What can we learn from social entrepreneurs and their community building aspect for future business models?

Nestler, M; Pennink, Bartjan

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Exploring a changing view on organizing value creation:

Developing New Business Models

Contributions to the 2nd International Conference on New Business Models

Rauter, R., Zimek, M., Kiesnere, A.L., Baumgartner, R.J.

Institute of Systems Sciences, Innovation and Sustainability,
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Colophon

The proceedings of the 2nd International Conference on New Business Models – "Exploring a changing view on organizing value creation: Developing New Business Models" has been made possible by the following persons:

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In case of any inquiries, please contact the editors: romana.rauter@uni-graz.at

Disclaimer

Content

Preface

While traditional business models of firms describe the logic of creating, delivering, and capturing value, new business models try to widen the perspective and respect new circumstances. The aim of sustainability stays in the centre so that new business models describe an organisation's logic of value creating, delivering, and capturing by considering varying preferences and by focussing on multiple value creation not only in economic, but also in ecological and social terms. The examination of this new form of business models requires knowledge from a broad variety of domains as well as interdisciplinary and systemic thinking.

In this context the University of Graz, Austria, and especially the Faculty of Environmental, Regional and Educational Sciences, which has a strong focus on interdisciplinary approaches, on sustainability and on social responsibility, is proud to host the 2nd International Conference on New Business Models. The first conference, which took place in Toulouse, France, in 2016, formed the solid basis and starting point for what seems to become a well-positioned conference being attractive for researchers and practitioners from many places in the world. Such events do not only foster the scientific exchange contributing to excellent research results, but also form the basis for a solution-oriented collaboration of science and society.

I'm convinced that the scientific presentations, workshops and key note speeches during these two days will lead to fruitful discussions, inspire further research and initiate collaborations. Additionally, I hope you will enjoy the wonderful city of Graz and find time for a walk through its renowned historical centre.

I wish you a successful and productive conference!

Prof. Dr. Barbara Gasteiger-Klicpera

Dean of the Faculty of Environmental, Regional and Educational Sciences, University of Graz

June 2017

Word of welcome

Dear participants,

Welcome to the 2nd International Conference on New Business Models (NBM@Graz2017) entitled "Exploring a changing view on organizing value creation: Developing New Business Models".

After the first conference taking place in Toulouse, France, in 2016, we are very proud and happy to host and organize this second edition of our newly founded international conference format. We welcome about 115 participants from 20 different countries, ranging from Brazil to Turkey, and from Finland to Australia. It makes us very happy that this conference brings researchers and practitioners from various cultural and professional backgrounds together, hence leading to an exchange of views and knowledge, which in turn hopefully creates positive impact by fostering the distribution of new business models in various contexts. While organizing this series of conferences we can put further emphasis on the importance of new business models by building up a community of researchers and practitioners that share similar visions and are ready to pool the forces together pushing the change forwards. Beside discussing research work at the conference itself, we hope that many contributions make their way to one of the three Special Issues aligned with the this years' conference, namely (1) the Special Issue in the International Journal of Corporate Social Responsibility (IJCSR), (2) the Special Issue in the Journal of Business Models (JoBM) and, (3) the Special Issue in the Journal of Accountancy & Bedrijfskunde.

Organizing such an international event requires joint efforts and support from various partners. It would have been impossible without the encouraging and constant support of all the members of our sientific board, the members of our scientific committee, our session chairs and workshop organizers, and our reviewers! Thank you! Furthermore, we would like to say thank you to all our sponsors and promoters, and last but not least, thank you very much to all of you participating in this conference! This is what brings such a conference to life. We do hope that you enjoy your days in Graz!

We also hope that you enjoy reading this report which includes abstracts or short papers of authors who are participating in the conference and presenting their work there. The proceedings are divided into three parts: Part 1 includes all abstracts, Part 2 includes all short papers and Part 3 comprises the workshop descriptions. Within Part 1 and Part 2 the abstracts and papers are arranged in the same way as they are presented at the conference ranging from Session 1 to Session 8.

After this conference we will hand over to Nikolay Dentchev and his team, who will organize the 3rd International Conference on New Business Models in Sofia, Bulgaria, next year (NBM@Sofia2018). We are already looking forward meeting you there too!

Yours,

Romana Rauter, Martina Zimek, Aisma L. Kiesnere, Rupert J. Baumgartner
Organizing Committee NBM@Graz2017

Prologue

Seeing ourselves as an emerging field of research and practice[1]

Some industries and even whole nations are in transition, gradually replacing the boundless pursuit of material prosperity by one driven by sustainable development, social inclusivity, and material circularity. However, we also witness the decline of ecological and social systems in many parts of the world (e.g., accelerating loss of biodiversity, food crises in many countries around the globe). Reverting this decline and supporting sustainability transitions requires various shifts in the economic realm as well as the broader societal and political domains. For example, the circular economy emphasises the thrifty use of materials and the transformation of open-ended supply chains to closed cycles of production and consumption. The bio-based economy aims to replace non-organic with organic materials. The functional and performance economies challenge the traditional transaction model of make-and-buy and replace this with product-as-service solutions. Other economic transitions focus on higher utilization of resources through (true) sharing, collaboration, and other forms of collective value creation.

It is within all these economic transitions that we observe the emergence of a generation of new business models that foster sustainability, social inclusion, and circularity. We call these three strands of business models the "new business models." Together they address various aspects of business modelling and in doing so they give substance to the economic transitions society desires since they are embedded in everyday transactions, be it between citizens or businesses. The New Business Models conference series started at Toulouse Business School, France, in 2016, and is currently celebrating its second anniversary. It aims to bring together scholars, practitioners, and others to share experiences, exchange insights etc., to collectively reach a deeper understanding and improve the repertoire of contention available to implement the necessary changes for sustainable economic transitions.

Against this backdrop, we would like to use this year's proceedings prologue to point to some remarkable developments that we, and surely many of our colleagues around the world, are currently observing. In particular, we like to point at the many research and practice activities, niche communities, publications, communication and publishing channels, and so forth, which emerge around those new business models. We see many valuable bits and pieces – or nodes and relationships – that emerge here and there and contribute to what is becoming a global network and community of scholars, business practitioners, policy makers, and civil society actors who follow a common vision: to enable all kinds of organisations, be it profit-driven or purely social mission-driven, to use the growing knowledge that results from business model research for the sake of stakeholder- and society-sensitive as well as circular and sustainable value creation.

What does it take to create such a community, or, on a larger scale, a new field of research and practice? Following John Ehrenfeld, who famously described the emergence of the industrial ecology field in a classic article,[2] it is at least four things that characterise a new field of research and practice: the shared major beliefs and concepts underpinning the field's activities; the tools and resources developed and used within the field; authorities and points of reference; and a growing community of actors.

We see that gradually common *beliefs and concepts* emerge in discussions and publications on this family of new business models. These beliefs and concepts are often formulated as normatively grounded propositions about what business models are, or more precise, should be or do (e.g., support stakeholder inclusion and multiple value creation, enable a systems perspective). They can be explored and debated from various perspectives, such as deontological, ethical, normative, functional, strategic, and so forth. Naturally this can be done from either a theoretical or an empirical viewpoint. Overall this shows a dynamic and iterative field moving back and forth between theory, concepts, empirical studies and discoveries embedded in an ongoing cycle of scientific refinement. An important and widely discussed topic is innovation *tools and resources* (e.g., tools like the "Clover Leaf Canvas Model" by Jan Jonker, or the book "Business Models for Sustainability" by Peter Wells). We do note that "standards" for sustainable, socially inclusive, or circular business modelling do not exist yet, but see a variety of approaches emerge – which is for sure not a bad thing.

Regarding the *community of actors,* we find that a growing number of academics, practitioners, and policy makers deal with issues related to new business models. This gives rise to the development of a transdisciplinary field as they begin to exchange their knowledge across research-practice, disciplinary, and institutional boundaries (e.g., through reports published by global consulting firms, international publishers, or dissemination via social media). This emerging community is dealing with issues that are partly defined and spread by *emerging authorities and points of reference* in the field, namely a handful of academic journals (e.g., Journal of Cleaner Production, Organization & Environment) and institutions such as the OECD, the International Finance Corporation, or think-tanks like SustainAbility. Recently, this community has also found new platforms, besides online channels (e.g., Strongly Sustainable Business Model Group; SustainableBusinessModel.org), to meet on a regular basis, hence the annual New Business Models conference.

A new field must be gradually institutionalised to last and evolve, and to be more than a passing fancy. We find some indicators of early institutionalisation processes mainly in academia, given for example the growing number of special issues of academic journals around business modelling. We also observe that the number of courses, be it on Bachelor or Master level, is growing. There is now also a MOOC on New Business Models (https://iversity.org/en/courses/new-business-models). We also see practical forms of

institutionalisation, for example through increasing social impact investments and the rise of social enterprises. Shaped by growing knowledge on how to construct social business, the attractiveness to invest is growing.

All in all, we see the emergence of a new field of research and practice. The 2nd International Conference on New Business Models, for which we serve as Board Members, is our contribution to developing and institutionalising this field. At the same time, this is an open call to you to actively participate, e.g. by joining the existing online and offline groups (e.g., Strongly Sustainable Business Model Group; SustainableBusinessModel.org), submitting papers to the upcoming special issues for this conference (e.g., International Journal of Corporate Social Responsibility), launching local events (e.g., business modelling workshops) … and much more. There is a lot we can do – together.

Florian Lüdeke-Freund, Niels Faber, Jan Jonker

[1]: The description of the four field characteristics builds on discussions and joint research with **Krzysztof Dembek,** who can be contacted at krzysztof.dembek@unimelb.edu.au.

[2]: Ehrenfeld, J. (2004): Industrial ecology: a new field or only a metaphor?, Journal of Cleaner Production, Vol. 12, No. 8-10, 825–831, http://www.sciencedirect.com/science/article/pii/S095965260400068X.

PART 1: ABSTRACTS

ABSTRACTS SESSION 1

Business Models for the Circular Economy: Developing a typology based on existing literature

Jan Jonker* and Hans Stegeman
Nijmegen School of Management, Radboud University,
PO Box 9108, 6500 HK Nijmegen (the Netherlands)
*Corresponding author: j.jonker@fm.ru.nl

Introduction: what is at stake?

Stimulating a transition towards a circular economy (CE) is becoming more and more the focus of attention for policymakers, business people, and scholars considering the growing upsurge of policy documents and research reports. The promise it entails to create an economy that operates within the boundaries of nature is hopeful, yet challenging given the fact that over the past one and a half century all efforts have been invested in developing a linear economy. No wonder, quite a gap can be observed between the political and societal promise of a CE and the economic and organizational reality of putting the idea of circularity into practice. Key is to design and organise an economy based on closed loops around materials. In essence this is done with the ambition to create in a balance way multiple values. This implies that different values such as ecological, social or material 'capitals are addressed simultaneously by organisations. To shape this complex and sometimes even contradictory process of value creation and guide the outcomes a specific logic is needed. Different logics can be created given available assets and circumstances and the strategic choices made given this context. The leads to a variety of business models. This contribution sets out to understand the logic behind these business models by identifying the principal building blocks.

Transition to a circular economy

In order to realize the promise of the CE, businesses must massively transform from a linear to a circular way of operating. This implies designing and operationalizing closed loops around materials by a configuration of dedicated constituents that together are capable to closing a particular loop. The ambition of creating these closed loops is that products materials and spare-parts are used as long as possible. The lifetime of products, spare-parts, and the materials they are made of is extended by smart design and refurbishing leading to repetitive yet not unlimited reuse. Ultimately this has far reaching consequences for the

design of products and their life-cycle. Instead of a take-make-waste philosophy the are designed on a take-make-use-refurbish-use-remanufacture etc. philosophy. This implies a transformation from a linear value-chain to a so-called value-cycle that is being created and maintained by multiple constituents. In turn this has far reaching consequences for business propositions, the organizational models between constituents, last but certainly not least the nature of revenue models. While in itself the idea of a CE has been around for at least half a century we now witness processes in different sectors of society whereby the idea of organising those closed loops are being put to practice. As a result, across various sectors and countries, a number of self-declared successful business cases can be observed, demonstrating to have one or another type of circular business model. Yet why they are successful, what kind of values are being created and what the underpinning logic is, remains difficult to observe left alone to compare.

Circular design

Linear business models are fuelled by the ambition to create as much value added as is feasible. The highest turnover component of this objective is to transform materials as efficiently as possible into products within a value chain. They are organization-centric, bottom-line leading to value creation measured in terms of costs and benefits. Leading design principle is planned obsolescence, supported by perceived obsolescence. This implies to design products in such a way that they will only function a limited period of time and are difficult thus costly to repair. The principle of closed loops is all but taken as a compass for the design and use of these products. This leads to a value creating logic where the role of materials or built in sustainability in terms of efficient left alone cyclical use of commodities does not matter. No wonder the underpinning logic that can be observed in the used business models offers no fundamental room for these issues.

Business Model Ontology

Many of today's regular business models are implicitly or explicitly based upon the Business Model Canvas ontology. This is a strategic management template to either built for scratch or rebuilt a business model. It provides a systematic overview of key-activities and key-resources including (partner) networks leading to defining a value proposition. The promise of this ontology is that it can be applied ion almost any situation. Yet the core, despite an embedded stakeholder perspective, is still very 'linear' and organisation-centric. It is driven by neo-classical assumptions in which creating financial shareholder value is the fulcrum of organizational activities. Paramount are, bottom-line, two decisive building blocks: cost and revenues. Designing a value creating logic that favours the latter is the bare essence of these kind of business models. As a consequence, the notion of value creation is narrowed down

to an almost purely financial focus. Although during the process of organising the creation of other values are not prohibited yet they are subordinated to the cost-benefit balance. A closer look at the BMC shows that principles such as eco-design or eco-efficiency, need to fit to this balance. Conversions and alterations of the BMC, such as the Triple Layered Business Model Canvas, Honey Comb Business Model or the Borrow-Use-Return Model do not overcome this issue since in the end they still hold the traditional cost-benefit analysis as the dominating principle to define either success or failure.

Circular business models

Circular business models (CBM) are based on the premise of either fully or partially closing material loops. Core of these business models is a process with multiple transactions over time leading to value-cycles whereby CBMs promise to contribute to sustainability which can be expressed in social, ecological, material and financial values. This is called multiple value creation (MVC). It remains difficult to assess what MVC exactly entails left alone how the balancing of values in the process of multiple-value creation is established. Yet its emerging application can be ascertained in rather innovative approaches such as Integrated Reporting (IR). Integrated Reporting is the way to achieve a more coherent corporate reporting system, that provides a fuller picture of organizations' ability to create value in various domains. These domains are called 'capitals' of which six are depicted: financial, manufactured, intellectual, human, social and natural. Evidently it echo's the Triple P approach proposed by Elkington in the '90s but now adds an operational dimension enabling to frame multiple values. This is a great step forward in the debate on creating multiple values in and between organisations.

Making a trace in the sand

Despite the increasing literature on CBMs it continues to be ambiguous concerning stipulating a clear starting point of the (inter) organizational challenges a circular economy entails. Organising a closed loop is quite a challenge given the fact that parties have not been working in such a way for the last say one hundred and fifty years. Inter-organisational revenue models hardly exist. No wonder existing classifications of CBMs lack a general and coherent framework identifying principles, value-creating logics, strategies, and building blocks leading to a piling up of different business models which all share some characteristics which resembles CBMs. The empirical underpinning of these classifications hardly goes beyond the anecdotal use of cases. Empirical evidence comes from a broad variety of sources and related contexts. No wonder a clear and transparent way of clarifying the logic of multiple value creation linked to CBM is lacking.

Building a typology

Against this backdrop and despite the empirical and methodological criticism we set out in this contribution to develop a typology of CBMs. This typology is based on five assumptions. First, CBMs must - at least to some extent - aim at closing resource loops. Second, they must also deliver ecological and social value in addition to financial value. Third, it is assumed that this creates opportunity for a set of dedicated business strategies. These first three assumptions will foster new (inter) organizational collaborative models which subsequently urge developing revenue models between constituents based on ongoing value creation in value cycles. We use these assumptions as the five building blocks of CBMs which enable classifying existing examples leading to a typology. Between early 2016 and Spring 2017 research was carried out to explore this typology based on the five building blocks. This research shows that some of the published typologies are still rather conceptual and, therefore, not discriminating enough to be of practical use in designing conceptual and empirical research on CBMs. This while in its infancy it also demonstrated that these building blocks offer a solid ground to develop a typology. While the work that needs to be undertaken is still in progress we express a solid if not firm belief that the research undertaken offers maple ground for a solid typology for BMCE's.

The Evolution of waste exchange platforms' business models

Francesca Ciulli*, Merve Güvendik & Ans Kolk
University of Amsterdam Business School, The Netherlands
*Corresponding author: f.ciulli@uva.nl

In 2012, Europe experienced an astonishing loss of 95 percent of the material and energy value (Ellen MacArthur Foundation, 2015). Over the last years different initiatives have been adopted to reduce the amount of waste produced by businesses. Although 'zero-waste' goals are increasingly embraced by companies, considerable amounts of waste and surplus materials still result from production processes, causing both economic and environmental value destruction. In this context, "the exchange and reprocessing of wastes and other excess resources from one firm into valuable inputs for another" (Paquin et al., 2015: 95), has been viewed as a powerful approach to minimize waste. Concurrently with the diffusion of online platforms allowing peer-to-peer exchange of products and services, over the last years different actors have engaged in creating, managing and supporting business-to-business platforms, which match firms selling their wastes and 'surplus materials' with those willing to buy them (Dhanorkar et al., 2015). The matchmaking can involve basic or more sophisticated activities by the platform operator.

Yet, these so-called 'circulation platforms' (Kortmann and Piller, 2016) or 'online materials and waste exchange platforms' (Dhanorkar et al., 2015) have received scant attention from management scholars. Given the increasing number of circulation platforms across different countries and sectors, and since "the choice of a business model seems to be the key to the success of a platform" (Rochet and Tirole, 2003: 991), our study adopts the platform operators' perspective and explores how they develop and foster the growth of their business model.

The study adopts a multiple case study research design (Yin, 2003). The cases consist of 6 established circulation platforms; for each case we have explored, through primary and secondary data, the evolution of their business models since the creation of the platform.

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How to identify and engage stakeholders to build sustainable business models?

