and difficulties in access to financing and also external resulting from inadequacies of the policy and regulatory framework (ILO, 2018).

Foundation for the Support of Women's Work (KEDV) is a non-profit organization working with grassroots women's groups in disadvantaged areas and regions of Turkey since 1986. The main areas of KEDV's operations are; 1) support the
organization and co-operation of women against fighting poverty, 2) promote women's leadership and economic empowerment in the development and the creation of resilient societies, and 3) strengthen the role of women in disaster and migration management (KEDV, 2020). It is the leading foundation in supporting disadvantaged women's empowerment in the country, and its community-based approach has been widely recognized and supported both nationally and internationally. From the beginning, KEDV, has been active in supporting the women's cooperatives movement and has helped them to create the Women's Cooperatives Communication Network in 2005, and later in 2014, the Simurg Women's Cooperative Union (Simurg, 2020). KEDV provides training, counseling and financial support to women's cooperatives, they manage and run two handicraft stores, and also support the management of the Simurg Women's Cooperative Union (ILO, 2018; KEDV, 2020).

During 2017-2019, KEDV followed a program titled Vocational Proficiency of Syrian and Turkish Women (TAMEB) in Istanbul. The program was financially supported by GPP (Global Project Partners), a German non-profit organization. The TAMEB program was applied at two women's cooperatives in Istanbul and can be taken as a pilot program for KEDV in their attempts to address a newly defined social issue, which is the integration of Syrian people into society. Turkey remains the world's top refugee-hosting country (United Nations High Commissioner for Refugees (UNHCR), 2018), with 3.6 million registered (Refugee Association, 2020) and an estimated 500 thousand unregistered Syrian refugees. Of those Syrian people, children and women constitute 70.5% of the population, and they are the most vulnerable groups. It is of the highest importance to direct Syrian refugees towards employment in the formal sector and provide guidance for the local institutions in these processes.

The two women's cooperatives that the pilot programs were applied are Harmony and Early Steps, which are situated in two different boroughs of Istanbul. The areas share similar challenges that are a high population density, a local immigrant population together with the recent move of Syrians into their neighborhoods, and a high degree of unemployment among women and young people. Both cooperatives aim to support disadvantaged women groups, yet, they are different in their business models, maturity, and the characteristics of their founding members.

In the first year of the TAMEB, the program aims were to increase the two women's cooperatives capacity (physical and technical) and encourage refugee women
to participate in various training modules within the women's cooperatives. In the second year of the program, TAMEB aimed to strengthen the production capacities of the women's cooperatives, encourage refugee women to take part in the production processes, develop solutions for their problems, and maintain social cohesion. During the two years, 150 Syrian women and 49 Turkish women at Early Steps and 90 Syrian and 33 Turkish women at Harmony attended the training modules of the program. In evaluating the results of these two pilot programs for achieving social cohesion among the Syrian and Turkish groups, KEDV found notable differences.

This research study started in 2018 as a collaboration between KEDV and the author for investigating the differences in program results and making recommendations for future programs in the labor market integration of refugees. The business models of the women-led social enterprises may affect how they integrate social and business goals into their enterprises (Kimbu, & Ngoasong, 2016). In the literature, it recorded that it is possible to have differences among women's cooperatives in achieving women's empowerment, and these differences may even exist within the same cooperative (Cinar, Akyuz, Ugur-Cinar, & Onculer-Yayalar, 2019). These differences may result from multiple internal and external factors. For instance, externally, the institutional environment and context can shape how the SEO and the social entrepreneur acts (Bailey et al., 2018; Littlewood & Holt, 2018). Furthermore, internally, governance and management issues may challenge women's cooperatives (Kleinhans et al., 2019). A strong business model, the existence of social capital, and entrepreneurial leadership are shown to be success factors for the durability of CBSEs (Van Meerkerk, Kleinhans, & Molenveld, 2018b).

This research utilizes an interpretive case study approach to investigate the interplay between the founders' values, business and governance model, and contextual factors in determining the social innovation results of the women's cooperatives. The data is gathered through individual semi-structured in-depth interviews with KEDV managers and the two women's cooperative founders, group interviews with cooperative members, and Syrian refugee women and participant observations at work sites. Using the approach of sustainable business models, the findings provide insights on women-led social entrepreneurship in the Turkish context, with implications for broader social entrepreneurship scholarship.

References


Improving the Flourishing Business Canvas through Design. Experiments in Belgium, Sweden and Canada

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Extended abstract

Introduction

Companies are facing numerous grand challenges such as rapid population growth, extreme poverty, devastating climate change effects, social and financial inequities, environmental pollution, and the increasing cost and scarcity of resources. These challenges imply not only significant market risks and uncertainty for organizations but also create opportunities for change (Bansal, 2019; de Boer et al., 2012; Freeman & Engel, 2007). Organizations of different types and in geographic locations are attempting to expand their business logic to implement integrated social, environmental, and economic sustainability (Zollo, Cennamo, & Neumann, 2013).

The business model, when reviewed as a single unit framework, is effective in providing a lens of experimentation for innovation within the firm (Weiller and Neely, 2013). Business model innovation (BMI) is the process of designing and implementation of novel and feasible business models (BMs) which starts with
business modelling. BMI is therefore one possible way to expand the overall business logic. In that sense, business models are designed - intentionally and/or non purposive - by factors that affect the way in which the firm operates in relation to business’ actors, purpose, place and definition of success over time.

According to Aversa et al. (2015), when BM are intentionally designed, three phases of cognitive action (thinking, articulating, and doing) occur in business modelling. These actions, which strongly resemble a typical design process, intend to represent the complex business activities in a simplified form of BM designs and then to iteratively experiment to create and evaluate alternative BM designs. Thinking refers to understanding a business. Articulating refers to designing a simplified BM that may be shared and modified. Doing refers to making the decisions and creating the routines needed to implement the BM.

The stream of BMI research that focuses on sustainability, no matter how it is defined or labeled (Stubbs & Cocklin, 2008), offers a nuanced understanding of the BMI process. This research positions itself between the broad fields of development of BM design tools (Elkington & Upward, 2016; Geisdoerfer, Bocken, & Hultink, 2016; Joyce & Paquin, 2016); business frameworks (Stubbs & Cocklin, 2008; Upward & Davies, 2019); BM guidelines (Kurucz, Colbert, Lüdeke-Freund, Upward, & Willard, 2017); and sustainable archetypes and patterns (Bocken, Short, Rana, & Evans, 2014; Lüdeke-Freund, Carroux, Joyce, Massa, & Breuer, 2018).

Specifically, this study, which is still ongoing, focuses on the importance of the use of BMI design tools as boundary objects in business modelling for sustainability. However, at present, it appears that BMI design tools are still in the early stages of development and testing. BMI design tools support the generation, interpretation, and manipulation of information using images. These images facilitate, for example, problem-solving, communications, and team building (Darren, Amitava, & Gerald, 2001). Critics, however, charge specifically that the tools to design and implement sustainability-as-flourishing goals are inadequate. Similarly, a common language for describing these tools is said to be lacking. Breuer et al. (2018), for example, conclude that the fundamental characteristics of BMs that promote achievement of sustainability-as-flourishing goals are insufficiently identified. One answer to this deficiency is the Flourishing Business Canvas (FBC). The FBC has its roots in the Strongly Sustainable Business Model Ontology presented by Upward and Jones (2016), and it is an emerging strategic sustainability management innovation (Kurucz et al., 2016). The tool itself is a significant extension to the earlier
profit-normative Business Model Ontology by Osterwalder (2004). This focus on tools aligned with sustainability-as-flourishing goals is important and relevant to the recent call for a normative and systems perspective that extends well beyond short-term financial viability that would enable a sustainable future (Bansal, 2019). Bansal (2019, p. 9) writes: “[this] requires multi-level, multi-disciplinary, and dynamic analysis. Business models, financial systems, and economic markets are expected to serve society within natural resource limits. [Thus, research and practice must] recognize the interconnection among natural and social systems not just in the moment, but over time”. The FBC claims to meet this demand and is theoretically based on insights from both natural and social sciences (Upward & Jones, 2016). However, very little is known how companies work with the FBC in practice towards sustainability-as-flourishing.

Tools / toolkits and other boundary objects are particularly useful in doing that and in supporting organizational decision-making (Prahalad and Bettis, 1986; Arias and Fischer, 2000). The use of these tools can help organizations solicit and create shared understandings among diverse groups (Täuscher and Abdelkafi, 2017). Such shared understandings are very important in situations, such as working with sustainability-as-flourishing, when a change of mind-set and a new dominant organizational logic are required. Therefore, it is important that research aims at understanding how easy to use those tools and if they are fit for purpose. In this research we have chosen to focus on the FBC building on recent research has looked into the FBC to facilitate learning and business modelling for sustainability both in pedagogical setting (Hoveskog et al., 2018) as well as in industrial contexts (Karlsson et al., 2019; Karlsson et al., 2018). Additionally, the literature has identified the FBC as an innovation advancing strategic sustainable organization management as it supports embody leadership for sustainability and the companies’ efforts towards sustainability as flourishing (Kurucz et al., 2017). Furthermore, Breur et al. (2018) place the FBC amongst six of most relevant tools for business modelling towards sustainability-as-flourishing based on two criteria: (1) sustainability is implied as a normative goal for business modelling; and (2) underlying assumptions and theoretical foundations are explicated. Finally, in their analysis Lozano and Muñoz-Torres (2019, p. 5) has pointed out that the definition of sustainability that the FBC is grounded in is “more complete” and holistic since it covers all sustainability dimensions (economic, environmental, social and time).

While there are a number of benefits of using the FBC as outlined in this research, Ostuzzi and Hoveskog (2020) as well as Norris (2019) highlighted some limitations.
For example, it is still difficult to think in terms of all three contexts of the FBC. Tested users hardly tackle some of the innovative building blocks of the FBC, the ones that are at its very core (radically different from the profit-normative BMC). This raises the question of how effective and easy it is to adopt the FBC. Furthermore, a related question is how the FBC as well as other tools can be made more usable and subsequently increase their adoption? Therefore, the purpose of this study is to improve the FBC, through design. A typical design process has been followed by iteratively testing, evaluating and redesigning the tool itself. The iterative nature of the experiment asked to identify different testing settings: Belgium, Sweden and Canada, a triple experiment. This was done in order to understand: (1) how users use the FBC and (2) what kind of outcomes emerges from the use of the FBC. In each experiment a different designed version of the canvas has been used, so that the overall goal is to compare older versions with new ones, in terms of (1) and (2).

Method

In this research we have adopted a “research through design” approach. Zimmerman and Forlizzi (2008, p. 42) define research through design as an iterative qualitative research approach that “employs methods and processes from design practice.” In line with that research, in this study we carry out “triple experiment” which applies and evaluates a re-designed tool for business modelling for sustainability. Our research is informed both by the knowledge base on business modelling tools for sustainability and by the role of visualization tools in management decision-making. With this background, we took the “research through design” approach in a design project aiming to redesign the FBC. The redesigned FBC as shown in Figure 1 (a new canvas) and Hex Cards as shown in Figure 2 were applied in three contextual settings - Belgium, Sweden and Canada to compare how users appropriate it and what kind of ideas they come up with in a business modelling for sustainability process. Table 1 shows an outline of the experiment as well as the data collection sources and the profile of the participants.
Figure 1 - Proposed Redesign of Flourishing Business Canvas 2.1. Final iteration of Canvas after three contextual settings - Belgium, Sweden and Canada

Figure 2 - Flourishing Hex Cards (left - Question Prompt Card / right - content modelling cards)

The data collection sources are feedback from the participants, photos, and FBC artefacts (Hex Cards patterns and canvases created). Furthermore, the participants in Sweden and Canada filled in a survey after the workshops, while the
participants in Belgium made a written structured reflection after the workshop. See the table below for detailed description.

<table>
<thead>
<tr>
<th>Time</th>
<th>Details</th>
<th>Data gathered</th>
<th>(consequent) design</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2018</td>
<td>0 / Univ. 1 and Univ. 2 (cancelled for blind review, 2020)</td>
<td>(reference canceled for blind review)</td>
<td>Preliminary experiment that led to the first design iteration (canvas with hex cards)</td>
</tr>
<tr>
<td>October 2019</td>
<td>Exp. 1 / Univ. 1 / 14 teams (42 participants) / Students of industrial design engineering</td>
<td>Photos of the canvas, during the first interaction, Photos of the final canvas, Written reflection on value and limits of the canvas</td>
<td>This re-design of the canvas follows the ‘zero experiment’ and has been used in the experiment 1.</td>
</tr>
</tbody>
</table>
This re-design of the canvas follows experiment 1 and has been used in experiment 2.

<table>
<thead>
<tr>
<th>November 2019</th>
<th>Exp. 2 / Univ. 2</th>
<th>Photos of the canvas, during a workshop</th>
<th>Photos of the final canvas</th>
<th>Survey on the usability of the canvas and/or the hec cards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 teams (45 participants)</td>
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<tr>
<td></td>
<td>35 students from Industrial Management and Innovation</td>
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<tr>
<td></td>
<td>10 Practitioners</td>
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</table>

<table>
<thead>
<tr>
<th>February 2020</th>
<th>Exp. 3 / Univ. 3</th>
<th>Photos of the canvas, during a workshop</th>
<th>Survey on the usability of the canvas and/or the hex cards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 Teams</td>
<td></td>
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<tr>
<td></td>
<td>30 Participants</td>
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<tr>
<td></td>
<td>46% Staff across various departments (Facilities, Student Services, Mental Health &amp; Well-being Procurement, Marketing, Events and</td>
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<td>Corp Services)</td>
<td>12% Faculty Members (Business, Automotive Business Engineering Technology, Liberal Arts)</td>
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<td></td>
<td>8% Industry Partners - Small to Medium Business</td>
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<td></td>
<td>7% Business or Sustainability Consultant</td>
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<td></td>
<td>4% Senior Leadership</td>
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</tbody>
</table>

The canvas has been digitized and contains final design iteration, follows experiment 3 and brings changes not only in the visualization but also on provides instructions process-wise (https://app.mural.co/t/changethenow8156/m/changethenow8156/1587165808021/a1720ba8c433ef96d788c9959c1ec41b96c11d)

Table 1. Overview of the triple experiment (Univ. 1, 2 and 3 are used for blind review).
Tentative results and Implications

This research is still ongoing where all data collection is done, and the analysis of this data is in its start. The impetus for this research project came from the desire of a group of three “First Explorers” designated licensee of the Canvas, to solve feedback on universal themes of usability and accessibility specifically related to the usability of FBC.

It became apparent that users of the FBC are asked to business model three dimensionally of the environmental, social and economic systems, using a two-dimensional layout. Therefore, the improvement of the FCB was aimed to increase the ability or at least the perception of usability for users of model across three systems at once. Two versions were developed. The first one was an improved canvas in terms of its visual appearance. The second one was the Flourishing Enterprise Hex Cards as a design solution for the inclusion and on-boarding of group efficacies and individual agency to better understand, and thus design flourishing enterprises. Apart from tackling the requirement of 3 dimensionality and thereby producing cognitive complexities, the cards were also aim to capture ‘micro-moments’ of dialogue by allowing the actual components of the canvas to be fluid and rearrangeable supporting a dialogic design methodology.

This research raises some questions. For example, can tools like the Hex Cards be strategic dialogic design pieces to help reveal, discuss and transform bias? Are they a more effective interface for the “co-designers” (users) than the canvas-alone in modelling new proposed business operations for a Flourishing enterprise?

Keywords

business modeling, tools, sustainability-as-flourishing, experiment.

References


Construing Community-based Strategies In Practice
A Case-based Approach

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Extended abstract
This contribution to the debate on organizational configurations addressing sustainable development explores the nature of strategy formation in Entrepreneurial Communities. Entrepreneurial Communities are place-bound and community-based forms of collaborative organizing aiming to address wicked problems related to sustainable development by engaging into multiple value creating actions.
Entrepreneurial Communities are formed by collaborating civilians, organizations, and institutions. Constituents in Entrepreneurial Communities acknowledge sustainable development as a place-bound and integral challenge in need of new, supra-local, collaborations. Their collective actions (Ostrom, 2010, 2011) address various, wicked problems (Gray & Wood, 2018, Dentoni & Al. 2012) that require the mutual matching of issues and initiatives by multiple constituents. Constituents engage in various processes of decision making, goal setting, and planning. Although not always initiated by civilians, the structural involvement of civilians in Entrepreneurial Communities results in a mix of personal and professional involvement which becomes strategized into value creating actions.
It is as yet unclear how constituents in Entrepreneurial Communities conduct their different motives and views into strategies that direct value creating aspirations into collaborative actions. This contribution aims to fill this hiatus by exploring the nature of strategy formation in contemporary Dutch Entrepreneurial Communities. The researchers approach Entrepreneurial Communities as distinct manifestations of Institutes of Collective Action (ICA) (Ostrom, 2010, 2011) while observing their collective actions through a strategic lens.

Issues addressed by Entrepreneurial Communities parallel concepts in both academic and professional literature of evolving New (Hess, 2008) or Contemporary Commons (Bauwens...
et al., 2017; De Moor, 2012), referring to multi-stakeholder collaborations evolving around and in-between various views on addressing issues related to sustainability while creating economic, ecological, and/or social values. Constituents in Entrepreneurial Communities aspire to do so in a collaborative way, aiming for sustainable development of their immediate environment by advocating and conducting actions resulting in collaborative, multiple, and shared value creation (Jonker & Faber, 2019). Actors from different realms of society bring different motives for engaging into collective action. As a consequence, constituents in Entrepreneurial Communities differ in views on, and experiences with, actions that are associated with strategy formation such as goal setting and planning (Mintzberg et al., 1998). Strategy formation in Entrepreneurial Communities can be characterized as an emergent process, shaped in practice and in demand of the mutual matching of value creating views and actions.

A conceptual process model of strategy development in Entrepreneurial Communities has been developed, rooted in Ostrom’s (2010, 2011) Institutional Analysis and Development framework and Clarke and Fuller’s (2011) process model of collaborative strategy development. The conceptual model envisages different stages in processes of collaborative strategy formation and demonstrates how these stages are interconnected and indicates how stages in the strategy formation process are affected by distinct variables. The conceptual process model served as a basis for analyzing strategy formation processes in Entrepreneurial Communities during a longitudinal (2015-2020) qualitative field research. A purposive selection (Seawright & Gerring, 2008) of eleven different Entrepreneurial Communities operating in the Netherlands participated in an explorative and transdisciplinary comparative case study (Boeije, 2011, Yin, 2009). Allocation and analysis of strategic decision making in all cases accommodated for refinement of the conceptual model by determining distinct conditions of organizational and strategic nature that affect stages in the collaborative strategy formation process. Given the limited amount of eleven cases in this research, as well as its explorative approach, results and conclusions must be considered with due caution.

Results establish that strategy formation in Entrepreneurial Communities is recognizable as an emerging and cyclical process (Mintzberg & Waters, 1987), shaped in practice (Whittington, 2007; Jarzabkovski & Fenton, 2006). Analysis of strategic action situations in all cases resulted in a case-based process model which enables the recognition of conditions affecting stages in collaborative strategy formation processes, as well as the outcomes of those stages and, eventually, their outcomes. Strategy formation is acknowledged important by governing bodies of Entrepreneurial Communities but seldom concretized in strategic plans that are monitored and evaluated. Strategic awareness differs and evolves in practice. Various decision-making processes are administered to establish goals and to develop and accomplish collaborative actions. Analysis of strategic-oriented decision-making processes reveals that different perceptions, interests, and opinions on collaborative, organizational, and value creating processes direct but also hamper strategizing aspects of community-based organizing. Strategy formation in Entrepreneurial Communities is clearly challenged by the complexity of the issues addressed, as well as the complexity of governing and structuring collaborative decision-making processes in a novel and place-bound multi-party setting. As a result,
Entrepreneurial Communities differ in the manner that they concretize goals and they differ in the manner that they effectuate plans and projects that contribute to these goals. Cross case comparison indicates that distinct manifestations of Entrepreneurial Communities correspond with different strategies, leading to a provident typology of collaborative strategies that emerge in community-based forms of organizing.

The research contributes a strategic dimension to Ostrom’s (2010) Institutional Analysis and Development (IAD) framework as well as a strategic perspective to the current societal and political debate on the importance of multi-party networking forms of organizing in a broader societal transition.

**Keywords**

collective action, strategy formation, entrepreneurial communities,

**References**


Waste management firms as catalysts for developing SME’s circular business models
The possibilities of industrial symbiosis

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Abstract

The purpose of this research was to explore possibilities for waste management firms (WMFs) to act as lead firms in industrial symbiosis (IS) processes with medium enterprise (SME) clients in order to promote circular business models. We were curious to see how willing and able four local WMFs were regarding adoption of a lead firm role, and under what conditions. We used a case study design because of the lack of research on the topic and the explorative nature of the research itself. First we interviewed nine representatives from four WMFs using a semi-structured interview protocol. We then presented our results to the representatives as a basis for further discussion. We found that WMFs are open to adopting the various roles associated with a lead firm position in an industrial symbiosis, but need various kinds of support in order to so, for example in coordinating the IS - network and for financing the activities. Our research is original in the sense that we look at the concept of IS from the specific context of a WMF-SME symbiotic relationship. We also contribute to both the IS literature as well as that of new business model development. Management implications include understanding why firms are willing to explore new business models with their client partners.

Keywords
Circular business models, waste management firms, SMEs, industrial symbiosis
Exploring ways to make a business case for the transition towards circular business models
Making circular investment decisions in a non-circular world

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Extended abstract

A rise in global population and welfare is depleting the earth’s resources and challenging the current predominantly linear economy, following a take-make-waste pattern, calling upon a shift towards a more circular economy (Bastein and Willems, 2019; Ellen MacArthur Foundation, 2013; Lüdeke-Freund et al., 2019). The Dutch government and the European Union have set the goal/ambition to become fully circular by 2050 thus striving towards a cleaner economy and reducing the dependency on scarce resources (European Commission, 2020; Government of Netherlands, 2016).

Businesses are expected to play a large role in the transition towards a circular economy. This poses a challenge for businesses transitioning towards these new circular business models aimed at closing-, narrowing-, and slowing down the resource loop (Bocken et al., 2016; McDonough and Braungart, 2002; Vermunt et al., 2019). Taking into consideration the economic, social and environmental effects on businesses implementing circular practices and circular business models, positive impact can be realized (Cavallo and Cencioni, 2017; Geissdoerfer et al., 2017; PACE, 2019; Stegeman, 2015). But, developing clear business cases will be essential in the ability of firms to adapt circular business models (PACE, 2019).

Many firms in the Netherlands are currently transitioning towards circularity, but in order to achieve a fully circular economy, value chains will still need to change considerably (Peters et al., 2019; Roemers et al., 2018). The province of Zuid-Holland supports SMEs (Small and Medium Enterprises) in the manufacturing industry by boosting material and production innovation, driven by the digitization of manufacturing (Peters et al., 2019).

The smart industry has shown capabilities to fungate as an enabler of circular business models (Bastein, 2018; Bastein and Willems, 2019; Blunck and Werthmann, 2017; Ellen MacArthur Foundation, 2016; Ellen MacArthur Foundation and Google, 2019; Nascimento et al., 2019; Pham et al., 2019; Rosa et al., 2019). These technologies are especially crucial as they allow
for more efficient resource use by means of intelligent cross-linked value creation models (Rosa et al., 2019; Stock and Seliger, 2016). Taking note that circularity can only be reached on an eco-system level (cross-company boundaries) (Jonker et al., 2017; Raworth, 2017) and that supply chain issues are perceived among the main barriers for implementing circular business models (Brown et al., 2020; Vermunt et al., 2019), smart industry technologies show great prospect in order to accelerate the transition towards circular businesses.

A coalition of nine frontrunners in implementing digitalizing and circular business models joined forces in the Capital Equipment Coalition (CEC), which was established in January 2018 in Davos. In this paper the circular driver framework proposed by CEC (2018) is adopted. This framework suggests drivers that can strengthen business cases for those SMEs that are mainly profit-led instead of mission driven frontrunners (Bastein and Willems, 2019; PACE, 2019).

In the current framework seven drivers have been described; 1. Enter new markets, 2. Reduce Cost, 3. Reduce risk and future-proof the business, 4. Trigger Innovation Capacity, 5. Attract & Retain talent, 6. Deliver greater customer value and 7. Align with public expectations (PACE, 2019). However, it is not yet known how digitalization and circularization of manufacturing leads to these drivers exactly. The PACE framework summarizes these drivers, but this framework has not yet been validated in the context of smart manufacturing.

Other scholars have also identified both drivers and barriers in firm transitions to circular business models (Brown et al., 2020; Lawton et al., 2013; Linder and Willanders, 2017; Rizos et al., 2016; Tura et al., 2019). Analysis of the type of impacts for such business transition clearly reveal that these are of strategic nature (Eisenhardt and Zbaracki, 1992). The underlying fundamental shift is to move away from mere financial value maximization towards multiple value creation (Jonker, 2014; Raworth, 2017; WECD, 1987). This points to the need to embed digitalization and circular business strategies at the strategy level of an organization.
The aim of this research is to identify how and why manufacturing companies adopted digitalizing and circular business strategies, in order to distill and provide practical pathways for followers to adopt. This is done by means of qualitative case study approach. Eight different corporations in the manufacturing industry that have taken initiatives in the past to implement circular business models will be examined. The examination consists of desk research regarding the strategy of the corporation, a short survey and an in-depth interview that allows for understanding the contextual conditions of their circular initiatives. This collective and instrumental case study approach allows for examining similarities and differences between the cases and is expected to lead to insights into the barriers end drivers related to circular business initiatives and therefore a validation of the PACE framework.

This paper pursues action design research (Sein et al., 2011) as the research outcomes are used to acceleration the transition of SMEs towards circular business models. This is done by the development of an interactive online tool that shows pathways and possible drivers and barriers related to circular initiatives and will therefore provide input for building circular business cases at an operational, tactical and strategic level for SMEs. Two SMEs in Zuid-Holland are selected for three iteration sessions for tool development. The last part is a validation stage of both the framework and the tool with a new sample of twelve selected SMEs.