Fritz, M.M.C.*, Rauter, R.
Institute of Systems Sciences, Innovation and Sustainability Research,
University of Graz, Austria,
*Corresponding author: morgane.fritz@uni-graz.at

Keywords

Supply chain, Business Models, Stakeholders, Engagement, Dialog

Abstract

Business models are increasingly being addressed by non-business oriented organizations because of the added-value they bring in understanding how a system can be more sustainable. In the context of energy for instance, the shift from centralized to de-centralized systems to allow the transition towards more sustainable energy supply and use, require the collaboration of several stakeholders, among which businesses producing and delivering energy, but also energy users (public services, households, industry), public utilities, and policy-makers at a local, regional, national and international level. Consequently, for some products and services, there is a need to consider the system they are embedded in in a holistic manner. However, a challenge remains in identifying the stakeholders to engage with to build a sustainable business model. Stakeholder identification is a step that is often neglected and conducted with bias, although it is the basis to understand which stakeholders are part of the system under consideration and investigate their roles. We address this issue here by taking a supply chain perspective combined with concepts from the stakeholder management field of research and present a structured process to identify stakeholders. This process has been developed by identifying stakeholders in the field of mercury trade over the period 2014-2016, and further tested in the field of sustainable energy supply in 2015. Our aim is here to present how this process can be used to support the development of sustainable business models with different tools as examples (e.g., the Business Model Canvas) and to define who the beneficiaries of such a combination may be (e.g. Public Private Partnerships). We show that by identifying thoroughly stakeholders with the suggested process, it is possible to obtain a comprehensive picture of present and future stakeholders in a system and to avoid especially the risk of omission or bias that put at risk the successful implementation of business models. Also, by engaging already with various stakeholder groups during the stakeholder identification step, the process enables to connect stakeholders together and increase the opportunities for dialog and the

identification of synergies. By providing a more comprehensive picture of the stakeholders in place, it is also possible for organisations to develop a value proposition for stakeholder groups that would otherwise be ignored with traditional client-centred business model development methods.

A Business Model for an Industrial Symbiosis Facilitator

Amtul Samie Maqbool[1]*, Stéphane Ogé [2,3,4] and Greet Van Eetvelde[1]
[1] Ghent University, Energy and Cluster Management, Faculty of Engineering and Architecture, Belgium
[2]Strane Innovation, 2 route de la noue, 91190 Gif sur Yvette, France
[3]University of Lyon 3, CRGA-EVS UMR 5600, 18 rue Chevreul, 69362 Lyon, France
[4]ITECH (Institut textile et chimique de Lyon), 87 Chemin des Mouilles, 69134 Ecully, France
* Corresponding author: ecm@ugent.be

Keywords

Industrial Symbiosis, Resource Efficiency, Industrial Clusters, Industrial Symbiosis Facilitator

Abstract

Symbiotic relations in industrial clusters provide the perfect breeding ground for innovative ideas to achieve resource and energy efficiency, and ultimately aim for a circular economy. This paper focuses on the role of an industrial symbiosis facilitator (ISF) that drives industrial symbiosis (IS) within and between self-organised industrial clusters and the community, towards resource efficiency (RE) at the regional level. Simple one-to-one contractual partnerships lack the complexity to tackle the multitude of factors that orient industrial networks; hence a legal organisation of the partnership is needed to structure decision-making processes, to simplify operations and to guarantee continuity of the symbiotic activities.

Large and established (multi-national) companies face significant barriers in business model redesign due to the institutionalisation of existing mental models and physical infrastructures (Bocken, Rana, & Short, 2015; Jonker & O'Riordan, 2016). Often, their focus is incremental improvement (Christensen, 2013; Massa & Tucci, 2013), translating to increased resource and energy efficiency while maintaining business as usual. Using the Value Mapping Tool (Bocken et al., 2015), the core of an ISF is placed in the outer rings of the business model of established businesses. It captures the value missed in the form of underused resources, from multiple businesses, and turns them into opportunities via IS,

which the personnel of the company might miss because of their focus on their core business (Van Beers, Bossilkov, Corder, & van Berkel, 2007).

It is not possible to create shared value without connectivity and reciprocity, thus without linkages and collaborations nothing can be traded, shared, or created (Jonker & O'Riordan, 2016) and an ISF provides this opportunity. The ISF is proposed to fulfil the role of glue between the different actors; the industry, local businesses, community and the local authorities (Maqbool, Piccolo, Zwaenepoel, & Eetvelde, 2017) while capturing value for itself by providing its services to the multiply stakeholders. The ISF responds to the societal need of RE from the process and manufacturing industries, by thinking globally and acting locally. The key partners of ISF in this pursuit are the waste managers, local authorities, recycling industries, logistics providers and local and regional industrial associations. The core services of the ISF include helping resource and energy intensive industry for finding local needs to consume their underused resources.

Highly skilled human resource is the key to ISF's success. The value proposition of ISF lies in links with multiple stakeholders, knowledge of legal certification and different funding schemes to support RE. The customer relationships are maintained by continuous interaction between the ISF and the IS partners. The channels to reach the customer segments include platforms like sector associations, web-sites, city council, online platform for matchmaking and frequently organised networking sessions. The cost structure is based on the variable costs for the services provided. Revenue streams would include operation service fee from IS partners, management of the platform for match-making, service costs for subsidy applications filed, brokerage fee for putting IS partners together.

Ultimately a private ISF answers to the bottom-up initiatives that are more sustainable and more inclusive where large multi-national companies may find themselves obstructed.

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The role of circular business models (CBMs) in creating sustainable prosperity

Dr Geraldine Brennan[1,2,*] and Dr Anthony Alexander[3,]
[1]Middlesex University Business School, [2]Imperial College London, [3]Warwick University
*Corresponding author: g.brennan@mdx.ac.uk

Keywords

Circular Economy, Social Value Creation, Flourishing, Quality of Life, Social Justice

Abstract

The relationship between circular business models (CBMs) and sustainable business models (SBMs) remains contested (Lewandowski, 2016). The SBM literature acknowledges the need for synergies between environmental and social value creation but recognises that in practice, firms often focus one form of value creation over the other - rather than both (Bocken et al. 2014). More recently, the role of circular economy (CE) as a new paradigm for sustainability has been explored (Geissdorfer et al. 2017).

CE emphasises creating environmental and economic value from turning waste into a productive resource, and beyond recognition of potential job creation from a shift in the economy to more circular production systems (Stahel, 1984), social ideals and their relationship to value creation tend not to be explicitly addressed. Murray et al. (2015) argued that in order for CE to be coherent with sustainable development, it needs to include explicit consideration of social impacts and social value creation. This echoes earlier arguments that equating sustainability to CE, without such considerations, runs the risk of reducing sustainability to material efficiency at the expense of broader ideals of equity, morality and social justice (Ehrenfeld, 2000) given one of its core foundations is the biological/ecosystem metaphor (Brennan et al. 2015).

More recent alternative interpretations of CE, particularly in the grey literature, have espoused that poverty is a social waste – which results in the waste of valuable human resources (Lemille, 2016). This implies that implementing CBMs in developing country contexts has the potential to create employment related to transforming waste resources where unemployment is high and labour relatively cheaper. None-the-less beyond existing considerations of the job creation potential of CE, broader social considerations have not yet been adequately incorporated into the emerging discourse.

This in part is due to the perceived novelty of the idea which has not been closely examined (Gregson et al. 2015). It is also due to the sheer complexity of the technical challenges raised when considering the details associated with attempting to re-configure and re-design materials, products, and tack-back systems. Thus, while it is recognised that social impact and social value creation are important considerations in the context of CE, the question remains how CBMs can simultaneously generate economic, environmental and multiple forms of social value in practice?

Sustainable prosperity is underpinned by the principle that value creation and increased quality of life can both be decoupled from resource use (Jackson, 1996; Jackson, 2009; Moore, 2005; Jackson, 2017). Related to this concept are explorations of how to create conditions for the emergence of economies where people can flourish (Ehrenfeld, 2004; Ehrenfeld & Hoffman, 2013) and the need to incorporate safe social-operating boundaries (Raworth, 2012) in addition to recognition of physical planetary boundaries (Rockstrom et al. 2009).

Using sustainable prosperity as a lens, this conceptual paper will, based on a literature review, explore how to operationalise these and associated ideas within the evolving CE and CBM debates. This paper seeks to develop insights which unpack the relationship between sustainable business models in general and circular business models in order to address the following question:

- How can ideas associated with sustainable prosperity and flourishing be operationalised in CBMs so that they successfully contribute to the generation of economic, environmental and multiple forms of social value in practice?

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Collaborative Value Creation in Innovation projects for a Circular City

Inge Oskam[1], Bart Bossink[2] and Ard-Pieter de Man[3]
[1]Amsterdam University of Applied Sciences, i.f.oskam@hva.nl
[2] Vrije Universiteit Amsterdam, b.a.g.bossink@vu.nl
[3] Vrije Universiteit Amsterdam, a.p.de.man@vu.nl

Over the last decade, the concept of a circular economy, an industrial economy that is restorative or regenerative by intention and design, has gained increased attention of policy makers, industry and academics (Geissdoerfer, Sayaget, Bocken and Hultink, 2017). Recently the number of innovation projects that are set up to experiment with new sustainable technologies to advance the transition towards a circular city has increased substantially, the initiators being local governments, communities, NGOs and business (Prendeville, Cherim and Bocken, 2017). Although the literature on circular economy and circular cities stresses the importance of bottom-up initiatives, a gap seems on how different stakeholders in bottom-up initiatives collaboratively create value and develop sustainable business models for these innovations for a circular city. The aim of this research is to explore how in the emerging field of circular city innovation projects, bottom-up initiated by for example NGOs and businesses, different stakeholders are involved in the collaborative value creation process and how they collaboratively create value and develop a viable business model for the project, whilst maintaining value for each partner involved. We do so by building on literature on circular economy, sustainable and collaborative business modelling and value networks.

Different scholars show that the CE literature can be divided in research on three levels: macro-level (cities, regions or nations), meso-level (eco-industrial parks) and micro-level (single firms or products) (e.g. Ghisellini, Cialani and Ulgiati, 2016; Su, Heshmati, Geng and Yu, 2013). At all levels, the literature stresses the importance of new business models and collaboration with a variety of stakeholders. New business models are widely recognized as conditions for implementing sustainability-oriented innovations (Boons and Lüdeke-Freund, 2013; Schaltegger, Lüdeke-Freund and Hansen, 2012) and are considered important in the transition towards a CE (e.g. Geissdoerfer et al., 2017). For this purpose, many scholars have developed definitions and frameworks that extend the generic business model concept towards sustainable, social and circular business models (e.g. Yunus, Moingeon and Lehmann-Ortega, 2010) and circular business models. These business model definitions and frameworks have three perspectives in common related to the creation of value:

- a multiple value perspective, extending economic value provided by the value proposition with environmental and social value (e.g. Bocken, Short, Rana and Evans, 2014; Yunus et al., 2010);
- a multi-stakeholder perspective on value creation, considering a wide range of stakeholder interests (e.g. Lüdeke-Freund, Bocken, Brent, Massa, and Musango, 2016);
- a value network perspective, constituting the whole constellation of actors involved in the value creation process (e.g. Antikainen and Valkokari, 2016; Doganova & Eyquem-Renault, 2009; Chesbrough & Rosenbloom, 2002).

Although the majority of the business model literature takes a single firm perspective, recently a number of scholars presented and discussed new tools and methods for collaborative business model innovation, e.g. Jonker (2016); Lindgren, Taran and Boer, (2009); Rohrbeck, Konnertz and Knab (2013). Common in these methods is that individual business models and value captures need to be in accord with the common business model. Breuer and Lüdeke-Freund (2017) add the notion of values, arguing that 'purposeful innovation requires considering the shared values of those engaging in innovation processes'. A gap seems to exist though in how the values of stakeholders shape their roles in the value creation process and how tangible and intangible value is created and shared with these models, whilst in the meantime capturing stakeholder-specific values.

For this study we take a qualitative research approach, using a multiple case study design to improve the external validity (Yin, 2003). Four collaborative innovation projects, bottom-up initiatives that are set up to experiment with new sustainable technologies to advance the transition towards a city that recycles and upcycles waste, are selected using a theoretical replication logic (Yin, 2003). All four projects are examples of bottom-up initiatives with explicit goals to create shared value and are characterized by collaboration of a wide variety of stakeholders. Two of them can be considered an urban living lab, initiated and coordinated by an NGO and supported by external funding and support for example by municipalities. Two of them initiated and coordinated by business and are executed without any additional funding. The data consists of 10 in-depth retrospective interviews with key project partners and 56 additional data sources. The cases are analysed by an inductive research approach consisting of within-case analysis and cross case analyses using pattern matching techniques.

The preliminary results show that participation in projects for a circular economy is mainly environmentally and socially driven with an aim to innovate, demonstrate sustainable solutions and inspire others to contribute to the transition towards a circular economy. The data reveals that, regardless the starting point and coordination, the partnerships remain open to new collaborations. Salient for the value network is that three roles vary throughout the project and change their contribution to the value creation

process, e.g. public organisations and private companies that originally take part as facilitator, in a later stage may also become involved as knowledge provider and/or customer of the value that is created. The collective value that is developed, is largely non-financial and encompasses clear ecological benefits (e.g. material reuse, reduction CO2 emissions) and social benefits (e.g. education, creating awareness, community building) for a wide variety of stakeholders, ranging from the city as a whole to specific beneficiaries. The value capture shows how this collective value fits together with the individual value each partner captures from the project, that includes financial as well as intangible benefits.

The paper contributes to the business modelling and circular economy literature by showing possible motivations for different stakeholder types to engage in innovation for a circular city and by indicating the multiple types of individual and collective business model value that may be pursued. The paper further shows how different stakeholder types conciliate creating common value with individual interests.

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A Typology of customer value creation in circular business models

Erwan Mouazan, Faculty of business studies, University of Vaasa
erwan.mouazan@uva.fi

Keywords

Circular Business model; Customer Value Creation

Abstract

Customer value creation is recognized as a critical part of a business strategy and perceived as the fundamental basis for all marketing activity. First defined as a unidimensional concept referring to the trade-off between benefits received and sacrifices made to acquire a product or service (Monroe, 1990), the very notion of customer value has since then been studied from a multiplicity of dimensions, and its complex and dynamic nature has been often. The paper explores the notion of customer value creation in the context of circular business model innovation (CBMI). CBMI may come as a novel solution to solve current pressing business challenges, such as the rise in commodity prices or the increase scarcity of specific resources. With increasing resource constraints on one hand, and a growing concern from customers for sustainability-related business practices, redefining value creation in the framework of circular business models becomes more than relevant for businesses. Companies seeking to implement a circular business model may need to reevaluate their customer value creation strategy accordingly, as conventional notions of ownership transfer, traditional pricing fees, or distinctive usage patterns are being challenged in circular business models.

Literature around circular business model innovation, which aims at exploring the rationale of how an organization creates, delivers, and captures value from closed-loop & circular strategies is today at a nascent stage. It is often considered as a sub-stream of sustainable business model innovation. In this emerging stream, little has been studied regarding customer value creation. To bridge this gap, the article explores which dimensions of customer value creation are emphasized in circular business models. More specifically, the paper aims to clarify which combination of value dimensions can appeal to customers, based on an adapted typology of customer value creation.

First, a literature review of customer value creation is helping framing the concept and helps clarifying the main dimensions of customer value creation. Second, an overview of

circular business models recent literature outlines the main dimensions of CBM and helps drawing specific typologies of CBM. The bridging of the two notions - customer value creation and circular business models - helps developing a theoretical framework (circular customer value creation) that is then applied to 65 cases of circular business models drawn from existing literature and representing the diversity of circular business models (in 6 different sectors, as well as in B2B and B2C contexts). Preliminary results are challenged and discussed with a narrowed selection of companies' representatives and key EU experts in circular economy, in order to validate the preliminary conclusions of the research. Five cases illustrate how the circular customer value creation compass can be used in practice.

At theoretical level, the paper revisits different customer value creation frameworks and adapts it to circular business model innovation. The tool can support managers and entrepreneurs active in the circular economy to clarify their circular value proposition. At practical level, the various value constellations inherent to each category of circular business model are outlined, and results offer illustrated specificities for each CBM category.

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Quick scan for the social impact of reuse scenarios in a circular economy

Yanti Slaats, Inge Oskam
Amsterdam University of Applied Sciences, Faculty of Technology
Urban Technology research program
Weesperzijde 190, 1097 DZ Amsterdam, The Netherlands
y.slaats@hva.nl, +31 610720994

Keywords

Social Impact, Quick Scan, Reuse, Social Life Cycle Assessment, Circular Economy

Abstract

For the transition to a more circular economy, it is important to know how the cycling of resources will affect value creation of businesses (Ellen MacArthur Foundation, 2013). Key business model strategies that are identified by Bocken et al. (2016) that fit the approach of slowing and closing resource cycles are 'Extending product value' and 'Extending resource value'. In these strategies, the residual value of products or resources is exploited by turning otherwise wasted product (parts) or materials into new forms of value.

Increasingly, social value is considered of importance next to economic and environmental value. To assess the value of a certain product, life cycle analyses are considered to most accurately approximate impacts over the life span of a product. Extensive literature exists on environmental life cycle analyses and business modelling for financial impact of products. The knowledge on social impact is less extensive and methodologies for social lifecycle assessments (SLCA's) are still in an early stage of development (Jørgensen et al., 2008; Ekener Petersen, 2015). Nonetheless, in the past years, several guidelines have been developed to assess the social impact of products over their lifespan (UNEP, 2009; Fontes, 2016). Although an effort is done to make these guidelines as practical and implementable as possible, they are based on the availability of several key performance indicators that are not always easily accessible and require extensive data search. Moreover, in the early stages of product development, profound analysis is difficult because of undefined factors in design, materialisation, production processes and production locations. In this paper we present a quick scan approach to asses social impact of reusing product parts or materials at an early stage in the decision making process.

Based on the available literature on guidelines for social life cycle assessment and on interviews with experts on social impact analyses we defined the social topics to take into

consideration in the framework for a quick scan. With these social topics in mind, possible reuse scenarios were built. In a workshop with designers and business professionals, the possible impact of each of the scenarios on the social topics was discussed.

We tested this approach in the case of a Dutch company that has a uniform waste stream of plastic stadium seats at its disposal. The base-line scenario was partial recycling and partial incineration of the plastic material. Several alternative reuse scenarios for product parts or materials could be imagined. Based on this test case we formulate our first findings and conclusions about the strengths and limitations of this 'quick scanning' method for social impact of a circular economy case.

Initial results indicate that existing guidelines are not readily suited at a scenario stage of evaluation of the reuse of parts and materials. The proposed conceptual framework does help to generate insights in impact of the possible alternative scenarios. We found that in a circular business case it is even more difficult to determine the system boundaries for a social life cycle analysis than in a linear business case. We learned that, on one hand, certain social topics that are suggested in existing guidelines are not applicable in this particular reuse case because it was characterized by the fact that it aimed to source all production steps within the Amsterdam region. This meant that topics that we take for granted in Western countries, like abolishment of child labour and forced labour, and secured fair salary and health and safety at the work floor, are not helpful in distinguishing scenarios from each other. On the other hand, topics that could discriminate between circular production scenarios and traditional linear scenarios, like emotional value of reusing product (parts) and awareness of end-of life scenarios are not distinctively enough represented in the existing guidelines. This was specifically the case in the consumer stakeholder group of topics.

We propose an extension of the categorisation with more topics related to emotional value, awareness of end-of life scenarios, and other topics that represent the circular economy, particularly in the consumer stakeholder group. This paper contributes to academia by adding an extension to the social impact categories mentioned in literature, which could contribute to optimize social impact assessment in circular economy business models that aim to extend product and resource value. It contributes to practice by improving the usability of the SLCA in a more circular economy.

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Unfolding challenges of business model innovation towards circular economy: The case of fashion industry

Kerli Kant Hvass, PhD
Copenhagen Business School (CBS)
kkh.msc@cbs.dk

Keywords

Circular economy, business models, closed loop, fashion industry, qualitative case study

Abstract

Over the last decades there has been a call for finding solutions and implementing strategies that aim for more efficient use of natural resources and sustainable development within our societies (Brundtland et al. 1987). In addressing this, the concept of circular economy has recently gained extensive attention (EMF 2012; 2013), even though the concept is not a new and traces back several decades to Stahel & Reday's (1976) work on the ecology behind product life extensions and their sketched vision for "an economy of loops" or "circular economy."

Addressing circular economy is an emerging field in industry, academia and policy, however, there is limited research that studies this concept from a business model perspective supported with empirical evidence. Traditional fashion companies' business models mainly focus on creating and capturing value from the sale of new products, while aspects related to circular economy principles, such as product take-back, reuse and recycling are often not an integral part. The aim of this article is to explore the organizational and supply chain related issues in relation to implementing a closed loop recycling-focused circular economy strategy in an existing business model. The paper is based on empirical findings from a 34 month long qualitative case study of a leading Scandinavian fashion brand and the study followed an engaged scholarship strategy (Van de Ven, 2007).

The findings identify issues and challenges that impact the successful implementation of a product take-back system and closed loop recycling into an existing business model. The study shows that closed loop fashion is a complex matter with several uncertainties and difficulties that span across the entire value chain. Moving towards a circular textile

system implies wider systemic change and innovation, not only in business models, but also in technologies, production practices, policies and consumer behaviour.

At a micro level, the findings conclude that in order to integrate circular economy practices into the existing business model, rethinking existing value propositions and modifying several or all business model elements is required. For example, the findings reveal a need for organizational learning and a common understanding of the circular economy value proposition among internal stakeholders. An additional finding is that circular business models require an extended understanding of customers where it is important to see them as suppliers and co-producers of post-consumer value of products and materials. Finally, integrating circular economy strategies into business models may bring along radical changes to how companies perceive its products and relationships with customers and other stakeholders.

Overall, the research provides a unique contribution as it synthesizes the theoretical and empirical insights from the field of business model innovation and circular economy with a focus on product and material circularity and management of post-consumer waste streams in a specific industry context.

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Modelling interconnected business models in the circular economy value chain: The story of portable batteries

Tatu Lyytinen*, Jarkko Levänen
Aalto University Department of Management Studies (Finland).
*Corresponding Author: tatu.lyytinen@aalto.fi

Introduction

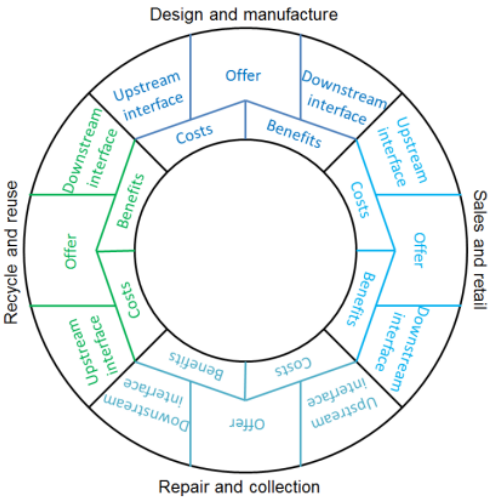

Figure 1: Business modelling circular economy value chains

Circular economy is a new economic model that relates to transition from linear to circular value chain (e.g. Lewandowski, 2015; Ghisellini et al., 2016; Lieder and Rashid, 2016). Sustainability on circular economy can be achieved thought modifications on business models on entire industries' system value chains (Kortmann and Piller 2015). This means that circular economy is hardly possible without collaboration between all actors in the value chain from manufacturing to recycling (Roos 2014).

In this study business model is seen as a formal conceptual modelling approach for circular economy (Baden-Fuller and Morgan 2010; Mangematin and Baden-Fuller 2015; Massa et al. 2017). Recent literatures on sustainable business models (Boons and Ludeke-Freund, 2013) and industry system value chains (Porter and Kramer 2011) have addressed the issues of sustainability. We divide circular economy value chain into four phases: 1) design and manufacturing; 2) sales and retail; 3) repair and collection; and 4) recycle and reuse (Figure 1). To model each value chain position, we have selected four business model elements: 1) offer; 2) upstream interface; 3) downstream interface and; 4) financial model (Figure 1). These business model elements enable structuration of interaction analysis between different value chain positions and implications of circular economy to each position's offer and financial performance.

Methods

Electronics industry is one of the fastest growing sectors and inefficient integration of circular economy principles in the industry value chain causes serious environmental and

social hazards worldwide (UNEP, 2015). We have selected case study research method to study the implications of circular economy principles to business models of different actors in the portable batteries value chain. We have conducted semi-structured interviews with seven key private and public organizations in Finland that have a role in the portable batteries value chain. We develop conceptual model for parallel and sequenced business models to organize a narrative story (Margetta 2002) of portable batteries' circulation in the global value chain.

Findings and results

This research has theoretical, managerial and policy implications. Theoretical outcome of this study is the conceptual model that enables simultaneous consideration of interconnected business models in the circular economy value chain. Managerial implications indicate that even product markets have become global, the circular economy remains local meaning that a link is missing between design and manufacturing and recycling and reuse. Policy implications indicate that circular economy is hardy possible without policy dialogue and intermediary interventions that support interaction and value capture for all actors in the value chain. We found that local intermediary organizations can only have limited interventions on value chains that are global by nature.

Conclusions

In this study we have developed and tested conceptual modelling framework to circular economy value chain. We argue that for circular economy to materialize requires considering implications of business models in different value chain positions and understanding how to improve the communication and collaboration between different actors in the value chain. Moreover we highlight the importance of system level governance of institutions, such as public authorities and public-private facilitating organizations.

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ABSTRACTS SESSION 2

Transition to Business Models for Sustainability: Link between decision-making in the context of sustainability management to changes in business models

Aisma Linda Kiesnere*, Romana Rauter, Rupert J. Baumgartner
Institute for Systems Sciences, Innovation and Sustainability Research,
University of Graz
*Corresponding author: aisma.kiesnere@uni-graz.at

Keywords

Transformation, Business Models for Sustainability, Decision-Making, Corporate Sustainability Management, Survey

Introduction

Sustainable Development is seen as unlikely without sustainable development of organizations. Companies are challenged by various stakeholders to address sustainability issues arising from their value creation process. Corporate management and other decision-makers within the company have important roles to play in changing the modus operandi of the whole company, and thus, also the business model of the company, to deal with these challenges.

Business Models for Sustainability (BMfS) is a term used for business models that integrate sustainability aspects in the core of organizations. While there is an increasing number of scholars researching and classifying the types of BMfS and different value creation aspects, there is still the need to understand the transition or transformation processes of companies, and particularly the role of decision-makers, that can hinder or encourage the change towards sustainability.

Theoretical Background

Decision-making support systems as well as sustainability management tools support key managers and other decision-makers to make decisions using reasonable amount of information and time. Previous research shows some links between the sustainability

awareness of key employees and the application of sustainability management tools in decision-making (Hörisch et al. 2015), which can subsequently lead to Business Models for Sustainability. Insights about corporate sustainability management, such as addressed topics, causes of concerns about sustainability issues and real life praxis in companies can help to understand, how to enable more sustainable organizational development with a help of certain company structures as decision-making systems – wisely managed and delegated responsibly for sustainability topics in the company.

Methodology

A survey by Schaltegger et al. has described the status quo of corporate sustainability management in Germany (Schaltegger et al. 2012), as well as in cooperation with group of international researchers, they have compared the sustainability management in 11 countries (Schaltegger et al. 2013). These studies provide context for benchmarking results of further studies, as well as can serve as basis for framework to analyze status quo of corporate sustainability management in Austria. Additionally, questions identifying change processes in company - in the core product group, service, or operating industry,- should enable analysis of relation between decision-making for sustainability, particular corporate sustainability management practices and business model transformation for sustainability.

This first-time corporate sustainability survey in Austria will address large companies. In 2015, there were 1069 enterprises in Austria that had 250 or more employees, and over 50 million Euro turnover; and these companies were contributing 39.4% of the total value added by the enterprises in Austria (EU 2015). The survey will consist of questions addressing range of sustainability activities, such as interaction with stakeholders, knowledge and use of sustainability management tools, as well as the questions that aim at identification of change processes in the company. The survey will address Sustainability/CSR managers or persons that have main responsibility for the sustainability topics in the company, and will be done with a help of online platform.

Results

This study is a contribution to attempts to describe status quo of corporate sustainability management in large companies in Austria; and it is a starting point for identification of companies that undergo business model change for sustainability, to further explore, understand and enable such processes. Additional emphasis is put on exploring the role of decision-makers, to see if there are considerable differences in operationalization and outcomes of sustainability management, leading to changes in business model, depending on the existence or non-existence of the sustainability/CSR manager.

Contribution

In the best-case scenario, the survey will also help to understand if companies purposefully aimed to reach some sustainability level and adjusted their business model to serve this interest, or the companies merely try to survive in the business environment and improved sustainability performance is outcome of such efforts.

The next steps of research after the survey will include in-depth case studies on companies that have undergone transformation for sustainability to identify the critical points of transformation and have further insights on decision-making support systems.

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New business models of transforming Finnish forest-based sector: Companies' perspective to sustainability considerations

Annukka Näyhä
Corporate Environmental Management, Jyväskylä University School of Business and Economics, P.O. Box 35, 40014 University of Jyväskylä, Finland
annukka.nayha@jyu.fi

Keywords

Finnish Forest-Based Sector, New Business Models, Sustainability, Bioeconomy, Circular Economy

Abstract

The forest-based sector (FBS) is in a period of facing many profound structural changes, such as changing consumer demands and values, globalization, the strengthening role of emerging economies, digitalization, climate change, increasing sustainability goals and transition towards the bio- and circular economies (Hansen et al., 2013; Hetemäki & Hurmekoski, 2014; Pätäri et al., 2016).

The success of companies in the long term requires that they upgrade their business models and resources in line with strategic goals and changing business environment. For these reasons the FBS companies are developing new products based on forest biomass, such as bioenergy, raw material for textile industries, nanopulp and microfibrillated cellulose which can be utilized in a variety of sectors (Hetemäki, 2014). It is obvious that in addition to large-scale biorefineries there are various other opportunities in de-centralized, higher value-added, small-scale production and service-based businesses, which means fundamental change for the sector (Ollikainen, 2014; Näyhä et al., 2015; Schipfer et al., 2017). There is also increased need for cross-sectorial collaboration because development of new product portfolios requires expertise from different fields (Näyhä & Pesonen, 2014; Toppinen et al., 2017).

Environmental, social and economic sustainability are important drivers for the transition towards new forest-based business models. Further, in many contexts, the rise of bioeconomy and circular economy businesses are associated with increased sustainability

(Pulzl et al., 2014; Pfau et al., 2014; Ghisellini et al., 2016). Wood-based businesses are often considered environmentally sustainable given wood's status as a renewable natural resource. However, forest management can have adverse impacts on the ecosystems. In particular, large-scale harvesting for bioenergy production and the related impacts on soil carbon stocks and biodiversity has aroused criticism of its environmental and social acceptance among many stakeholders (Näyhä & Horn, 2012; Pfau et al., 2014; Seppälä et al., 2015).

While actively seeking new opportunities and creating business models, both actors in the FBS and their stakeholders increasingly highlight a need for commonly accepted, sustainable future directions for the sector (Hetemäki, 2014; Hagemann, 2016). This study aims to explore existing and emerging new business models and ways of value creation in transforming FBS companies. Further, the study focuses on the sustainability considerations; e.g. how sustainability principles are integrated in the business models, which sustainability dimensions and challenges are highlighted, and how actors perceive their business models in relation to bioeconomy and circular economy goals which are linked with the sustainability principles. Moreover, the study aims to clarify what kind of resources, capabilities, and collaboration are needed for successful implementation of new business models. This information is important not only for the sector itself when developing their strategies but also for the various other societal actors.

In this study 18 semi-structured interviews were conducted with the Finnish company leaders/managers from various forest-based industries representing different branches in March-May 2017. Both mature FBS companies transforming towards new businesses and novel start-up companies were included in the study. Participating companies varied also in size and located in the different parts of the value network. Data will be examined using the thematic analysis method (Guest, 2012).

Due to unfinished data analysis the results of the study and the details about the applied analytical framework cannot be presented at this point. However, the earlier developments and frameworks in the field of new/sustainable business models (e.g. Sustainable business model archetypes introduced by Bocken et al., 2014 and Architecture, principles and components in business models for sustainability presented by Wells, 2016) have offered useful elements for initial analysis of the data. The key findings will be presented in the conference presentation.

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Open innovation, absorptive capacity and strategic coopetition: An approach to the transactional structure of business models

Joao Leitao
University of Beira Interior & CEG-IST, University of Lisbon, Portugal
joao.correia.leitao@tecnico.ulisboa.pt

Keywords:

Absorptive Capacity, Innovation, Tangram Model.

Abstract

This paper revisits the theoretical framework on innovation and recovers Zahra and George (2002)'s model of absorptive capacity and other related work, aiming to analyse a set of internal and liaison factors of the firm that affect firm-level absorptive capacity and entrepreneurial innovation capacity, in the context of open business models' implementation in a strategic coopetition framework; to propose a new business model approach entitled: Open innovation bridge – a Tangram model; and to exemplify the identification of critical elements of the transactional structure of open innovation business models.

As the firm is an open system, it is important to analyse internal firm-level factors that spur absorptive capacity, as well as the factors concerning resources and liaison flows used to absorb and communicate with external sources of knowledge, within a transactional structure *rationale* that needs further understanding in the context of open innovation business models. By mapping these factors, managers can design a more efficient open innovation business model in order to generate more innovation, at the firm level.

In the empirical application, following the Tangram model (Leitão, 2017), an analysis of firm-level resources and transactional elements is provided, by making use of a dataset of 571 service firms and 562 manufacturing firms which participated in the European Community Innovation Survey (CIS), 2010 (Eurostat, 2010). The results of a logistic regression analysis reveal that the resources represented by: acquisition of external knowledge and internal R&D activities; as well as the transactional elements, namely: cooperative liaison relationships with consultants and universities, plus external R&D activities; have a positive influence on the entrepreneurial innovation capacity, although

they denote different ranges according to the subsamples under analysis, outlining the advanced development stage of the open innovation business models of service firms.

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A Collaborative Energy System: How Business Models of the Sharing Economy affect the Energy Sector

Frederik Plewnia, Edeltraud Guenther, TU Dresden
ema@mailbox.tu-dresden.de

Keywords

Sharing Economy, Collaborative Economy, Energy system Transition, Business Models

Introduction and purpose

As a result of the rapidly evolving digitalization, numerous new business models were born that are summarized under the umbrella term of a sharing economy. While sharing schemes are already disrupting the entertainment, hospitality, or mobility sector, lately, the sharing economy has also sparked vivid discussions about its impact on the energy sector (Haring, 2016; Johnston, 2015). Joining in on this conversation, researchers have included the sharing economy in their analyses of new business models within the energy sector (Wainstein and Bumpus, 2016). The business activities discussed in this context range from peer-to-peer trading of energy within prosumer markets (Gstrein and Teufel, 2015) to centrally distributed cloud energy storage systems (Lombardi and Schwabe, 2017).

The goal of this paper is to bring these two major topics - an evolving sharing economy and new business models within the transitioning energy system – together. For this purpose, a conceptual typology of sharing economy activities is developed that might help to understand and structure discussions on this topic. This typology is used to identify and examine business activities currently evolving in the energy industry which are related to sharing practices and discuss them for their implications for sustainable development.

Methods

To achieve the research goal outlined above, two steps are taken. First, a systematic review and a content analysis of literature on the sharing economy were conducted. As a result, a typology was developed that integrates 38 existing systematizations of sharing economy activities created by other researchers.

Furthermore, new business models in the energy sector, which have recently been discussed in scientific articles, blogpost, reports, and on company or project websites, were

identified. These new business models were then discussed for their conceptual intersections with developed framework of the sharing economy.

Findings and results

The four main dimensions of categorization identified for sharing economy activities are: *shared good*, *market structure*, *market orientation*, and *industry sector*. The dimension *shared good* comprises energy and material, redistribution of goods, product service systems (PSS), space, money, workforce, knowledge and skills, as well as information and data. The dimension *market structure* distinguishes business-to-consumer (B2C), consumer-to-consumer (C2C), consumer-to-business (C2B), business-to-business (B2B) and government-to-consumer (G2C). The *market orientation* differentiates between for profit and non-profit transactions and the *industry sector* identifies sharing activities according to their industry field.

Furthermore, together with the above introduced sharing categories, three meanings of the word sharing were found to co-exist within the realm of the sharing economy. Social sharing, also considered as 'true sharing' (Belk, 2014), is based on non-profit transactions, while economic sharing, associated with saving costs and resources, was found in for-profit transactions. Communicational sharing, in the sense of dissemination and multiplication of information and knowledge, was another form of sharing which was associated with the sharing economy. We found that there are many business activities in the energy sector which can be associated with economic sharing of goods and the communicational sharing of information. Social or 'true' non-profit sharing schemes are existing only on the margin of these business models.