This paper seeks to add to clarifying the link between digitalization of manufacturing industry and circular drivers. Circular value drivers will be validated and function as the basis for business case information that will enable SMEs to make the investments in digitalization that accelerate their transition towards a circular economy.

**Keywords**: Circular Economy, Smart Industry, Digitization, Smart Manufacturing, Sustainable Business Models
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Despite many goals of breaking the link between waste volumes and growth, today's society is still characterized by a linear economy, a "wear and tear culture", which has led to a negative impact on the climate, ecosystems and human health. Throughout the years many attempts to reduce the environmental impact from linear business models have been made e.g. establishing goals, regulation and other instruments for reducing environmental impact. There is, however, still a need to slow down the pace of resource depletion, and an alternative to linear business models, are circular business models. Circular business models open up possibilities to create value through the use of resources in several life cycles, and to reduce waste and consumption (Lüdeke-Freund et al., 2018). Circular business models go beyond products and pay attention to complex networks of supply chains and other stakeholders (Bocken et al., 2016) aiming to change the flow itself. The concept is under development (ibid.) and no commonly agreed definition has been established. Guldmann et al. (2020) suggest the following definition though; “In a circular business model, the business model elements are joined together to provide a compelling value proposition to customers, generate economic profit to the value network, and minimise environmental impacts by means of slowing, intensifying, dematerialising, closing and narrowing resource loops” (s. 43). Building on the ideas slowing and closing the loops, Charter and McLanaghan (2018) suggest six types of circular business models, i.e. 1) on demand 2) dematerialization 3) product life extension/reuse 4) recovery secondary raw materials/by-products 5) product as a service/product-service systems (PSS) 6) sharing
economy/platforms/collaborative consumption. When it comes to circular business model archetypes, PSS seems to be the one that received most attention.

At the same time, public procurement accounts for 14% of the European economy (EC, 2020), in Sweden approximately 17% (Upphandlingsmyndigheten, 2020), public procurement offers an opportunity as a catalyst for the growth of a more sustainable economy (EC, 2019; Milios, 2018). Sweden has, together with Denmark, Germany, Austria, the United Kingdom, and the Netherlands, been pointed out as countries applying green public procurement and sustainable public procurement (Brammer and Walker, 2011; Day, 2005; Melissen and Reinders, 2012), but the actual movement is slow. Opportunities and obstacles to reduce the environmental impact from public procurement have been investigated in several studies (c.f. Chippinelli and Zipperer, 2017; Roman, 2017; Cheng et al, 2018; Michelsen and de Boer, 2009; Løland Dolva, 2007; Liu et al, 2017; Testa et al, 2012, 2016; Walker et al, 2008; Aragao and Jabbour, 2017). Green public procurement and sustainable public procurement are, however, often product and technology oriented (Uttam and Roos, 2015) and have focused on making the linear economic model more efficient, mitigating the impact from the linear flow of resources. Some attempts have been made to implement circular public procurement in several countries (Alhola et al., 2018), with the goal to link the consumption side, through public procurement, to the production side. Despite such initiatives, there has been little academic research focusing on linking circular public procurement and circular business models (Witjes and Lozano, 2016). In a recent review by Sönnichsen and Clement (2020), they find two studies on circular public procurement; Alhola et al. (2018) and Witjes and Locano (2016). In fact, only one of them, Witjes and Locano (2016), addresses a circular business model perspective in public procurement and that is the product-service-system (PSS) business model.

This main objective of paper is to contribute to the transformation from a linear to a more circular business model in the context of public procurement. We employ literature on public procurement and through the lens of circular business models (Guldmann et al. 2020; Charter and McLanaghan, 2018; Geissdoerfer et al., 2018; Bocken et al., 2016; Witjes and Locano, 2016), we examine challenges/hinderance, related to the six different circular business model approaches in the context of public procurement, Charter and McLanaghan (2018). In particular, we assess experiences from procurement officers from eight public procurement organizations in Sweden, in a one-day workshop, where we discussed sustainable flow of resources, circular business models and procurement officers’ role in the development of different types of business models. To broaden the range of expertise, environmental strategists from the organisations, also participated. We identify a number of challenges related to each of the six circular business model types and discuss the barriers of introducing each of them in public procurement. We also find that some circular business model types, such as product life extension and recovery of secondary raw material require less effort to introduced than PSS and sharing platforms. For example, PSS and sharing solutions require new types of contracts and changes in the value chain, which challenge properties in the core of the public organization like cost-control
and measurement tools to follow up the procurement process, leasing and reluctance to establish partnership with suppliers. This situation means that some of the circular business model types, other than PSS and sharing platforms, can offer a good start to overcome obstacles of transforming from a linear to circular business models rather than transforming for a product service system.

This paper conceptually and empirically contributes to both circular business models and public procurement research.

**Keywords**

public procurement; circular business models; municipal organization; business model transformation;

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Value Creation Processes vs. Outcomes in Management of Sustainable Business Models

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Abstract

This paper presents four elements of SVC: value forms, stakeholders, conflicting impacts and tensions, and temporal view, divided in value creation processes and value outcomes. Further, strategic approaches related to the value creation processes and value outcomes are discussed from the sustainable business model development point of view.

Key words

Sustainable value creation, sustainable business model, systemic perspective, systematic literature review
Sustainable business models for renewable energy

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Extended abstract

Introduction

Renewable energy is considered as an important driver for sustainable development. In search of sustainable business models in renewable energy, it is important to consider their duality. On the one hand, each business model “begins with an insight into human motivations and ends in a rich stream of profits” (Magrreta, 2002, p.3). On the other hand, sustainable business models primarily contribute to prevent or resolve challenging social and environmental challenges on our planet (Lüdeke -Freund & Boons, 2013; Boons, Montalvo, Quist & Wagner, 2013; Wells, 2013). Sustainable business models guide thus our societies towards cleaner production and consumption (Lüdeke-Freund, 2010, Tukker et.al, 2008).

Business models for sustainability

However, a very important question for defining a business model as sustainable is related to the core idea of how does a business builds sustainable competitive advantage (Teece, 2010) and turns it into a profit? In this regard, innovation and efficiency are identified as key “design themes” (Zott & Ammit, 2008) of the sustainable business models for building-up competitive advantage (Bocken, Short, Rana & Evans, 2014) from a strategy perspective. However, the production of renewable energy is much more expensive than the production of energy based on non-renewables. Nevertheless, as stated by Lyytinen (2017), the establishment of a favorable business model for sustainable development, supported by fiscal incentives, may overcome the problems with the cost increase. We aim to find the key success factors for public policy instruments that contribute to the competitiveness of renewable energy business models (Polzin, Migendt, Täube & von Flotow, 2015). This is against the principle of voluntarism and business involvement in dealing with sustainability issues (Carroll, 1979). Hence, the role of governments in reaching sustainability goals is gaining importance (Dentchev, Hazendonck and van Balen, 2015). In this regard, companies around the globe are increasingly changing their business behavior reflecting a commitment to environmental and social sustainability. This change means that many companies will need to create new and innovative business models.
Public policy approach towards competitive REBM

Green and competitive sustainable business models became an efficiency tool (Osterwalder, Pigneur & Tucci, 2005) for value creation and delivery for the customers as part of the transition management for sustainable development (Loorbach, 2010; Gladwin, Kenelly & Krause, 1995). Nevertheless, resource dependency theory (Pfeffer and Salancik, 1978) and network relationships (Hillman et al. 2009) are seen as very important features for building successful governance in terms of sustainable entrepreneurship for renewable energy business models, a research gap remains in finding a polycentric model of governance (Ostrom, 1990) in terms of different models of governmental intervention for building a long-term renewable energy model. Our study is an attempt to bring empirical evidence from case studies for bridging the policymaking gap in the renewable energy sector, especially in the way how the REBM are being governed towards a circular economy. We bring new facts and empirical evidence that under certain conditions government regulations may strengthen the competitive mechanism and may create suitable conditions for competitive advantages for the companies that apply environmentally friendly technologies or produce such technologies. Our contribution statement is aiming in promoting renewable energy business models towards a circular economy and reveal how renewable energy companies create micro-environments for competitive business models with regard to the value added coming out from them, namely social, environmental and financial (Lewandowski, 2016).

Research Methods and Research Question

Our study aims to answer the following research question: Which are the key success factors for effective use of the policy instruments that contribute to a more efficient business model for sustainable production of solar and wind electricity, respectively solar and wind equipment? A multiple case approach is deemed most appropriate and more robust than a single case study as the potential benefits of data richness, depth and quality, compensate for the associated shortcomings of limited representativeness and generalization (Eisenhardt, 1989; Strauss and Corbin, 1994; Yin, 2003).

Comparison analysis between Belgium and Bulgaria investments in renewable energy business models will contribute to making the difference between cooperatives and traditional business models. We shall underline the facts why the cooperative’s business model, with community-based social marketing initiatives, is creating the promotional factors required for a resilient energy sector. We have conducted qualitative research in the afore-mentioned countries for the period March-November 2019 and the respondents were interviewed on the key success factors for better policy implementation used to increase the competitiveness of renewable energy business models. Interviews were performed face-to-face or recorded via skype. The interviews in Belgium were held in the period between 18th May–05th November 2019, meanwhile the interviews in Bulgaria were conducted between 28th June – 18th November 2019. For the aforementioned qualitative research period, 13 Belgian and 15 Bulgarian renewable energy experts were interviewed. All of the respondents (from Belgium and Bulgaria) were asked 10 similar questions. The volume of preliminary secondary data used (reports, renewable energy papers, national programs, strategies, and laws) counts to 45 in total from Belgium and 52 from Bulgaria).

Preliminary Results
Following the research, we have conducted, we have found out that the most important building blocks of renewable energy business models are the developers, financial parameters (equity provider and the loan provider), operation and maintenance of the installation and at last but not least, competitors in the energy market. While analyzing the patterns of the renewable energy business models it is important to highlight the fact that this study shows an exploration of competitiveness amongst different forms of renewable energy business models mainly coming from the geographical location of the installations, access to resources, regulatory framework, grid access, and mentality.

It was revealed that on top of the most important policy instruments provided by the government which is used to enhance the competitiveness of renewable energy business models, is the provision of a long-term planning framework. Following the comment of an independent renewable energy consultant in Belgium: “A bold and stable subsidy framework, (excluding the feed-in-tariff system due to high regulatory and political risk), and level playing field or preferential conditions for grid access and ancillary services remain the most preferred tools for building-up the “muscles” to pave the way towards sustainability and reshaping the oligopolistic electrical market”. On the other hand, the new Clean Energy Package does not rely on subsidies anymore because they should be stable but also have the best efficiency possible to limit the cost for grid users (EU Clean Energy Package 2030). The comment of advisers at Energy Directorate in Brussels: “It is very important to consider public policy instruments for technological innovation, as the key enabler is to accept the creation of “sandbox” (fintech innovations) on both regulatory and technical side”. The scope of the study is limited mainly to the wind and solar energy sector and its development in Belgium and Bulgaria. It consists of microeconomic analyses of this sector and its potential for further development. We bring facts and arguments that this highly dynamic energy sector contributes to the technological innovation and better competitiveness of the economy. From our perspective, it could not be possible without the intervention of the government (Steurer, 2013) and the implementation of the EU Directives, concerning the restructuring of the energy sector and making it more efficient and more environmentally sound.

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Sustainable business models of Finnish SMEs
specific features and challenges in organizational transitions

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Introduction

Companies are currently facing increasing pressure to respond to sustainability-related challenges (Joyce and Paquin, 2016) because their business models are seen as essential in attaining a systemic transition to a more sustainable society (Loorbach and Wijisman, 2013; Schaltegger et al., 2016; Baumgartner and Rauter, 2017; Bidmon and Knab, 2018). New business models with improved company sustainability performance can also create competitive advantage for companies (Geissdoerfer et al., 2018).

However, there is no one-size-fits-all solution or mechanism to attain sustainability in businesses, and numerous factors can contribute to the inclusion of sustainability in business models. Neither is there a common language or unified frameworks to promote sustainability among academics and practitioners (e.g. Bocken et al., 2014; Leonidas et al., 2016). One attempt to tackle these challenges is presented by Bocken et al. (2014), who have developed sustainable business model archetypes for describing mechanisms that can facilitate formulating business models for sustainability. These eight archetypes are, based on the categorization by Boons and Ludeke-Freund (2013), classified under technological, social and organizational-oriented innovations. The technological grouping has three archetypes: (1) maximize material and energy efficiency; (2) create value from waste; and (3) substitute with renewables and natural processes. The social grouping also includes three archetypes, which are (1) deliver functionality rather than ownership; (2) adopt a stewardship role; and (3) encourage sufficiency. The organizational grouping contains two archetypes: (1) repurpose for society/environment and (2) develop scale-up solutions (Bocken et al., 2014).

In line with the trend on a European level, 99.8% of Finnish companies are small and medium-
sized companies (SME, referring to companies with less than 250 employees), and a majority of these are microenterprises having less than 10 employees. In Finland, SMEs’ share of yearly turnover of Finnish companies is almost 60% (Statistics Finland, 2017). As indicated also by these statistics, it is obvious that SMEs play a prominent role in our society and accordingly, their significance in promoting sustainability transition through their business models cannot be neglected.

Regions can often be important incubators of new ideas and knowledge, and regional networks can offer support and opportunities for entrepreneurship by pooling resources and skills for the benefit of all the actors in the region (see e.g. Lopes and Franco, 2017). Regional networks are often significant for SMEs in particular. For this reason, paying attention and identifying the sustainability-related needs and strengths of the firms in a certain region, along with sharing this regional information between companies and their stakeholders, can facilitate SMEs’ success and, overall, their transition towards more sustainable business models and practices.

Despite the obvious role of SMEs in sustainability transition, research has often concentrated on larger firms, and the specific features of SMEs in terms of sustainability have not been sufficiently examined (e.g. Brammer et al., 2012; Leonidas et al. 2016; Jansson et al., 2017). However, identifying actions and challenges in SMEs could help to formulate suitable incentives and drivers to speed up the diffusion of sustainable business models, and sustainability transition in general (see Linder et al., 2014). For example, Brammer et al. (2012) argue that environmental management is a prominent challenge for small companies, and they are often less committed to environmental goals than are larger companies. According to their study, most small firms are engaged in some environmental initiatives, but there is plenty of variation at the level of engagement. Further, their study indicates that the smallest companies perceive notably less advantage from engagement with environmental issues. Burch (2018) argues that, in smaller companies, practices that focus on social issues, such as the wellbeing of employees, appear to be more important than environmentally driven actions. In small companies, community reputation is the most often mentioned motivator for sustainability, followed by increased profits (Burch, 2018).

Objectives

This study is part of the regional research project, “Towards Planetary Wellbeing: Sustainability Transition in Central Finland”. The project aims to explore sustainable practices of companies and the factors affecting firms’ sustainability transition from a multidisciplinary perspective. The more specific goal of the study presented in this abstract is to explore how Finnish SMEs understand sustainability in terms of their own businesses, what characteristics of a sustainable business model companies are currently manifesting and what developmental needs companies recognize in these terms. In addition, the study aims to point out regional strengths and weaknesses related to the companies’ sustainability practices. Based on the
results of the study, a further aim is to present policy and sustainability implications and recommendations for private and public actors on both local and regional levels.

Methodology

The data were gathered through an online survey directed to CEOs and managers of Finnish companies in August to October of 2019. The survey was mainly distributed through different social media platforms (particularly Facebook), through the websites of the chosen organizations/associations, and through emails to various networks with the request to share the survey link with suitable parties. The data consist of 113 responses from company actors who represented SMEs from diverse sectors. The firms varied, for example, in offering, size, and location. The respondents from various services-based businesses dominated the sample. Most of the participating firms were limited companies or private traders. Around 40% of the participating companies had both intangibles and physical products in their offering. Half of the respondents ran a company that had no other employees than the respondent (i.e. microenterprises are dominant among the responding companies) and almost 40% of the companies had less than 10 employees. Almost half of the companies were located in central Finland. There were also plenty of respondents from populated regions of Helsinki-Uusimaa and Tampere regions. Overall, in the representativeness of the sample, it is obvious that the dominance of services-based businesses and microenterprises needs to be taken into account when interpreting the results.

The survey included both an open-ended question and questions with predetermined statements that were evaluated using a Likert-scale from 1 to 6. In addition, in the questions with predetermined options, the respondents had an opportunity to add open comments. The predetermined statements were formulated by applying elements and perspectives from sustainable business model archetypes developed by Bocken et al. (2014; archetypes are described above in section 1). In the survey, the respondents first answered the following open question: “How do you understand sustainability in terms of your own business?” Then, the respondents evaluated predetermined statements first related to what kind of practices and elements of sustainable business models their companies currently have, and, second, to what type sustainable business model practices and elements companies should emphasize more in the future.

The qualitative data will be examined using thematic analysis (Braun and Clarke, 2006; Guest et al., 2006). The quantitative data will be analyzed by SPSS statistical software. At the moment, analysis of the data is largely unfinished.

Results and conclusions

The preliminary analysis of qualitative data from the open question (in which the respondents described their understandings of sustainability in their own company context) indicates the
respondents’ focus on the environmental dimension of sustainability. The preliminary themes detected from the data are related to material and energy efficiency, recycling and reuse, the renewability of materials and energy sources, and expanded product lifetime, all of which are indicated by Bocken’s (2014) technological archetypes.

However, based on the preliminary analysis of the quantitative data, the participating companies highlight employee wellbeing as the most important sustainability element they currently invest in, and the one they would also like to put more focus on in the future. When compared to the qualitative findings – where the focus is on environmental dimension – this result is surprising. However, the questions preceding the open question on sustainability concentrated largely on environmental challenges. This survey setting probably affected respondents’ thoughts, leading them to perceive sustainability mainly from an environmental perspective. Moreover, in the quantitative questions, the respondents emphasized their responsibility to encourage customers to adopt more sustainable consumption models. These elements are strongly connected to the social sustainability dimension. Yet, also in the quantitative questions, maximizing material and energy efficiency were identified as significant ongoing sustainability-driven practices in the companies.

**Keywords**

sustainable business model, SME, Finland, sustainability transition

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Institutional work for value logics in family business: evidence from Chinese family firms

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Abstract

This research seeks to explore how family business propose, capture, exchange and create value differently from non-family business, and how value logics of family business are shaped and influenced by the dynamics of institutional work. Based on an in-depth analysis of 15 family firms we find that the family identity leaves a strong imprint on the development of products and services in family business. The nature of the family governance, including the relationship between family and non-family members, significantly impacts the way value is captured. Also, the dynamics of institutional work actively shapes family business model. We find two key dynamics within the family firms we study. One where the family business members actively are involved in institutional work to embed the family value logics throughout different development stages of family business. Part of the institutional work also involves emphasizing the long-term sustainable orientation of the family firm, with a focus on develop long-term trust-based relationships with various stakeholders such as employees and suppliers and generating positive social and environmental impacts next to economic performance. Another dynamic involves family firms whose institutional
work is focused on de-emphasizing the family nature of the firm and focusing more on the professional management and economic performance of the firm, partly because they perceive the institutional environment to consider family firms as relatively traditional and less professional. The research contributes to family business model literature by offering the “family” characteristics perspective by establishing the importance of family goal achievement and family social networks in the value logics of family firms; it also contributes to institutional work literature by adding re-establishment stage throughout the whole dynamic process; moreover, two models developed could also be the inspiration of future research in exploring different patterns of family business models in deep.

**Key words**: value logic, family business model, institutional work
Business Model Innovation as Mean for Reducing Packaging in Retail  
Towards a holistic and practice-oriented approach  

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Abstract  
Retail can reduce packaging with holistic systems suggesting a business model perspective. We derive from interviews a taxonomy of sustainability-oriented packaging improvements. Implications at business model level are presented for three areas of application. Retailers are thus provided with a tool to select suitable paths of business model innovation.  

Keywords  
Sustainable business models, business model patterns, plastic waste, zero-waste shops
Cognitive process perspectives
A structured review in (out) business model

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Abstract
Received literature on business model extensively focused on external factors as antecedents of business model, notably innovation and technology change and more recently societal challenges, while internal cognitive process research has been sporadic. In this exploratory study we first review the existing frameworks used to explain the cognitive mechanisms that shape business model decision; then, we explore alternative cognitive theories used in other disciplines but not yet applied in business model research. After analysing and categorising the findings, we highlight its fundamental characteristics. Finally, we present an integrated meta-framework mapping the outcomes. This paper offers a set of cognitive perspectives that stimulates new directions in the research on business models, in particular hybrid organizations, e.g. social entrepreneurship and sustainable business, as driven by heterogeneous value logics, hence the need to shed light on the mind process beyond the pure commercial rational.

Keywords
Cognitive process perspectives; Business model process; Literature review.
THEME III   ORGANISATIONAL IMPACT

Theme coordinator: Florian Lüdeke-Freund

The heart of any business model is its value creation logic (Laasch, 2018). New business models aiming at contributions to sustainable development build on the principle of multiple value creation, taking the shape of various business model patterns (Lüdeke-Freund et al., 2018). The underlying idea is that such business models are developed not just to improve organisations’ own operations, but also to render positive ecological and social impacts outside beyond organisational boundaries (Schaltegger et al., 2016). The extent to which these impacts are realised when adopting new business models is often unclear. The aim of theme three is to better understand how business models with positive impacts can be developed and how their impacts can be estimated or even measured.

Chairs

Florian Lüdeke-Freund, Tobias Froese, Koos Wagensveld, Egbert Willekes, Karen Maas, and Frank Hubers
Sustainable Innovations in Startups: An Investigation through the Sustainable Business Models

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Extended Abstract

Entrepreneurial activities are pointed as a promising way to develop innovative sustainable business, especially for startups, which do not face many of the challenges mature enterprises do to undertake new business. When it comes to the integration of social and environmental issues into new businesses, large and mature firms have to cope with challenges such as the existing economic approaches as well as the core logic of existing business processes and tools (Schaltegger & Wagner 2011). On the other hand, startups, smaller organizations with lower degree of formalization, are more dynamic (Bos-Brouwers 2009) and better positioned to integrate sustainability aspects into their core business (Schaltegger & Wagner 2011). Despite the importance of this subject and the fact that the number of entrepreneurs and new ventures with focus on sustainability challenges are increasing (Horne et al. 2020), there is lack of research that deals with sustainable innovations developed by startups.

Sustainable business models (SBMs), which are means to support the creation and implementation of sustainable innovations (Bocken, Short, Rana, & Evans, 2014; Boons, Montalvo, Quist, & Wagner, 2013), create competitive advantage by delivering customer value and contributing to sustainability, as they consider environment and society as key stakeholders (Lüdeke-Freund 2010).

However, no studies reporting the practical application of SBMs in startups and how different SBM patterns affect the creation of sustainable innovations were found. In fact, problems of utilizing the current literature on SBMs in the entrepreneurial context has been reported by Godelnik and van der Meer (2019). The authors believe that the SBM literature is more prepared to support established firms and do not seem to apply as it is for companies like startups (Godelnik & van der Meer 2019).

Another issue concerning the development of SBM is the lack of centrality of the profit generation view in such business models (Dentchev et al. 2016). Therefore, it is also a challenge for entrepreneurs in startups to develop SBMs since the current economic system prioritizes profit generation (Godelnik & van der Meer 2019). In addition, startups depend on investments to be able to concretize their business ideas into market innovations and sustainable innovations seem not to attract the interest of traditional investors (de Lange 2017).

Additionally, the process of creating sustainable innovations is complex and difficult. Besides creating value to customers, a sustainable innovation has also to create value to multiple stakeholders, including the society and the environment (Bocken 2015). If you sum this challenge to the typical challenges that any startup faces when trying to concretize their business idea as well as to attract investments, it is possible to realize the facets of complexity that a startup developing SBMs and sustainable innovations might face.
In order to tackle the mentioned challenges, this study aims to research the current state of the art on the mentioned topics as well as to investigate the SBMs developed by the startups delivering sustainable innovations. Different sources, e.g. Fuer-gruender (2020) and Borderstep (2018), are used to identify the startups. The main selection criteria to include a startup in this study is the following: the startup should have a sustainable innovation already launched in the market. After selecting the startups, an analysis of their vision, mission and sustainable innovation is performed in order to map and describe the sustainability characteristics of their business models. Online documents and websites are used to accomplish that. Afterwards, the business models are classified according to the 45 SBM patterns of SBM (Lüdeke-Freund et al. 2018). These patterns were developed based on synthesis, consolidation and organization of the knowledge on SBM found in the literature. The 45 SBM patterns are assigned to 11 groups, which encompasses ecological, social, and economic dimensions of sustainability. Examples of patterns are “Maximize material productivity and energy efficiency”, assigned to the group “Mainly ecological” and “Buy One, Give One”, assigned to the group “Social”.

The investigation and classification of the startups’ sustainable business models and innovations will highlight which are the main sustainability challenges and characteristics approached by the German startups currently. In addition, this study will bring first insights of how well the current SBM literature encompass the sustainable innovations these startups are creating. Are there business models which do not fit in the 45 SBM patterns (Lüdeke-Freund et al. 2018)? Are there new patterns identified? Are there patterns which are not represented in the startup context? These are some questions we aim to answer by the end of this study. In addition, we wish to extend the current body of knowledge on SBMs, by analyzing its adoption in the startup scene. Therefore, this study extends the work of Boons & Lüdeke-Freund (2013), by investigating the topics business models and sustainable innovation specifically in the startup context. In addition, this study contributes to the SBMs patterns developed by (Lüdeke-Freund, Carroux, Joyce, Massa, & Breuer, 2018), by empirically testing them.

In the next steps of this research, it is planned to perform explorative case studies at some of the startups previously analyzed. Through these case studies, other factors of the entrepreneur process can be clarified, such as: (1) conditions in which the entrepreneurs identify the sustainability challenge/business opportunity, (2) mode of investments received, (3) collaborations with other actors according to the different phases of the entrepreneur process. Therefore, the contextual factors that limit or drive the adoption of SBMs by startups can be understood. In addition, the SBM transformations that occurred during the entrepreneur process will be explored. What were the changes that occurred from opportunity identification until the sustainable innovation launched in the market? Did the SBM fit different patterns during this process? The knowledge gained through the different steps of this research shall be organized to support the design of specific guidelines. The goal of these guidelines is to support the development of SBMs that fits the startups’ business opportunity. Ultimately, we hope this enhances the market success of their sustainable innovations.

Keywords
Sustainable Business Model, Sustainable Innovation, Startup, Entrepreneur Process

References


Beyond Product/Service Systems and towards configurations of circular strategies, business models and actors

Introducing the Resource/Service-Spectrum

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Abstract

Product/Service-Systems (PSSs), and the emerging concept of Material/Service-Systems (MSS) offer opportunities for value creation and capture through the application of circular strategies, and may thus be classified as circular business models. Moreover, PSS and MSS combat structural waste by providing the necessary closer value chain relationships, and are therefore also mechanisms to create circular value chains. We collectively refer to services with a resource component such as PSS and MSS as Resource/Service-Systems (RSS). Although helpful stepping stones, current RSS approaches are insufficient to understand the change that is needed within and between businesses, and capture the opportunities circular strategies represent, since current RSS approaches 1) do not engage in sufficient detail with circular strategies; and 2) they lack the capacity to shed light on the enabling actor configurations underpinning RSS for circular systems as a whole. To illustrate: RSS have different value creation and capture potential depending on which circular strategies are applied, an organisation’s position in the value chain, and the system design. At present, such aspects are not typically part of holistic analysis and design of circular systems. It is therefore difficult to examine which combinations of circular strategies and which enabling actor configurations make effective business model and business model ecosystem patterns. To address this gap, we develop the Resource Service Spectrum: a framework which extends current RSS typologies to include a focus on circular strategy configurations and actor configurations.
Keywords
Circular economy oriented innovation; product/service systems; component/service systems; material/service systems; resource/service systems; resource states.

1. Introduction
The concept of (industrial) Product/Service-Systems ((i)PSSs, or iPS2) has long since been identified as potential mechanisms for increased circularity - primarily in the area of components and products, but also to an extent in the area of materials (Boons and Bocken, 2018; Stahel and Reday-Mulvey, 1981; Yang et al., 2018; Zeeuw van der Laan and Aurisicchio, 2020). PSS include such offerings as the provision of spare parts or repair and maintenance services, and sharing models such as tool libraries and car sharing systems, as well as the delivery of performance through the outsourcing of tasks based on performance contracts (Tukker et al. 2006).

Putting the spotlight on the circularity of materials is the emergent concept of Material/Service-Systems (MSS) (Aurisicchio et al. 2019; Stahel, 2006). MSS includes Chemical Management Services (CMS) that support the handling of chemicals (Stoughton and Votta, 2003) and Chemical Leasing or Materials-as-a-Service, where ownership of the materials remains with the manufacturer and the user gets access to the functionality of the materials. Materials-as-a-Service has been applied to catalysts, lubricants and a range of other speciality chemicals (Buschak and Lay, 2014) and has also been explored in the case of rare earth elements in ELV batteries (Aurisicchio et al., 2019) and a range of other materials (Rau and Oberhuber, 2016).

Collectively we refer to services with a resource component such as PSS and MSS as Resource/Service-Systems (RSS). This framing is aligned with and extends Tukker et al. (2006)'s PSS typology that focuses on products, but also explicitly includes materials and components. RSS thus covers the full range of resource services in between pure resource sales (e.g. sales of materials, components, products) on the one hand, and pure service (no or negligible resource component required) on the other. In between these two end-points, there exists a range of RSS where a mix of “tangible resources” and “intangible services” designed and combined so that they are jointly capable of fulfilling customer needs across the value chain (adapted from: Tukker and Tischner, 2006, adaptations in italics).
RSSs can be considered as circular business models: ways of operating (part of) a business in a manner that is in line with the principle of addressing structural waste, whilst creating improved or new value creation and capture opportunities, and reducing value loss and destruction (EMF, 2013; Blomsma and Brennan, 2017). As such, circular business models leverage circular strategies for value creation and capture. Moreover, the implementation of RSS requires the involvement of multiple actors. This is because addressing structural waste - which frequently results from the misalignment of actors - requires redefining relationships and establishing new ways of working together. Collaboration and the alignment of processes is key to this. In other words: the actor configuration needs to be reconfigured to enable (more) circular flows of resources. After all, ‘people make flows flow’ (Baumann, 2004, 2012). As such, there is a close connection between the development of circular business models and the development of circular value chains.

Although the expectations for RSS to contribute to increased circularity and sustainability are high, their adoption levels are still low (Tukker, 2015; OECD, 2017). Moreover, evidence around the actual impact of the largest of the RSS sub-domains, PSS, is mixed (Tukker, 2015), with concerns raised around rebound effects that negate positive impacts (Zink and Geyer, 2017). These negative effects can stem from behavioural changes prompted by the widespread availability of RSS, such as seen in some car sharing systems, where the overall road use increases instead of decreases (Bocken et al, 2020). However, rebound effects can stem from technical aspects related to resource quality, such as when recyclate is not of sufficient quality to substitute virgin materials and additional markets have to be created for these materials (Zink and Geyer, 2017; Gregson et al, 2015). In addition, rebound can stem from a combination of behaviour and technical aspects, such as in the case of dockless e-scooters, which add additional motorised traffic as well as require more materials per transportation unit (Hollingsworth et al., 2019). In these cases, increased circularity leads to more structural waste, not less. This prompts the need to design RSS in a manner that truly addresses structural waste.

Suggestions have been offered of how RSS can be designed to prevent these effects, such as through identifying the conditions under which RSS are also more sustainable/ circular (e.g. Zaring et al., 2001; Kjaer et al., 2019). So far, however, a systematic, detailed and pragmatic approach to understanding and designing new RSS from a CE point-of-view is absent. Without this, there are limited mechanisms.
to, within the context of RSS A) to understand the role of circular strategies in value creation and capture activities, B) to understand the necessary supporting actor configurations required, including the accompanying business model ecosystem, or C) to understand the barriers that need to be overcome and the enablers that make RSS a success. Salient patterns with regards to circular business models and circular business model ecosystems cannot be uncovered without such knowledge. In turn, this inhibits circular oriented innovation, or COI (Brown et al. 2019) - innovation activities that aim to address structural waste and capture the opportunities this represents for increased value creation and capture, and/or the possibility to reduce value destruction - as guiding principles and system design recommendations are lacking.

In this paper, we aim to provide a foundation for remedying this gap and with this we support both the academic and business communities. That is: for scholars we provide an analytical framework to guide both the generation of deeper scholarly insights into RSS and circularity. Second, for practitioners of COI we provide a pragmatic approach to understand and explore directions for COI - including circular business models and circular value chains.

In the next section, we proceed by exploring the nature of existing PSS and MSS approaches, and highlight where they are insufficient for understanding how circular value and capture can be created through RSS-oriented COI. Next, we put forward two frameworks that - combined with existing RSS thinking - can offer a way forward. Specifically, we discuss the Resource States framework and the ‘Big Five’ Structural Wastes framework in turn. We introduce the automotive industry as a case example, and proceed with applying the proposed frameworks to examine the CE aspects of RSS in the automotive industry more clearly, focussing on car sharing. In the discussion section we generalise our learnings and consolidate our insights by linking it to the broader CE business model and value chain discourses.

2. Background: the current Resource/Service-System literature and its limitations

As part of RSS - and to different degrees - resources can be provided with through-life support, their productive life time extended and/or their capacity for value creation optimised. This addresses structural waste, whilst offering value creation and capture opportunities. Although this relationship between RSS and their potential for addressing structural waste through the application of circular
strategies is widely acknowledged, a systematic, detailed and pragmatic approach to understanding and designing new circular systems that incorporate RSS is absent. This is due to three main shortcomings in the RSS literature, which presently lacks with regards to providing support for A) understanding the role of circular strategies in value creation and capture activities, B) understanding the necessary supporting actor configurations required, including the accompanying business model ecosystem, or C) understanding the barriers that need to be overcome and the enablers that make RSS a success. Next, we examine each of these shortcomings in detail.

2.1 RSS literature does not engage sufficiently with circular strategies and structural waste

An important part of the RSS literature is dedicated to investigating typologies that characterise different types of offerings available to RSS customers. In the area of PSSs, for example, Tukker and colleagues distinguish between Main and Sub-categories of Product-Services, with the three main categories being product-, use-, and result-oriented PSS (Tukker 2004; Tukker et al. 2006). Mont (2002) identifies five main categories: product/service/combinations/ substitutions, services at the point of sale, different concepts of product use, maintenance services, revalorisation services. Baines et al., (2007) categorises PSS on whether the service or the product is the main or the supporting element. That is: whether the service supports the product or vice-versa. Likewise, in the area of materials, similar classifications are proposed, such as Three major categories of services in the chemical sector (Weigel, 2003, in: Mont et al., 2008). This typology distinguishes between: chemical products and related basic services, chemical products and technical services, and integrated or total chemical services.

A second contribution of the RSS literature is the identification of functional elements and the creation of morphological maps. Such frameworks support the design and configuration of RSS, serving as a list of ingredients to choose from and combine. For instance, the box scheme provided by Lay et al., (2009) has a range of options covering the dimensions of ownership, personnel, location of operation, single/ multiple customer operation, and payment mode. Tan and McAloone (2009), following this thinking, developed a scheme consisting of 56 ‘ingredients’, covering sales channels, monitoring, training, and a range of product related circular strategies. Similarly, where it concerns MSS, Buschak and Lay (2014) describe commonalities of chemical leasing models, containing such elements as the need to change business models, the enabling role of monitoring
technologies, and the importance of offering such services as part of a larger offering portfolio.

Although these and other frameworks are valuable in their respective contexts, on their own they are insufficient for understanding how to create circular value and capture it through RSS-oriented COI. For one, these typologies typically do not engage with circular strategies, or not with the full range that falls under the CE umbrella (Blomsma and Brennan, 2017; Homrich, 2018). And where such frameworks acknowledge circular strategies, they are insensitive to the range of potential implementation scenarios that are possible for such strategies (Blomsma and Tennant, 2020). For example, in recycling material quality is preserved on a high level, whereas in cascaded recycling (downcycling) a subsequent use for a material is found for an application that is considered either of lesser quality or of lesser value. Similarly, reuse that involves upgrading, refurbishment or remanufacturing, is different from reuse that merely entails redistribution of a product to a new user or new use context, since product quality and features are remade. In short: the RSS literature lacks the necessary detail with regards to circular strategies to examine their role within RSS. Consequently, it is difficult to understand how RSS can systematically address structural waste, how circular strategies can be leveraged for value creation and capture, and under what conditions new structural waste - e.g. circular rebound - occurs.

2.2 RSS literature does not comprehensively cover the three resource states that are affected by COI

At present, the RSS literature is fragmented into the two silos of PSS and MSS, which are largely unconnected. This is problematic since COI tends to either create new, or adapt or improve existing circular configurations: situations where two or more circular strategies are present and interact (Blomsma et al, 2020; Fischer and Pascucci, 2017). Circular configurations frequently consist of circular strategies that affect a mix of materials, components and products.

For well-functioning configurations it is key to understand which circular strategies affect materials, which affect components, and which affect products, as well as to create synergies between the circular strategies and to minimise the effect of trade-offs. Take the following case of Renault and its supplier. Renault previously provided maintenance for its machining equipment and bought cutting fluids from the manufacturer, whilst also taking care of monitoring, replacing and disposing of the fluids. In this arrangement the fluids needed to be exchanged weekly or monthly due to the build-up of impurities. In search for a more efficient solution,
a new arrangement was implemented where the manufacturer of the equipment now provides Renault with maintenance services for the machines, including the supply and disposal of the cutting fluid. In response, the supplier implemented design changes to the fluid formulation and usage process, and through this was able to extend the usage period of the fluid to a full year. The result was that Renault was able to reduce its total cost of ownership for the related processes by 33% and the supplier was able to improve its margin by 125% (McKinsey & Co, 2016). This example shows that well-thought out alignment of a PSS - offering maintenance service for the machining equipment, and an MSS - including the cutting fluid as part of the service, can address multiple types of structural waste and result in benefits for multiple partners along a supply chain.

Apart from considering both products and materials in the context of RSS, an additional clarification is needed. The PSS literature currently does not distinguish between finished goods that users can derive value from, and components that need to be part of a larger assembly to be useful: both are regarded as PSS with equal standing. But in the example of Rolls Royce’s airplane engines power-by-the-hour scheme (Smith, 2013), or façades-as-a-service models (Azcárate-Aguerre et al., 2018), these components have to fit in and function as part of larger assemblies, respectively airplanes and buildings. Although both the airplanes and buildings as well as the engines and façades can be supported by services, they differ in a number of ways. For example: the operator of the product is oriented towards the customer, and can choose whether or not to share performance data of components with the component suppliers, thereby controlling the degree to which component suppliers can innovate and improve. On the other hand, component suppliers can inhibit a product operators’ capacity to generate revenues, if no incentives exist that allow the supplier to benefit from the efficiency of the overall system. Also consider what may happen when the supplier of the product service defaults on its payment to the component supplier. Airplanes and buildings cannot function without engines and façades. In other words: for product and component RSS to function well, we need to regard them as parts of a larger whole whilst acknowledging that they have their own unique characteristics, where the design, operation, and risk and revenue sharing procedures need to be fair and aligned, if the whole system is to function well. Or, put differently: RSS approaches need to be extended to include the interfaces and linkages between RSS.
The preceding examples highlight that - if our understanding of the role of RSS within CE is to progress - a more systematic and holistic framing with the different resource states of materials, components and products is needed, as also earlier indicated by Hagelüken (2014) and Lifset and Eckelman (2013) in the context of sustainable materials management.

2.3 RSS do not allow for systematically exploring and understanding the necessary actor configurations

A second related insight from the above is the need to integrate different actor perspectives in order to support greater circular value creation and capture through RSS-oriented COI. Actors can prioritise different circular strategies and pay attention to different success factors and they construct different risks, which inhibits collaboration, depending on whether their perspective is grounded in materials, components or products (Lapko et al., 2019; Machacek et al., 2017).

As well as acknowledging different perspectives, it is necessary to understand them as relational to the life-cycle stage they are active in. Recycling-as-a-service (RaaS) can be used to illustrate this. This model of operation is different from regular recycling in the sense that ownership of the materials is not conveyed to the recycler, but they continue to be owned by the client of the recycling company. Recycling-as-a-service can take place as industrial recycling, where pre-consumer wastes are turned into new materials for the manufacturing process, such as the RaaS service offered by recycler Wipag. Alternatively, one could conceive of mobile recycling-as-a-service units to clean-up ocean plastics to recycle post-consumer wastes, as proposed by Sørensen (2019). Such a material could even have added value compared to a virgin material, due to its journey and the narrative this provides. As a result of targeting different life-cycle stages, these two MSS involve different logistical operations, require different ways of ensuring consistent and high-quality recycling outcomes, and harbour different value capture and creation opportunities.

In addition to this, an important blind spot of current RSS approaches is that they emphasise RSS at the expense of the ‘pure resource’ (no service component) and ‘pure service’ (no or limited resource component) parts of the spectrum. In reality, RSS interface and interact with these outlying parts of the spectrum. This is salient, as creating circular systems can be achieved through linking different value chain actors in a variety of ways (Baumann, 2004, 2012; Brennan and Tennant, 2018). One such set of linkages may create different value creation and capture opportunities for the systems as a whole, then another set. Any particular
assembly of linkages within a value chain, we refer to as an actor configuration: the set of actors and actor interfaces that make up a value chain.

It is important to remember, however, that as well as synergies, trade-offs between circular strategies may be present. For example, lightweighting vehicles through use of composite materials may reduce their impact during use (e.g. reduce fuel consumptions), but make them more difficult to recycle at the end-of-life. This can have negative effects on value creation and capture for some actors (e.g. the recyclers), whilst it may be positive for others (e.g. the PSS operator). This shows that actor configurations are inextricably linked with resource configurations.

In the above, we have argued that the current RSS literature lacks the conceptual tools to address the shortcomings and blind spots outlined. What is needed to progress the RSS literature is: a) to link it with a systematic approach to structural waste and circular strategies, b) better integration of considerations across resource states, and c) a relational view of actors, where the set of actors and actor relationships is viewed from a life-cycle perspective and is linked with the circular configuration. These capabilities will allow for examining business model patterns and business model ecosystem patterns and to understand how interests across the value chains can be aligned and how value can be created and captured by individual actors through the complementarity of their business models.

3. **Approach - research design**

In order to explore how differences in resource and actor configurations influence value creation and capture through the application of circular strategies, we create and compare four car-sharing ‘archetypes’. In the following, we explain our choice for the PSS type investigated and why we have chosen the automotive segment to analyse. Next, we discuss how the archetypes were created, as well as our approach to analysing them.

3.1 **Use-oriented PSS - car-sharing business models**

We investigate and map a range of car sharing services that are all classified as use-oriented PSS (rent/ share based) within the well-known typology of Tukker and colleagues (Tukker et al., 2006). This means that the user of the service does not own the car, but pays for access to the vehicle for a specified time slot and/or
number of kilometres. We have chosen to examine cases that fit within a single category of this typology to highlight that although this category gives a broad indication of what is of interest within the system under investigation, more depth is needed if the full potential of circular strategies is to be understood.

We have chosen the automotive sector as it is already circular to a large degree. The manufacturing infrastructure is mature and well-developed: with many lean manufacturing and zero-waste-to-landfill approaches in place. Moreover, the support infrastructure for repair and maintenance is also relatively sophisticated. In addition to this, the ELV vehicle directive dictates that 85% of materials need to be reused or recycled, and 95% of materials to be reused or recovered (including energy recovery) (Directive 2000/53/EC). Yet, significant structural waste is still present. For one, cars are not used 95% of the time. Moreover, large potential exists for extending vehicle life, the life of parts and components, as well as to ensure better quality outcomes when it comes to recycling of materials (Allwood and Cullen, 2012; Circle Economy and ABN Amro, 2016). For this reason, it is insightful to explore where and how RSS can support further circularity. To structure our analysis and findings we draw on the following two analytical frameworks described below. Data was collected through compiling circular economy case examples within the automotive industry, a selection of relevant academic and grey literature sources, company presentations and a series of interviews with stakeholders of the Circular Cars Initiative.

3.2 Analytical frameworks - the ‘Big Five’ Structural Wastes and the Resource States framework

Structural waste exists in various forms (Blomsma, 2018; Blomsma and Tennant, 2020), see Fig. 1. This figure shows the ‘Big Five’ Structural Wastes: that both materials - or particles - as well as components and products can be regarded as ‘wasted’ if they are not renewed or restored, but also if their capacity for value creation is not fully used. In our analysis, as in line with the ‘Big Five’ we designate types of circular strategies as belonging to one of these five types.

To represent the life-cycle perspective, we draw on the resource states framework by Blomsma and Tennant (2020), which is in line with other sources on circularity such as Young et al., (2001), Fischer and Pascucci (2017) and Hopkinson et al. (2018). This framework uses material entropy to describe the journey of resources through the economy and the different forms they take on along the way. Material
entropy describes degree to which materials are distributed and diffuse, or are concentrated (Boulding, 1966). The first resource state is that of ‘particles,’ or where we speak of elements, substances, molecules or materials. Through the act of organising - using technological or logistical means - (bulk) materials are created. Next, ‘parts’ are created, covering the level of components, modules and (sub)assemblies. This is where materials are given an intermediate level of organisation: components are more organised than materials, but are not yet sufficiently organised to be useful on their own. Finally, components are assembled into ‘products’ from which end-users can derive value.

Following the remainder of the industrial life cycle in line with circular economy thinking, these states of organisation can be reversed, or partially reversed, to allow for the cycling of products (e.g. as-is reuse, redistribution, product cascades), cycling that involves (partial) disassembly into components (repair, maintenance, refurbishment, remanufacturing, upgrading, component cascades, etc), and the cycling of materials (recycling, composting, cascaded recycling, cascades). This can
be done in a closed-loop manner, or through open loops that link one system to another. This journey can be visualised as depicted in Fig. 2.

We will apply both frameworks to analyse the automotive industry qualitatively, as we are interested in the types of wastes and the types of circular strategies. We regard quantifying these wastes as a piece of further work.

Fig. 2. Resource States framework: depicting the industrial life cycle, the flow of resources through the economy, and the different levels of organisation these resources take on during this journey.

4. Results

In line with the analytical frameworks used, we present our results as visual mappings, see Fig. 3 and Fig. 4.
4.1 The current situation: private car ownership

Fig. 3 depicts the current prevailing situation of private car ownership, with the resource flows indicated on the Resource States framework and the circular strategies indicated using the ‘Big Five’ categorisation. The arrows indicate when the resources enter a new life-cycle stage. Specifically, for cars we distinguish between: raw material extraction (mining/ extraction/ farming), the manufacture of bulk materials (plates or rolls of metal, polymer granulate, etc), the manufacture of components, the manufacture of products, forward logistics (e.g.

Fig. 3. Simplified mapping of current situation of private car ownership, indicating the main flows of interest from a product perspective. The line thicknesses are merely representative of the ‘order of magnitude’ of flows, not of exact quantities. Manufacturing, logistics waste and system leakage considered out-of-scope for this analysis. Assumptions made regarding sale and resale (via dealer/ broker) in this example, but other scenarios are also possible. Virgin inputs assumed. Scope extended to include impact of vehicle use (e.g. fuel use).
car dealers, which may or may not operate as a franchise), a use phase, redistribution (e.g. second-hand sale), scrapping (disassembly and pre-treatment of materials by authorised actors), with some parts being resold, and finally the recycling or landfilling or materials.

The left of Fig. 3 depicts where circular strategies of which type can be found. This part of the diagram confirms that a large number of circular strategies apply to the car industry. The ELV vehicle directive together with commercial incentives, for instance, drives several preventative strategies, the reuse of parts, and the recycling and cascading of materials. In this sense, the car industry operates as a circular configuration.

The right side of Fig. 3 shows that several significant structural wastes still exist. Vehicles are idle the majority of the time, and although fuel efficiency has gone up over the last few decades, vehicles also have become heavier, over-specified for most use-cases and thus resulting in large amounts of fuel still being required. One could also argue that both the vehicle and many of its constituting components reach their end-of-life prematurely (Allwood and Cullen, 2012), given emerging refurbishment and remanufacturing activities (Circle Economy and ABN Amro, 2016). Moreover, as is the case generally with recycling, secondary raw materials are rarely returned to a virgin-like state. In reality, downcycling often takes place.

4.2 Rent/ share based PSS models: towards increased circularity

Four distinct car sharing archetypes were developed based on existing car sharing models and designs for car sharing models, as well as combining them with other RSS on the fore-front of circular thinking. The basis for their grouping is their potential for addressing structural waste. The four car sharing archetypes are organised along a scale where the left side represents the smallest improvement (potential) for resource productivity in relation to private car ownership, and the right side the largest. The four archetypes are:

- **Peer-to-peer**
  - Based on: e.g. Get Around and Hiya car.
  - The model: the owner-user owns and uses a car him- or herself, whilst also making it available to other users via a digital platform. Revenues are shared between the platform provider and the vehicle owner.

- **Third party operated**
  - Based on: e.g. Zipcar and Greenwheels.
- The model: these car-sharing platforms buy existing vehicles and make them available to users, indicating that they are part of their service through branding the vehicles. Usually a combination of a subscription with a pay-as-you-go fee is applied.

- **Consortium operated**
  - Based on: Share Now (former Drive Now and car2go).
  - The model: both the service operator and the vehicle manufacturers are owned by the same consortium. In the case of Share Now this means that they only use vehicles only from Daimler and BMW (e.g. Smart, Mercedes-Benz, BMW, and Mini). Share Now is co-owned by the Daimler and BMW mobility alliance, and serves as one of the PSS branches of these two vehicle manufacturing companies.

- **Systems integrator**
  - Based on: Riversimple, with inspiration from other RSS such as Michelin’s tyres-as-a-service and Wipag’s recycling-as-a-service. Although Riversimple is a pre-revenue company, with pilots ongoing, the systems design is illustrative of how circular strategies can be used to address structural waste, whilst creating value for multiple stakeholders. At the same time, companies like Michelin and Wipag already operate parts of the system in the way Riversimple aims to operate, showing the validity and feasibility of becoming a systems integrator.
  - The model: Riversimple has followed a radical efficiency approach in designing vehicles for use in sale-of-service systems. What’s more, they are working with suppliers to up-stream service thinking, and to get access to components and materials through components-as-a-service and materials-as-a-service (Blomsma et al., 2018, Lloyd, 2017) (presently they still largely buy materials and components).

Fig. 4 gives an overview of the archetypes as well as the status-quo, allowing for visual contrasting and comparing. For reasons of simplicity and brevity, we discuss only the basic scenario targeted at consumers, and exclude other parts of operations such as any business-to-business elements. The differences between the PSS models are all depicted in relation to the private car ownership model. Next, we discuss the circular strategies that are present in each model, new types of structural waste that emerge, as well as the potential for incorporating
additional circular strategies - which are summarised in the top row of Fig. 4. Here, the arrows indicate transitions between different life-cycle stages.

**Resources, waste and circular strategies**

The intensification strategy in the use phase is indicated for all models, since this is the essence of this type of PSS models. For peer-to-peer car sharing, however, this is the only new circular strategy. Third party operated models, on the other hand, operate at scale which improves their buying power, and they can therefore negotiate better terms on service contracts, as well as negotiate the acquisition of high-quality spare parts. In these models it is furthermore possible to learn about what features of the vehicles reduce maintenance costs, and specify such features if they are present in existing OEM catalogues. Seats with (artificial) leather covering, for instance, are easier to clean compared to fabric seat covers. Combined, these actions reduce costs, as well as improve the ‘health’ of the components and vehicles overall.

In addition to the strategies already mentioned, consortium operated models have the potential for optimising vehicle design for better fit within their system. Our inspiration for this archetype, the service operator Share Now and the vehicle OEMs, are all owned by the same mobility consortium. Due to the direct link between the operator and the OEM, new ideas for product designs can be more easily conceptualised, tested and implemented more quickly. In addition to this the health of certain critical components such as the battery of EVs can be monitored more easily (e.g. less privacy concerns). This allows use patterns to be better understood, and the component specification and product design adjusted accordingly. This allows the consortium to improve its system more rapidly, making it more efficient and extracting more value from its assets, whilst gaining competitive advantage.