Conclusions

According to the insights gained from this study, companies in the new energy system can choose to become B2C assets hubs in providing PSS services, they can become C2C, C2B, or B2B platforms aggregating and managing information and energy flows, or they can do both. This might create tendencies towards aggregation of power, information and know-how across the energy supply chain in the hands of new actors (Gauntlett, 2016). However, with reduced costs of renewable electricity generation as well as storage devices and the implementation of the blockchain-technology, social sharing schemes might increasingly gain importance in the future. (Benkler, 2004; Rifkin, 2014).

The mentioned forms of business models within the transitioning energy system might have important implications for value creation not only for companies but also for society, and the environment. Paths of future research could include the investigation of social capital creation and resilience within economic as well as social sharing schemes, or the

environmental impact of local C2C energy networks with or without back-up capacities on a larger scale. Another interesting avenue of investigation could include the decomposition and detailed analysis of sharing business models within the energy sector, based on their value creation, proposition and capture mechanisms.

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Business models for optimizing urban solar energy use

Patrik Hart, Stefanie Hatzl, Eva Fleiß, Thomas Brudermann, Alfred Posch
University of Graz, Institute for Systems Sciences, Innovation & Sustainability Research
Merangasse 18/I, A-8010 Graz
*Corresponding author: patrick.hart@uni-graz.at

Introduction and Purpose

Solar energy technologies for heat and electricity still play a minor role in urban energy systems. Numerous benefits however, such as zero emissions of noise, greenhouse gases and air pollutants or the general availability of the energy source, make these technologies attractive for urban regions (Christian et al., 2011; Genske et al., 2009). To date, research on energy investment is biased towards homeowners or citizen participation initiatives (Hatzl et al. 2016), thereby neglecting more complex ownership structures which are characteristic for urban regions, i.e. joint ownership of residential buildings by several apartment owners. Facility managers usually assume an intermediate role between stakeholders, within owners/tenants of a multifamily house but also to external actors (e.g. third-party companies) and are also those who carry out refurbishments (Hopkins et al. 2016; Londerville 2012); therefore this group seems to be of particular relevance when it comes to solar energy adoption in multi-family buildings.

Previous studies identify the type of building and its tenure as important factors, which influence energy investments in buildings (Heiskanen et al. 2016). The aim of this study therefore is to address this research gap and to answer the following questions:

(1) What are current business models to implement solar projects in multi-family residential buildings?
(2) What are problems and challenges that these projects are currently facing?
(3) How do business models need to be designed to be more attractive for the peculiarity of solar projects for multi-family residential buildings?

Methods

Based on results from six explorative interviews with experts (e.g. representatives of facility management companies, politics, energy supply companies) and literature review, an online-survey was carried out amongst facility management companies in Austria in July

2016 (n=47; response rate=4.7), aiming to identify companies which have experience with solar projects. Subsequently, semi-structured qualitative interviews are currently being carried out with representatives of these to gather detailed information about their solar projects. The interview guideline is based on the theoretical background of business model literature (e.g. business model CANVAS, (Osterwalder & Pigneur, 2010) and product service systems, (Tukker, 2004). It includes questions about the implementation process, actor constellation, business model elements (e.g. key activities and resources, customer relationship, channels, financial aspects, etc.), fostering/hindering aspects for implementing such projects, and the estimation of future progress. The interviews are conducted face-to-face or by phone and last on average about an hour. All interviews are recorded, transcribed and analyzed by applying qualitative content analysis (Mayring, 2010) using the software tool MAXQDA.

Preliminary Findings

Different kinds of challenges exist for the different types of facility managers (single entrepreneurs, small & medium enterprises, large cooperative facility managers). Especially for single entrepreneurs solar projects bear difficulties in the sense that particular expertise is necessary for implementation. In larger cooperations, projects can be assigned to experts within the organization who have the necessary knowledge and experience. Using third-party contractors for the implementation of such projects appears to be an obvious solution, however the available know-how in the market is still considered to be too low by facility managers to make it a worthwhile alternative. So far all surveyed facility mangers see a high relevance of solar technologies in multi-family residential buildings in the future; but only a small proportion sees themselves responsible for this change, depending on the different types of facility mangers (the larger the organization, the higher the willingness to offer/extend their service). Altering the legal context to make on-site solar energy more easily available for tenants might increase the relevance of solar installations for smaller facility mangers.

Conclusions

The research at hand contributes to a deeper understanding of currently used business models in the field of solar projects in multi-family houses. This includes the characterization of existing business models based on the CANVAS business model building blocks and the identification of challenges regarding the implementation of solar projects. Preliminary findings point to a gap between actual needs of facility managers who are willing to implement solar projects, and existing solutions in terms of business models. Especially lack of expertise in terms of technological possibilities, legal context and implementation process serve as clear barriers. Some of these barriers might be overcome with suitable business models, which, e.g., could take the form of product service systems (Tukker, 2004; Beuren et

al., 2013) with a dominating service component. Thus, the research shows that the diffusion of solar technologies, in the field of more complex owner structures such as multi-family houses is limited because of lacking commercialized business models, which cover existing barriers. From a conceptual point of view, such business models need to consider multiple stakeholders and change the traditional perspective of a “customer-provider” perspective. Such new business models need to go beyond offering services just to end-users and target intermediaries like facility managers too. As this study is still ongoing, a clearer picture of existing business models, as well as requirements based on the needs potential adopters, will be available at the time of the conference.

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A Sustainable Business Model Pattern Language: 45 Patterns to Support Sustainability-Oriented Business Model Innovation

Florian Lüdeke-Freund[1,*,+], Sarah Carroux[1], Alexandre Joyce[2], Lorenzo Massa[3], Henning Breuer[4]

[1]University of Hamburg, Hamburg, Germany; [2]DesjardinsLAB and Institut de Développement de Produits, Montreal, Canada; [3]Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; [4]HMKW Berlin & UX Berlin Innovation Consulting, Berlin, Germany

*florian.luedeke-freund@wiso.uni-hamburg.de

[+]Supported by Centre for Sustainability Management, Leuphana University, Germany and Copenhagen Business School, Copenhagen, Denmark

Keywords

Sustainable Business Model Innovation, Pattern Theory, Delphi Survey, Business Model Taxonomy

Extended abstract

The purpose of this research project is to consolidate the currently available knowledge about so-called business model patterns (Gassmann et al., 2014; Remane et al., 2017) that have the potential to support solutions to ecological and social problems, such as greener products, new mobility systems, or social enterprises (Short et al., 2012; Clinton & Whisnant, 2014). This consolidation will lead to a new pattern taxonomy (Lambert, 2015) that can be used to support sustainable business model innovation (SBMI) and sustainability innovation (Boons & Lüdeke-Freund, 2013).

In recent years, the value of using patterns to support business model development has been increasingly recognized and discussed in both research and practice. Already in *Business Model Generation* (2009), Osterwalder and Pigneur describe five business model patterns using the Business Model Canvas in an attempt to create a shared language similar to Alexander's pattern language (Alexander et al., 1977; Leitner, 2015). Gassmann et al. (2014) identified 55 business model patterns as the basis for most business models that have been created over the last decades. And recently, Remane et al. (2017) consolidated current knowledge of conventional business model patterns into a database that can be used to

support business model innovation. The use of patterns for sustainable business models is yet to be explored. This project intends to help close this gap.

To start with, we define the notion of 'sustainable business model pattern' as follows: *A sustainable business model pattern captures the similarities of sustainable business models that are repeatedly followed, i.e. similarities in terms of business model design principles, elements, and their arrangements. In doing so, a sustainable business model pattern illustrates an ecological, social, and/or economic problem that arises regularly when creating business cases for sustainability and describes the core of a solution that can be repeatedly applied in different ways. A sustainable business model pattern can either describe a complete business model or just a partial model (e.g. the financing model of a business model).*

To identify such patterns the first step was to review 14 studies proposing a total of 102 potential SBM patterns. By deleting doublets and candidates that did not fully qualify as patterns in the sense of contextualised problem-solution combinations, we systematically identified a reduced set of 45 patterns ranging from eco-designed products and processes to social freemium models. In the second step, we used Alexander's pattern template to describe these business model patterns in a consistent way. The third, currently ongoing step involves a Delphi survey combined with a physical card-sorting method (Paul, 2008) to arrange the 45 patterns in consistent and meaningful groups. This is necessary to develop a rigorous and relevant pattern taxonomy. Ten international experts from academia and business take part in our Delphi survey. We propose 12 initial groups to these experts and ask them to organise the patterns into these 12 groups to obtain a shared expert opinion on how to best classify the patterns. Once consensus emerges regarding the grouping of SBM patterns, we will set up the final SBM pattern taxonomy.

The Delphi-based card-sorting is currently going on (as of March 2017). Its results and the first draft of our Sustainable Business Model Pattern Language will be presented at the 2nd New Business Models Conference in Graz.

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Business models strategies of frugal green technologies and innovations

Prof. Dr. Marlen Gabriele Arnold
Corporate Environmental Management
TU Chemnitz
marlen.arnold@wirtschaft.tu-chemnitz.de

Abstract

In the current discussion about a sustainable development new business service concepts are highly required. Natarajan and Nancy (2012) argue for the intense customer relationship throughout the whole value process: “The system of products and services and its sales and distribution must be a co-operative enterprise between business and customer and customer should be major shareholder in value creations” (p. 8). Thus, the new understanding of value creation also requires new business models. However, Jagtap et al. (2014) argue that there are huge differences in design processes between BOP and industrialised markets. Defining the Base of the Pyramid (BOP), Webb et al. (2010) identified differences in market characteristics and stressed BOP markets depend less on country boundaries but on formal or informal market characteristics. So, comparable to poverty, there are (a) low levels of education, skills and capabilities, (b) weakly established infrastructure in urban areas and almost none in rural areas, (c) dominance of informal contracts and enforcement, and (d) minor property rights protection. In that sense, the differentiation between industrialised and developing countries is more than dysfunctional; BOP can be everywhere. Countries, mostly having higher levels of technology, education, expectation of life, basic services, food, etc. (further titled as countries of type I-I in order to avoid strongly valued and pejorative expression of developing countries or unilaterally economic defined definitions of countries or regions, e.g. World Bank, UN) are very different from countries developed otherwise, mostly having higher levels of poverty, specific diseases, less education and limited basic services and expectation in life (countries of type I-II), in terms of innovation, technology, sustainability as well as cooperation with science (Rosca et al. 2016, Webb et al. 2010). Innovative products and services for low-income consumers, or even at BOP, base on new technologies and/or new business models (Bhatti et al. 2013), but seem to be very different. So, what are main characteristics of sustainable inclusive value creation and sustainability business models to mitigate social exclusion in BOP contexts?

Innovations offered in I-II countries often do not cause technological breakthrough that drives innovation in I-I countries (Soni and Krishnan 2014, Brem and Wolfram 2014). BOP

solutions rather focus on unique combinations of existing knowledge and technologies on local scales (Govindarajan and Ramamurti 2011). In the literature, BOP markets are closely connected with inclusive value creation and frugal innovation. Frugal innovation refers to reduced complexity and reduced costs within the development and production process and significantly differs concerning the level of manufacturing compared to the steady state in the respective economic area (Rosca et al. 2016). Brem and Wolfram (2014) argue frugal innovations often focus on the specific needs of the BOP markets. This goes hand in hand with new technologies, new and innovative business models and/or value chain creations (Bhatti et al. 2013). Papaioannou (2014) stressed frugal innovations are mostly polycentric innovations stressing the diversity of actors and cross-country cooperation. Moreover, according to UNDP (2010: 18), inclusive strategies build bridges and imbed poor or BOP people "on the demand side as clients and customers and on the supply side as employees, producers and business owners at various points along value chains". Thus, there is potential to mitigate social exclusion.

George et al. (2012) stresses the possibility of inclusive innovations, business models and strategies for mitigating the trade-off between inequality and growth. From a policy perspective, inclusive strategies also foster sustainability. In the literature, inclusive or frugal innovation is somehow related with sustainability – often combining social and economic issues (Brem and Wolfram 2014, Bhatti et al. 2013); only some authors stress the need for a holistic analysis integrating all three dimensions of the triple-bottom line approach (Rosca et al. 2016, Gold et al. 2013). According to Brem and Wolfram (2014) frugal innovations can refer to sustainability, but do not have to. Rosca et al. (2016) argue for a conceptual separation of frugal innovation, sustainability and business model and stress inclusive approaches often highlight social and developmental concerns instead of ecological issues. However, are there different business models, different types of green technologies related to specific business models in the frugal context? George et al. (2012) highlights numerous theoretical approaches stressing inclusive growth by focusing on the limitations of current economic theories in BOP contexts. The theories of social and organizational networks are emphasised by the authors in order to understand new shapes of mixed partnership models like the partners' strategies, actions and behaviour. Following the 3Cs framework of ecosystem research, the three main aspects context, configuration, capability (Rong et al. 2015) are investigated in order to understand the characteristics, the complexity and dynamism of corporate strategies and sustainable business models in BOP contexts better. Applying the 3Cs framework, the research design is based on a combination of exploratory multiple case study design and cross-sectional design (Bryman 2015, Yin 2013) analysing 59 cases of frugal green technologies and innovations stressing differences between entrepreneurs, multinational companies and NGOs as main players in BOP contexts. The research design is based on a combination of exploratory multiple case study design and cross-sectional design (Bryman 2015, Yin 2013). A qualitative research strategy is supported by descriptive statistics. For case selection a comprehensive case analysis was conducted.

Data collection was based on text analysis, including different types of information, like papers, webpages, reports and other written data concerning the given case. Therefore, a database was used comprising keyword analysis and protocol (Bryman 2015, Yin 2013). Analysing the cases, different categorisations were used.

First findings show that there are versatile and complex cooperation for creating frugal innovations. Companies operating on type I-II markets have to adopt their strategies and business models to serve the markets. Inclusive value creation and the inclusion of BOP people within the whole value creation, like product development, to procurement, production and distribution, enables social change and some mitigation of social exclusion. However, social engagement is mainly value-driven by SMEs and NGOs, but also MNCs invest in education, training and health service to enhance the employees' capabilities. There are only three goals to highlight: Good health and well-being (goal 3), decent work and economic growth (8), and reduced inequalities (10). Moreover, there are various indirect effects, and only few direct contributions to the sustainability goals. Overall, the sustainability goals are not aimed at directly and comprehensively. Several limitations are given and further research is necessary: Diverse types of cases and data are mixed. The justification of case selection is based on the way the cases of the samples are investigated criteria-based and confirm the predefined item frugal innovation. Moreover, the representativeness of case selection can eclipse when cases can provide new knowledge or insights (Bryman 2015). The cross-sectional design was determined by the given data, so cases were not selected to balance industry selection but followed the frugal innovation criteria to secure the specific research focus. Furthermore, data collection was based on a single period, so that mid- or long-term effects of the respective sustainability effects of the innovations, their rebound or time-delayed effects could not be integrated within the analysis. Thus, a longitudinal design would be necessary.

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“Is Time Money”? Implications of the Democratic Workplace for New Business Models

Fabiana Melara[1], Janaina Macke[1,2*], Romana Rauter[3]
[1]Faculdade Meridional (IMED), [2]University of Caxias do Sul (UCS)
[3]University of Graz
*Corresponding author: janaina.macke@imed.edu.br / jmacke@ucs.br

Objective(s) of the study/paper and its originality

This papers aims to build a model for analytical participatory management, considering Galbraith’s (2002) business model dimensions, which includes Strategy, Structure, Processes, Rewards, and People. We intend to analyze the characteristics of a democratic company and the tools used to apply democracy on the workplace. The originality of the study is that we do not have in the literature a Brazilian business model for participatory management.

Design/Methodology/Approach

We used a qualitative case study method to analyze one representative case of Brazilian democratic workplace and participatory management: the Semco S.A. This company was completely rebuilt in the 1980’s by adopting a business model based on employee empowerment leadership. The data collected in the semi-structured interviews (n = 6) were analyzed by content analysis method to understand the elements behind the participatory management.

Key Findings

First, the findings showed the importance of the strategy for the participatory management. This dimension leads to two deployed elements: the leadership and the commitment-efficiency trade-off. The idea is to show that a democratic environment demands much more time than an autocratic one (for example: time to discuss, time to find a “consensus”, time to plan an action in a collective decision, among others). The leadership has to do with a strong will of the CEO to maintain the participatory environment despite of the difficulties. Finally, the commitment-efficiency binomial represents a trade-off in the sense that the pursuit for organizational commitment jeopardizes the efficiency of decision making process, because democracy takes more time for voting and consensus.

Discussion

This paper contributes both for practical and academic purposes. The limitations are related to the generation of a case study. To overcome the limits of the present paper, we encourage additional research including a wide number of companies, even though Semco is the most representative case of workplace democracy in Brazil. A multiple case study could allow the raise of variables to be tested in a quantitative research. Finally, this analysis could support the understanding of democratic workplaces in different organizational and cultural contexts.

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Getting the big picture: business model and stakeholders as a whole

Silvia Vernizzi[1*], Sara Moggi[1], Silvia Cantele[1], Andrea Beretta Zanoni[1]
[1]Department of Business Administration, University of Verona, Italy
*Corresponding author: silvia.vernizzi@univr.it

Keywords

Strategy, Business model, stakeholder sustainability

Abstract

In competitive context, every firm needs a strategy, no firm excluded. In competitive context, the achievement of goals is not depending just on the way a firm carries out its activities but also, and above all, on the way it carries out its activities compared to what others do. Strategy is about "looking outside" and trying to understand how to continuously reshape business model in order to catch opportunities and to prevent threats (Weber and Tarba 2014; Doz and Kosonen 2010). Over the last decades, globalization, technology convergence and innovation have made the economic environment more and more complex. Among this complexity the topic of sustainability (Amini and Bienstock, 2014; Baumgartner and Rauter, 2017; Lozano et al. 2015) has gathered momentum and has become one of the central issues into companies boardrooms (Baumgartner 2014). Starting from these premises it's easy to assert that, nowadays, sustainability and, within the wide sustainability borders, the set of relationships a firm has built with its stakeholders (Freeman 1984; Mitchell et al 1997) cannot be considered as an off-topic item within the strategizing process. Among the overall strategic planning process, business model (Baden-Fuller and Morgan, 2010; Chesbrough 2010; Zott and Amit 2008) is, by its nature, the point of contact between firm and stakeholders, i.e. between strategy and sustainability. For the aim of this paper we define business model as the set of choices related to the way in which a firm decides to implement its activities generating value. According to this view, business model can be seen as composed of two main classes of choices:

1. the positioning of the firm within the business;
2. the macro-architecture of the firm related both to internal items (internal stakeholders, resources, governance) and external items (position within the value chain, external stakeholders, cooperative Vs competitive relationships).