The Riversimple model - currently under development - also allows for the creation of the circular benefits already described. However, Riversimple’s approach goes beyond using and adapting existing vehicles. Instead, this company is developing a new system that actively addresses a multitude of structural wastes. Through applying radical efficiency principles, the company creates the highest number of synergistic circular strategies or the most intricate circular configuration contained in our analysis (Blomsma et al, 2018). This is a result of
Riversimple’s starting assumption that conventional cars are over-specified for conventional use (Bocken and Short, 2016; Wells, 2018). For a start, car manufacturers do not have to provide the most efficient cars possible: profits of OEMs are not directly correlated to the fuel efficiency of the cars they produce. Typically only 14-30% of fuel energy drives vehicles: the rest is lost as a result of power-transmission inefficiencies and powering ancillary items (in: Wells, 2018). In addition, of the 4-5 seats, only 1 or 2 are frequently used. Finally, the top-speed possible is often lower than the actual top-speed driven, resulting in larger engines than necessary. In terms of usage patterns, cars are not optimised for the frequent starting, stopping and accelerating that is characteristic for city road use. By taking a whole systems approach, meaning that the car is designed specifically with radical efficiency in mind for a maximum of two occupants, with lower top-speeds, with acceleration decoupled from cruising demands, by removing accessories and providing ‘luxury minimalism’, Riversimple’s hydrogen-powered Rasa prototype is between 2.3-3.7 times lighter than other environmentally conscious car designs (Wells, 2018).

As well as these circular strategies, the Riversimple model also contains Component/Service-Systems (CSS) and a Material/Service System (MSS). Here, the company works together with its suppliers, to up-stream the RSS mindset. As part of this, they are working to improve the longevity of their vehicles, through improving the longevity of the components. This means making components more robust, easier to service and easier to repair and replace. To put it differently: component manufacturers are asked to become component fleet operators. An already existing example of this within the automotive industry is tyre manufacturer Michelin, who offers various tyre services, among which is their tyres-as-a-service offering. Note that this may involve the integration of multiple CSS, as one component supplier can feed into an assembly produced by another component supplier.

Riversimple intends to also work with materials suppliers applying RSS thinking. With this, Riversimple aims to incentivise their supply chain to act as good stewards of materials. This way, a pure recycling stream can be created ensuring high-quality recycling. An existing example of this is recycler Wipag, who offer recycling-as-a-service to OEMs, processing manufacturing wastes. However, with car-sharing models in place, it is only a small step to imagine such a way of operating being applied to ELV vehicles also. Note that similar to CSS, there may be the possibility to link different MSS: the supplier of a material can continue to own it, but use local recyclers for treatment and recycling. Taken together,
Riversimple’s model increases coverage of the resource states through actively pursuing circularity in the product, component as well as the particle state, and shows the potential for increased circularity when multiple RSS are integrated to function as a whole.

In addition to new circular strategies, the top row of Fig. 4 also depicts (potential for) new structural wastes. For example, in car hire systems cars tend to be written-off sooner compared to when they are owned by private users. This is due to users taking less care of cars that they do not consider their property (Tukker, 2015). In addition to this, when such systems do not replace private car ownership, there may be a circular rebound effect where car use becomes more accessible, which drives increased use of cars (Zink and Geyer, 2017; Kjaer et al., 2019). This risk is present in all four car-sharing models included in our analysis. Another example of a new waste added, is the choice to use composite materials in the chassis of Riversimple’s cars, means that although the vehicle is lighter and uses less fuel during its lifetime, that recycling is not a feasible end-of-life strategy for this part of the vehicle, given present technology - although this may change in the future, especially if a commitment to the service model is made early on, which allows recyclers and composite providers to invest in the necessary technology and infrastructure for recycling.

**Actor configurations**

Next, we turn to the actor configurations, which are summarised for each archetype in the bottom row of Fig. 4. The focus in this diagram is on where materials, components or products are sold, offered as a RSS, and/or are supported by a (pure) service. In this diagram, the arrows indicate hand-over points of ownership, and with it the responsibility for end-of-use and end-of-life treatment (Rau and Oberhuber, 2016).

The figure shows that for the peer-to-peer car sharing model, in one sense, the organisational set-up changes little in relation to private car ownership: the vehicle itself is still privately owned, after all. However, through the addition of an online platform more users get access to the same vehicle. This archetype can therefore be called a hybrid ownership/ PSS model. The sphere-of-influence of the vehicle owner and the platform provider have limited influence over the remainder of the supply chain.
In the remaining archetypes the sphere-of-influence is expanded to different degrees. For instance, in the other 3 archetypes it is easier to negotiate good terms with service suppliers and to get access to high quality spare parts, due to the buying power of PSS operators and/or the integration of OEMs into the system. If learning loops are to take place across organisations, such as in the Share Now example between the PSS operator and the OEM manufacturer, mechanisms have to be put in place to enable this - e.g. collect, aggregate and analyse data, and for this information to feed into R&D and decision-making processes.

Due to Riversimple’s choice to work with suppliers to upstream the RSS mindset, their proposed change goes beyond adaptations to an existing system. Instead, working with suppliers to operate several RSS in an integrated manner to extend its sphere of influence and align interests, means redesigning the value chain in a fundamental way: all partners involved have to adapt and align their business models, so that a new ecosystem of circular business models is created. That is: these shared value creation efforts have to go hand-in-hand with profit sharing mechanisms and clear procedures for responsibilities and risk sharing. For this reason, new innovative contracting mechanisms are being explored by the company. To support this, new ways of sharing information to increase transparency (e.g. block chain), are being explored. This ensures that all actors feel fairly treated, as well as that learning can contribute to further efficiency of the whole system. Through Riversimple’s novel approach to value chain collaboration, all partners will benefit, and interests across the value chain become aligned with each other as well as with reduced resource use, since every stakeholder has an interest in efficiency of the overall system and with using a minimum amount of materials.

This does not mean that capturing further circular advantage is out of reach for the other models. However, different actor interfaces will have to be explored, such as buy-back systems or producer responsibility schemes, and it may impact the degree to which such opportunities offer value creation and capture opportunities. Currently, little knowledge of such patterns on the supply chain level exists. Further work is needed in this area.

However, what is evident from Fig. 4 is that car sharing models can differ wildly in who captures what amount of value where in the value chain. This despite the fact that these models are largely similar from a user point-of-view: e.g. the user gets access to a vehicle to get from A to B and merely pays for the time used (small differences between the models put aside, such as whether the model is free-
floating, or whether the car needs to be returned to a fixed point, or the choice of different vehicles offered). Crucially, these models are all categorised as a use-oriented PSS (rent/share based) within the typology of Tukker and colleagues (Tukker et al. 2006). Our analysis has shown that within this single category large differences can exist both in terms of the presence of circular strategies and the actor configuration that facilitate them. We have thus shown that it is necessary to engage more in-depth with both the resource and actor to understand how circular strategies can be leveraged in circular business models and circular value chains.

5. Discussion - the Resource Service Spectrum

Our exploration of the nature of existing PSS and MSS approaches has highlighted their insufficiency for understanding how to create circular value and capture it through RSS-oriented COI, or circularity-oriented innovation. It was shown that there is a need: a) to link the RSS literature with a systematic approach to structural waste and circular strategies, b) to better integrate it with considerations across resource states, and c) to include a relational view of actors, where the set of actors and actor relationships is viewed from a life-cycle perspective and is linked with the resource configuration.

In our analysis of the automotive sector and with the creation of the four archetypes that sit within the PSS type of renting and sharing, we have shown how these three shortcomings can be overcome. As a foundation we took the Resource States framework and the Big Five structural wastes framework, but our overall approach is modular, see Fig. 5. Fig. 5 explicitly expands on the typology of Tukker and colleagues (Tukker 2004; Tukker et al. 2006) into a Resource/Service Spectrum typology that covers materials, components and products. Through using these modular elements, it becomes possible to examine business models and business model ecosystems through the presence of patterns. That is: which sets of business models and ecosystems best align interests across the value chains and how value can best be created and captured by individual actors through the complementarity of their business models.
Fig. 5. Resource-Service Spectrum, based on the Resource States framework, including services aimed at materials, components & products.

Such a modular approach to (circular) business model patterns can be used as depicted in Fig. 6. Fig. 6 illustrates where RSS are to be found and to what degree they are linked, by distinguishing between single, dual and triple resource service systems, depending on their coverage of the three resource states.
Fig. 6 Resource/Service Patterns, showing different combinations of Resource/Service Systems.

The benefit of our proposed approach is that it allows for analysing not just the solution, but also the problem - e.g. the structural waste - that is being addressed. The result of this is that the users of this approach are invited to seek out where structural waste occurs and to take a systemic view on this. In addition to this, by taking a life-cycle perspective organised through the resource states framework, a relational view of business model patterns is created, or a view that focuses on the interaction ‘between’ business models. What’s more, we can start to understand the dependence of business models on other business models. In the case of car-sharing, for example, MSS that offer materials-as-a-service may be dependent on well-functioning PSS. As such, our proposed approach is complementary to existing approaches, such as by Remane et al. (2017) and Lüdeke-Freund et al.,(2019), who offer typologies that can be classified as targeted at understanding the dynamics ‘within’ business models. Further academic work can be directed at integrating these two approaches.

Practitioners of COI, moreover, can use our proposed approach in designing robust new circular business models and resilient new circular value chains. Not only does it allow them to understand structural waste and find potential sources of value creation, it also allows them to explore how best interests can be aligned between
RSS and non-RSS in a systematic manner. With the four automotive archetypes that differ in their integration of circular strategies and facilitating value chain configurations, we have furthermore provided practitioners with an example that will help them explore how to create complementarity between business models in their circular systems.

To sum up: the Resource Service Spectrum - and its use to distinguish between different RSS patterns - offers an analytical framework and approach that can be used by academia to generate deeper insights into RSS and circularity by systematically exploring and understanding what new connections and closer alignment within value chains is needed in COI. This addresses the calls of Lozano and colleagues (2013) for establishing ‘collaborative business models’, Boons and Bocken (2018) for creating ‘ecologies of business models’, and Hsieh et al. (2017) for ‘sustainable business ecosystem.’ What’s more, with this research we have connected the circular value chain and circular business model literatures, and provided insight into how circular strategies can be leveraged for value creation and capture within businesses (Bocken et al., 2016; Geissdoerfer et al., 2018; Lüdeke-Freund et al., 2019).
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Identifying Business Model Patterns in the Sharing Economy

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Extended Abstract

The sharing economy is not sustainable by default. In order to realise its potential to reduce net consumption (Frenken and Schor, 2017), we must be strategic and deliberate in how we design sharing economy business models (SEBMs). However, without financial incentives, the “sharing economy ideal” is difficult to achieve scalability, to maintain economic viability, and to preserve community-based aspirations (Acquier et al., 2017; Laukkanen and Tura, 2020). In other words, there is a gap between the design and successful implementation of sustainable business models (Baldassarre et al., 2020; Geissdoerfer et al., 2018; Ritala et al., 2018), particularly SEBMs. Therefore, there is a need to learn from existing SEBMs to establish “patterns in action” that support sustainable value creation.

The aim of this research is to identify business model patterns among existing SEBMs across contexts in order to suggest business model choices that support economic viability and improved sustainability performance. In this way, patterns seek to elaborate generalised solutions to a specified problem (Abdelkafi et al., 2013; Gassmann et al., 2014; Lüdeke-Freund et al., 2018; Lüdeke-Freund et al., 2019; Remane et al., 2017). A solution pattern is determined when a combination of business model choices occur repeatedly in successful business models (Amshoff et al., 2015). Patterns are increasingly attractive to structure knowledge, to facilitate communication, and to support business model innovation (Lüdeke-Freund et al., 2018). In this research, we propose patterns to address the problem of limited successful implementation of sustainable business models in the sharing
economy. This organisational perspective supports learning among sharing platforms to enhance their sustainability impact. Establishing patterns to support learning is an important research contribution on the role of business models to support sustainability transitions.

In this research, I depart from a normative definition of the sharing economy, which prioritises reduced resource extraction, greenhouse gas emissions, and social issues. Thus, I define the sharing economy “…as a socio-economic system that leverages technology to mediate two-sided markets, which facilitate temporary access to goods that are under-utilised, tangible, and rivalrous” (Curtis and Lehner, 2019; Curtis and Mont, 2020). In previous research, this definition was operationalised in describing SEBMs using morphological analysis (Curtis and Mont, 2020). Building on literature, expert feedback, and empirics, the resulting morphological box describes sixteen business model attributes and their corresponding choices (Figure 1).

![Morphological box depicting sharing economy business model choices (Curtis & Mont, 2019)](image)

The research approach follows that of Amshoff (2015), Hunke et al. (2017), and Tangour et al. (2019), whom conducted a quantitative cluster analysis to establish business model patterns. I employ a five-step research process: 1) establishing
framework and configuration options; 2) data collection and preparation; 3) cluster analysis; 4) data validation; and 5) business model pattern interpretation.

In the first step, the business model attributes and choices presented in Figure 1 are condensed into configuration options. Each configuration option represents a mutually exclusive expression of SEBMs, which can be mapped by examining online and interview data with sharing platforms. In the second step, I analyse data collected from five global cities: Toronto, Amsterdam, San Francisco, London, and Berlin. These case cities were selected as part of the Urban Sharing research programme as they represent contrasting political, economic, and social contexts. This selection follows the maximum variation case selection strategy (Flyvbjerg, 2006). In each city, the selection of sharing platforms is based on preconditions (or properties) for improved sustainability performance stipulated in Curtis & Mont (2020):

- Operates as a platform
- Leverages idling capacity of an existing stock of goods
- Possesses non-pecuniary motivation for ownership
- Facilitates temporary access over ownership

Of those identified sharing platforms, their business models are mapped in relation to the configuration options determined in the first step. Using binary signifiers, in each instance where the configuration option is present, I record a ‘1’ and in each instance where the configuration option is absent, I record a ‘0’ (an extract is provided in Table 1).

Thirdly, a form of cluster analysis is conducted, where Table 1 is converted into a similarity matrix and transferred into a multi-dimensional scaling (MSD) visualisation. A similarity value is calculated, based on when two configuration options occur repeatedly in combination. The higher the similarity value, the more often the configuration options are used jointly. The visualisation illustrates configuration options with high similarity values in close proximity, making it easy to identify business model patterns in a “comprehensible manner” (Amshoff et al., 2015). However, prior to this, we carry out sensitivity analysis. In the fourth step, following the approach of Hunke et al. (2017), we intend to neglect the clustering results silhouette coefficient less than 0.25, which suggests that no substantial structure in the data exists.
In the final step, we identify clusters and interpret business model patterns. We intend to identify patterns generally as well as across city contexts and business model attributes (e.g. platform type, shared practice). For instance, the mapping may highlight prominent value orientations in specific city contexts (e.g. successful SEBMs in North American cities are more likely to adopt a commercial value orientation compared to Asian cities). In addition, one may consider global examples of viable peer-to-peer platforms to determine any patterns among business model attributes that support success. The analysis intends to propose a list of patterns to support successful implementation and improved sustainability impact among SEBMs.

To be useful for researchers and practitioners, this research shall seek to overcome the challenges of incompleteness, overlap, and inconsistent structure of proposed patterns (Remane et al., 2017). The research will seek to address these challenges by reviewing existing literature on business model patterns to triangulate, as well as to validate, our identified patterns. We conducted a database search on 14 April 2020, using the query TITLE-ABS-KEY ("business model patterns"). The search was open to all document types, including articles, conference...
papers, and book chapters. The results returned 56 documents in English. The titles, abstract, and keywords were analysed and full access to 52 documents was obtained. The excluded documents included a retracted article and three book chapters from the same volume that I was unable to obtain access.

In summary, the business model choices and patterns presented in this research seek to establish SEBM design strategies relevant for specific contexts. The results seek to help bridge the design-implementation gap existing among sustainable business models. It is my hope that this knowledge advances literature on sustainable business model innovation as well as converts “knowledge to action”. In this way, we support sharing platforms to learn from global examples in order to improve the financial viability and sustainability impact of their business models.

**Keywords**

Business Model Patterns, Sharing Economy, Sustainable Business Model Innovation

**References**


Sustainability Performance

Highlighting Values, Value Creation and Context in the Business-Society Relationship

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Abstract

To date a plethora of constructs articulating the business society construct exist, such as corporate social responsibility, corporate social performance, corporate sustainability, creating shared value, etcetera. There are signs that some of these constructs are the result of an evolutionary process, although quite some of these constructs lack a precise definition and operationalization. Moreover, although values are undoubtedly at the heart of all these constructs, these are seldomly made explicit, but also many of these constructs do not adequately epitomize a social, environmental and economic system transformation or paradigm shift.

The purpose of this paper is to develop a business-society construct which:

a. explicitly takes the transition towards a sustainable or circular economy, as well as values and value creation into account.

b. can (potentially) be used to evaluate sustainability performance of organizations

To this end the Sustainability Performance construct will be introduced, based on which 4 Sustainability Performance categories are developed. For each category a set of ideal typical strategies and a business model ontology will be developed. A business model ontology is a reference model a model that can be used to calibrate or compare other models. In this paper, existing business models have been selected to serve as reference models.

The Sustainability Performance categories can help organizations to reflect on their sustainability performance: where do we currently stand, and in what direction do we want to move in terms of transition orientation and value creation? This construct can also potentially be helpful in measuring organizational’ sustainability performance.
The Classification of Sustainable Business Model Patterns using Machine Learning

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Extended abstract

Background and aim

Over the past decade, a significant body of knowledge about the various forms of sustainable business models (SBMs) has emerged (Dentchev et al. 2018; Evans et al. 2017; Lüdeke-Freund & Dembek 2017). This knowledge is distributed across various publications from several domains, such as social and ecological entrepreneurship, innovation and design, and operations research. The available categorisations include typologies (Dohrmann 2015; Tukker 2004), taxonomies (Lai et al. 2006; Lüdeke-Freund et al. 2018b), ideal-types (Stubbs & Cocklin 2008), archetypes (Bocken et al. 2014), and frameworks (Fielt 2013).

Whilst some reviews aim to consolidate the distributed knowledge (e.g., Bocken et al. 2014; Lüdeke-Freund et al. 2018a; Lüdeke-Freund et al. 2019), others face issues with overlapping, inconsistent and incongruent descriptions of SBM types. These inconsistencies result, inter alia, from varying descriptions of the actual unit of analysis, overly inclusive definitions of the business model concept, or mixing up factual and normative foundations of describing existing and potential SBM types. These hamper the development of a common SBM repository and language that can continuously grow and be used across different domains (e.g., innovation, entrepreneurship, accounting, etc.). Such a repository would serve several purposes: researchers could use the identified SBM types as analytical lenses for their theoretical and empirical research (e.g., studying the relationships between certain SBM types and corporate sustainability performance), and practitioners could use this information as a source of inspiration for their business development projects (e.g., as an innovation management tool). Our assumption is that the current lack of clarity about existing SBM types limits our understanding of how and when organizations can make real contributions to sustainable value creation.

Therefore, in this paper, the problem of inconsistent descriptions of SBM types is addressed by combining two approaches: pattern theory (Alexander 1977, 1979) and machine learning (Binkhonain & Zhao 2019). The aim is to develop and apply a method that supports the systematic automated identification and classification of SBM patterns.
Leveraging pattern theory and information systems

Some authors suggest using pattern theory as a framework for the identification, description and systematic categorisation of business models (e.g., Gassmann et al. 2014; Lüdeke-Freund et al. 2018a; Lüdeke-Freund et al. 2018b; Remane et al. 2017). Patterns are mostly derived from experience and empirical observations, and are therefore demonstrated to be proven problem-solution combinations (Leitner 2015). Patterns are instruments to codify knowledge systematically and to transform it from the tacit to the explicit (Lüdeke-Freund et al. 2018b).

Opportunities offered by the increasing sophistication of information systems (IS) in areas such as big data analytics and machine learning (ML) (Melville 2010) can help us to discern patterns in the description of business models as they appear in corporate literature and websites, as well as in official reports such as financial statements and sustainability reports (Michalak et al. 2017; Villiers & Sharma 2017). In the case of multinational enterprises, where the law often requires it, these audited documents are commonly made available publicly online via the web (Szekely & Vom Brocke 2017). Given the magnitude of open data available, an advanced software-based pattern recognition system using ML can help to search, identify and classify textual business model data (Gholami 2016). Developing a tool that can be operationalised through ML places IS at the cornerstone of solving this modern-day challenge, in what is an otherwise difficult transdisciplinary and fragmented field of research (Fielt 2013; Lüdeke-Freund & Dembek 2017), by utilising innovative knowledge to deliver a practical solution. The use of a technology platform powered by extensive IS, allows enterprises to experiment with a range of business models and solutions (Remane et al. 2017). Supported by IS, these platforms can extract patterns, and combinations thereof, thereby discovering trends indicating which business models are conducive to transitioning enterprises to a more sustainable outcome.

Methodology

To ensure the replicability and usefulness (March & Vogus 2010; Pries-Heje et al. 2008; Venable et al. 2012) of the classification tool (identification and categorisation), a design science research approach leveraging knowledge and techniques from IS is adopted (Gregor & Hevner 2013). Initially, seed data may be produced by means of annotation by a field expert or through a data labelling process to produce LABELS, using online glossaries and dictionary of synonyms (Collobert & Weston 2008). Seed data informs the ML process by providing the first-pass information linking TEXT concerned with business models with its associated patterns. The use of ML reduces bias by increasing uniformity and consistency whilst controlling for variance. It also means producing more accurate, scalable, and objective results compared to just using a group of experts. Programmatically, the system may be rerun with various corpus of knowledge to produce more relevant results depending on the purpose of the study (Mehrabi et al. 2019). Management theory resulting from this prescription-driven research approach will be used largely in an instrumental way, to design business model solutions to sustainability entrepreneurship and management problems. IS solutions are considered socio-technical systems contributing to the transdisciplinary design science dialogue (Aken 2004).
Expected findings

By adopting a design science research approach, and by leveraging ML, a set of design principles will emerge as the product of design (Walls et al. 1992) that explicitly augments a class of IS-related problem-solution combinations. The resultant customised, author-developed Systematic Pattern Recognition INtelligent Technology (SPRINT) system (Figure 1) processes massive open datasets to classify systematically (i.e., identify and categorise) TEXT (Figure 2), ensuring science integrity, repeatability, and increased significance. The SPRINT ML system developed here is a self-replicating construct, which dynamically generates alternatives and removes confirmation bias, thereby benefitting from IS technologies (Lotrian 2019). Data science and big data analytics adds a sophistication in process far above static reporting (Malhotra et al. 2013), with reduced costs for data acquisition, curation, integration, collaboration, analysis, visualisation, exploration, and predictive knowledge (Wang et al. 2016).

Figure 1. The SPRINT system process model implements machine learning for knowledge engineering.

Enterprises using decision support systems to identify these design principles for IS during business model innovation can support sense-making during their transformation towards business models and activities that are better aligned with sustainability considerations (Seidel et al. 2017). Generated ML models for Learnt Rules can be used to produce generalised (Gregor & Jones 2007) grounded technological rules (Aken 2004) for use in the management sciences, and for implementing IS solutions to integrate into an enterprise’s sustainability strategy (Cao & Zeng 2019). Classification of SBMs can serve to tackle our urgent problems (Malhotra et al. 2013; Watson et al. 2010) by supporting enterprises transforming towards a more sustainable society (Elliot 2011; Melville 2010).

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The SPRINT system

Using source TEXT documents, the ML method LABELS the business model using natural language processing. Accuracy of the seed data determines the reliability of the classification (identification and categorisation) process.

The SPRINT system retrieves the TEXT from the source document (seed data), then annotates with LABELS to create a training set. Next, using the training set, it trains the model (MACHINE LEARNING). The SPRINT system learns the learnt rules from the model, by proposing the learnt rules to the Knowledge Base (KNOWLEDGE ENGINEERING), then writes or extends rules to the Rule Set from the Knowledge Base. The SPRINT system processes the Rule Set to derive Features (such as weights, frequency, synonyms).

Figure 2. The SPRINT system method.

Conclusions and future research

This study will contribute to an openly accessible and scalable pattern database that aggregates the growing knowledge gained about SBMs (Lüdeke-Freund et al. 2018b). The implementation of natural language processing will be shown to be useful in the transition from static reporting to an ML-based, real-time classification system for SBMs. Given the vastness of the source TEXT publicly available, largely comprised by enterprise sustainability reports, the developed Systematic Pattern Recognition INtelligent Technology (SPRINT) system offers consistency, scalability, and replicability in its identification, categorisation, and classification approach.

By leveraging the strengths of ML, the method proposed here compares favourably with manually performed, one-off reviews (Ritala et al. 2018). Traditional literature reviews can cope only to a certain degree with the exponentially growing SBM field. While these methods are certainly needed to develop topical overviews and theoretical propositions based on academic works, ML-based SBM pattern recognition can inform theory from business practice. Its automatic nature also allows ongoing and up-to-date overviews. However, this is only a first step. Building robust SBMs also requires the ongoing benchmarking of corporate sustainability performance (Maltz et al. 2018). Future studies ought to evaluate SBM patterns against their true quantitative and qualitative sustainability performance, thus providing a basis of comparison as to which business model patterns are more likely to yield sustainable outcomes.