Several frameworks rooted in strategic management debate propose the integration of corporate sustainability with strategy (Baumgartner 2014; Baumgartner and Rauter 2017; Engert and Baumgartner, 2016; Rauter et al 2017). Added to that, by the reporting side we are experiencing several attempts to integrate strategy and sustainability (Adams 2015; Beattie and Smith 2013). Starting from the strategic management discourse around business model definition, the paper is aimed at suggesting a method to assess the nature and quality of the relationships the firm has with its stakeholder through its business model. More in details, the paper is aimed at identifying and evaluating, by the use of qualitative and quantitative criteria, the nature of the relationships a firm has built with its stakeholders analyzing the role played by each of them in the process of strategy implementation and realization (by the means of business model). Starting from the work of Mitchell (1997) that defines stakeholder salience on the base of the possess of three main attributes (power, legitimacy and urgency) the paper adds the strategic functionality dimension, intended as the role played by each stakeholder in strategy implementation – realization. Through the combination of the two dimensions, level of salience (i.e. behavioural attitude of stakeholders) and strategic functionality (i.e. role played by each stakeholder in strategy implementation - realization) the paper maps the nature and features of the stakeholders and the role they could play in influencing (positively or negatively) firm's strategy realization.

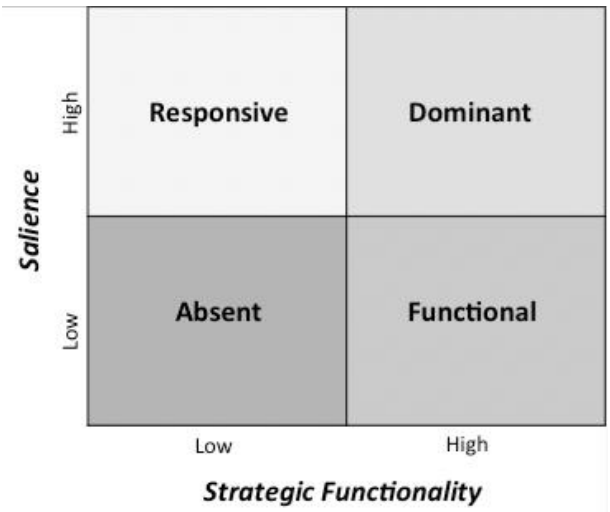

Figure 1: Stakeholder map

The paper begins with a review of the theoretical background that frames the analysis with particular reference to the strategy-stakeholder relationship (Baumgartner 2014; Baumgartner and Rauter 2017; Engert and Baumgartner 2016; Rauter et al 2017). Subsequently, the study develops its analysis by means of a case study, a method widely used in management studies (Yin, 1984; Eisenhardt, 1989; Berg, 2009) because of its

ability to provide the qualitative evaluations that are particularly useful when analysing company strategy. Through the case study, adopting a dynamic perspective, the paper analyzes the role played by each kind of stakeholder in the process of strategy implementation and realization (by the means of business model), over a specific time horizon (5 years).

The case study is based on primary information coming from authors' interviews of company management and from a survey purposely appointed to get both qualitative and quantitative insights of the relationships the firm built with stakeholder over the years. This is a preliminary study aimed at investigating the strategy-stakeholder tie, focusing on the relationships built by the firm through its business model.

It contributes to the existing literature (Haslam et 2015, Mitchell 1997) by adding a new dimension to the Mitchell work (1997) stressing the role of business model as the main point of contact between firm and stakeholders. At the same time, the paper suggests a managerial tool, useful to better drive the effectiveness of strategy realization through a better understanding of the role played by each stakeholder in strategy realization (i.e. business model implementation).

Future studies should implement other real cases in order to verify and deepen the business model – stakeholders relationships and the manner in which enterprises should manage them to realize their strategy.

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ABSTRACTS SESSION 3

Case study of how one Australian company is implementing and managing the B Corp model

Wendy Stubbs, Monash University, Australia
wendy.stubbs@monash.edu

Introduction and Purpose

Hybrid business models are emerging that prioritise positive social and environmental outcomes (Haigh & Hoffman, 2014). Social enterprises, which seek to solve social problems through business ventures (Smith, et al., 2013) are examples of these types of models. B Corps are a more recent example of a hybrid business model that attempts to align profit and societal impact and prioritises positive social and environmental outcomes (Stubbs, 2017a). B Corps are described as for-profit, socially obligated, corporate forms of business, with traditional corporate characteristics but also with societal commitments (Hiller, 2013). While little research has been conducted on B Corps, they provide interesting sites for studying how organizations integrate for-profit and for-purpose considerations into their business model (Stubbs, 2017b).

The aim of this paper is to present the results of a case study of an Australian B Corp. The objectives of the study were to: examine how a B Corp integrates for-purpose and for-profit considerations into its business model, including its vision/mission/purpose, strategy, structure and business practices; and, explore any tensions in integrating for-profit and for-purpose logics in the B Corp model.

Research Methods

The study used in-depth, semi-structured interviews with an Australian certified B Corp in order to understand how it is implementing the B Corp model and the tensions that arise. The B Corp operates in the financial services sector and primarily provides products and services to not-for-profit (NFP) organizations. Its vision is to strengthen NFPs and assist them to deliver social change and community wellbeing. 13 people across different functional areas were approached for an interview and 7 agreed to participate in the study. The interviews were of the duration of 60 to 75 minutes and were conducted during February – May 2016. All interviews were recorded (with consent) and transcribed to aid the analysis process.

The transcribed interviews were coded and refined into categories to draw out key themes. The process involved open coding, axial coding and selective coding (Strauss & Corbin, 1998). The institutional logics literature was used to analyse the key themes.

Research Findings

In many respects the B Corp model reflects the 'hybrid ideal' (Battiliana, et al., 2012) where everything the hybrid does produces both social value and commercial value and employees do not work on separate for-profit or for-purpose activities. The B Corp makes its money from selling products and services to the not-for-profit sector to enable NFPs to drive positive societal impacts. It does not rely on generating revenue in one part of the organization to finance social impact projects in another part of the organization. However, while the for-profit and for-purpose logics are strongly integrated in some aspects of the B Corp's operations (vision, recruitment, communications and marketing), trying to balance these two logics has created tensions and conflict in other areas (ownership structure, performance measurement, sales and distribution, product design and development). These tensions, coupled with the founding CEO pursuing a strategy strongly aligned with the for-purpose logic, have hindered performance but are now instigating change in two main areas. One is repositioning the strategy. The other is the incentives system. A framework that classifies the types of tensions that arose and the management approaches observed to deal with these tensions is summarised in Table 1.

Table 1: Framework of tensions and management responses

Type of tension	**Examples**	**Management approach**
Structural	Founding CEO not leveraging infrastructure and resources of the for-profit shareholder (inefficiencies)	Appointed new CEO to provide a stronger focus on reducing costs and increasing profitability through leveraging Shareholder's branch network and expertise
Strategic	Perception that the stronger focus on profitability clashes with the organization's values connected with positive social impacts. Employees finding it difficult to adjust.	Reposition strategy to focus on one 'burning' social issue, social and affordable housing, that can increase revenue growth and profits as well as social impact Increase focus on accountability Revising performance management systems Established a pricing committee that

		balances for-profit and for-purpose considerations in pricing products and services (overseen by Board)
Channel	Channel staff don't understand the not-for-profit sector or don't value the social impact focus Arguments about product ownership, customer ownership and who receives the 'rewards'	Established a B Corp Committee to create awareness building and training programs (socialization practices) Restructured communication to explain the social impact of the products, as well as the value of the products to the distribution channel (sales revenue and profits) Revising sales incentive schemes
Cultural	Sales people who had recently joined the B Corp from competitors were finding it difficult to reconcile the focus on impact as well as sales revenue, as they were used to selling customers the most profitable product	Reinforce a common organization identity through socialization practices to prevent sub-groups from forming that exacerbate the tensions between the market and social welfare logics: interview process reinforces the B Corp's values and candidates are asked how their values align with these values; B Corp values are incorporated into the position descriptions for new employees; incorporating B Corp training in the induction program; developing training that is tailored to different groups (already incorporated in the 'toolbox' of the business development people).

The study highlights the organizational challenges that arise from having to deal with incompatibilities between for-profit and for-purpose logics in hybrid business models, and how organizations respond. Its main contribution is to increase understanding of how to implement business models that combine for-profit and for-purpose considerations in response to calls for more research into new organizational forms that are breaking down traditional boundaries (Zietsma, et al., 2014).

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Business Models as Activity Systems: Unravelling multiple value creation in organizations.

Herman van Blitterswijk* and Jan Jonker
Radboud University, Nijmegen, the Netherlands, Avans UAS, Breda, the Netherlands,
*Corresponding author: ht.vanblitterswijk@avans.nl

Abstract

This paper contributes to the debate on New Business Models and multiple value creation in Organizations. We aim to clarify the idea of multiple value creation in organizations through the lens of Activity Theory. In this perspective business models are seen as an activity system. A literature review will be deployed to investigate and harness this perspective. There is a vivid debate on how organizations contribute to valuing Sustainable Development given their social and environmental impact. In this debate, we understand value from a capital-based view. According to this view, capitals are seen as valuable productive human and physical resources. Value creation is shaped by 1) the intrinsic value of resources and 2) the way (human) activities are being organized.

We are observing a stream of literature, addressing issues on how value creation in organizations takes place. A school of thought in this field focuses on the concept business model by means of which organizations are able to profit through the provision of products or services. The business model-concept is regarded as a conceptual frame for the development of business systems and business architecture; as such it describes mechanisms through which value can be created and captured. The literature shows that the dominant business model-concept is based on the Osterwalder business model-ontology. The ontology is archetypical for a business model logic that strives to realize economic value and to maximize shareholder value. The embedded neo-classical logic of value creation hinders the simultaneously creation of social, environmental and economic value. In this perspective the meaning of value creation is being reduced to economic value in the sense of financial profit. We conclude that a business model logic that strives to realize primarily economic value and maximize shareholder value is not supportive to multiple value creation in organizations. Our aim is to propose to a business model logic that supports multiple value creation in organizations.

An activity system-approach that provides a framework to study a business model as a collective activity system seems to be a more appropriate theoretical lens. Central notions in this approach are 1) that human activity is a social activity per se, 2) that activity is collective and meets the needs of the community and 3) that activity is driven by a communal motive. As a consequence, value creation studied through an activity system-lens will provide attention to value as a collective feature, meeting the needs of the community. We expect that value creation is not limited to the realization of economic value and of shareholder value alone.

In this paper, we will report on the execution of a structured and extensive literature search. This will not only cover management sciences but will be expanded in the fields of psychology and learning. It will be based on a set of keywords to define value creation in organizations, business models and activity theory. Secondary objective is to use combinations of keywords identifying the relation between business models and multiple value creation. This might provide the basis for new insights and knowledge. The search will be conducted using Mendeley software. As an overall result we will provide a review of the state of the art in knowledge in the field of multiple value creation in organizations, business models and activity theory. The literature review will be used for further empirical research.

Building Value Propositions for Change Stakeholders:
A Practical Tool

Doroteya Vladimirova
Centre for Industrial Sustainability, Institute for Manufacturing
University of Cambridge, 17 Charles Babbage Road, Cambridge, CB3 0FS
United Kingdom
dkv21@cam.ac.uk

Keywords

Value Proposition, Sustainable Business Models, Change Stakeholders, Stakeholder Network, Business Transformation

Introduction and background

This study explores a new practical approach for helping innovation leaders to design better value propositions that result in more sustainable businesses. It develops a new tool for supporting the development and communication of value propositions to multiple change stakeholders of business model transformations. Integrating sustainability into business models requires a systemic view that considers the global perspective of the system (Stubbs and Cocklin, 2008). Despite recent entrants like the ©The Sustainable Value Analysis Tool (Yang, Vladimirova and Evans, 2017) and ©The Cambridge Value Mapping Tool (for full collaboration see Vladimirova, 2016), there is still a paucity of tools that can be used by companies to evaluate and design the business case for sustainability successfully (Schaltegger et al., 2012) and carry out successful business model transformations (Vladimirova, 2012).

The paper introduces a new tool, the Value Proposition Builder, which assists industry users by providing a step-by-step structured approach for creating value propositions for multiple change stakeholders of their business to support the development of or the transformation towards new business models. The tool can be used alongside other sustainable business model innovation tools to create a more comprehensive innovation process.

Methodology

This study applies multiple theoretical perspectives from the fields of business model innovation for sustainability (Evans et al., 2017), sustainable value creation (Hart and

Milstein, 2003), Service-Dominant logic (Frow and Payne, 2011), stakeholder networks (Svendsen and Laberge, 2005) and business transformation (Vladimirova, 2012) to identify a practical approach for integrating the concepts of 'value proposition', 'change stakeholders' and 'sustainability'.

The research strategy is engaged scholarship (Van de Ven and Johnson, 2006; Van de Ven, 2007) which is a means of collaborative inquiry between industry practitioners and academics. The study develops a structured method and a practical tool to facilitate the development of value propositions for stakeholders of the business in practice. The tool was tested in a workshop with 30 industry participants grouped in six international collaborative inter-disciplinary project teams within a global digital services market leader. In the workshop, each project team had to develop multiple value propositions, as part of the development of a business case to their customers, the company top management, and other project-specific internal and external key stakeholder that could enable or prevent the proposed change, as identified by the participants.

Results

A new tool was developed: The Value Proposition Builder (Figure 1). The purpose of the tool is to outline a practical method for co-creating value propositions for multiple change stakeholders of the business model. The tool takes participants through the following process:

- Define the unit of analysis – a new value opportunity, e.g. product, service, project which could lead to a change in the existing business model or to the creation of a new business model.
- Identify key change stakeholders of the new value opportunity, i.e. stakeholders who will enable or prevent successful change, which might include customers, decision-makers, partners, suppliers, environment (e.g. resource availability), society.
- Describe the benefits from the new value opportunity for each change stakeholder, e.g. problems that the new value opportunity solves for each stakeholder.
- Describe the contributions from and the responsibilities of each change stakeholder for the realisation of the new value opportunity.
- Identify a common theme on how value is created for all stakeholders.
- Develop a value proposition for each stakeholder.

Conclusions

This paper contributes to the field of sustainable business models by increasing the understanding of how multiple stakeholder value propositions which enable successful business model transformations could be developed in practice. A new tool, which facilitates organisations in better understanding the value from new ideas, products or services and the contributions from their stakeholders, could help build and communicate targeted value propositions. The tool also enables industrialists to enhance competitive advantage through the economic, social and environmental attributes of sustainable value. This tool forms part of ©The Business Transformation Tools suite developed from Vladimirova (2012).

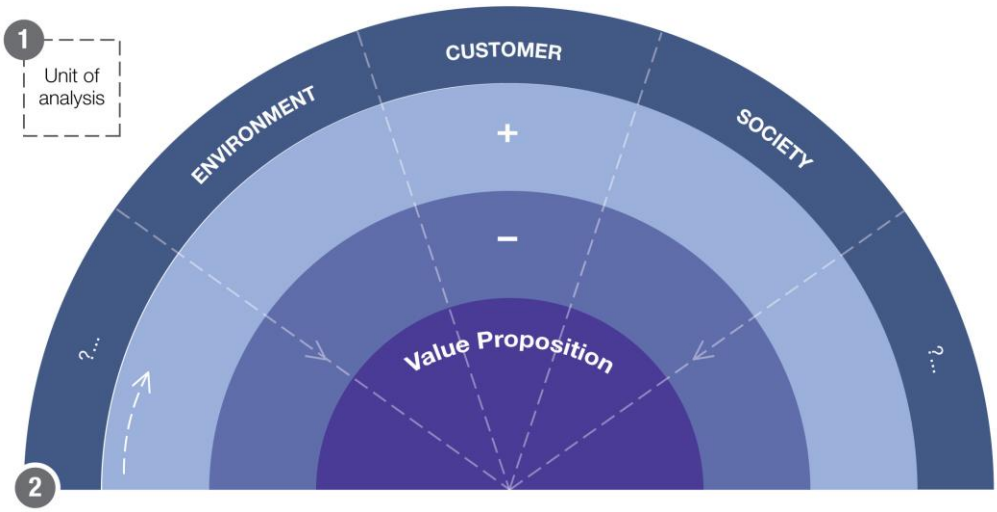

Figure 1: Value Proposition Builder

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The Roles of Business Models in Sustainability Transitions: Car Sharing in Sydney

L.L.J. Meijer [(1)], F. Schipper [(2)], J.C.C.M. Huijben [(1)]

[(1)] Eindhoven University of Technology, School of Industrial Engineering, CNT building, P.O. Box 513, 5600 MB Eindhoven, The Netherlands

[(2)] Eindhoven University of Technology, School of Innovation Sciences, IPO building, P.O. Box 513, 5600 MB Eindhoven, The Netherlands

*Correspondence address:
Lotte Meijer
Eindhoven University of Technology
School of Industrial Engineering
CNT Building 0.06, P.O. Box 512
5600 MB Eindhoven, the Netherlands
l.j.meijer@tue.nl

Keywords

Business Model Innovation, Sustainability, Transition, Car Sharing, Up-Scaling

Extended Abstract: Introduction

New, sustainable business models can address economic, environmental and social issues (Boons & Lüdeke-Freund, 2013). Research on the role of such business models in supporting wider societal change and transition processes is however still in an early phase (Bidmon & Knab, 2014, and Huijben et al., 2016). While it has been acknowledged that business models enable the upscaling of new, sustainable technologies by removing various investment barriers, this has so far not been explicitly considered from a transition studies systemic perspective.

An empirical case study was conducted on business models for car sharing in Sydney, Australia. The Australian government is interested in business models that make large cities more environmentally friendly. The City of Sydney, with problems such as limited parking space and heavy traffic congestion, considers car sharing as an option to make the city 'green, global and connected' (City of Sydney, 2015).

Car sharing is thus perceived promising for making the transition to a more sustainable mobility regime. Despite whether its sustainability will be proven or not, car sharing business models are part of a niche that is still under development.