Aided by big data analytics, ML models, and neural networks for predictive analytics and deep learning, one can expect better predictive capabilities. This in turn will help in identifying which specific business model patterns are associated with certain levels of sustainability, thereby underscoring those business strategies that truly link business model innovation with sustainable development.
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A Sustainable Business Model in Action: Environmental and Social Performance

A Case Analysis in the Wine Industry

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Abstract

The aim of this research is to analyse Viña Concha y Toro S.A.’s (VCT) strategic business model (SBM). A Chilean based company, VCT is considered Latin America’s largest wine grower. The case study is focused on two of the three core elements of the value proposition, namely environmental and social performance. Towards this end, we use as a framework for analysis the CSR disclosure index (Gamerschlag et al., 2011), Bocken et al.’s (2014) SBM archetypes, and established GRI sustainability performance indicators as reviewed in VCT’s Sustainability Reports over seven years, between 2012 and 2018. Based on this research strategy, extensive content analysis was undertaken on the company’s annual sustainability reports, followed by a complementary in-depth interview providing for qualitative insights. We can conclude that VCT represents the manifestation of a SBM as defined. Sustainability fundamentals are explicitly present in the vision and mission of the company. The value is created for all stakeholders, and coordinated activities are undertaken and implemented with partners and suppliers – impacting the broader wine industry. Analysis of VCT’s sustainability strategic orientation showed that the company made permanent advances from 2015, with an emphasis on social aspects rather than environmental ones. In 2020, the definition of VCT’s strategic orientation is in progress, with focus directed towards the principles of ethical trade, which involves fair wages and human rights, among other issues. The sustainability performance indicators from GRI reports, show positive results in the environmental and social aspect. The company has different SBMs, which coexist with each other, this confirms the theoretical framework used, which postulates that the services rendered by the firm’s unique bundle of resources and capabilities may lead to value creation, as posited by the Schumpeterian innovation and the Resource-Based View (RBV) fundamentals. The study provides an empirical study on SBM and demonstrates that the generation of SBMs is multidimensional and complex.

Keywords

Corporate sustainability; Sustainability strategy orientation, Sustainability strategy performance; Sustainability Business Model; Listed firms, Wine industry; Resource-based view (RBV)
Unravelling Repurposing
A taxonomy for a promising circular business model strategy

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Extended Abstract

Introduction

This abstract addresses a gap in academic literature with regard to a classification of repurposing as a business model strategy by unravelling the repurposing concept and providing insight in the main characteristics of repurpose as a business model strategy.

Theoretical background

In the transition towards a circular economy finding new uses for discarded products and materials is gaining increased attention in practice and research, which is one of nine circularity strategies within the product chain and referred to as ‘repurpose’ by Dutch national strategic advisory boards RLI and PBL (Potting, Hekkert, Worrell, & Hanemeijer, 2017).

According to a circular economy conceptualization study by Reike, Vermeulen & Witjes (2018), repurpose is used to a lesser extent than other circularity strategies. Various academic studies refer to repurpose as a strategy which uses a discarded product or its parts in a new product with a different function (Sieffert, Huygen & Daudon, 2014; Potting et al, 2017; Kirchherr, Reike & Hekkert, 2017). Whereas this definition still leaves some room for technical product modifications and
intentional design for multiple lifecycles, alternative definitions exist among scholars. For example, Sihvonen & Ritola (2015) leave no room for product modifications and specifically refer to repurposing as “using the same product for new purposes without any adjustment” (p. 641) and Bauer, Brissaud & Zwolinski (2017) specifically refer to repurposing as an end-of-life strategy. Furthermore, academic literature also refers to the same concept with alternative terms, including ‘re-think’, ‘fashion upgrading’, ‘part re-use’ (Reike et al., 2018), and ‘upcycling’ (Braungart, McDonough & Bollinger, 2007; Wilson, 2016; Kyungeun Sun, 2015), terms that are also used in practice.

Repurposing has been proposed as a possible strategy for sustainability (Sieffert et al., 2014) and especially gained attention in design literature and becoming popular among industrial design and artists (Reike et al., 2018), mainly because of its creative potential in the gap between reuse and recycling (Mills, 2012). Various contributions have been made by scholars with regard to repurposing of specific product types, for example with regard to specific cases like wind blades (Leahy, 2019; Bank, Arias, Yazdanbakhsh, Gentry, Al-Haddad, Chen, & Morrow, 2018), electronics (Zink et al., 2014; Ortiz et al., 2010) and do-it-yourself repurposing (Wilson, 2016), or in relation to design processes in textile (Han et al., 2017) and civil engineering education (Sieffert et al., 2014).

In sustainable business model literature, several scholars made important contributions in relation to business model strategies for a circular economy, for example the categories of slowing and closing loops by Bocken, de Pauw and van Grinten (2016) and the six business model patterns based on major reverse cycles in closed loop supply chains by Lüdeke-Freund, Gold and Bocken (2018). Bocken, de Pauw and van Grinten (2016) distinguish two business model strategies for cyclic use of products and materials, which are based on ‘slowing’ and ‘closing’ material loops. We consider repurposing as a ‘closing loop’ business model strategy with a focus on extending value where value is captured by turning otherwise ‘wasted’ resources into new forms of value.

Lüdeke-Freund, Gold and Bocken (2018) propose six major business model patterns based on major reverse cycles in closed loop supply chains and associate the ‘cascading and repurposing’ pattern particularly to local Industrial Symbioses relationships and biological cycles. Although some examples of technical nutrient and product cycles are mentioned in relation to the cascading and repurposing pattern - i.e. clothing and EV-batteries - technical nutrient cycles are primarily addressed
in any of the four other circular business model patterns (i.e. repair & maintenance, reuse & redistribute, refurbish & remanufacture, recycling).

Although some academic contributions recognise repurposing as an important business model strategy, attention for repurposing in academic research is still lacking behind (Lüdeke-Freund et al., 2018). This abstract addresses this gap by unravelling the repurposing concept and providing detailed insight in the characteristics of repurpose as a business model strategy.

**Method**

Our unit of analysis in this research is repurpose as a business model strategy and our classification approach is based on clustering empirically collected characteristics and variables, hence we develop a taxonomy (Bailey, 1994, p. 6; Rich, 1992). For this study we conducted 11 semi-structured interviews with experts from research and practice until a convergence of views was accomplished (Huberman & Miles, 1994) and collected 100+ cases examples from literature, interviews and by web search.

Starting from a general classification of factors and characteristics of the repurpose business models strategy based on a preliminary literature study, the 100+ cases were listed in a database with the following variables:

- **Origin** (Sector, Product/function, Country of use, Producer (if known), Uniqueness of origin, Availability (once / intermittent / continuous), Number of availability)
- **Characterisation** (Materials/parts, Production technologies, Product Characteristics, Uniformity)
- **Critical factors** (Unicity, Functional value, Design, Non-uniformity, Discontinuity, (A-)synchronicity, Rebound-effect)
- **Typology**
- **Application** (Sector, Product/function, Producer, Country, When/since)
- **Characterisation** (Preparation, Production technology, Other processes, Materials added, Product varieties, Uniformity)
- **Business model aspects** (Value proposition, Choice option, Distribution, Revenue model, Price, Number of repurposed items)
- **Impact** (Economic, Environmental, Social, Rebound effect)
Based on the interviews, using a pattern-matching logic for explanation building (Eisenhardt & Graebner, 2007; Yin, 2017), we first identified key characteristics of repurposing and derived a definition for the repurpose business model strategy. Next, we used a multiple case study method (Yin, 2017) building on the 100+ cases of repurposing we found. Based on a cross-case analysis we developed a concept taxonomy for repurposing, that was further validated and improved in two workshops with experts from practice.

Findings

The results of this research relate to the identification of key characteristics of repurposing, leading to a number of variables and a domain of repurpose. Based on the interviews we have identified a number of key characteristics of repurposing, entailing:

- Change of context, function or purpose
- Enhancement or extension of value, lifecycle, lifespan, function or personal attachment
- Remaining material integrity, visible origin and emotional value
- Avoiding damaging material and large distances

Based on the interviews we define repurpose as: “a business model strategy that applies a discarded product or its components for a function, goal or context other than its originally intended value proposition, and in doing so retaining value that was added by various production processes and adding new value”.

Based on the cross-case analysis of 100+ case studies we also propose a taxonomy for repurposing, consisting of three main categories: Recontextualise, Reshape and Regenerate, and four related categories (see Figure 1).
The three main categories – Recontextualise, Reshape and Regenerate - each entail new value propositions with decreasing degrees of value retention. In Recontextualise the discarded product is used without physical modifications in a new context, however with a new value proposition which is closely related to its original usage. A car battery, for example, may no longer be able to fulfil its original function properly, but is with minor alterations usable in a less demanding context such as electricity storage in buildings. In Reshape, the product or its components undergo minor physical modifications and are used for a new application inspired by the emotional value related to the unique origin of the product, the original form or appearance of the product or component, and/or the functionality or the properties the product or component offers. An example that uses a combination of these characteristics is a tray made of the national railway timetables, using the colour and material properties as well as the emotional value related to the iconic timetables. In Regenerate the product or its components undergo relatively significant physical modifications, but specific functional and visual properties of components or materials are used for the production of higher-value products. Other than with recycling, with Regenerate the material of the discarded product of component is still recognizable, for example colourful flip flops produced from waste rubber found on African beaches each being unique and appealing to a sustainability-minded target audience.

Additional to the three main categories, we found four categories which are related to the concept of repurposing. Add-ons are products that facilitate recontextualising of discarded products (for example a cap that makes a spray bottle out
of a soda bottle), whereas tools for reshaping facilitate the making of a new product out of a discarded one (for example a kit to make guitar picks out of credit cards). Among the case studies we also found products that were especially designed for next-life repurpose, as well as repurposing of production waste leading to more efficient production.

Contribution and discussion

With this research we contribute to the sustainable business model and circular economy literature by providing a profound insight in the repurposing concept and a taxonomy for repurpose as a circular business model strategy. The taxonomy shows the broad scope of the repurposing concept by distinguishing between three main categories, i.e. Recontextualise, Reshape and Regenerate, with an increasing level of adjustment of the original product or product part. The main category Recontextualise reflects the definition of repurpose by Sihvonen and Ritola (2015) with no or minor adjustments to the product. The main categories Reshape and Regenerate reflect the creative potential of design to fill the gap between reuse and recycling (e.g. Reike et al., 2018; Mills, 2012) and provide promising possibilities to retain value that was added in the production process.

This taxonomy provides a differentiation of the cascading and repurposing business model pattern as identified by Lüdeke-Freund et al. (2019), addressing how this pattern may also be used for technical nutrient cycles. This taxonomy may be used as a framework for further research, for example to study the business models related to each category and to accompanying circular design strategies by employing more comprehensive case studies. Moreover, the taxonomy can be used to compare the economic, environmental and social impact of different repurpose categories, hence providing a refinement of current frameworks for circularity strategies for closing material loops.

Keywords

Circular economy; circular business model; business modelling; repurposing; business model strategy.

References


Impact of Circular Economy on Sustainability of Incumbent Companies in the B2B Environment

Dynamics of Business Models

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Abstract

The aim of the presented research is to capture and quantify the dynamics of business model (BM) adaptation in relation to the implementation of circular economy (CE) measures. The research will focus on the dynamics of individual BM’s elements and the whole BM in terms of configuration, content and importance for the BM. A mixed research strategy will be applied, drawing mainly on case studies, participative observation, expert views and the questionnaire method.

Keywords

Business model, Circular economy, Dynamics, Incumbents, BM patterns
Marketing for Less Consumption

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Abstract
This short paper develops a conceptual framework for analyzing sufficiency-promoting marketing from a social practice theory perspective and applies it on a case study in the outdoor clothing industry. The resulting framework can serve as a means to identify patterns of sufficiency-based business models.

Keywords
business models, sufficiency, marketing, sustainable consumption, social practice theory
Assessing and Managing the Sustainability Performance of Business Models

Status Quo and Research Agenda

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Extended abstract

Background and research gap

Sustainable business models (also referred to as business models for sustainability) (SBMs) are about value creation with and for a company’s stakeholders (Freudenreich et al. 2019). This deliberately normative approach to defining value creation builds on an extended notion of value, integrating various types of value created, such as ecological, social, and economic (Evans et al. 2017). So far, the SBM discourse has an obvious bias towards issues of business model development (Breuer et al. 2018; Press et al. 2019), including topics such as sustainable business model innovation (França et al. 2017; Geissdoerfer et al. 2018), business model evolution (Schaltegger et al. 2016a, 2016b), processes and tools (Geissdoerfer et al. 2016; Joyce and Paquin, 2016; Vladimirova 2019). The question of how to assess and finally manage the sustainability performance that is expected to result from SBM development has not gained a lot of attention and therefore represents a huge and critical research gap (Lüdeke-Freund & Dembek 2017).

Assessing and managing the sustainability performance of business models requires a clear delineation of the unit of analysis (‘the business model’), as well as
frameworks, methods, and tools that are able to grasp this unit of analysis and its performance, created value, and impacts in relevant and useful terms (e.g., ‘value created’, ‘environmental performance’, ‘social impact’) (Lüdeke-Freund et al. 2017; Rauter et al. 2019). However, seemingly simple terms such as performance, value, or impact are neither clearly defined in this field of research, nor are they related to the notion of business model in any meaningful way. In this paper, we will focus on the conceptual groundwork that is needed to prepare the scientific debate on and practical implementation of SBM assessment and management. It is expected that this conceptual work will provide a framework to identify and consolidate relevant concepts and issues – such as ‘What is an SBM?’, ‘What is business model and SBM performance?’ – which is a prerequisite for dealing with this yet untapped field of research.

Our assumption is that the absence of comprehensive works on SBM assessment and management results from several interrelated and overlapping issues related to defining and conceptualizing SBMs. The breadth and inclusiveness of the SBM concept is beneficial when it comes to ‘thinking big’ and dealing with the ‘big picture’ of business and its relationships to the natural environment and society (see for example the strongly sustainable business model ontology developed by Upward & Jones 2016). But this breadth and inclusiveness turns into a fundamental problem when it comes to assessing and managing distinct qualities of business models (as indicated by the notion of ‘sustainable’ business model) or the effects they are assumed to have on the natural environment and society (as in business models ‘for sustainability’) (the implications for stakeholder value creation are discussed by Freudenreich et al. 2019):

- What do we (not) know about the assessment and corresponding management of the sustainability qualities and performance of business models?
- What do we need to know?
- Which theories and scientific methods will allow us to develop the required knowledge?

Research approach

This paper is meant (i) to develop an initial research framework for SBM assessment and management by (ii) reviewing the few works that are already dealing with this issue (literature review) and by (iii) critically discussing the status quo and gaps from which a research agenda shall be derived (conceptual framework
development and agenda setting). The development of the framework follows the basic steps of setting up assessment or accounting systems (Fig. 1), from defining the unit(s) or system(s) of analysis (defining SBMs), through identifying what and how to analyse (assessing SBMs), to deducing the need for certain management responses (managing SBMs). The review will build on two systematic literature reviews on SBM that the authors are currently performing. The foundation will be two databases covering hundreds of SBM papers from the past two decades. In addition, leading authors in related fields will be invited to join and add their special knowledge to selected aspects of our framework. Finally, based on outlining the basic framework and some of its details, research gaps and opportunities will be identified.

The following issues will be discussed in our paper:

- The business model concept has been defined in various ways, from various theoretical perspectives, for example taking a stakeholder, activity, building block, or value flow perspective. Which perspective(s) is (are) most suitable to provide the ground for assessment and management approaches?
- Resulting from this, various boundary setting and scoping issues emerge that directly translate into assessment and management problems. How to define the boundaries of a business model and to assign certain environmental or social impacts to it? How to define the scope or reach of a business model, and hence corresponding notions of responsibility, accountability, and governance – based on a value chain perspective, by distinguishing direct/owned and indirect/others’ value-creating activities, or by some other scoping approaches?
- While most frameworks suggest locating business models on the organisational level, value-creating activities and their impacts occur on multiple levels at the same time, from individual to global, from nano to macro. What kinds of sustainability effects do result from business models on which levels? How to make use of the available range of sustainability assessment methods, ranging from individual to planetary levels?
- The latter point is amplified by the circumstance that various stakeholders have an interest in SBMs, hence, various users of sustainability assessment approaches and impacted groups must be considered. Which approaches are suitable for which group; for example, consumers (to support better choices), companies (to support their business and product
developers), external bodies overseeing companies’ duties and performance (to provide sustainable value-creating incentives), and many more?

- Taking a systems and sustainability perspective requires dealing with various potential units of analysis: business model, activity, performance, output, outcome, impact, value-added, etc. Which concepts and corresponding are needed to develop sustainability assessment and management approaches for business models – which are already defined in a useful way?

**Preliminary framework and outlook**

The aforementioned issues may explain why comprehensive research and practical approaches are still missing. With this paper we aim to structure this critical research gap and to motivate future research contributing to closing it. The following illustration summarises our initial framework that will guide the development of the proposed research agenda.

![Diagram](image-url)

*Figure 1. Initial framework guiding the development of a research agenda for SBM assessment and management.*

From left to right, the following three major areas need some more elaboration: How are SBMs framed conceptually – what is the scope of an SBM? How can sustainability assessment be operationalised – how to capture the scope of an SBM? Here, different levels and different sustainability effects must be consid-
ered – performance on the SBM level, sustainable value creation in relation the stakeholders of an SBM, and impacts on the systems level. Finally, what does the scope and sustainability effects imply for the responsibility, accountability, and governance of business? By aiming for rather comprehensive – and deliberately more complex – framework, our approach follows the notion of providing an ‘integrated’ framework for the assessment and management of SBMs (cf. Maas et al., 2016).

Our presentation at NBM 2020 will provide a more detailed version of our initial research framework. The paper will contribute to the specific goals of conversation at this track by providing a solid platform for discussion on methods and approaches to measurement, monitoring, and evaluation of SBM impact and performance. Further, we will provide analysis of the value-creating activities and their impacts on multiple levels and add to the conversation on the research-practice gap between theories of social impact and real-world managerial problems.

**Keywords**

Business model, sustainability impact, sustainability assessment, review, research agenda

**References**


A Literature Review on Sustainable Business Model: first insights about the value measurement gap

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Abstract

Although business models have been extensively studied by researchers, latest trends have led organizations to rethink their way of doing business, focusing not only on profit, but also on social and environmental purposes. That’s why literature on sustainable business models (SBM) has been recently developed and is rapidly spreading. The purpose of this paper is to explore this body of literature, describing its temporal, industrial, geographical and methodological features, but also categorizing articles in terms of main purposes and specific themes addressed. To do so, we conducted an integrative literature review, which highlighted that SBM literature has so far focused on the descriptive analysis of case studies, on the process of innovation of the business model towards sustainability, or on the visual representation and design of the SBM, while a gap emerges in terms of quantitative analysis and performance measurement of SBM. As a result, a specific analysis on SBM articles dealing with the concept of value in its components of proposition, creation, delivery and capture was carried out: we found that authors mainly focused on extending the
concept of value proposition and value creation and distribution, but only few of them addressed value capture and almost no one investigated how to measure it in an alternative way, compared to traditional business models. This paper ends by highlighting the research gap on sustainable business model value measurement and suggesting new ideas for future research.

**Keywords**

Sustainable business models, business model for sustainability, literature review, value, sustainability performance

**Main text**

1. Introduction

Sustainability is one of the major challenges of our time, reflected by the increasing focus of the public, governments and organisations on issues such as climate change, poverty, inequalities and the unsustainable use of resources (United Nations, 2015). Therefore, companies are faced with a major challenge to adapt, modify or transform their business models (BMs) to seize the opportunities and face the threats that characterise an environment in continuous change (Moratis, Melissen, & Idowu, 2018). In this light, companies should adopt BMs that contribute to sustainable development, which is defined as development capable of satisfying the needs of current generations without compromising the needs of future generations (World Commission on Environment and Development, 1987). Over the past decade, sustainable business models (SBMs) have increased considerably because of growing concerns over global, social and environmental problems. Research on SBMs is relatively recent compared with research on BMs, which has been a common topic of research in the academic and professional world since the advent of the internet in 1995. Indeed, this concept has been popular since the dotcom era and the rise of electronic commerce (Richardson, 2008).

The literature presents many definitions of BMs. According to Osterwalder, Pigneur and Tucci (2010), a BM expresses the logic through which an organisation creates, delivers and retains value. Starting from this concept, typical BM elements include the following: (i) value proposition, or the offer of value to the customer, which includes not only the products and services supplied by the firm but also the targets to which they are aimed and the strategies adopted to acquire new or retain existing customers; (ii) the value creation and delivery system, which is the means through which an enterprise creates value through its own activities and distributes it to partners, suppliers...
and other stakeholders; and (iii) so-called value capture, which is how an enterprise generates profit through the value that it retains for itself in relation to the generated value, allowing the firm to endure over time (Richardson, 2008).

The literature on SBMs (Bocken, Short, Rana, & Evans, 2014; Stubbs & Cocklin, 2008) and BMs for sustainability (BMfS) (Schaltegger, Hansen, & Lüdeke-Freund, 2016a), (Schaltegger, Hansen, & Lüdeke-Freund, 2016b) originated from the general BM research. Despite its recency, the SBM literature presents some differentiating elements, even though most contributions have been devoted to providing theoretical definitions of SBM and BMfS concepts, analysing the components of SBM or presenting empirical research from the perspective of case studies. SBMs have been defined as BMs that incorporate the proactive management of monetary and non-monetary value creation for a wide range of stakeholders from a long-term perspective (Geissdoerfer, Vladimirova, & Evans, 2018). They are also defined as models in which the principles of sustainability guide companies in decision-making processes (Stubbs & Cocklin, 2008). A BMfS is a model that describes, analyses, manages and communicates a firm’s value proposition to its stakeholders and how that value is created, delivered and retained, while maintaining or increasing natural, social and economic capital (Schaltegger et al., 2016a, 2016b). In contrast, some authors have proposed other classifications of SBMs, such as those presented by Dohrmann, Raith and Siebold (2015) and Tukker (2004), the ideal types proposed by Stubbs and Cocklin (2008), the archetypes of Bocken et al. (2014) and the patterns of Lüdeke-Freund, Carroux, Joyce, Massa and Breuer (2018).

Another relevant stream of research is focused on SBM design and aims to develop tools that companies may use to innovate their BMs towards sustainability. Scholars have attempted to modify Osterwalder et al.’s (2010) business model canvas by incorporating three dimensions of sustainability. The triple layered business model canvas proposed by Joyce and Paquin (2016) adds two additional layers to the traditional canvas: The first layer concerns the environmental dimension, which refers to the environmental impacts generated at each stage of the life cycle of a product, while the second layer concerns the social dimension, with a particular focus on a company’s stakeholders. After presenting a new ontology of BMs, Upward and Jones (2016) proposed the strongly sustainable business model canvas (Kurucz, Colbert, Lüdeke-Freund, Upward, & Willard, 2017), later renamed the flourishing business model canvas (Hoveskog, Halila, Mattsson, Upward, & Karlsson, 2018), which is a model that creates, delivers and retains positive economic, social and environmental value.
for all respective stakeholders through its value network, thus fostering the possibility for human and non-human life to flourish indefinitely on the planet (Ehrenfeld, 2000). Other recently proposed canvasses and tools include the value triangle framework (Biloslavo, Bagnoli, & Edgar, 2018) and the sustainable value exchange matrix (Morioka, Bolis, Monteiro, & Carvalho, 2018). With respect to empirical studies, the literature mainly presents qualitative analyses of case studies (Dentchev et al., 2018) with the aim of presenting state-of-the-art and best practices of pioneer SBM organisations.

The aim of this study is to present an integrative literature review of SBM research that focuses on various descriptive aspects of its evolution (i.e. year and journal of publication, type of study, methods of data collection and analysis and geographical and sectorial factors) and categorises the main purposes and contributions developed to date. Themes are developed based on recurring content to identify gaps and suggest pathways for future research.

The article is structured in five sections. Section 2 describes the methodology used to conduct a high-quality integrative literature review and illustrates the various steps leading to its realisation. Section 3 presents a descriptive analysis of the 104 collected articles in terms of their distribution by publication year and journal, type of article, the main methods of data collection and analysis and, with respect to empirical articles, the main industries and countries of firms analysed in each article. Section 4 provides our original contribution in terms of article classification according to each article’s specific purpose and content. The final section summarises the main contributions of this research together with limitations and recommendations for future research on SBMs. In particular, it highlights a gap that emerged from our review regarding the measurement and representation of value delivery and capture in SBMs. In fact, value capture in current SBMs does not appear to have evolved from traditional financial BM canvasses, regardless of the numerous claims about the need to consider value not only from the financial perspective but also from the social and environmental perspective.

2. Literature Review Method

The integrative literature review is a specific research method that allows for the synthesis and critical analysis of a body of literature to highlight new perspectives and generate new knowledge of selected themes (Torraco, 2005).

Prior to conducting an integrative literature review, it is necessary to choose a theme to analyse and schedule the work by making a (flexible) plan that will act
as a guide along the research path (Tranfield, Denyer, & Smart, 2003). Topic identification and selection should arise from a need to review the literature such as a gap in the research or the reviewer’s interest in the topic. In either case, authors should demonstrate their knowledge of the topic by clarifying the main concepts upon which the chosen theme is based, identifying authors who have carried out relevant studies in the area and highlighting the historical origins and fundamental stages in the evolution of the theme. In this way, even inexperienced readers will easily understand the topic of research (Luciano, 2011).

An integrative literature review involves the following steps (Seuring & Müller, 2008): First, appropriate materials must be collected, and the limits of the research and research unit established. Second, a descriptive analysis should be carried out to describe the formal aspects of materials collected (e.g. the number of publications by year) to provide a basis for the consequent theoretical analysis. Third, the collected documents should be categorised. Finally, the collected materials must be evaluated by considering their structural dimensions to highlight significant issues and help researchers interpret the results obtained from the investigation.

A literature review was conducted following these suggestions and guidelines, starting with the initial collection of data. Two keywords were selected for the bibliographic database search: ‘sust* business model’ (the asterisk was used to cover as many terms as possible) and ‘business model for sustainability’. These search terms were selected based on their presence in the literature on BMs with a sustainability approach and were applied to three databases: EBSCO (www.ebsco.com), Scopus (www.scopus.com) and Web of Science (www.webofscience.com). Next, the field of investigation and limits of the research were defined. Initially, only titles of articles were searched for keywords, before expanding the search to include abstracts and keywords of the articles to increase the sample size. Moreover, criteria were selected to narrow the range of articles to those most relevant. First, the oldest year of publication was set to 2008, when a seminal work by Stubbs and Cocklin (2008) was published. Further inclusion criteria were only articles in English and those for which the full text in PDF was available. Finally, only articles published in scientific journals were selected, while books, theses and professional or commercial reports were excluded.