The aim of the research is to identify the regime barriers for an urban mobility transition and to examine the role of new car sharing business models in overcoming these. Here, we define the regime as the mainstream private car transportation system in place consisting of various dimensions: culture, consumer practices, infrastructure, industrial networks, technology and scientific knowledge, and policy (Geels, 2002). This leads to the following research question: how can new (car sharing) business models conquer the barriers imposed by the existing mobility regime thereby enabling the up-scaling of this mobility niche?

Methodology

The qualitative research conducted for this study builds upon a comparative case study between two different types of business models in the city of Sydney: peer-to-peer car sharing and traditional car sharing. Both business models were commercially operating at the time of the study (2015). The research involved an iterative process of study, including a desktop and literature study, and interviews with main car sharing stakeholders. The transcribed interviews were coded and structured based on content analysis. Overall, data analysis exploits the constructionist ontology juxtaposing different business models and the regime context (Hardy, Harley, & Phillips, 2004).

Findings

With regard to the development of a car sharing system in Sydney, barriers were formed by the dominant logic (i.e. private car use) within the regime. The results of the study are summarized in Table 1. Several regime dimensions and their elements were identified, and for each regime element we found the business models to either align to it or not. For example, there is an initial fit or alignment on the infrastructural regime dimension in the case of the old car infrastructure, since the business models 'borrow' this infrastructure for their own use. When a business model is not aligned, an individual business model can overcome the trust barrier in the cultural regime dimension by managing expectations of their customers and including a feedback reputation system in their value proposition (Business Model Innovation). Additionally, in the policy dimension, there is a lack of parking spaces dedicated to sharing. Traditional car sharing companies have close ties with the government who can assist in overcoming this barrier. A general regulation on dedicated parking spaces for sharing is eventually beneficial for the whole niche.

Conclusion

Results show that there are three types of niche business model and regime interplay. First of all, the study showed that there is some fit between the private car regime and the car sharing business models. Next to this, there are two different strategies for dealing with regime barriers. There is a strategy focusing on the internal organizational part of the

business model (i.e. Value Proposition and Customer Segment). The other strategy is on the contextual level, where the business can use their network to alter the context for the new business models (e.g lobbying for transformation of regulations). Both strategies can lead to new business opportunities for the entire niche or only the company itself.

Table 1 - Business Model alignment on regime elements

REGIME DIMENSION	Regime Element	BM Type	Aligned?	BM Element	Beneficial for	Explanation
Cultural meaning	Trust between peers	C2C	Not aligned	Value Proposition	Company	Feedback reputation system + Lock technology
	Property Responsibility	B2C	Not aligned	Partners	Niche	Create new kind of insurance
	Car dependency	B2C C2C	Not aligned	Value proposition Customer Segment	Company	Convince customers of sustainability, traffic congestion etc.
Consumer Practices	Cars are mostly used in weekends	B2C	Not aligned	Customer segment	Company	Extending the customer segment
Infrastructure	'Old' car infrastructure	B2C C2C	Aligned	Value Proposition	Niche	Car sharing highjacks old infrastructure
	Public transport	B2C	Not Aligned	Partners	Niche	Lobbying for governmental fleet
	Bicycle infrastructure	B2C C2C	Aligned	Value Proposition	Niche	Increasing health by complementing

						bicycles
	Parking lots	B2C	Not Aligned	Partners	Niche	Too many parking lots, not necessary to share
Policy	Lack of dedicated parking spaces	B2C C2C	Not Aligned	Partners	Niche	B2C arranges with government, C2C with P2P community
	Tension between political parties	C2C	Aligned	Partners	Niche	Being part of community reduces the necessity to become acknowledged
	Tax payment for cars	B2C	Not Aligned	Partners	Niche	Regulation with government
Industrial networks (Markets)	Market share Manufacturers	B2C C2C	Aligned	Value Propositio n	Niche	B2C Buying one fleet / C2C Making use of the used cars
	Car rental competition	B2C	Not Aligned	Partners / Business Model merging	Company	Acquisition by car rental company e.g. Hertz
Technology	Car sharing website	B2C	Not Aligned	Partners	Niche	Partnership with Metavera

	Car lock technology (expensive)	B2C C2C	Not Aligned	Value Proposition Resources	Company	Developing own car locking technology
Science (Knowledge)	Knowledge on sharing	B2C C2C	Not Aligned	Partners	Niche	Marketing through partnerships
	R&D on driverless cars	B2C	Not Aligned	Partners	Niche	Knowledge institutes for autonomous shared fleet

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Sustainable business models for packaging waste management: A step towards building up a circular economy

Ivan Bozhikin,
Assistant Professor
University of National and World Economy, Vrije Universiteit Brussel
Student town, UNWE, 1700 Sofia, Bulgaria
e-mail: bozhikin@gmail.com

Nikolay Dentchev,
Professor
Vrije Universiteit Brussel, KU Leuven
Pleinlaan 2, 1050 Brussels, Belgium,
e-mail: Nikolay.Dentchev@vub.ac.be

Abstract

The concept of a circular economy (CE) has become increasingly popular in the recent years (Zhu, 1998; Ghisellini, Cialani and Ulgiati, 2014; Lieder and Rashid, 2015; Ellen Macarthur Foundation, 2015). This concept requires transition from a linear model toward a circular model of material management (Bonciu, 2014; Andersen, 2007; Happaerts, 2014). The latter, in contrast with the linear model (Ness, 2008), considers waste as a resource that can be used in the production process (Sauvé, Bernard and Sloan, 2015). Building a CE, i.e. the circular model of material management, requires attention on the entire life-cycle of the product: from products to materials (Ellen Macarthur Foundation, 2012; Yap, 2005). Therefore, each step between the extraction of materials and the end of life of products is taken into account in order to build up a CE (Jawahir and Bradley, 2016). However, sustainable waste management remains the keystone for implementing the concept of the circular model of material management (Ghisellini, Cialani and Ulgiati, 2014). Moreover, the sustainable waste management becomes a key one to build up a CE in the European Union (EU) and support the sustainable development through decreasing environmental problems and economic losses for society and creating green jobs (Bonciu, 2014; Ghisellini, Cialani and Ulgiati, 2014; European Commission, 2014; Christis et al, 2015; Sauvé, Bernard and Sloan, 2015). Therefore, the use of sustainable business models for waste management is one of the important tools for the creation of such kind of economy (Witjesa and Lozano, 2016). However, not every sustainable business model could be considered as a circular one (Van

Ostaeyen et al, 2013). This is because not every sustainable model could close the loop in the production process of a firm (as in our case study) through introduction of product-service systems (Tukker and Tischner, 2006; Van Ostaeyen et al, 2013). However, the circular business models could be defined as a part of sustainable business models.

Building up a circular economy is a complex process that involved various players and organizations from different economic levels (micro, meso and macro) and sectors (Ellen Macarthur Foundation, 2015; Yuan, Bi and Moriguichi, 2006). This is also valid for sustainable waste management that is based on a particular sustainable business model. In our paper, we focus on packaging waste stream as an important one from all household waste streams (Fost Plus, 2008). Moreover, in our case, the sustainable business model is implemented by a particular organization (e.g. Fost Plus in Belgium and EcoPack in Bulgaria) for managing a packaging management system. In other words, one organization implements a sustainable business model for managing of packaging management system that is built from different firms having their own business models (Seelos and Mair, 2007; Yunus, Moingeon and Lehmann-Ortega, 2010; Massa and Tucci, 2014). The aim of our paper is to present the two main sustainable business models for packaging waste management applied in the EU and to find out the factors under which these models could be used optimally. Hence, the sustainable business model applied in Belgium and this one implemented in Bulgaria are presented and analyzed. These two countries are chosen due to several reasons. The two main of them are the following: first, they are appropriate samples for presenting the two main sustainable business models used in the EU; second, Belgium is considered to be amongst the most (eco)efficient countries for packaging waste management in Europe, whereas Bulgaria is amongst the less (eco)efficient EU counties in this field. This facilitates the aim of our study.

To conduct our research, we used one case-study method (Yin, 2003). Our explorative case-study research is guided by the following research problem: “How can the sustainable business models for packaging waste management be used optimally in EU countries to achieve higher social, environmental and economic results?” To approach this research problem, we used semi-structured interviews, as they leave space for respondents to give personal explanations of the issues under study (Brewerton and Millward, 2001; Yin, 2003). The interviews last more than an hour and are generally held with a single respondent. A diversified group of 24 waste experts were selected for our study. These respondents were selected according to two main criteria: (1) their knowledge on waste management (separate waste collection and recycling); and (2) their varied perspectives on sustainable waste management and effectiveness of packaging collections, processing and recycling. They were chosen from 24 leading organizations in the field: 12 organizations from Belgium (e.g. Fost Plus, OVAM, EXPRA) and 12 organization from Bulgaria (e.g. EcoPack Bulgaria, EcoBulpack, Bulgarian Association of Recycling). We selected these organizations from the three basic sectors (public sector, private sector and voluntary sector) in order to gather

wider and unbiased information related to our research. To enhance data validity and reliability, interview data (primary information) have been complemented with other sources of evidence, such as articles, reports, and policy documentations (secondary information).

By comparing Bulgarian and Belgium business models for packaging waste management, we found out the obstacles that hinder successful implementation of the Bulgarian business model and the drivers that lead to successful application of the Belgium one (and optimal recycling results as well). Thus, we highlight the factors that could affect positively (drivers) or negatively (obstacles) the using of such kind of models. We also present some suggestions for overcoming the obstacles that curb the achievement of efficient and optimal recycling results in Bulgaria. In conclusion, the results of our study could facilitate better use of sustainable business models for packaging waste management. Thus, we contribute to the literature of sustainable business models and packaging waste management.

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The role of networks in business model innovation:
Three shaping processes supporting cognitive shifts

Inge Oskam[1], Ard-Pieter de Man[2], Bart Bossink[3]
[1]Amsterdam University of Applied Sciences, i.f.oskam@hva.nl
[2] Vrije Universiteit Amsterdam, a.p.de.man@vu.nl
[3] Vrije Universiteit Amsterdam, b.a.g.bossink@vu.nl

Abstract

Scholars regard the implementation of sustainability-oriented innovations as a business model challenge (Boons, Montalvo, Quist and Wagner, 2013; Schaltegger, Lüdeke-Freund and Hansen, 2012). Business model innovation is regarded as an important instrument for commercializing new ideas and emerging technologies (Chesbrough, 2010; Spieth, Schneckenberg and Picart, 2014), for innovative technologies do not in itself have economic value, but incorporate latent value that may be commercialised by the business model (Chesbrough & Roosenbloom, 2002).

One of the functions of the business model is supporting management in defining and developing the firm's strategy (Spieth et al., 2014). The business model is further seen to be developed through creating encounters with potential users and possible partners (Boons & Lüdeke-Freund, 2013; Doganova & Eyquem-Renault, 2009). Stakeholders and in particular (potential) customers are an important source for business model innovation (Spieth et al., 2014). Especially for sustainable business models, stakeholder integration may radically change the business logic and help to revise the business model (Schaltegger et al., 2012). In respect to strategic decisions and adaptation of business models cognition plays a central role (Foss & Saebi, 2017; Spieth et al., 2016), challenging basic assumptions, including the belief system, and changing the dominant logic (Cavalcante, Kesting and Ulhøi, 2011; Doz and Kosonen, 2010; Tikkanen, Lamberg, Parvinen and Kallunki, 2005). How cognitive change reframes the dominant logic (Cavalcante et al., 2011; Spieth et al., 2016), and how stakeholders are integrated into business model innovation need further research (Massa, Tucci and Afuah, 2014; Spieth, Schneckenberg and Matzler, 2016).

In this study we focus on interfirm-level collaboration of actors in business model innovation (Spieth et al., 2016). Our research approach is a multiple case study design, enabling within-case analysis and cross-case synthesis, using pattern matching logic for explanation building (Yin, 2013). We build on three cases concerning sustainability-oriented

innovations, each case constituting a cognitive shift that resulted in a fundamental redesign of the business model, including the value proposition. The data consists of 12 semi-structured interviews, and 82 additional data sources. We closely look at the commercialisation stage in which a change of cognition and redesign of the business model take place, and create codes for value creation activities and the roles different partners play in these activities, prior and after the change occurs.

Our findings show that interaction with the network contributes to business model development in two different ways. The cognitive shift in the entrepreneurs' mind, emerges from external barriers (e.g. reluctance of potential customers to adopt the innovation, and new competition), and changes his perception of the added value of his innovation for different stakeholders. Based on an analysis of the encounters that take place, the roles that partners play and the activities that are collaboratively undertaken, we find that this cognitive shift consists by three processes that are interrelated and support business model innovation. Each type of shaping consists of different activities and involves different partners in different roles:

- Product/service offerings shaping. (Re)shaping the offering that ascertain optimal customer value creation through interaction with (potential) end customers and complementary partners, e.g. changing from delivering functionality towards creating total solutions;
- Credibility shaping. Employing the companies network to enhance the credibility of the value proposition, e.g. changing from collecting evidence, towards gaining legitimacy;
- Market approach shaping. (Re)shaping the market interface and go-to-market strategy in collaboration with strategic partners, e.g. changing from technology push towards market pull.

The findings add to the business model literature by showing how stakeholder integration contributes to changing the dominant logic in business model innovation (Spieth et al., 2014). The three processes can be viewed as an extension of the process of distancing, abstracting and reframing as proposed by Doz and Kosonen (2010). They provide a deeper understanding of the business model innovation process, by showing what type of activities and kind of partnerships may contribute to redesign business models to adapt to the market, and by showing how firms may co-create business models (Spieth et al., 2016). The main contribution of this paper is a conceptual framework with a cognitive shift supported by three interrelated shaping processes that provide a fine-grained perspective on value creation through collaborative networks. It allows academics to further study the role of cognition in business model innovation, the roles specific partners play in each shaping process, and how entrepreneurs can organise the activation of the three processes.

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Human Capital Management in Support of Sustainable Business Model Innovations: A Systematic Review

Burcin Hatipoglu

Bogazici University, Istanbul, Turkey

burcin.hatipoglu@boun.edu.tr

Keywords

Innovation, Human Capital, Sustainable Human Resource Management, Systematic Review

Abstract

Managing organizational change for sustainability most probably is one of the biggest challenges for the companies of the 21st century. It is possible to suggest that finding effective ways for managing organisational change (Millar, Hind & Magala, 2012) have become a critical topic for many organisational sustainability development programs. In order to realize these innovations, organizations need to possess a mix of resources and capabilities (Bowen, et al., 2001; Darnall and Edwards, 2006). This mix includes the human capital (HC) related capabilities as well. However, having these capabilities is not enough as Penrose (1959) has suggested but the ways they are used add value to the organization. In those organizations that aim for sustainability innovation, human resource management's (HRM) goal should be to support the organization in adopting new business models. Essentially how human side is managed in organizations can determine the success of sustainability oriented innovations.

Accepting the understanding that depletion of resources without replacing them is a major concern for sustainability, sustainable HRM aims to develop and rejuvenate human and social capital for the organization and also for the society (Kramar, and Mariappanadar, 2015; Buller and McEvoy, 2016). Sustainable HRM pertains to two domains in which support to organizational sustainability is provided through HC management practices and the HRM processes themselves becoming more sustainable (Ehnert, Parsa, Roper, Wagner and Muller-Camen, 2016). Sustainable HRM should consider the value creation logic of the organization and take into account the external stakeholders as well. This perspective defines business outcomes beyond economic outcomes to include economic, social and ecological outcomes for multiple stakeholders (Kramar, 2014). In this way sustainable HRM

can also be in line with business model of the organization for sustainability (Schaltegger, Hansen, and Lüdeke-Freund, 2016).

The study aims to review the HC management capabilities that support sustainable business model innovations (SBMI) in organizations. The systematic review approach is adopted in order to increase transparency and bring focus to the study (Seuring and Müller, 2008). The time period of the study is chosen to be the last twenty years as SBMI and sustainable/green human resource practices were conceptualized and researched in that time period (1997-2017). The six step model of systematic review as defined in Klewitz, and Hansen's (2014) work is adopted. Firstly, two clouds are selected (human capital and sustainable business model innovation) guided by the research question and in the next step relevant keywords were determined in light of the previous literature reviews and the theme of the research. Next, search has been conducted using five databases, only selecting peer reviewed academic articles that are written in English. Resulting 184 articles were sorted into three groups from most relevant to not relevant by going through the abstracts. Following this step, the most relevant and informative 20 articles were selected by reviewing the main body of the articles. Inductive thematic analysis was conducted on these articles.

The results of the review firstly present quantitative descriptive analysis of the articles examined; the data is presented in terms of journals, time period, geography, methods of study and theories used. The demographic analysis highlights the rising importance of the SBMI concept in the last decade. The second part of the analysis presents the results of the thematic analysis answering the research question. The human capital management capabilities are sorted by using four stages of SBMI that are development, implementation, controlling and assessment. The HC management capabilities are found be more for the first stages of the model, and almost absent for the last stage. Building sustainability oriented innovation teams, top management support, building trust among team members, increasing employee engagement, outsourcing, knowledge sharing learnt from external stakeholders are some of these human capital management related capabilities. The results direct future studies in exploring HC management capabilities in relation to SMBI, particularly during controlling and assessment stages.

Acknowledgement

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The missing link in business models for sustainability? Lessons from the sharing economy

Raz Godelnik
Parsons School of Design – The New School, 66 Fifth Ave
New York, NY 10011 USA
godelnir@newschool.edu

Abstract

The sharing economy has provoked interest in part because it offers possible avenues to sustainability (Martin, 2016). By enabling consumers to conveniently and affordably access goods rather than own them, the sharing economy unlocks the value in excess capacity, allowing society to use resources more efficiently (Chase, 2015). Whether this potential is realized remains to be seen (Frenken & Schor, 2017), but many peer-to-peer platforms do operate what appear to be business models for sustainability (BMfS).

In this paper, I use case studies from the sharing economy to assess the drivers behind BMfS development, in specific corporate contexts. These contexts are worth exploring because, as BMfS scholars argue, sustainable business models are manifestations of organizations' sustainability strategies (Lüdeke-Freund et al., 2016). Applying Schein's (2010) argument that strategies are determined by organizational culture, I ask whether indeed organizational culture has significant influence over the creation and character of new BMfS.

In order to address this question, I compare three ride-hailing services—Uber, Lyft, and Juno. Using publicly available data, I evaluate each according to Boons and Lüdeke-Freund's (2013) BMfS framework, which considers customer value propositions, business infrastructures, customer interfaces, and financial models. I also apply an organizational-culture model based on Schein (2010) and Graham et al. (2016).

These ride-hailing platforms were created to meet similar customer needs, but my analysis finds differences in their business models and sustainability outcomes. The findings suggest that organizational culture in fact does shape these platforms' approaches to sustainability, with consequences. I also detect a strong connection between founders' mindsets—defined as "the assumptions and expectations we have for ourselves and others that guide our behavior" (Goldstein & Brooks, 2007)—and organizational cultures, suggesting that founders play pivotal roles in the creation and development of new BMfS. Scholars increasingly recognize that organizational culture and founders' values affect the

development of BMfS (Lüdeke-Freund et al., 2016), but the extent of their impact is not yet clear.

Finally, I consider the applicability of my findings to new enterprises outside the sharing economy. Sundararajan (2014) argues that the organizational cultures of sharing-economy firm lack "the directive authority or co-located social systems that traditional firms can take advantage of to manage their employees." But my analysis shows that, despite this, the corporate cultures of sharing-economy firms still shape outcomes in ways much like those of other startups.

My results suggest that the sustainability impact of the sharing economy is contingent on organizational culture and on founders. Future research on the development of BMfS should therefore attend to these factors, alongside the business drivers already identified in sustainable business models.

Ultimately, I argue that there is an opportunity to apply the lessons from the sharing economy's emerging enterprises into a BMfS framework that incorporate the human influences I isolate. Indeed, businesses in general, not just those participating in the sharing economy, can benefit from a better understanding of the mindset-culture-strategy connections in BMfS to foster sustainable change.

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Market characteristics moderating the spread of a business model: The case of a solar energy and the TPO business model

Jessica Lagerstedt Wadin [a,*], Ph.D., Researcher
Kajsa Ahlgren [a], M.Sc., Ph.D. Candidate
Lars Bengtsson [a], Prof.
[a] Department of Industrial Management and Logistics, Faculty of Engineering, Lund University, Sweden
* Corresponding author: jessica.wadin@iml.lth.se

Keywords

Business Model For Sustainability, Business Model Adaption, Business Model Spread, Solar Energy

Abstract

It is widely argued that business models constitute an important link between a sustainable technology and the market (c.f. Boons and Lüdeke-Freund, 2013). The literature on business models and business models for sustainability, however, has often pleaded for a stable model once it is developed rather than viewing the adaption of a business model to different circumstances or the continuous change due to changing circumstances associated with the adaptive transformation that characterize sustainable development (Roome and Louche, 2016). Still the most successful business models are considered role models ready to be copied or imitated (c.f. Baden-Fuller and Morgan, 2010). In addition, Foss and Saebi, (2017) argue for further need of more research on contingency and moderating variables (macro-, firm- and microlevel moderators) influencing business model innovation.

In California has the third party ownership (TPO) business model, a scalable and efficient business model platform allowing consumers to “go solar” without upfront costs and with maintenance and system guarantees over 20 years, rapidly developed during the last decade (Overholm, 2017). This, on a US scale, successful TPO business model is currently being introduced in a number of European markets, where upfront purchases of systems and local entrepreneurs have been dominating. Researchers studying business models for solar energy have, however, pointed to potential challenges for the TPO business model to spread to markets outside the US, suggesting that differing customer characteristics and

environmental setting might influence its success (Overholm, 2017; Strupeit and Palm, 2016).

In this paper we employ a multiple case study approach to analyze the TPO business model spreading in space and time to new markets to enrich the debate on business model adaption as well as the debate on bringing business models for sustainability to new markets. Embedded in the business model for sustainability and business model innovation literature we examine macro level factors shaping a business model for solar energy to residential customers when travelling from California to three distinct European markets: Netherlands, Sweden and Germany. The research question guiding the study is: "How do market characteristics influence the business model spread into new markets?"

The paper will provide empirical evidence and a deeper knowledge of how macro level moderators influence business models travelling into new markets and align with new circumstances, as sought after in the business model literature (Baden-Fuller and Morgan, 2010; Foss and Saebi, 2017), and thereby providing better chances for bringing sustainable technologies to the market. Following the guiding principles on business models for sustainability (Jonker, 2016), this paper contributes both to collaborative value creation and multiple value creation as the business model is seen as a framework allowing us to better understand how a sustainable technology can create sustainable value on a new market.

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Multibusiness, decentralized companies and transitions to sustainable business models

FRANCESCA CIULLI* & ANS KOLK

UNIVERSITY OF AMSTERDAM BUSINESS SCHOOL, THE NETHERLANDS

*Corresponding author: f.ciulli@uva.nl

Abstract

Over the last years scholars have increasingly explored firms' transition towards sustainable business models. Yet, extant literature on sustainable business models and sustainability-oriented business model innovation (e.g. Schaltegger et al., 2016; Seelos and Mair, 2006; Yunus et al., 2010) has mainly focused on firms with a narrow business scope. It has instead overlooked the study of multibusiness companies, i.e. companies comprising multiple business units focused on specific products and/or customers (Martin and Eisenhardt, 2010). Due to their complexity, studying multibusiness firms is particularly relevant for a thorough understanding of organizational transitions to sustainability, as it allows to explore how different types of sustainable business models and heterogeneous dynamics of business model innovation for sustainability may coexist and interact within one organization.

Multibusiness organizations often adopt a decentralized organizational structure, by "moving down the hierarchy the locus of authority and decision-making" (van Wijk et al. 2008). Yet, scant attention has been given to investigating how a decentralized structure affects a firm's sustainability transition. Our study aims to contribute to the understanding of business model innovation for sustainability, by exploring how a sustainability transition unfolds in a multibusiness, decentralized company.

The study adopts inductive theory building (Eisenhardt, 1989) and uses a single embedded case study research design with multiple units of analysis. The selected case is a multibusiness company, comprising over 100 business units and having a decentralized organizational structure: the business units are independent, with their own profit and market responsibility. The data has been collected through semi-structured interviews with actors at different levels and with different responsibilities within the company.

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Investigating the relationship between sustainability and business model innovation in the context of the European food industry

Francesco Rosati[1,*], Esben Rahbek Gjerdrum Pedersen[2]

[1]Department of Management Engineering, Technical University of Denmark,

*Corresponding author: frro@dtu.dk

[2]Centre for Corporate Social Responsibility, Copenhagen Business School, ergp.msc@cbs.dk

Keywords

Sustainability, Business Model Innovation, Food Industry, Europe

Abstract

Organisations, and society at large, are nowadays facing enormous and unprecedented challenges in terms of sustainable development (United Nations General Assembly 2015). Therefore, there is an increasing necessity to prioritize sustainability concerns, and ensure the integration of sustainability into organisations' business models. Such a prioritization and integration can in turn generate new opportunities to innovate and differentiate business models (Bocken et al. 2014), and, consequently, be decisive for organisations that want to sustain their competitiveness in the market (Teece 2010; Gambardella & McGahan 2010).

Thus, on one hand, business model innovation can help to achieve significant improvements in terms of sustainability (Breuer and Lüdeke-Freund, 2017; Carayannis et al., 2015; Pedersen et al., 2016; Rauter et al., 2017; Schaltegger et al., 2012). On the other, sustainability has the potential to inspire and drive business model innovation (Bocken et al., 2014; Joyce and Paquin, 2016). As effectively explained by Ernesto Ciorra, Head of Innovation and Sustainability at Enel, "we are not sustainable unless we innovate, and in order to innovate, we have to be sustainable" (Global Reporting Initiative 2016).

The current study aims to investigate the relationship between sustainability and business model innovation within the European food industry. Empirically, the analysis is based on survey data from 469 companies of seven European countries, namely Denmark, France, Germany, Italy, Netherlands, Spain, and United Kingdom.

The overall results show that sustainability is slightly positively related to business model innovation. This seems to be particularly true for German companies, which show a high positive relationship. The result does not hold true for Danish companies, which show a

slightly negative relationship. This study has implications for practitioners and scholars who work in the field of sustainability and business model innovation, especially in the context of the European food industry.

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Micro-foundations of developing Sustainable Business Models

Kristin Ringvold*, Tina Saebi, Nicolai Foss
*Corresponding author: kristin.ringvold@nhh.no

Keywords

Sustainable Business Models, Micro-Foundations

Abstract

Firms increasingly seek to innovate or change business models in ways that integrate social and environmental concerns, developing what can be referred to as sustainable business models or business models for sustainability. Existing theory is divided in its view on the complexity of developing sustainable models; some contributions focus on a win-win perspective (where the firm can solve social and/or environmental problems and earn money at the same time) while other contributions look at sustainable business models from a complexity perspective. This latter literature argue that developing sustainable business models can be a complex matter that confronts managers with situations where they must simultaneously address multiple desirable but potentially conflicting outcomes that work at different levels (for the individual, firm and society). However, there is yet little empirical literature on the (micro) processes by which companies develop sustainable business models and on how sustainable business model innovation arises and is enacted in the organization.

Sustainable business models imply a greater multiplicity of goals for firms to be able to satisfy the interests of various stakeholders, and addressing multiple goals is likely to raise the costs of decision making. Arguably, to succeed in developing sustainable business models, managers must be able to identify and mitigate areas of tensions and potential trade-offs between the social, environmental and financial goals of the business models. Such tensions are recognized as core characteristics of social enterprises; however literature provides no systematic analysis of how these tensions manifest.

Research on the phenomenon of sustainable business models has an emphasis on concept understanding and conceptualizing as well as its implications for business model design and innovation. As of yet there has been little focus on the organizational and managerial implications of sustainable business models. And while there has been extensive research on the related concepts of corporate sustainability and corporate (social) responsibility, most of this has been based on a macro-oriented rather than micro-oriented

approach. Research addressing the micro-foundations of corporate sustainability is emerging but in an early stage. There is now a growing literature that addresses the question of how managers interpret the ambiguous cues from their organizational context on sustainability issues from a cognitive perspective. However, research on corporate sustainability has been permeated by a strong focus on business case thinking which has resulted in the conceptualization of managerial responses to sustainability issues along an opportunity/threat dichotomy where the economic objectives of the firm dominate. Recently, there has been some research addressing corporate sustainability from a paradoxical perspective. Yet there is still little knowledge on issues such as how goals related to sustainability arise and are aggregated throughout the organization, how managers sense and shape opportunities for sustainable business models and the processes of how managers develop sustainable business models.

We intend to contribute to theory development by analyzing a case of developing sustainable business models within a large corporation. The research focuses on the Norwegian based telecommunication operator Telenor ASA, a group with considerable operations in emerging markets. Telenor is at present developing several digital business models with the potential of having high social impact on the societies where they are operating, and the corporation proclaims a shared value strategy for sustainability. We explore the development of Telenors business models to develop health services in Bangladesh, and the managerial challenges this invokes. Based on the case findings, we identify challenges and recommendations for how managers in practice may manage sustainable business models at different levels of the corporation.

Managing sustainability-oriented business model innovations:
A global perspective

Singh, Jagdeep*, Shapley, Matthew and Cooper, Tim
School of Architecture, Design and the Built Environment, Nottingham Trent University, 50 Shakespeare Street, Nottingham NG1 4BU, United Kingdom
*Corresponding author: jagdeep.singh@ntu.ac.uk

Keywords

Sustainable Business Models, Product Lifetimes, Indicators, Innovation Management

Abstract

A variety of business-related initiatives in recent decades have resulted in innovations aimed at driving and responding to society's sustainability demands. Among these, business models are increasingly recognised as having an important role to play. Sustainability-oriented business models are envisaged and operationalised as a part of corporate strategies to address sustainability issues along supply chains, whether regional or international. The outcomes of such models (described variously as 'sustainable', 'circular', 'resource-efficient', 'novel' or 'alternative') depend on the underlying normative principles guiding society's sustainability demands. In order to assess how successful they are in responding to these demands, it is necessary to develop indicators that measure the actual performance of these business models. The intricately complex value proposition of business models makes this problematic and, despite growing theoretical literature on business model innovations in recent years, there is still a lack of key indicators and tools to measure to what extent such innovations could contribute to sustainable development. In their absence, it is difficult to assess and control the short- and long-term outcomes of innovations, both within and across organisations. The development of such indicators, tools and frameworks could not only assist organisations towards better-planned innovations, but make explicit some of the factors - internal as well as external to the organisation - influencing their implementation and operation.

The present study is an attempt to address this research gap by reviewing practical examples of a range of sustainability-oriented business models. Business models were analysed focusing on (i) prolonging product lifetimes; (ii) facilitating systems for product reuse, repair, remanufacturing and end-of-life product collection; (iii) offering product warranties; (iv) providing contracts for supplying spare parts and/or upgrading the product's

functionality; and (vi) offering collaborative consumption. A variety of products and services were addressed, including vehicles, transport, building materials, household appliances and tools, consumer electronics, textiles and industrial equipment. Although these business models contribute to a range of social, economic and environmental impacts, both positive and negative, the present study focuses on their impact on reducing the overall demand of materials and energy. A life cycle perspective including product design, production, retailing and distribution, consumption and post-consumer discard was utilised in order to identify major gaps within these business models in a global perspective. Data was collected for more than 600 products and associated services through journal papers, websites and reports.

The study shows that many sustainability-oriented innovations, within both semi-durable and durable product sectors, claim to adopt an approach based on longer lasting product design or some other aspect of sustainable design; however, there is still a lack of focus on providing an effective system for managing discarded products. On the other hand, due to advances in information technology, collaborative consumption has recently grown for transport, and power tools and equipment. Within the product categories studied a range of novel products and services, with a large potential to reduce the overall demand for materials and energy, was identified; however, their market share is currently very small, in particular due to high prices, especially for semi-durable products such as clothing and durable products such as furniture, flooring and household appliances. A novel business model to deliver maximum material and energy efficiency within each product category was proposed and discussed.

ABSTRACTS SESSION 4

How can B Corps build effective partnerships to scale up their social impacts for a sustainable society?

Melissa Edwards, University of Technology Sydney, Australia
melissa.edwards@uts.edu.au
Wendy Stubbs, Monash University, Australia
wendy.stubbs@monash.edu
Mark Starik, American University, USA
mstarik@american.edu

Abstract

Entrepreneurship and innovation play an important role in moving to a more sustainable society (Schaltegger and Wagner, 2011). Sustainability-driven entrepreneurs not only create products and services that are successful in the marketplace, but also integrate social and environmental goals into the core of their business. Certain sustainable entrepreneurs contribute to solving social and environmental problems while simultaneously seeking to generate a profit-oriented business model. These "hybrid" organizations seek to "transform the market structure intentionally and directly by creating economic, social, and/or environmental value simultaneously" (McMullen and Warnick, in press, p. 12).

'B Corps' – for-profit, socially obligated, corporate forms of business, with traditional corporate characteristics but also with societal commitments (Hiller, 2013) – are a new form of sustainable entrepreneurship business model. To become a B Corp, a business must complete an Impact Assessment, which assesses the overall impact of the company on its stakeholders and be assessed by the certification body B Lab. To be certified, the business must earn a minimum 80 points out of a possible 200 points in the assessment. The B Corp vision is: "people using business as a force for good" in order that all companies "compete not just to be the best in the world, but to be the best for the world" (B Lab, 2014, emphasis in original).

The purpose of this paper is to report on preliminary findings of an empirical study that sought to understand how B Corps across three countries (Australia, Chile and USA) develop relationships to drive their social impacts. An exploratory research design was crafted to address the central research question 'how can B Corps form and maintain effective partnerships and networks for a more sustainable society?' We adopted a relational approach to explore the type and purpose of the relationships B Corps had with their key stakeholders and to determine if and how they sought to influence these relationships to

obtain purposeful outcomes. B Corps were sampled through the publicly available B Lab and Sistema B databases. Complexity of stakeholder relationships was assumed to be associated with longer duration of certification, higher certification score and industry type. B Lab staff were consulted to confirm selected B Corps were most likely to be characterized by more complex stakeholder relationships.

Research participants were founders or senior managers of the sampled B Corps who responded favorably to an interview. A total of 18 participants, each representing a different B Corp, completed the interview. Semi-structured interview questions were designed to explore the formative and relational aspects of partnerships and stakeholder interactions and to identify challenges encountered when building partnerships with like-minded for-profit, for-purpose businesses (interview questions can be found in attachment A). Participants were asked to discuss the approach they took when developing different types of business relationships while seeking to obtain their purpose. Such purpose was not defined singularly, yet each participant articulated an ambition for societal change. Interviews ranged between thirty minutes to one hour. They were transcribed in full and analyzed using NVivo 11 adopting a grounded approach. Firstly the interview text was coded line-by-line to generate codes. A coding summary was created and discussed between three members of the research team to validate key concepts. Following this a second round of coding occurred to ensure emergent concepts codes could be back coded against all interviews. Concepts were then organized into three main thematic clusters: motivation for becoming a B Corp; characteristics of relationships with other stakeholders; and, the type and purpose of relationships with various stakeholders (including other B Corps, B Labs, customers, other large organisations, other organisations and suppliers). Within each of these thematic clusters, concept nodes were further categorized to clarify key concepts within each theme. For the purposes of analyzing the research question for this paper, we provide an overview of the key concepts related to the characteristics of relationships and partnerships themes to address our research question regarding how and why B Corps form partnerships with other stakeholders to achieve their purpose-driven mission.

Preliminary analysis revealed four concepts that participants discussed when describing the various different types of relationships. In order of most prominent these were ‘Influence partners’, ‘Partner intentionally’, ‘Obstacles’ and ‘Partnering organically’.