The initial quantitative review outputs were as follows. For EBSCO, the search term ‘sust* business model’ was found in the titles of 26 articles, the abstracts of 371 articles and keywords of 31 articles, for a total of 428 articles, while the
search term ‘business model for sustainability’ was found in 13 titles, 159 abstracts and 15 keywords. For Scopus, we collected a total of 2,620 relevant articles, subdivided as follows: the search term ‘sust* business model’ was found in the titles of 96 articles, the abstracts of 1,415 articles and the keywords of 287 articles, while ‘business model for sustainability’ was found in the titles of 26 articles, the abstracts of 626 articles and the keywords of 170 articles. For the third and final database, articles were identified using ‘topic’ in the survey field, allowing us to search in titles, abstracts and article keywords for search terms. Using ‘sust* business model’, we found a total of 349 articles, and using ‘business model for sustainability’, we found 1,050 articles, for a total of 3,399 articles.

Article collection and selection took place from April to October 2019. Special issues published in the same period (2008–2019) were also collected (Agafonow, Donaldson, & Hoerber, 2015; Arevalo et al., 2011; Boons, Montalvo, Quist, & Wagner, 2013; Dentchev et al., 2016; Jabłoński, 2016b; Pedersen & Gardetti, 2015; Schaltegger et al., 2016a; Svensson & Wagner, 2011) to include any other articles not detected in the database search. Once the collection of relevant articles had been completed, a check was carried out to remove duplicates.

The final sample was obtained following systematic analysis and evaluation of the collected articles, beginning with a careful reading of abstracts and keywords with the aim of verifying whether the topic was consistent with that of the review. The sample of articles was then examined in more detail, with a particular focus on the theoretical frameworks used. Only articles citing literature on SBMs or BMfS were retained, while those referring to BMs in general (e.g. definitions and classification), sustainability as a general concept or financial sustainability were discarded. Articles referring to circular BMs were also excluded because their prevalence led us to consider this as a separate topic in the literature needing specific analysis in further research. The final sample consisted of 104 scholarly articles, which were examined in more detail to understand their contributions to the literature on SBMs and categorise them based on the following criteria: year of publication, journal of publication, type of article, data collection method, data analysis method and, for empirical studies, industry and country. To better understand their contributions to the literature, articles were classified according to their purpose and content. These categories were not predefined but emerged during article analysis based on the detection of recurring topics and approaches.

3. Analysis of Diffusion Features and Methodological Aspects

SBMs and BMfS are emerging themes that have only recently appeared in the
literature (Torraco, 2005). Hence, the literature is not yet saturated, providing opportunities for researchers to offer new perspectives and suggestions to further develop the research field. As shown in Figure 1, the number of publications has increased sharply: one article was published in 2008 rising to three in 2014; however, since 2015, the number of publications has increased considerably, reaching a peak of 34 articles in 2018 before decreasing to nine in 2019. However, given that the data collection period ended in October 2019, the final year excludes those articles published from October to December 2019.

![Figure 1. Number of Articles by Year](image)

Table 1 shows the journals that have provided the most visibility to the SBM literature: Journal of Cleaner Production (46 articles on the topic published in recent years); Organization & Environment (nine articles), Journal of Business Models (seven articles), Sustainability (six articles), Journal of Corporate Citizenship (five articles) and other journals with two articles each. Another 23 journals (not shown in Table 1) published only one article each.

<table>
<thead>
<tr>
<th>Journal</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal of Cleaner Production</td>
<td>46</td>
</tr>
<tr>
<td>Organization &amp; Environment</td>
<td>9</td>
</tr>
<tr>
<td>Journal of Business Models</td>
<td>7</td>
</tr>
<tr>
<td>Sustainability</td>
<td>6</td>
</tr>
<tr>
<td>Journal of Corporate Citizenship</td>
<td>5</td>
</tr>
<tr>
<td>International Journal of Innovation Management</td>
<td>2</td>
</tr>
<tr>
<td>Long Range Planning</td>
<td>2</td>
</tr>
<tr>
<td>European Business Review</td>
<td>2</td>
</tr>
<tr>
<td>Business Strategy and the Environment</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 2 reveals the types of articles in the sample. The majority (almost 60%) comprised theoretical articles that presented at least one case study. These studies typically involved the application of pre-existing or new theoretical models to the case study or the participation of professionals or managers to discuss the models. The second most common type (22 articles) comprised theoretical articles that simply proposed modified or new frameworks or conceptual models without applying them, while a third theoretical type comprised literature reviews aimed at categorising SBMs (8 articles). The final category of articles (15) included all empirical studies in which the theoretical background was missing or presented as a pure premise for analysis. These articles focused mainly on the collection and the qualitative or, less frequently quantitative, analysis of empirical data (e.g. case studies of companies that have succeeded in orientating their BMs towards sustainability).

<table>
<thead>
<tr>
<th>Type of article</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical and case example</td>
<td>59</td>
</tr>
<tr>
<td>Theoretical</td>
<td>22</td>
</tr>
<tr>
<td>Empirical</td>
<td>15</td>
</tr>
<tr>
<td>Review</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
</tr>
</tbody>
</table>

Tables 3 and 4 present the methods of data collection (Table 3) and analysis (Table 4) in more detail. Table 3 shows that the most common data collection methods were from secondary data and interviews. Secondary data, gathered in 56 articles, were collected from existing databases, company websites and internal documents and various archives and reports. Primary data collected directly by researchers were most frequently generated by interviews (51) and, to a lesser extent, surveys, workshops and focus groups. Participants involved in data collection were mostly managers, professionals, experts or, in some cases, employees and consumers, depending on the focus of the specific article.
Table 3. Methods of Data Collection

<table>
<thead>
<tr>
<th>Method of data collection</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary data</td>
<td>56</td>
</tr>
<tr>
<td>Interview</td>
<td>51</td>
</tr>
<tr>
<td>Survey</td>
<td>14</td>
</tr>
<tr>
<td>Literature review</td>
<td>13</td>
</tr>
<tr>
<td>Workshop</td>
<td>10</td>
</tr>
<tr>
<td>Delphi method</td>
<td>2</td>
</tr>
<tr>
<td>Focus group</td>
<td>2</td>
</tr>
<tr>
<td>Action research</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4 shows the data analysis methods. Case studies were the most frequent method used (47 of 104 articles), allowing an in-depth analysis of the characteristics and critical success factors of specific firms that have transitioned towards an SBM. In order of frequency, case studies were followed by content analysis (30 of 104 articles) and coding procedures (25 of 104 articles), while few articles were found presenting quantitative analyses such as correlation analysis, analysis of variance, median tests or structural equation modelling.

Table 4. Methods of Data Analysis

<table>
<thead>
<tr>
<th>Method of data analysis</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>47</td>
</tr>
<tr>
<td>Content analysis</td>
<td>30</td>
</tr>
<tr>
<td>Coding</td>
<td>25</td>
</tr>
<tr>
<td>Quantitative (analysis of variance, structural equation modelling, correlation analysis, median tests)</td>
<td>5</td>
</tr>
<tr>
<td>Thematic analysis</td>
<td>2</td>
</tr>
<tr>
<td>System dynamics, network analysis</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5 shows the number of articles presenting data from empirical or case studies in descending order of frequency according to industry. The most common sector was manufacturing, immediately followed by the energy and gas sector. Eighteen articles were on firms from the services sector, 17 from the food
and beverage sector and 10 from the fashion industry. Relatively fewer articles pertained to the public, social and non-profit, agricultural, education, building, banking and financial, mobility and retail sectors.

Table 5. Industries

<table>
<thead>
<tr>
<th>Type of industry</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>28</td>
</tr>
<tr>
<td>Energy and gas</td>
<td>20</td>
</tr>
<tr>
<td>Services</td>
<td>18</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>17</td>
</tr>
<tr>
<td>Fashion</td>
<td>10</td>
</tr>
<tr>
<td>Public, social and non-profit services</td>
<td>7</td>
</tr>
<tr>
<td>Agriculture</td>
<td>6</td>
</tr>
<tr>
<td>Education</td>
<td>6</td>
</tr>
<tr>
<td>Building</td>
<td>5</td>
</tr>
<tr>
<td>Banking and financial services</td>
<td>5</td>
</tr>
<tr>
<td>Mobility</td>
<td>4</td>
</tr>
<tr>
<td>Retail</td>
<td>2</td>
</tr>
</tbody>
</table>

Finally, with regard to the geographical locations of the companies analysed in the articles, Table 6 shows that firms from United States, United Kingdom, Germany and Netherlands were represented most frequently. Apart from Australia, Brazil, Canada and China, the remaining articles presented empirical data mainly from European countries.

Table 6. Countries
4. Analysis of Main Contributions and Themes

The previous section highlighted some descriptive characteristics of the articles included in the review, starting with observable and objective features such as the year and journal of publication, the industry and geographical distribution of firms studied and methodological aspects concerning data collection and analysis.

We now propose a classification according to the article aims. Although the authors of the articles explicitly stated their aims in detail, we attempted to synthesise these aims into groups of higher-level contributions to the SBM literature.

Table 7 shows the seven overarching categories that emerged from our classification of studies according to their aims. The first category, which refers to the proposal of frameworks and tools, included almost 40% of our article database, while the second category, SBM implementation examples, included approximately 23% of our database. This shows that the SBM literature has made two primary contributions: first, conceptual and visual models and practical tools for companies that explain how to integrate sustainability principles into traditional BMs; and second, case studies as examples of companies that have
succeeded in integrating sustainability into their traditional BMs to innovate and transform them into SBMs. Two other categories of articles that together constituted another 21% of our database were SBM component frameworks and SBM-specific archetypes. The first refers to all articles in which the authors, starting from Osterwalder et al.’s (2010) business model canvas, proposed new canvas models or other visual representations focusing mainly on the composition of SBMs, including value proposition, value creation, value distribution and value capture. The SBM-specific archetypes category includes all articles focusing on specific types of SBM, including social business models, product service systems, sharing platforms, bottom-of-the-pyramid models or collaborative consumption BMs. Another type of SBM, the circular BM, was not analysed in this review because it was considered an autonomous stream of SBM literature. Three final categories were identified: the first included articles reviewing the literature on SBM and proposing new perspectives arising from the recognition of gaps in the literature; the second included articles focusing on the proposal of new classifications of SBM, such as types, archetypes, patterns or other taxonomies; and the third category, Editorial, included introductory articles in special issues that aimed to summarise the main themes presented by contributing authors.

Table 7. Study Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable business model (SBM) tools and frameworks</td>
<td>42</td>
</tr>
<tr>
<td>SBM implementation examples</td>
<td>24</td>
</tr>
<tr>
<td>SBM component frameworks</td>
<td>11</td>
</tr>
<tr>
<td>SBM-specific archetypes</td>
<td>10</td>
</tr>
<tr>
<td>Reviews</td>
<td>8</td>
</tr>
<tr>
<td>SBM taxonomies</td>
<td>5</td>
</tr>
<tr>
<td>Editorials</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
</tr>
</tbody>
</table>

In addition to classifying the aims presented by various authors, the literature review also generated a number of article themes, which may be described as the perspective from which SBMs were analysed. The themes shown in Table 8 did not come from a predefined classification but rather emerged as articles were read before being reviewed and refined during the analysis process. Eight key themes emerged from the analysis of SBM articles.

Table 8. Article Themes
The most frequent theme presented in the articles (44 out of 104) was that of innovation. These articles focused on the transition of BMs towards sustainability by identifying the barriers and obstacles rather than the opportunities an enterprise faces when deciding to introduce changes or totally reconsider its BM.

The second most frequent theme, present in 34 articles of 104, was that of societal transition systems, which refers to the transition of business ecosystems towards the implementation of sustainable development principles. In these cases, the focus was not just on a particular firm or BM but on the role that they play in the unavoidable transition towards a more sustainable society.

The third most frequent theme was that of value, which in the SBM literature typically includes not only financial value (as in traditional BMs) but also environmental and social dimensions of value. Some articles in this category proposed frameworks or analytical tools to identify the different types of value created or destroyed as well as distinguishing the different categories of stakeholders involved; a more detailed analysis on articles dealing with value is presented in section 6.

The collaborative/network theme emerged in articles highlighting the need to reconsider the level of investigation in the SBM research. Given that many sustainability innovations stem from the collaboration of different actors and organisations, analyses that are limited to the BMs of single firms cannot capture this relevant aspect.

Another theme that emerged from our investigation is that of the design process, which pertains to articles establishing the necessary steps in the design of a new BM. In most cases, these steps were defined using a creative and participatory...
process carried out through workshops or focus groups with firm managers and professional experts.

The next category in Table 8 concerns the various life cycle stages through which every BM goes, from the initial phase through to maturity, similar to the life cycle models proposed in the management literature for products or firms. Two other themes emerged with lower frequency: first, scalability of BMs, which is the distribution of sustainability innovations to bring greater benefits to the environment and society while simultaneously assuring economic sustainability; and second, education, or how to disseminate awareness and information about SBMs through student engagement and the implementation of new university courses.

6. The concept of value emerging from the review

What emerges from our review of the literature is that one of the most frequent themes presented in articles (34 out of 104) was value. However, only 18 (out of 34) articles actively contribute to the three components of business model (value proposition, creation and delivery, and capture) and deal with this issue in a widespread way. In fact, many authors mainly focused on value proposition or, at most, on the value distribution system; only few have better defined value capture, and almost no one has suggested how to measure it in an alternative way, compared to the traditional business models.

Most authors have outlined the need to extend the value proposition concept by including all three dimensions of sustainability (economic, social and environmental), all stakeholders different from shareholders and a new time perspective. Evans et al. (2017) attempted to extend the concept of value proposition considering a wider list of stakeholders, while Biloslavo et al., 2018 suggested that the value offered by a firm can be distinguished into three main types: public value, partner value and customer value. Vladimirova, 2019 presented a process and a visual tool named ‘sustainable value proposition builder’, which considers different stakeholders as key players in this process, in order to meet and satisfy their needs. Stakeholders are made part of the process of value creation by the firm, considering the concept of value as “the perception, by a human or non-human actor, of a fundamental need satisfied, measured in aesthetic, psychological, physiological, utilitarian and/or monetary terms” (Upward and Jones, 2016). If the need to be satisfied is seen in these terms, value proposition will have to adapt, being no longer merely tangible - thus including products and services produced by the firm - but also intangible, and related to the values that characterize the firm itself (Morioka et al., 2017).
The concept of value in SBM literature can also be extended from a temporal point of view: Lozano (2018) argued that time is a sort of ‘fourth dimension’ of sustainability, as firms need to combine short-term with long-term vision to satisfy stakeholders needs and avoid trade-offs (Biloslavo et al., 2018; Upward and Jones, 2016).

On the other hand, the authors seek to extend the concept of value creation and delivery system, emphasizing that sustainable innovation requires cross-cutting collaboration across organizational boundaries. It is necessary to adopt a different perspective, to investigate value transfers between focal firm and the external network of actors in the business model (Brehmer et al., 2018), to assess the value flows with stakeholders, and measure value with a network perspective and not only at individual firms’ level (Evans et al., 2017). Creating value through a network perspective allows firms not to focus on being better than competitors - in order to obtain a competitive advantage - but also to collaborate with different stakeholders in order to obtain a ‘coopetitive advantage’, resulting from a combination of competition and cooperation (Morioka et al., 2017). According to this network perspective, some authors introduced a new concept of value: Oskam et al. (2018), taking up the value network concept proposed by Allee (2009) developed the ‘value shaping’ concept, which is a process through which new types of value are identified, emerging from the interaction between a business model of a firm and its network; also Morioka et al. (2017), proposed a new concept of value in terms of value network, the so called ‘cascaded sustainable value’, which is the value that a firm creates and is captured by the extended network of stakeholders, including also indirect stakeholders of the firm.

Finally, our analysis shows that only few articles tried to define value capture in a different way, by considering not only economic value, as the difference between revenues and costs, but also environmental and social value, as the difference between environmental and social benefits and impacts that a firm generates through its activities (Biloslavo et al., 2018). Pursuing economic objectives, and, at the same time, environmental and social objectives, can generate tensions, and a firm is asked to address them to allow the full development of sustainable value (Davies and Chambers, 2018). The three dimensions of sustainability can be combined in a triple-layered business model canvas, highlighting three different perspectives of value proposition, creation, delivery and capture (Joyce and Paquin, 2016).

Other authors proposed to consider sustainable value as the intersection between economic, social and environmental (Evans et al., 2017), or to
conceptually sum benefits and costs of each dimension of sustainability, developing the concept of ‘tri-profit’ (Upward and Jones, 2016). A new role of economic value is required to enlarge the traditional perspective of business: profit becomes a means to reach social and environmental aims, not an end in itself (Morioka et al., 2017).

Another interesting perspective is that of value uncaptured, that is the value not yet captured by the firm: Bocken et al. (2013 and 2015) developed a new tool, ‘the value mapping tool’, which considers the value uncaptured perspective, divided into three types: value missed, value destroyed and value wasted. In a subsequent publication, Yang et al. (2017) proposed a new classification of value uncaptured, which can be divided into value surplus, value absence, value missed and value destroyed.

Although some authors within SBM literature have tried to provide a new definition of value capture, almost no one has gone further and tried to develop alternative methods of measurement. In fact, only two articles suggest to use already proposed performance measurement tools with SBM: Morioka et al. (2016) used the Performance Prism model, while, Kuruzc et al. (2017) described the Strongly Sustainable Business Model Canvas (afterwards become Flourishing Business Model Canvas - Elkington e Upward, 2016), that uses four perspectives similar to those proposed within Kaplan and Norton’s Balanced Scorecard. On the other hand, other two articles present examples of performance indicators: Biloslavo et al. (2018), in applying their Value Triangle Business Model Canvas to Loccioni case, identified and highlighted some examples of costs, revenues, impacts and benefits, not only for the company but also for the environment and society; Joice and Paquin (2016), in their Triple Layered Business Model Canvas, added two layers to the traditional Business Model, in which value proposition is combined with functional and social value, while environmental and social benefits and impacts are added to the financial model section; the authors also present some examples of performance indicators with reference to the case Nestlé Nespresso.

In our opinion, value capture turns out to be the extreme synthesis of the success of a business model, which can be measured both in terms of effectiveness, by considering the transformation of value proposition into actual value distributed and captured; and in terms of efficiency, by creating economic value surplus (the difference between revenues and costs). As a consequence the success of a sustainable business model cannot be assessed unless a consistent value measurement proposal, including social and environmental effectiveness and value surplus is addressed by the literature.
### Table 9. The different concepts of value within SBM literature review articles

<table>
<thead>
<tr>
<th>Concepts of value</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE PROPOSITION</strong></td>
<td></td>
</tr>
<tr>
<td>Wider range of stakeholder</td>
<td>Biloslavo et al. (2018); Evans et al. (2017)</td>
</tr>
<tr>
<td>Tangible and intangible value</td>
<td>Morioka et al. (2017)</td>
</tr>
<tr>
<td>Co-creation of value</td>
<td>Biloslavo et al. (2018); Upward and Jones (2016)</td>
</tr>
<tr>
<td>Sustainable value proposition builder</td>
<td>Vladimirova (2019)</td>
</tr>
<tr>
<td>Time dimension</td>
<td>Lozano (2018)</td>
</tr>
<tr>
<td><strong>VALUE CREATION AND DELIVERY</strong></td>
<td></td>
</tr>
<tr>
<td>Value transfer</td>
<td>Brehmer et al. (2018)</td>
</tr>
<tr>
<td>Value network</td>
<td>Biloslavo et al. (2018); Evans et al. (2017)</td>
</tr>
<tr>
<td>Coopetitive advantage</td>
<td>Morioka et al. (2017)</td>
</tr>
<tr>
<td>Value shaping</td>
<td>Oskam et al. (2018)</td>
</tr>
<tr>
<td>Cascaded sustainable value</td>
<td>Morioka et al. (2017)</td>
</tr>
<tr>
<td>Sustainability triangle</td>
<td>Lüdeke-Freund et al. (2018)</td>
</tr>
<tr>
<td><strong>VALUE CAPTURE</strong></td>
<td></td>
</tr>
<tr>
<td>Environmental, social benefits and impacts</td>
<td>Biloslavo et al. (2018)</td>
</tr>
<tr>
<td>Value tensions</td>
<td>Davies &amp; Chambers (2018)</td>
</tr>
<tr>
<td>Sustainable value</td>
<td>Evans et al. (2017); Morioka et al. (2016; 2017; 2018);</td>
</tr>
<tr>
<td>Triple layered value capture</td>
<td>Joyce &amp; Paquin (2016)</td>
</tr>
<tr>
<td>Tri-profit</td>
<td>Upward &amp; Jones (2016)</td>
</tr>
<tr>
<td>Value uncaptured</td>
<td>Bocken et al. (2013; 2015); Yang et al. (2018)</td>
</tr>
<tr>
<td>Performance indicators</td>
<td>Biloslavo et al. (2018); Joyce and Paquin (2016)</td>
</tr>
<tr>
<td>Performance tools</td>
<td>Kuruzc et al. (2017); Morioka et al. (2016)</td>
</tr>
</tbody>
</table>

### 7. Discussion and Conclusion

Although the SBM literature is recent, it has undergone rapid development. Most articles have been published by the Journal of Cleaner Production, which has recently hosted a substantial special issue on the theme. Articles have mainly approached the topic of SBM from a theoretical perspective, presenting frameworks, tools and taxonomies. In most cases, articles presented either the application of these frameworks or the ideation, formulation and implementation of tools and frameworks by firms and consultants/experts.

Empirical analyses have mainly used the case study methodology to investigate
the practical implementation of SBMs. Some cases were based on secondary data, while interviews were used as the primary data collection method. Apart from these frequently used methods, the literature is characterised by some original and innovative methods, including workshops, focus groups and Delphi methods, which were used to collectively discuss topics and co-create new frameworks and tools. Quantitative studies were scant—considering the innovative nature of the topic, which requires a description of the few (but increasing) best practices, the large amount of data needed for quantitative analysis is difficult to obtain. Nonetheless, a literature mainly based on descriptive analysis of SBM case studies and almost lacking quantitative studies does not allow to assess the impact of SBM implementation on firms survival and success. Case studies and other kinds of empirical analyses focused on firms belonging to various industries, with manufacturing and energy sectors prevailing. Companies mainly originated from the United States or European countries such as United Kingdom, Germany and Netherlands.

The themes that emerged from this review show that most studies have been devoted to formulating new or modified frameworks and tools or implementing SBMs. The most frequent theme was that of innovation, which is to be expected given that the SBM literature has stemmed from the BM innovation and sustainability literature. Because sustainable development is a common goal for organisations, the study of the application of SBM appears to be related to a higher-level transition towards a more sustainable society. Thus, business can act as a lever to spread sustainable development knowledge and practical implementation.

The topic of SBM implies the consideration of value, which was another recurring topic in the literature. Many authors referred to SBM elements in terms of value proposition, creation, delivery and capture. However, if we examine the articles in more depth, we find many conceptualisations of value (especially value proposition and value creation), but concrete proposals for measuring value are missing. In fact, only few articles included in our review have better defined value capture – by including the social and environmental dimensions of value - and almost no one has investigated how to measure it. Whether adopting a SBM is successful for an organization and how to measure this success is a question not yet addressed in this literature, as there are no concrete proposal for measuring sustainability of the business model and to clarify the benefit of adopting not only an economic focus but also an environmental and social perspective of business. In particular, methods to combine the traditional financial model with the widely acknowledged need to extend the social and
environmental dimensions of value have not yet been developed. If value capture is limited to revenues and costs, its SBM conceptualisation and representation will remain incomplete. Further, if sustainability is not measured or adequately reported in decision-making processes, firms will continue to be directed towards financial considerations. Therefore, the development of the SBM literature can benefit from focusing on this topic, which has received little attention until now. In our opinion, to fill the gap highlighted above, researchers should try to investigate and highlight the relationship between the SBM literature and the existing literature on sustainability performance measurement and reporting. In this way, the strategic approach to sustainability suggested by SBMs may be connected with the managerial approach for its implementation and control.

**References**


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Lessons From A Transition To Circular Use Of Wood In Utrecht
An in-depth study of two circular business models

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Abstract

In our in-depth case study on two circular business models we found important roles for material scouts and networks. These key partners are essential for establishing circular business models and circular flow of materials. Besides, we diagnose that companies are having difficulties to develop viable value propositions and circular strategies.

Keywords

circular business models, circular wood, waste management
Introduction

For a transition to a more sustainable economy it is essential to make loops in what currently are mostly linear value chains. Both politicians and academics call for a transition to this circular economy, because it leads to a better use of materials and via new businesses to new jobs (EC, 2015; Mazzucato, 2018). For instance, in the Netherlands, the size of the circular economy is still only 4 to 5 percent of total employment (PBL, 2019). This might be more than some expect, but is not sufficient for the challenges ahead, such as: zero pollution, toxic free, resource efficiency and clean economy (EC, 2019).

We choose to study circular business models in the wood sector, because there are many possibilities to make better use of this material: reusing, remanufacturing or recycling instead of burning. We expect that studying a sector based on material that is suitable for a circular economy, leads to useful insights for other companies that wish to build a circular business model, especially in the building and construction sector. What is more, many companies are part of what we defined as the Dutch wood sector. In the Netherlands the manufacturing of wood and of products of wood (NACE 16) and the manufacturing of furniture (NACE 31; which is more than just woodwork) consists of nearly 12,000 companies, representing over seventeen percent of the companies in the Dutch manufacturing industry (CBS, 2020).

In the wood sector, as in other building and construction industries, there is a clear cause for action for the transition to a circular economy, because it is a major consumer of virgin materials. But, in order to progress to a circular economy, companies in the building and construction industry need learnings about actual practice and about viable circular business plans. To many companies these insights are not available, and that is why we address the following research question: How do business models in the transition to circular use of wood function? This research question should help to answer questions such as: What can businesses and organizations in the wood sector do to make this transition happen? And what lessons can be learned from the circular business models we studied? Lessons that are useful for a wider uptake and that will help other companies to set up circular businesses or to transfer existing business models.

Method

In order to explain circular business models in the wood sector we set up an explorative case study of two small companies (<10 FTE) who are active in the transition towards circular wood use in the Dutch region Utrecht. This enabled a local and sectoral focus, which was the basis for an analysis, to study in-depth the characteristics of the two specific business models we investigated.

In our case study on circular business models we took a three step approach. First, we explored the context of businesses in transition towards circularity in the wood sector. We discussed the peculiarities of circular business models in the wood sector in a focus-group session, including the companies we studied and external experts. The aim of the focus-group sessions was twofold: a) to get an understanding of the context and b) to get insight in driver and barriers.
Second, we held expert interviews with the partners responsible for general management and finance of the two companies, and with context experts for the specific regional situation. We analysed the interviews using the Smart Business Modeler (SBM, 2020), an interactive online tool based on the Business Model Canvas (Osterwalder & Peigneur, 2010), and business model patterns (Remane et al., 2017; Lüdeke-Freund et al., 2018; Lüdeke-Freund, Gold & Bocken, 2019), that enabled us to easily identify possible circular economy business model patterns. In their study on sustainable business models, Lüdeke-Freund et al. (2018) define a pattern as an illustration of “an ecological, social, and/or economic problem that arises when an organisation aims to create value, and it describes the core of a solution to this problem that can be repeatedly applied in a multitude of ways, situations, contexts, and domains.” In addition, “a sustainable business model pattern also describes the design principles, value-creating activities, and their arrangements that are required to provide a useful problem–solution combination (Lüdeke-Freund et al., 2018).” The Smart Business Modeler tool we used aids in looking for patterns based on the following seven major circular economy categories: repair & maintenance, reuse & distribution, refurbishment & remanufacturing, recycling, cascading & repurposing, organic feedstock, and other. A breakdown similar to that of Lüdeke-Freund et al. (2019), with an ‘other’ category that contains additional patterns from literature.

Third, we validated the results and analyses with the partners of the companies we studied. We asked the interviewees to react on the interview transcript, and in case of the companies also to reflect on the business model as we had worked them out with the Smart Business Modeler tool. Based on the validation round we slightly adjusted our analysis of the business model.

The context: Wood waste

The wood case is interesting because according to a national bottleneck analysis in the Netherlands, of the approximately 1,600 kilotons that become available through business and consumer waste, up to 75 percent is burnt in power plants (Tauw, 2017). In theory this material stream would be relatively easy to reuse, recycle and remanufacture, because there are no complicated treatment procedures needed for circular use of wood. Circular start-ups manage to make use of wood from the waste stream by looking at the functionality of discarded wood that is available to them. Even though, many wood streams in the Netherlands still seem to be traditionally managed, leading to many resources ending up as fuel in power generating plants.

Currently, there are two important sources for discarded wood in the Netherlands: consumer waste and business waste. The first is the responsibility of municipalities (Ministry of Infrastructure and Water Management, 2019a), and is collected as bulky waste or brought to a recycling centre. Companies and organizations are responsible for their own waste (ibid.), and have contracts with private or municipal garbage-processing organizations. From here on the waste is further processed and mainly sorted according to the type of material. A constraining factor are the current regulations on moving and processing material once it has been designated as waste. According to our interviewees these regulations lead to structural barriers in realising circular flow of material. These regulations had been issued in order to be able to control hazardous materials. For the circular economy, however, they present a major obstacle.
For wood, an important distinction has to be made between A- or B-type wood waste, and C-type wood waste (Ministry of Infrastructure and Water Management, 2019b). C-type wood waste is qualified as hazardous waste and has to be managed under strict regulations, because it has been treated with toxic chemicals. A-type wood is unprocessed and can easily be recycled by woodwork companies. Processed wood that is not hazardous, B-type wood, is a very diverse waste stream. In reality, despite its potential functionality, B-type wood is mostly burned in power plants.

**Zooming in on two companies in the circular wood sector**

From the two companies we studied in-depths, one is active in trading and using discarded material, with wood as an important product in their portfolio (Company A). The other company makes wooden products for the gardening sector, and develops circular garden fences made from wood (Company B).

Company A enables discarded materials to be reused. The company is both a wholesaler of these materials, matching circular patterns such as redistribution and recycling (Lüdeke-Freund, Gold & Bocken, 2019); and the company facilitates the uptake of discarded materials in specific building projects they manage, matching repurposing (Lüdeke-Freund, Gold & Bocken 2019). The physical location of Company A is both a sales outlet and a wood workshop, that people can rent for woodwork activities or that is alternatively being used for commercial group workshops. The different activities are deliberately being developed together, because the application of materials shows the circular potential and creates more mass for the wholesale business. This multi-sided focus leads to different services that are being offered, also linking to various value propositions for the customer segments.

With their current focus Company A finds it has too little outflow of material streams in their wholesale business. Therefore, they aim to further develop specific projects, such as designing and manufacturing tree and flower tubs, and street furniture for public squares, into bigger assignments, leading to more materials being needed. In realizing these kinds of projects, they need a tight network with different craftsmen. This is essential for two reasons. The specialists surrounding Company A are needed to realize the projects for their skills and expertise on design and construction. Besides, these partner companies create a network for acquisition, also being supported by other networks in which Company A is active.

Company B designs and makes wood-based products for the gardening sector. Circularity is not yet at the core of their business model, the company is currently expanding their product range by adding circular products. However, this new focus must fit their current value proposition: creating living and lively gardens. Although, Company B can be characterized as a sustainable company, their traditionally product portfolio still is linearly organized. They do find that circularity fits their sustainability focus, and have therefore been designing and developing a circular product, a garden fence that is primarily made out of re-claimed and re-usable A-type wood. This product matches the circular patterns reuse and repurpose (Lüdeke-Freund, Gold & Bocken, 2019), and the patterns design for upgradability and design for dis- or reassembly identified by Bocken et al. (2016).
Company B is struggling to transform their value proposition to fit a circular product and how this transformation might change their business. In addition to their current product portfolio, Company B is exploring to develop what they call ‘special projects’. An example is an urban area development project, where Company B will be co-creating garden fences with residents. Circularity would be a key aspect of this initiative. A secondary aspect is the increased cohesion of the neighbourhood.

The importance of key partners

What we noticed during our analysis is that key partners have a high importance for the circular businesses we studied. These enable supply of materials, much needed networks and expertise that are essential for the companies to function in a circular economy.

Being manufacturing companies, suppliers are key partners of both companies we studied. Four different suppliers can be identified in the circular wood sector: (1) municipalities; (2) waste management companies; (3) building and construction companies, having leftover materials from their construction projects; and (4) material traders. One of the main challenges when it comes to supply of materials, for both company A and B, is estimating the available amounts of re-used wood. With a hard-to-estimate inflow it is occasionally difficult to fulfil agreements with customers. Closer collaboration or structural partnerships with these suppliers and within the supply chain could alleviate this problem.

Furthermore, close collaboration in networks is very important for both case companies. Company A is part of a vast range of different networks, and also acknowledges that this is needed both at the supply and demand side of their business model. For example, they are part of the Circular Craft Center network, and often collaborate on projects with these craftsmen and designers. For the transition Company B is aiming at, it seems that for realizing a viable circular product they need to be part of different networks as well, and need different key partners. Consequently, the number and type of suppliers might change as they must be able to provide a circular inflow of materials. Moreover, they will have to change their processes for manufacturing and quality assurance, which will influence the manufacturing site where they outsource their production to.

Other important key partners are specialists who are able to search for discarded materials, assess the quality of a material in a waste stream and estimate the possible use and value of that material in new products or buildings. These professionals are often referred to as ‘material scout’. A further distinction is sometimes made between the role of material trading, which is similar to the wholesale activities of Company A, and the role of finding useful materials. The first role includes sales skills and functioning as a middleman between companies, and getting a margin out of that. For the latter role a person needs to possess empirical knowledge about materials, negotiation skills, and be able to assess the applicability of a particular material.

Discussions and conclusions

The circular start-ups we studied had not consciously defined or chosen a specific circular economy strategy. In contrast, they use re-used materials as a starting point, and are
experimenting with different value propositions, products and services. Company A has activities that match patterns such as redistribution, recycling and repurposing. Company B’s search for a circular product could match patterns such as reuse, repurpose, and design for upgradability and dis- or reassembly (e.g. Bocken et al., 2014; Bocken et al., 2016; Lüdeke-Freund et al., 2019); at the same time Company B is concerned about finding an appropriate inflow of materials, whatever the circular pattern.

The patterns and typologies from circular economy literature are practical for understanding circular business models. What is more, the research tool we used supported linking our analysis to circular patterns. Though, we did not find distinct patterns that could help advising circular start-ups on their strategies. This implies that in (our) further research a more detailed approach and analysis is needed in order to be able to find circular business model patterns that are relevant to companies in the wood sector and other building and construction industries.

Although we were not able to typify the companies we studied based on circular economy patterns, our study does provide insights that are useful to both academics and business. In general, how to optimally use discarded wood and how to deal with existing waste management regulation is a key and unresolved issue in both the wood and the waste sector. Traditionally municipalities and waste management companies focus on what is available from (bulky) waste and recycling centres. Alternatively, the companies with a circular approach we studied work from a customer and market opportunities point of view, and look at the functionality of materials available.

Concerning the business model, based on our case study, we conclude that key partners are essential in making the transition to a circular business model. These key partners first of all include suppliers that are needed to stabilize the inflow of used wood material. It seems to be necessary to have a good relation within the supply chain, in order to reduce the problem of instable inflow of material. Secondly, circular companies are in need of, and therefor have to establish, a network with different experts such as craftsmen, designers and ‘material scouts’. This also enables the companies we studied to pursue different strategies and business models, including both services and products.
References


INTRODUCTION

Climate change represents a paramount challenge which affects all sectors, all companies, and whole economies (Labatt and White, 2011). Due to the large carbon footprint of the business sector, companies assume a central role in efforts to tackle climate change (Hoffmann & Busch, 2008). Correspondingly, many firms face raising pressure by authorities, shareholders, and stakeholders to reduce their carbon footprints (Weinhofer & Hoffmann, 2008). Moreover, a growing number of companies voluntarily disclose CO2 emissions and increase efforts to reduce their carbon footprints (CDP, 2019). While corporate carbon emission targets may provide a positive influence on climate change mitigation (Marland et al., 2015), they need to evolve from an organization-centric to a science-based approach (Haffar & Searcy, 2018). Because emission targets need to be broken down to firm-level (Jackson & Belkhir, 2018), science-based targets (SBT) form a new and promising concept. SBT represent ambitious CO2 reduction targets which are in line with what is necessary to meet the goals of the Paris Agreement to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C (SBTi, 2020a). Established in the wake of the Paris Agreement in December 2015 by CDP (formerly the Carbon Disclosure Project), the United Nations Global Compact, World Resources Institute, and the World Wide Fund for Nature and the We Mean Business Coalition, the Science Based Target initiative (SBTi) aims to institutionalize SBT as standard business practice and independently assesses and approves firms’ emission targets (SBTi, 2020b). As of May 20, 2020, 885 companies joined the SBTi whereof 367 firms set and approved SBT and 518 were committed to SBT (SBTi, 2020c). The SBTi had 34 members in its starting year 2015, the initiative grew to 701 signatories by the end
of 2019 representing an annual growth rate of 84 percent (SBTi, 2020c). While reducing corporate CO2 emissions represent a major and often costly effort (Ratnatunga and Balachandran, 2009), corporate emission reduction targets may have significant effects on companies’ financial performance – this may even more applicable for the ambitious SBT.

“Does it pay to be green?” represents a dominant research question in strategy over the past decades and produced a broad range of academic discussions and empirical analysis (Russo & Minto, 2012). However, literature remains ambiguous on the link between environmental and firm performance: while many empirical studies imply a positive relationship, other work find a neutral or negative relation (Busch & Lewandowski, 2018). Research examines the relationship of corporate carbon emissions and firm performance (Busch & Lewandowski, 2018; Lewandowski, 2017; Trumpp & Guenther, 2015; Misani & Poqutz, 2015). Although the role of corporate CO2 emission targets is controversially discussed (Marland, Kowalczyk & Cherry, 2015; Trexler & Schendler, 2015), there are no empiric studies on their impact on companies’ financial performance. While firms’ carbon emission targets are associated with improved environmental performance (Dahlmann, Branicki & Brammer, 2019), their relationship to financial performance remains unclear. It is to be examined if SBT-dedicated corporations – similarly to high sustainability companies (Eccles et al., 2014) – outperform their counterparts. There is yet no empirical research on the relationship of ambitious SBT and firm performance.

The study makes two main contributions: it increases transparency on the impact of corporate carbon emission targets on companies and extends research on the relationship of financial and carbon performance. First, we expand knowledge on the impact of corporate CO2 emission targets on firm performance. Since ambitious and publicly reported SBT represent a new development, effects of SBT on company outputs have not been examined. We address this shortcoming, and thereby answer research calls on SBT (Dahlmann, Branicki & Brammer, 2019). Intensive public and corporate discourse on climate change and growing carbon regulatory pressure makes SBT highly relevant for management, academia, and the public. Second, the study contributes to research on financial and environmental performance. To our knowledge, the study is first to empirically analyze the financial impact of publicly committed and set SBT. The consequences of carbon reduction programs for management accounting are not clear (Hartmann et al., 2013). We further advance research on the prominent question whether it pays to be green.
THEORY AND HYPOTHESES

Overall, studies find a positive but weak relationship between environmental performance and financial performance (Russo & Minto, 2012). Specifically, the meta-analysis of Busch & Lewandowski (2018) find indications that good carbon performance is positively related to superior financial performance. In addition, Trumpp & Guenther (2015) identify a U-shaped relationship between carbon performance and firm performance: while firms with superior carbon performance tend to show a positive link to profitability, companies with low carbon performance tend to be negatively associated with financial performance. We assume that companies participating in SBT are more likely to perform environmentally well – accordingly, we expect a negative association of carbon emission levels and firm performance of these companies. We operationalize carbon performance with corporate carbon intensity and annual changes in absolute corporate carbon emissions ($\Delta$ carbon emissions). Firm performance is measured by the return on assets (ROA) and Tobin’s $Q$. Taken together, we suggest the following working hypotheses:

**Hypothesis 1 (H1):** Carbon intensity of SBT-dedicated companies is negatively associated with their profitability (ROA).

**Hypothesis 2 (H2):** Carbon intensity of SBT-dedicated companies is negatively associated with their market-based performance (Tobin’s $Q$).

**Hypothesis 3 (H3):** $\Delta$ carbon emissions of SBT-dedicated companies is negatively associated with their profitability (ROA).

**Hypothesis 3 (H4):** $\Delta$ carbon emissions of SBT-dedicated companies is negatively associated with their market-based performance (Tobin’s $Q$).

![Research model](image-url)
METHODOLOGY

Sample

To test the hypotheses, we build a novel longitudinal dataset of SBT-dedicated firms from 2015 to 2019. For companies’ financial and carbon emission data we rely on Refinitiv, formerly Thomson Reuters Eikon and Asset4. We choose the database since it covers all CO2 emission scopes and its emission data exhibits the longest timespan among the main emission data providers (Busch et al., 2018). We obtain the SBT-affiliation of companies from the SBTi website. By the end of 2019, 714 companies were committed to SBT or had set or approved SBT. SBT-signatory companies are very heterogeneous with regards to industry, size, and revenue. A considerable number of SBT-firms are not listed on stock markets, and thereby not required to conduct a rigorous financial disclosure; for these enterprises financial data is not publicly available. Moreover, other enterprises lack required information to calculate all variables of interest, so that our final longitudinal sample consists of 346 observations of 187 companies. To predict the dependent variable, we lag all independent and control variables by one year.

Measures

**Dependent variables: firm performance.** Corporate financial performance represents our dependent variable. Consistent with previous research (Lewandowski, 2017; Busch & Lewandowski, 2018), we use return of assets (ROA) as accounting-based performance indicator and Tobin’s Q as market-based measurement. Tobin’s Q is defined as the sum of firm’s market value and liabilities divided by total assets.

**Independent variables: carbon intensity and Δ carbon emissions.** Comparable to prior studies (Lewandowski, 2017; Busch & Lewandowski, 2018), firms’ carbon performance is operationalized by carbon intensity and Δ carbon emissions and form the independent variables. Carbon intensity represents the ratio of the firms’ annual corporate carbon emissions consist and their net sales. Corporate carbon emissions consist of CO2 emissions produced by the firm’s business activities (scope 1 emissions) and the firm’s indirect CO2 emissions resulting from the consumption of purchased energy (scope 2 emissions) (WBSCD & WRI, 2004). Δ carbon emissions represent the corporate carbon emissions of a year subtracted by the corporate carbon emissions of the previous year. Data on carbon emissions is expressed in CO2 equivalents containing all greenhouse gas emissions (Busch et al., 2018).

**Control variables.** The study controls for variables with potential impact on firm performance and carbon performance. Therefore, we test for the variables firm size (defined as
the natural logarithm of total assets), risk (ratio of long-term debt and total assets), capital intensity, capital expenditure (CAPEX), and cash.

RESULTS
Table 1 shows descriptive statistics and correlation coefficients of the variables in our model. Overall, coefficients of the explanatory variables show limited indications for a high correlation.
Descriptive sample statistics and correlations

Table 1

FIGURES AND TABLES

Table 1

Descriptive sample statistics and correlations
Table 2 exhibits the regression results of our hypotheses’ testing. Models 1–3 include ROA as dependent variable and Models 4 – 6 comprise Tobin’s Q as depended variable. Model 1 and 4 contain only the control variables. Model 2 and 5 include carbon intensity and the control variables, model 3 and 6 the latter and Δ carbon emissions. These first results indicate that carbon intensity is negatively associated with ROA and positively related to Tobin’s Q. Furthermore, Δ carbon emissions is slightly negatively associated to ROA and with a marginal positive relationship to Tobin’s Q. The coefficient for carbon intensity significant (p<0.01 and p<0.05) as well as the coefficient of Δ carbon emissions (p<0.01).
Table 2: Results of fixed-effects regression model with return on assets (ROA) and Tobin’s Q as dependent variables.

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
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<tbody>
<tr>
<td>Return on assets (ROA) as dependent variable</td>
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</table>

All independent and control variables are lagged by one year.

Standardized coefficients (Coef.), robust standard errors (SE), t-values (t), and p-values (p) are reported.

<table>
<thead>
<tr>
<th>Obs</th>
<th>159</th>
<th>346</th>
<th>393</th>
<th>346</th>
<th>396</th>
</tr>
</thead>
<tbody>
<tr>
<td>R²</td>
<td>0.81</td>
<td>0.53</td>
<td>0.93</td>
<td>0.52</td>
<td>0.93</td>
</tr>
<tr>
<td>Cash</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>CAPEX intensity</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Risk (log)</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Emissions</td>
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<td>0.00</td>
<td>0.00</td>
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<tr>
<td>University carbon</td>
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*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
DISCUSSION

In line with recent academic work (Busch & Lewandowski, 2018; Lewandowski, 2017), we focus on carbon emissions as one specific environmental outcome to discuss whether it pays to be green. The study further advances research on carbon and firm performance and addresses the emerging field of corporate carbon emission targets. First results indicate a negative relationship of carbon performance and firms’ profitability as well as a positive association to market performance. These preliminary findings call for further discussions especially on the research model and its implications. This may contribute to a better understanding if it pays to be green.
REFERENCES


A Fit-For-Purpose 21st Century Business Model
... and its companion knowledge-for-action dashboard

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Extended abstract (820 words)

Blackrock is the biggest asset manager on the planet. It manages over $7 trillion of stocks, bonds and other investments on behalf of its clients. To earn their continued business, Blackrock must invest clients’ capital in companies that provide the best returns. Each January, Blackrock CEO Larry Fink sends a letter to the CEOs of companies in Blackrock’s portfolios to give them a heads-up about the criteria that Blackrock plans to use when selecting companies in which to invest that year.

For the last three years, Fink has sent a strong message that Blackrock wants to know the purpose of companies. In 2018, his declared that “without a sense of purpose, no company, either public or private, can achieve its full potential,” In 2019, he said that a purpose to contribute to the social good is the “animating force for profits.” In 2020, he reiterated that “purpose is the engine of long-term profitability and that it must consider the needs of a broad range of stakeholders.”

Meanwhile, in August 2019, the Business Roundtable (BRT) -- 181 CEOs of the largest corporations in the U.S.A. -- declared that Milton Freidman’s version of the purpose of a corporation has passed its best-before date. His three-word mantra, that can be recited by any MBA grad, was that the purpose of a corporation is to “maximize shareholder wealth.” The BRT echoed Blackrocks’s message and declared that the new purpose of the corporation in the 21st century is to “maximize stakeholder wellbeing.” This is more than tweaking a few letters. This changes everything, especially corporate business models.

Status quo, shareholder-centric business models only needed to show how companies produced good returns for shareholders. Now the business model needs to show how and where the company impacts its customers, suppliers, employees, communities and the environment, as well as shareholders. It needs to support stakeholder-primacy capitalism, not shareholder-primacy capitalism.
Business model template

Building on taxonomies and typologies of previous business model templates, a 21st century purpose-driven, stakeholder-centric business model must satisfy six design criteria:

- **Acknowledge nested interdependencies**: Make visible how business is nested in Society (i.e. treat it as a stakeholder), which is nested in the Environment (i.e. treat it as a stakeholder) on a finite planet.

- **Show impact points**: Make visible where the business impacts stakeholders, to facilitate tracking, managing and reporting on how well the company is fulfilling its “maximize stakeholder wellbeing” purpose.

- **Include new risks**: Make visible how new global environmental, social, technological, economic and geopolitical risks are threatening businesses.

- **Connect the dots**: Make visible the sources of reputation, savings and income that flow back into the business, enabling it to flourish.

- **Show traditional flows**: Show the overall input–process–output flow between the business, Environment, Society and other stakeholders.

- **Include traditional business elements**: Show traditional, value-creating business model components, to the desired level of detail.

This session will review a free, open-source business model template that satisfies these design criteria. It consolidates available knowledge on sustainable business model patterns, and can be tailored for any company of any size, in any sector, anywhere. It can also use terminology more appropriate for various sustainability reporting frameworks, such as the “capitals” used in an Integrated Reports <IR>.

Dashboard template

Suppose someone asks the CEO, “How’s it going with your new business model?” To answer the question comprehensively, wouldn’t it be nice to invite the questioner into a control room / cockpit where the business model is the centerpiece, surrounded by company performance indicators? The company’s direct and indirect impacts on key stakeholders – employees, the environment, society-at-large, communities and customers – would be quantified and connected to where and how those impacts occur in the company’s business model. The resulting “knowledge for action” dashboard provides a decision-ready overview of company performance.

This session will review a free, open-source dashboard template that includes both financial and non-financial performance. Further, the session will show how the dashboard can be tailored to frame non-financial value creation. Companies can
use their environmental, social and governance (ESG) / sustainability framework of choice to assess their performance: Future-Fit Business Benchmark (FFBB), the Sustainable Development Goals (SDGs) and Integrated Reporting <IR> Capitals.

The referenced free, open-source business model and dashboard templates are intended to be tailored to a particular company’s situation and to stimulate creative design ideas. For example, the dashboards can be jazzed up with clever graphics, dials, bar charts, fonts and colors to help management quickly identify and prioritize areas that warrant attention. Online versions could allow stakeholders to drill down in areas of interest, solving the nagging dilemma of whether the dashboard should be designed for investors or for other stakeholders – it serves both sets of needs.

The dashboard can be featured in sustainability / ESG reports and disclosures as context for drilling down on any particular theme, such as company efforts on climate change. It’s a fit-for-purpose diagnostic tool for a 21st century company with a purpose and business model that enables it to improve the wellbeing of its key stakeholders ... and itself.

Short abstract (250 words)

Recently, the investment community and Influential business organizations like the U.S. CEO Business Roundtable have sent strong messages that the purpose of a corporation matters – that it is the “animating force” for profits. They also say that the Milton Friedman-esque “maximize shareholder wealth” purpose should be replaced by a “maximize stakeholder wellbeing” purpose that contributes to the social good. What would a stakeholder-primacy business model look like that would enable a company to do well in the 21st century? That is what this session will explore.

Building on taxonomies and typologies of previous business model templates, we will review a free, open-source business model template that satisfies the six criteria for a 21st century business model. It can be tailored for any company of any size, in any sector, anywhere.

This session will also show the business model can be used as the center-piece for a comprehensive performance dashboard. We will review a companion free, open-source dashboard template that includes both financial and non-financial performance. The dashboard can be tailored to frame non-financial value creation using the company’s sustainability framework of choice: Future-Fit Business Benchmark (FFBB), the Sustainable Development Goals (SDGs) and Integrated Reporting <IR> capitals.

The dashboard can be featured in sustainability / ESG reports and disclosures as
context for drilling down on any particular theme. It connects the dots between financial and non-financial performance. It’s a fit-for-purpose diagnostic tool for a 21st century company with a business model that enables it to maximize the wellbeing of its key stakeholders, including the company itself.

NOTE: I can’t figure out how to enter the short abstract in the “Abstract” field of the registration and submission system (ConfTool), as instructed. Can you help, please?

**Keywords**

Business model, purpose, dashboard, stakeholder primacy, SDGs

**References**


EXTENDED ABSTRACT

Title: The impact of multiple value creation on management control systems: An explorative case study.

Authors: Egbert Willekes*, Jan Jonker**, Koos Wagenveld***

*The Hague University of Applied Sciences / Radboud University Nijmegen, ** Radboud University Nijmegen / Nijmegen School of Management, *** HAN University of Applied Sciences / Radboud University Nijmegen

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Keywords: multiple value creation, integrated reporting, management control systems, multiple case study design

Background

We are currently in a transition moving from a linear economy grounded on economic value maximization based on material transformation to a circular economy. Core of this transition is organising value preservation from various yet interlinked perspectives. The underlying fundamental shift is to move away from mere financial value maximization towards multiple value creation (WCED, 1987; Jonker, 2014; Raworth, 2017). This implies moving from mere economic value creation, to simultaneously and in a balanced way creating ecological and social value.

A parallel development supporting this transition can be observed in accounting & control. Elkington (1994) introduced the triple bottom line (TBL) concept, referring to the economic, ecological and social impact of companies. The TBL should be seen more as a conceptual way of thinking, rather than a practical innovative accounting tool to monitor and control sustainable value (Rambaud & Richard, 2015). However, it has inspired accounting & control practitioners to develop accounting tools that not only aim at economic value (‘single capital’ accounting) but also at multiple forms of capital (‘multi capital’ accounting or integrated reporting). This has led to a variety of integrated reporting platforms such as Global Reporting Initiative (GRI), International Integrated Reporting Framework (IIRC), Dow Jones Sustainable Indexes (DJSI), True Costing, Reporting 3.0, etc. These integrated reporting platforms and corresponding accounting concepts, can be seen as a fundament for management control systems focussing on multiple value creation.

This leads to the following research question:

How are management control systems designed in practice to drive multiple value creation?
Problem analysis

The application of integrated reporting in practice has grown significantly over the last decade (Rinaldi, et al., 2018). A report issued by KPMG (2017) shows that 93% of the world’s largest companies publish an integrated report. Despite the continuing development of integrated reporting, several authors have initiated a critical reflection on the development and evolution of integrated reporting (Brown & Dillard, 2014; Flower, 2015; Tweedie & Martinov-Bennie, 2015; Haji & Hossain, 2016; Humphrey, et al., 2017). One of the frequently heard criticisms is that these frameworks and guidelines create legitimation for external greenwashing, instead of enhancing multiple value creation. (Boiral, 2013; Cho, et al., 2015; Sundin & Brown, 2017; Boiral & Diouf, 2017). It is therefore interesting to determine what organizations actually do to create multiple value. This can be accomplished by examining how integrated reporting is integrated within the organization and its management control system (Villiers, et al., 2014).

The term “control” as it applies to a management function does not have a universally accepted definition. A conventional view of a management control system is that of a cybernetic or regulating system involving a single feedback loop analogous to a thermostat that measures the temperature, compares the measurement with the desired standard, and if necessary, takes a corrective action (Anthony, 1965). In this study, however we take a broader view. In our approach management control systems focus on encouraging, enabling or, sometimes, forcing employees to act in the organization’s best interest (Merchant & Van der Stede, 2012). This also implies stimulating search and learning, allowing new strategies to emerge as participants throughout the organization respond to perceived opportunities and threats (Simons, 1995).

Although we have found some studies regarding the design of management control systems aimed at multiple value creation (Arjaliès & Mundy, 2013; Lueg & Radlach, 2016; Maas, et al., 2016), numerous studies confirm the need for further empirical research in this field (Gond, et al., 2012; Hartmann, et al., 2013; Villiers, et al., 2014; Ditillo & Lisi, 2016; Sundin & Brown, 2017; Latan, et al., 2018). In this study we respond to the need for further empirical research on this theme.

The theoretical perspective of this study is based and further deepened on a conceptual study that we conducted regarding multiple value creation in relation to accounting concepts as an important fundament for management control systems. One of the conclusions of this study is that existing accounting concepts are difficult to apply in controlling multiple value creation (Willekes, et al., 2019).

Despite all the critique and lack of knowledge regarding multiple value creation and management control systems, several companies in different sectors seem to actively and successfully monitor and control the development of multiple value creation. It seems that these companies are ahead of the academic debate and resulting theory.

The aim of this study is therefore to gain knowledge on how these companies design and use management control systems to drive multiple value creation.
Research method

A qualitative multiple case study is chosen, in which reality is approached from different perspectives. The method is exploratory in nature and takes an inductive approach theorising from the empirical data collected.

Case selection

This study conducts research at twenty companies that are selected on the basis of purposive sampling. The most important criterion for the selection of these companies is that active management control of multiple value creation takes place, so that the objects to be investigated fall within the scope of the research question. Indications for the existence of management control systems focussing on multiple value creations are:

- The presence of a 'sustainability manager';
- Discussions with management, which show that the company focuses on sustainability;
- The integrated report, which shows that sustainability plays an important role in the company's strategy;
- High ranking on Sustainability indices (eg The Dow Jones Sustainability Index).
- Winning sustainability awards.

A conscious choice was made to include different types of companies in different sectors in this study (listed, private, and public companies). This increases the chance to observe various mechanisms and approaches with regard to the phenomena to be investigated (Adams & Frost, 2008; Ditillo & Lisi, 2016).

Data collection

Interviewing is chosen as the primary method of collecting data. This method is chosen to obtain an inside understanding of the selected cases. This inside understanding is crucial to learn management control systems, since these systems are internally oriented.

For most case studies three interviews are conducted, leading to a total dataset of fifty interviews. Within every case study the interviews highlight three perspectives:

- Strategy
- Sustainability (or Multiple Value Creation)
- Accounting & Control (or Management control systems)

These three perspectives are the sensitising concepts for this study. A research question is attached to every sensitizing concept. These three research question form the foundation for the interview guides. The interview guides are tested during trial interviews. The relation between the sensitising concepts and the research questions is shown in figure 1:
The secondary method of data collections is desk research and is built mainly on public information. This information is based on, but not limited to:

- Integrated reports;
- Information of the company on their website;
- Articles about the company published in newspapers (also used for triangulation).

But also during the interviews, relevant internal documents which are shared by the interviewee, form part of the data set.

**Methods of analysis and interpretations**

Data analysis will be performed in May, June, July and August, using the software programme ATLAS.ti.

The collected data will be analysed using grounded theory, resulting in a bottom up approach. First the data will be segmented into parts, followed by reassembling the parts again to a coherent whole (Boeije, 2010). The approach is being designed based on the following four iterative phases:

- Exploration -> concepts will be discovered based on an open coding process;
- Specification -> concepts will be organised and linked to each other based on axial coding;
- Reduction -> core concepts will be developed;
- Integration -> elaborate on theory.

The research team has a lot of theoretical and practical knowledge of the sensitising concepts. This increases the potential to make sense of the collected data. The data to be coded will not be limited to the transcribed interviews and the collected internal and public document, but will also include field notes, notes during the interviews, memo’s etc.
The knowledge of the research team entails the risk of bias. To limit the risk of bias, the coding process will be reviewed by independent researchers during the different phases of the coding process.

**Expected results and preliminary conclusions**

The contributions of our study is to fill in the gap of limited empirical research on the impact of multiple value creation on management control systems, contributing to the scientific debate on this relatively unexplored topic. We expect to discover patterns that form the possible beginning for theory building on this subject.

Preliminary conclusions are expected to be drawn during May-June of this year, during the analysis and interpretation phase of this study. During the NBM 2020 conference, we are quite happy to present and share the preliminary conclusions of our analysis with the audience in an interactive workshop.

**References**


THEME IV  YOUNG ACADEMICS

Theme coordinator: Romana Rauter

Theme 4 is a transversal theme, intended to offer a platform for young academics to present their work. The theme is open to students at Master level and PhD students in their first or second year. Submissions may address any of the topics in the various tracks of the three main themes.

Also this 5th NBM conference, we again wholeheartedly welcome young academics to submit their abstracts. At #nbmconference2020 we will combine early career researchers with experienced ones. To realise this, track chairs dedicate 1-2 slots within their track(s) to young academics. The abstracts and other contributions will be reviewed accordingly.

We ask you as early career researchers to submit to the tracks/themes that have the best fit regarding content. To make sure that your submission is recognised as a young academic contribution, please give notice in our Conference Management System ConfTool in the user comment that your contribution has to be considered as written by a PHD or student. This is an important information for the track chairs and reviewers.

Chairs
Romana Rauter
YOUNG ACADEMICS OF NBM 2020

Paul van Boerdonk
Romel Brun
Steven Kane Curtis
Hanna Dijkstra
Niklas Endregat
Tobias Froese
Daan Gijsbers
Marc Karahan
Joanna Kleine Jäger
Maren Ingrid Kropfeld
Edward Langham
Kaisa Manninen
Minttu Laukkanen
Zlatina Marinova Mihaylova Mihaylova
Margot Möslinger
Claudia Alba Ortuño
Kasper Ploegman
Jason Ronancio
Rudolf Schnee
Kaie Small-Warner
Sybrith Marije Tiekstra
Marlies van Tilburg
Fanny Ruth Lovisa Wahlström
Ananda Wyss
Andreas Wagner
Xuan Ye
Enabling sustainable business model innovation: practical tools and approaches.

The transition towards a future-proof society requires businesses to become more sustainable. Overall this requires changing a company’s business model. To create this change in practice towards innovative business models often proves to be challenging. During this session, TNO explores the domain of business model innovation. TNO is the Dutch National Organisation of applied research. They and their partners have developed tools that support companies in the process of designing and evaluating new business models. These tools will be presented and discussed in various interactive tracks, from presentations to workshops and discussions. The various tracks are interrelated and follow the process of business modelling ‘from generating ideas to creating impact.’ Still, each track can be attended independently. For this session, no contributions have been submitted.

Chairs
Frank Berkers, Suzanne Brunsting, Jessica Doorn, Ke Wang, and Jeroen Gillabel
1. Constructing collaborative innovation (Track 21)

Track chair: Frank Berkers

Business model innovation requires a clear definition of the configuration of parties with whom to design and organise the business models. In this track, we will explore the tools that support the joint development of collective business models. It will include both qualitative business models to design support tools as well as quantitative decision support tools.

2. Orchestrating the innovation ecosystem (Track 22)

Track chair: Frank Berkers

The ecosystem in which business models are embedded needs to be understood and reorganised to support innovation for business model innovation to succeed. This track elaborates on the activities to execute and how to do so to achieve effective ecosystem reorganisation.

3. Behavior and adaptation (Track 23)

Track chair: Suzanne Brunsting

The process of business modelling influences and is influenced by behavior from start to finish. This track focuses on decision-making behavior within organisations. The focus is on how to use behavioral science to foster participation and optimal collaboration in a configuration of various parties. Furthermore, what is the behavioral change needed within various parties once a collective is established?

4. Determining and measuring impact (Track 24)

Track chair: Jessica Doorn

The purpose of organising business model innovation is to operate sustainably. However, how to set the right goals and design business models in such a way that value is created? For instance, how can CO2 or other external values be described and translated to match the (financial) values of the business model? Moreover, once business models are in play, how to monitor progress and determine which impact is achieved? This track will guide you through the various approaches to impact measurement.
In addition to the four tracks above, TNO has invited two distinguished guests to each host a track. Both tracks can be followed separately.

5. Platform for Accelerating the Circular Economy (Track 25)

Track chair: Ke Wang

PACE is a public-private collaboration platform and project-accelerator launched by the World Economic Forum (WEF). Philips and Global Environment Facility co-chair PACE. The World Resources Institute currently hosts it. PACE works with global leaders from more than 70 companies, governments, and organisations to catalyse and scale-up circular business across various themes. During NBM@Nijmegen 2020, PACE will foster a dialogue between leading corporates, consultancy firms, and academics to discuss the implementation of circular business models, lessons learned, and areas of collaboration (www.acceleratecirculareconomy.org)

6. VITO (Track 26)

Track chair: Jeroen Gillabel

VITO is a renowned Belgian applied research institute with a long-standing track record in the domain of the circular economy. They support governments and companies with the shift from linear to circular thinking and help develop circular business models. During their track, they will elaborate on their experiences with supporting companies as well as business consultants during the development and practical implementation of circular business models. Several companies whom they have helped will join the discussion. (https://vito.be/en/circular-economy)
THEME VI  NOW SESSION SUSTAINABLE BUSINESS MODELS

In October 2014 the first five consortia within the NWO ‘Sustainable Business Models’ program started, called DBM I. In 2018, they were followed by three additional consortia, called DBM II. The overall aim of this unique program is to accelerate sustainable entrepreneurship in the Netherlands. All projects have a run time of four years. Below for each of the sub-programs a brief description is provided based on the title of the program, the program leader, the partners in the consortium and finally the goal. For this session no paper-proposals have been submitted.

Chairs
Hans van Kranenburg
DBMI

1. Transition to sustainable business models: leadership and the measurement of shared value creation (Track 13)

Goal: This interdisciplinary consortium combines knowledge from several disciplines together to offer solutions within three sectors: health care, food security and energy/bio-diversity.

Track chair: Prof. dr. Rob van Tulder (Erasmus University Rotterdam). Consortium: Erasmus University Rotterdam, Hanzehogeschool Groningen, Technical University Delft, University of Amsterdam, University Utrecht, TNO Hoofddorp (labour), Stichting Phusis and Ministry of Economic Affairs

2. Sustainable innovations and their societal impact (Track 14)

Goal: This consortium examines the societal impact of sustainable innovations, specifically the impact on shoppers, companies, non-governmental organisations and media. The intended results are reliable measuring instruments for societal impact and practical instructions for managers.

Prof. Dr. Bas Hillebrand (Radboud University Nijmegen). Consortium: Radboud University Nijmegen, Nyenrode University, TIAS (School for Business and Society) and Tendris.

3. Innovation systems and management (Track 15)

Goal: The consortium examines which factors influence companies to transition towards a sustainable business model. How do companies collaborate with different stakeholders to make sustainable business models a success?

Track chair: Prof. M.P. Marko Hekkert (University Utrecht).

Consortium: University Utrecht, University van Amsterdam, Hogeschool Zeeland, University College Roosevelt en Provincie Zeeland, Ministry van Economic Affairs and IUCN NL, Dutch branch of the International Union for the Conservation of Nature.

4. Upscaling car sharing in the Netherlands (Track 16)

Goal: The consortium examines which circumstances contribute to the growth of car sharing. The research will analyse regional differences, the policy at the municipal level and the effectiveness of public campaigns.

Track Chair: Prof. dr. Koen Frenken (University Utrecht).
Consortium: University Utrecht, University van Amsterdam, University Wageningen, Dialogic Innovatie & Interactie and Stichting Natuur & Milieu.

5. Sustainable business models in practice: circular designed supply chain (Track 17)

Goal: The project examines the impact of circular purchasing on the needed knowledge, skills and attitudes of purchasing managers. The consortium wants to find out to what extent intrapreneurship is necessary for purchase managers to proactively contribute to the implementation of circular value chain management.

Track Chair: Prof. dr. ir. Bart Vos (University van Tilburg).

Consortium: University of Tilburg, Open University and NEVI (Institute for purchasing and supply management). Goal:

DBM II

Three consortia were financed in the second round of the ‘Sustainable Business Models’ program (DBM II). In the three new projects, all of which started in 2018, the focus is on the development of sustainable revenue- and distribution models, circular eco-systems and business eco-systems in the infrastructure sector.

1. Action Repertoire for Distributed Business Models in Inclusive Business Value Chains (Track 18)

Goal: The project focusses on creating ways of moving towards the creation of sustainable revenue and distribution models within the domain of Inclusive Innovations. The research focusses on ten cases that look at involving low-income groups in developing countries with businesses in the Dutch economy.

Track Chair: Prof. dr. ir. Petra de Weerd-Nederhof (University Twente). Consortium: University Twente and The Next Organization (TNXTO).

2. Transitioning Towards a Circular Economy: The Role of Circular Start-up Hubs (Track 19)

Goal: The team examines if, and to what extent, circular start-ups develop ecosystems for their new products and services.

Track Chair: Julian Kirchherr, Dphil (University Utrecht).

3. Transitions towards more sustainable business models in a complex stakeholder field (Track 20)

Goal: This research project focuses on the successful transition of business ecosystems in the infrastructure sector in relation to their stakeholders.

Track Chair: Prof. dr. Hans van Kranenburg (Radboud University).

Consortium: Radboud University, Alliander and TNO. Goal: This research project focuses on the successful transition of business eco-systems in the infrastructure sector concerning their stakeholders.

During the conference NBM@Nijmegen 2020 each of the sub-programs in DBM I and DBM II will give a presentation about their actual research and its outcomes. It is not possible to submit an (individual) contribution to any of the presentations in this NWO-Track. Contributions are based on ‘invitation only’.
Special Tracks
Special Tracks

During the conference there are a number of additional special tracks:

“Marie Curie Training Network“

1. Circular European Economy Innovative Training Network (Circ€uit) – I. Project presentations on aspects of a circularity transition (Track 27)

Goal: The goal of the Circ€uit Network is to train 15 young researchers in the field of Circular Economy. For this purpose, 15 PhD projects started at Leiden University, TU Delft, Aston Business School, Cranfield University, INP Grenoble, NTNU and Linkoping University covering five main perspectives on a circularity transition. These included: Business Models, Supply Chain, Users, Design and Systemic aspects. We organize two adjacent sessions, with 6 presentations reflecting project results.

Track chair: Prof. Dr. Arnold Tukker, Scientific director and head of the department of Industrial Ecology Institute of Environmental Sciences (CML), Leiden University, Senior Researcher, TNO

2. Circular European Economy Innovative Training Network (Circ€uit) – II. Presentation and interactive discussion on the transition to a circular economy (Track 28)

Goal: The goal of the Circ€uit Network is to train 15 young researchers in the field of Circular Economy. For this purpose, 15 PhD projects started at Leiden University, TU Delft, Aston Business School, Cranfield University, INP Grenoble, NTNU and Linkoping University covering five main perspectives on a circularity transition. These included: Business Models, Supply Chain, Users, Design and Systemic aspects. We organize two adjacent sessions, with 6 presentations reflecting project results.

Track chair: Prof. Dr. Arnold Tukker, Scientific director and head of the department of Industrial Ecology Institute of Environmental Sciences (CML), Leiden University, Senior Researcher, TNO
Macro-level assessment of economic, social, and environmental implications of circularity

Author: Glenn A. Aguilar-Hernandez¹, Arnold Tukker²

¹Leiden University, ²Institute of Environmental Sciences
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Abstract
The circular economy has emerged as a paradigm that enables a sustainable future. Nevertheless, the economic, social, environmental impacts of circularity are unknown at national and global scales. To fill this knowledge gap, we assess circular economy policies and their macro-economic, social and environmental implications, which is part of the Work Package 5 from CircEuit program. We analyze the potential impacts of circularity by applying the global, multi-regional environmental extended input-output tables (MR-EEIOT) from EXIOBASE. This approach allows us to assess which interventions can be implemented for a cost-effective transition to circularity. For example, we demonstrate that, in certain circular economy scenarios, extending product lifetime could contribute to reduce environmental impacts (e.g. CO2 emissions), but also could cause trade-off by decreasing job creation and value added. Our findings provide relevant information that can be considered by decision makers for implementing circular economy policies in the future.
Circular Economy Myths

Author: Arnold Tukker¹

¹Leiden University – Institute of Environmental Sciences & TNO, Project leader Circ€uit

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Abstract
This presentation serves as a thought-provoking introduction to the panel discussion. Given ever rising material demands and waste flows, the need for making the economy more circular is obvious. However, the narrative that currently is used to win support for this transition is questionable. Several issues stand out. 50% of material use is inherently dissipative, and some 40% is used for new infrastructure. This cannot be made circular. Circularity cannot lead to eternal growth. Circularity can cut jobs. And business alone is not enough. This is not at all bad. A circular economy is more efficient with resources ánd labor – the problem is value added distribution and ensuring working time and income is distributed properly. And any game, be it baseball or soccer, is constrained by rules and has umpires to ensure it is competitive and interesting. Markets are not different only will have the desirable, circular outcomes if we manage them. The win-win, market-based growth discourse that now is used to promote circular economy is illusive and must go.
“Investing in SMBs”

3. ‘Sustainable Finance: assessing business models’ (track 29)

Goal: Investors have a choice where to invest in and allocate capital to. In these investment decisions sustainability criteria and parameters can be integrated. Adrie Heinsbroek and Hendrik-Jan Boer, senior professionals at NN Investment Partners, part of NN Group, provide insights in background of the incorporation of sustainability in both the decision making process and the investment process and illustrate it with examples. The sustainability characteristics and intentionality of the business models of companies and debt issuers are important in the assessment and business model dependency is an important factor if companies are restricted at all. This session sheds lights on how investors are incorporating sustainable principles into the investment practice and how they assess the investments of companies themselves to become eligible for their portfolios.

Track chair: Adrie Heinsbroek (Principal Responsible Investment of NN Investment Partners) and Hendrik-Jan Boer (Investment Team Manager of Sustainable Investments, Senior Portfolio Manager of Sustainable Equity Strategies (global and European funds, segregated mandates), Chair of the NN IP Proxy Voting Committee, Member of the NN IP ESG Board
Interplay among the building blocks of circular economy

Author: Yohannes Alamerew

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Abstract
Circular economy is increasingly recognized as an issue of critical importance for companies, academics, practitioners, policymakers, and society as a whole. A successful transition from the current, linear economic model towards a resource-efficient circular economy model requires a shared understanding of the interplay among the building blocks of circular economy and the interaction between various decision factors. This presentation will explore the role and interplay among the main pillars of circular economy: business models, circular design, reverse logistics, and system enablers, demonstrated through successful cases.
Engaging consumers with a circular economy through design and communication

Author: Lucy Chamberlin

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Abstract:
Circular economy literature has largely focused on business models and product design strategies until now, with the assumption that consumers will accept the new products and services without question. However, sociological and behavioural research has shown that consumers are complex, irrational and to a large extent ‘unmanageable’, with conflicting motivations and subject to frustrations like the values-action gap and rebound effect. Taking a cultural rather than a cognitive perspective that uses insights from the fields of design and communications and acknowledges the importance of meaning for action can help to engage people with circular practices through their everyday activities and to create a more human circular economy. In this presentation Lucy explores the relationship between consumption, design and circular economy and discusses how a cultural approach to transformative action can provide a more realistic route to changing thought and behaviour.
Innovation towards a sustainable and circular economy: An ecosystem perspective

Author: Jan Konietzko¹

¹TU Delft

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Abstract
The ecosystem as a concept has been used widely in the context of innovation for sustainability and circular economy. As a distinct and useful normative perspective, next to business models and supply chains, it can help firms drive systemic innovation. In this presentation, Jan will show why an ecosystem perspective is relevant and useful, how it emerged as a concept in the context of sustainability and circular economy, from which disciplines, and how different interpretations co-exist. He will also share examples of how an ecosystem perspective can be operationalized in practice.
Circular business models – why do consumers matter?

Author: Vivian Tunn\(^1\)

\(^1\)Delft University of Technology

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Abstract
Many circular business models that are targeting consumer markets have emerged in recent years. The hope is that circular business models reconcile economic and environmental goals to satisfy consumer needs without damaging the environment. Yet, behaviour of consumer who are ultimately supposed to use these business models is often disregarded in the development process. In this presentation, Vivian will outline why consumers behaviour should be considered during the development process and how it is a crucial factor in determining the sustainability potential of circular business models. Finally, recommendations for how consumers could and should be considered in the development of circular business models are presented.
Epilogue

Difficult questions for complex times

Sustainability has changed colour. A ‘touch of green’ or just ‘improving our recycling rate’ is not good enough anymore. If we want to make progress towards a more prosperous, more just society, we have to act more radically, thoroughly and with more impact. The messages since Rachel Carson’s ‘Silent Spring’, the Club of Rome’s Limits to Growth, and Brundtland’s Our Common Future are unmistakable and underpinned by solid empirical evidence – the window to act is closing. Given this growing urgency, transition has to start now and it has to be done collaboratively. We need at least two, but probably three decades, to shift towards fundamentally different systems and routines. It takes time to ‘deconstruct the existing order’ and the interests associated with it and for new organisational, economic and societal configurations to emerge. At the moment, early signals in Europe suggest we are cautiously shifting towards a ‘do-it-yourself-economy’ and ‘sharing economy’, yet it remains organised on a purely commercial and predominantly linear basis, in which a neo-liberal ideology is leading. But becoming more sustainable requires embracing change with the aim to create a different mind-set. It leads to strategic repositioning, for which keeping a clear vision is an important prerequisite.

These proceedings of NBM 2020 show how the integration of circularity, sustainability and inclusivity in a new generation of business models has the potential to foster collective value creation. Value creation that starts from the premises of sustainability, circularity, and inclusivity. Here we have unpacked a variety of building blocks, their key characteristics, underlying principles and patterns. Throughout the conference, we have argued, that they have a pivotal role to play in much needed transitions. Yet moving from theory and concept to reality poses a number of challenges. The largest challenge emerges from the necessity to redesign how value is created as a collective endeavour compared to conventional organisation-centric business models. This means revising the nature of value creation, be it in existing models or embedded in new models. It also entails different ways of delivering value propositions and allowing the use of a wider range of means of transactions, which is facilitated by the development of local, hybrid transaction models such as crypto-technologies.

Many questions arise in seeking to actualise NBM’s. What are really suitable business models to use? How do these models lead to the achievement of multiple value creation? What kind of impact can these models have on social inclusivity and participation? What kind of role will digital technologies such as Blockchain play? How do you get citizens and other urban parties motivated to actively work on the development and management of NBM’s. These are just a few of the many
paradoxes and questions that demand attention and research in order to realise the idea of NBM’s on a larger scale.

There are no ready-to-use manuals that fit the rich variety of today’s pressing, wicked challenges. There is no road-map and no Plan B. History shows that this is inherently linked to every type of transition – in shaping the way forward the same innovation has to be rediscovered over and over again, under new headings. Nevertheless, at present there is a multitude of promising signs in which the quest for new forms of co-operation is expanding, regardless of a remaining lack of proof. Are we in a transition? It is likely. Where will this lead to? Let us keep continuously asking each other that question and reflecting on where we want to go. We hope the future series of the NBM Conferences will contribute to understanding and above all solving these issues.
Members of the Permanent International Scientific Committee

MEMBERS OF THE PERMANENT INTERNATIONAL SCIENTIFIC COMMITTEE

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About Nijmegen School of Management, Radboud University

At Nijmegen School of Management, the staff have combined academic research and education to create a challenging curriculum in the fields of public administration, business administration, business economics, geography, environment, spatial planning and political science. A rich and inspiring blend of subjects with great social significance can be found here.

From within its culture of unity in diversity, the school expresses its developmental direction in its motto: ‘Responsible governance for sustainable societies’. Society is calling for critical reflection, for new views and scientifically validated, often multidisciplinary, knowledge, which can also be used in analysing and solving societal problems. The rich and unique combination of disciplines and perspectives within the school offers innovative opportunities for critically decomposing societal issues from different angles and developing new approaches of these issues in both teaching and research.

For years, the educational curriculum at the Nijmegen School of Management has been praised for the attention that it has paid to quality, the supervision of its students, the accessibility of its lecturers and wherever possible, its small-scale teaching. In order to create a stimulating study environment an active effort and commitment from students is needed. We expect to see this attitude shared by those who come here to study.

The faculty is housed in the Elinor Ostrom Building, where all facilities are close together. Staff and students can work, study, meet up and relax. The transparent building is very beneficial for the social foundations of the faculty.