The most prominent concept was ‘Influence partners’ which related to how B Corps sought to influence partners to ensure alignment of values. This concept contained fours sub-concepts that characterized how influence was sought as either being through establishing credibility, advocating for-purpose, requiring certification as the basis for partnering, or less formally seeking to convey purpose through informal conversations. Predominantly this came either through the credibility they obtained through the certification or through advocating their purpose. Credibility through the B Corp certification

was the predominate sub-concept for influencing partnerships. This was particularly relevant for suppliers, but less important for customers where B Corp there was less brand recognition in relation to consumption decisions. The certification enabled B Corps to explain what they do/their purpose. This was not necessarily seen as a means of attracting clients, but rather for better articulating to them what they do as the following quote illustrates:

> *'And it's a good frame for us saying – well, first of all, people say, "What does the name mean, it's a weird name?" And then we explain that and just say they're the ways in which we make sure that we're staying true to that, which tends to be received very well, generally'.*

The second most significant sub-concept was how B Corps sought to advocate their values and the benefits of being a B Corp to their partners. This was especially prevalent in the procurement of sustainable materials, when providing services to corporate clients and when connecting with customers who had limited awareness of sustainability issues. The following queotes is illustrateive:

> *'So we have advocated to each of our key partners for them to become B Corps, with varying levels of success….. we wouldn't work with anyone who doesn't resonate with, and we've done our best to try to convert them'.*

The third most prominent sub-concept was 'informal conversation'. Four BCorps described how they sought to influence their partners more informally through conversations as one stated '*we do talk to them about it but we don't yet put in writing'*. The final sub-concept occurred in two examples, where BCorps sought more direct forms of influence whereby they make voluntary certification a pre-condition for developing partnerships. This form of influence only applied in relationships with suppliers or clients, for example:

> *'As an investor, we have a lot more influence on potential partners, because people…..want the investment, they want the money and therefore when we say to them in order to work with us you need to do a B Corp certification, and you need to at least do the impact assessment and tell us what your score is'.*

The second most prominent concept was 'intentional or purposeful', which characterized how B Corps sought partnerships with an intention or specific criteria in mind. Participants sought the 'right opportunities' by selecting partner relationships that 'fit their purpose'. Participants discussed how relationships were purposefully or intentionally

established to ensure they did not compromise their B Corp values. Thus they pursued relationships with other B Corps wherever possible, or sought an alignment of values with other non-B Corp organisations. As the following indicates:

> *"We'll only work with companies that are aligned, from a values point of view. And the top of that group are the B Corps, and then there'll also be businesses that are not B Corps, but could be, according to other certifications that they might have or the relationships that we've developed with them and we know the way they work and operate in the world".*

The other two concepts associated with this category were of less prominence. 'Barriers' where, five BCorps discussed how they encountered barriers in their partnership relationships due to being small scale, an absence of values alignment or a lack of senior buy-in, time and resources or misunderstanding. Finally, 'organically' where two B Corps discussed how their partnerships were developed more organically as the following quote illustrates:

> *'I think just by doing your thing and standing up for what you do, I think people just gravitate towards that anyway' and 'I think, those things just naturally come out of conversation at events like that, and we've found that's the way it's happened'.*

Finally, we analyzed how B Corps describe the utility of various different types of stakeholder relationships. This analysis reveals different category types of relationships that occurred across the variety of different stakeholder relationships. These categories are conceptualized as a spectrum ranging from 'transactional' through to 'symbolic interconnection', with the former being described primarily a form of exchange and the latter being typified as a relationship motivated for enabling some form of social or environmentally-oriented change. Unpacking each of these categories we found variation in the categories as they were ascribed to different stakeholders. Taking the 'symbolic interconnection' example, while some B Corps described their relationships with other B Corps and B Lab as identifying with a broader group of like-minded businesses, not all subscribed to the same conceptualization of what that group represents. Some clearly described this as a sense of belonging to a broader 'tribe', community or movement, while others described it more loosely as a network or in functional terms as a hub for connecting with like-minded others. Such findings will be discussed in further detail in the presentation of this paper.

Taken together these preliminary findings suggest B Corps operate beyond their immediate business model to create and establish relationships in their operating environment that will enable sustainable development outcomes.

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“What can we learn from social entrepreneurs and their community building aspect for future business models?”

Maximilian Nestler* & Dr. B.J.W. Pennink
*Corresponidng author: maximiliannestler@gmx.de

Abstract

Current business models do not provide sustainable solutions for future generations (Jonker, 2014). Authors like Jan Jonker and Porter and Kramer are presenting new business models, which might provide solutions (Jonker, 2014; Kramer &Porter 2011). By observing these models, we came to the conclusion that the application of those models lead to social exclusion and the affected group of persons are not involved within the decision making process (Pennink, 2016). From our perspective it is therefore important to look for projects or organizations, which include social excluded persons within the society so that we can therefore create together a more sustainable world.

Parkin (2006) argues that social exclusion can be described as a withdrawal from the society in order to accomplish a beneficial position. By achieving a privileged position other groups experience losses within their welfare through the process of subordination (Parkin, 2006). Social exclusion and social relationships, which are limited when people got excluded from certain activities or communities, were recently more discussed under the social capital theory (Bowen, 2009; Gingrich, 2008). “Whereas economic capital is in the people’s bank accounts and human capital is in inside their heads, social capital inheres in the structure of their relationship” (Portes, 1998, p.7). Therefore we were looking for a catalyst, which can provide social inclusion and community building for future business models.

The European Commission describes social inclusion as “a process which ensures that those at risk of poverty and social exclusion gain the opportunities and resources necessary to participate fully in economic, social and cultural life, and to enjoy a standard of living and well – being that is considered normal in the society in which they live. It ensures that they have greater participation in decision – making, which affects their lives and access to fundamental rights (European Commission, 2004 p.8).

In our opinion several social entrepreneurs provide interesting attempts of community building and provide help to social excluded persons.

According to Zahra: “Social entrepreneurs make significant and diverse contributions on their own communities and societies, adopting business models to offer creative solutions to complex and persistent social problems” (Zahra et al. 2009). This idea builds up with the opinion of Wallace, who believes that social entrepreneurship has the intention to create sustainable projects or activities to reduce community issues (Wallace, 1999). Nevertheless, even if social entrepreneurs implement creative solutions to address complex social problems, they also use traditional business and market-orientated models (Spear, 2006; Dorado, 2006). The article of Ferreira “conceptualizing social entrepreneurship: perspectives from the literature” highlights additionally that there is no clear distinction within the definition of social entrepreneurship and “normal or traditional” entrepreneurship because entrepreneurship also addresses social problems (Ferreira et al., 2016). In terms of definition we want to use Austin’s definition of a social entrepreneur within the extend of this paper: “We define social entrepreneurship as innovative, social value creating activity that can occur within or across the nonprofit, business or government sectors”. (Austin et al., 2006 p.2). We therefore came up with the research question:

“What can we learn from social entrepreneurs and their community building aspect for future business models?”

Unlike common research practices this paper tries to turn the business modeling development from literature into building the models from practices (Schultz, 2005). We use a qualitative case study approach to better understand in which way social entrepreneurs act as a catalyst for community building while creating different kind of values. A qualitative analysis gives better opportunities to analyze complex phenomenon’s where scholars lack knowledge in (Corbin & Strauss, 2008). We follow Jan Jonkers methods approach, who conducted in depth-interviews and let participants draw their business model/ business idea (Jonker, 2014). For the data analysis we use the grounded theory, which means interviews get conducted and recorded so that the authors can listen to the interviews again with the intension to find similarities or contradictions within the data set (Mills, 2013). Limited to the financial extend of a master thesis and the short period of time doing the research, the authors could manage to find and speak to social entrepreneurs within the countries Germany, the UK, the Netherlands and Canada. Most of the samples were found online by looking for social projects or social entrepreneurs in Google. It was important to the authors to find projects and organizations within different fields of their action to conduct general knowledge about business concepts of social entrepreneurs.

We believe that this research can contribute to a business model transformation discussion in a way of learning from social entrepreneurs in terms of social inclusion.

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Sustainable entrepreneurship, responsible innovation, and new business models: how responsible innovations can attract the necessary finance

Thomas B. Long*, Vincent Blok
School of Social Sciences, Wageningen University, The Netherlands
*Corresponding author: Thomas.long@wur.nl

Keywords

Responsible Innovation, Sustainable Entrepreneurship, New Business Models, Finance, Responsible Investment

Introduction

Sustainable entrepreneurs develop innovations that are needed to tackle the grand challenges faced by society, such as sustainable development. These innovations often take the form of New Business Models (NBMs), which are developed by combining different products, services, and activities, to form new value propositions (Jonker, 2016). Sustainable entrepreneurs make societal contributions by combining commercial and sustainable (i.e. non-commercial) objectives and values (often at the cost of economic outcomes). In this way, the development of NBMs can be considered a type of responsible innovation. Responsible innovation is an approach to innovation focused on producing the 'right impacts' and contributing to 'grand challenges' (Owen et al., 2012; von Schomberg, 2013), in a way that includes the dimensions of anticipation, inclusivity, reflexiveness and responsiveness (Stilgoe et al., 2013).

NBMs that contribute to the solving of grand challenges can often raise socio-ethical issues. This can be due to the innovations they involve (i.e. new technologies, for example, the internet of things and big data), or because they often incorporate a wider array of stakeholder demands. This means that sustainable entrepreneurs have to manage a range of different socio-ethical issues in a responsible way in order for NBMs to succeed.

Socio-ethical issues and their management can create problems when it comes to obtaining investment and finance. While sustainable entrepreneurs may themselves be willing and able to manage socio-ethical issues, investors may not have an interest nor motivation to integrate socio-ethical factors in the NBM design (Dumas and Louche, 2016).

From the investor perspective, responsibility could be seen as an unwanted side-effect and not critical to their objectives – to obtain a return on investment (ROI). The problem of investor involvement is due to assumptions, based on traditional economic theory, as well as more recent research on Socially Responsible Investment (SRI), that investors are profit maximizers, unwilling to compromise their ROI (Pasewark and Riley, 2010; von Wallis and Klein, 2015). This is pertinent as NBMs may produce lower financial ROI, creating tensions that can limit the achievement of non-commercial objectives (Harris et al., 2009).

In such circumstances, changing the business model design and how socio-ethical factors are incorporated into innovation and entrepreneurial processes could help overcome these challenges. Incorporating socio-ethical issues into the business model design in particular ways, for example in terms of the value proposition (for instance, through enhanced animal welfare standards or green consumer products), could provide added value, and strengthen the investment case. However, such an approach may not be suitable for all types of investment, as investors are not a homogenous group. Different investors, such venture capitalists, investment banks or crowdsourcing organizations, are likely to have different requirements or needs in relation to investing in these responsible innovations (Sievänen et al., 2013). While impact or responsible investors may be well suited to assess responsible investments (in terms of valuing nonfinancial issues) and provide finance, more traditional retail investors, asset managers or institutional investors may not. The explanations for why investors finance sustainable entrepreneurship are also diverse, including the 'warm glow' they personally received from an ethical choice (Andreoni, 1990) or as a response to consumer demands (Dam and Scholtens, 2015).

Methods and approach

In this research, we seek to explore the conditions that are required for sustainable entrepreneurs to obtain investments for their responsible innovation NBMs. These conditions include the mentality and motivations of different types of investors, as well as how socio-ethical issues are incorporated into business models and investment logics.

By exploring these factors, we will gain an understanding of how best to embed social ethical issues into NBMs so that they do not limit the opportunity to obtain investment, and even potentially enhance the investment case. We further aim to explore whether classification is possible according to the type of NBM and/or type of investor. In doing so, we answer the research question:

- How can business model design, in terms of the incorporation of socio-ethical factors, help overcome barriers and enhance drivers for investment within contexts of sustainable entrepreneurship?

The research takes place in the context of European clean tech start-ups within the agricultural, water and energy sectors. An inductive qualitative approach is adopted, utilizing an initial focus group session with investors, followed by case studies. This is an appropriate approach, as the research problem is complex, requiring a broad holistic understanding, where many potential variables exist, while our questions are seeking to explore 'how' and 'why' aspects (Creswell, 2012; Leedy and Ormrod, 2005).

The focus group will provide an initial understanding of the perceptions, mentalities, and attitudes of a range of different types of investors, towards investing in responsible innovations and how business model design can impact the investment case (Greenbaum, 1998). Participants include key individuals from investment banks, crowdsourcing organizations, regional development banks, venture capitalists as well as individual investors such as business angels. Following this, more in-depth data is collected via semi-structured interviews across case studies. Each case includes a sustainable entrepreneur with their corresponding investors – in this way, we can shed light on both sides of the relationship and understand key dynamics. The cases will examine the NBMs associated with clean-tech innovations within the contexts of agriculture, water, and energy within the Netherlands.

Expected results and conclusions

The results will contribute to the literature on NBMs, sustainable entrepreneurship and responsible investment by highlighting the critical success factors and necessary conditions needed for responsible innovations to obtain investment and finance. This will include highlighting which investment sources may be most aligned with a responsible innovation approach, and how new financial models and revenue logics can enhance the responsibility outcomes of NBMs.

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Universities' central role as incubator in social entrepreneurial ecosystems

Philippe Eiselein*, Nikolay Dentchev, Ph.D, Abel Gonzalez Diaz
Vrije Universiteit Brussel Pleinlaan 2, 1050 Brussels, Belgium
*Corresponding author: philippe.eiselein@vub.ac.be, Tel: +32-478-794-051

Abstract

Collaborative online platforms in support of social entrepreneurs have not yet been discussed as a tool of universities in their role as incubators within the entrepreneurial ecosystem. Entrepreneurship, as the driving force of socio-economic development, receives quite a lot of attention from universities, both from a knowledge and technology point of view. Furthermore, social entrepreneurship, where the main entrepreneurial goal is a social instead of an economic objective, is also gaining attention among higher education institutions. Supportive online platforms for social entrepreneurs can be considered as a specific case in which such a collaborative tool could be of further use to overcome both launching and scaling challenges social entrepreneurs encounter, among many other issues. Universities play an important central role in the development of social entrepreneurial ecosystems and start-ups. This has lead us to the following research question: *How can universities support social entrepreneurial start-ups towards a more successful launch of their project*? Using several projects launched on the collaborative platform for social entrepreneurship, set up by the Chair on Social Entrepreneurship at the Vrije Universiteit of Brussels, we will perform a longitudinal study on several social entrepreneurial start up cases over the next three years, denoting the use and efficiency of such a nurturing platform.

Introduction

Universities are seen as one of the most important and efficient mechanism to create value to society and regional economic development (Belitski & Heron, 2017). Due to their innovative role towards society, we can consider both their centrality for entrepreneurial development and opportunities, as well as the direct reach they have throughout several entities and organizations. Indeed, as a centre of knowledge as well as a central figure to several types of stakeholders within society, a university has a direct socio-economic impact on both business and society as a whole (Etzkowitz, Webster, Gebhardt, Regina, & Terra, 2000). Universities, next to their educating role, are becoming more aware on their need to stimulate and nurture the required innovation and support of start-ups for economic development.

This direct socio-economic impact is generated throughout several initiatives; one of those include the growing number of university ventures (Åstebro, Bazzazian, & Braguinsky, 2012). Also known as spinoffs, these have amongst other characteristics, a positive effect on the local economic development (Vincett, 2010). Given university's unique position between business and society, it plays an important role for the internal dynamics of a sustainable business ecosystem (Schaeffer & Matt, 2016). Indeed, as an inhibitor for example, it can trigger the densification of the ecosystem, consisting of, amongst others, entrepreneurs, firms and investors (Etzkowitz, 2008).

This statement holds also certainly true when it comes to social entrepreneurship, a specific form of entrepreneurship, which focuses on addressing social problems whilst keeping a commercial mind-set to it (Austin, Stevenson, & Wei-Skillern, 2006). Social entrepreneurs, as the central actors in the social entrepreneurship phenomena, come up with innovative and sustainable solutions to urgent social matters. Combining the mind-set of a for-profit economic need as well as the not-for-profit charity goal, they seek to overcome our most challenging social issues in a sustainable way (Mair & Martí, 2006; Smith, Gonin, & Besharov, 2013; Zahra, Gedajlovic, Neubaum, & Shulman, 2009).

Several well-respected universities have already implemented strategic actions aimed at establishing a link between academia and social entrepreneurs. Courses and research on social entrepreneurship - as well as events, publications and permanent support to students and alumni fascinated by the idea of beginning their social ventures - are among the actions the university undertakes to support social entrepreneurs.

Regarding the latter, the Chair on Social Entrepreneurship at the Vrije Universiteit Brussel (2017) is creating a multidisciplinary online crowdfunding and -sourcing platform in support of social entrepreneurs. The main idea is that this networking platform gives the opportunity to create and share a social entrepreneurial project, which provides the possibility to social entrepreneurs to not only receive financial and non-financial resources, but also the proper coaching and experience from both academics and seasoned practitioners in the field. This collaborative platform mixes young social entrepreneurial minded students from the VUB, transforming their ideas into action, with those who wish to support them.

Currently, the online platform is scheduled to be launched by end of March 2017, having already 4 pilot cases ready to be launched. The current cases regard several social aspects. One case named F.LY. seeks to empower women through personalized clothing. Another case is a platform for second hand textbooks for VUB-students, giving "unused" textbooks a second life for a fair price. A third case considers co-housing between elderly and young people and the fourth case considers social driven quests with a social application, "changing

the world, one good deed at the time". It is the Chair's ambition to up this number of cases to two dozens of cases per year.

The platform can be considered as an innovative tool that could alleviate several challenges social entrepreneur encounter on its scaling process both at the incubating and start- up phase. It is our aim to help the social entrepreneurs with, amongst other things, to set up a healthy double bottom line (Moss, Short, Payne, & Lumpkin, 2011; Pache & Andre, 2016; Smith et al., 2013), creating the correct social and financial performance measurements (Austin et al., 2006; Grimes, 2010; Haski-Leventhal & Mehra, 2016), while nurturing their entrepreneurial and management skills (Hemingway, 2005; Weber, Kröger, & Lambrich, 2012; Wronka, 2013; Zahra et al., 2009).

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Towards New Business Models – On Push and Pull (F)Actors of Social Entrepreneurship and Value Contribution

Robin Gringhuis* and Bartjan Pennink
*MSc student International Business and Management at the University of Groningen Faculty of Economics and Business
*Corresponding author: robingringhuis1@gmail.com

Abstract

Our world as we know it currently finds itself in a system crisis urging us to rethink our economic system and the way we produce, consume, spill and devastate (Rotmans and Horsten, 2012). This urge becomes apparent through, for instance, the large economic difference between North and South, climate change and the recent financial crisis. In order to accurately address such challenges, a fundamental systems change is needed to reform our economy at the individual as well as organisational and societal level (Rauter et al., 2017). In doing so, merely focusing on efficiency and optimization is not sufficient. Our current economic ideas are unsustainable, outdated and require a reorganisation of our current business models towards new business models (NBMs) that put sustainability at the centre of attention (Jonker, 2012).

Our economy is undergoing a transition, in which the benefits of the traditional system clash with the ambition of the future, hence the system crisis. Traditional firms often find it challenging to adjust their existing methods, partly since they are often still judged using financial measures such as ROI. While this is difficult for existing businesses, NBM development allows for a great level of entrepreneurial creativity (Jonker, 2012). It thrives by initiatives set up by and for social entrepreneurs (SEs) to improve the quality of their (local) environment and the people living in it. SEs pursue multiple value creation, which entails that entrepreneurial activity is carried out not merely for the sake of creating economic value, but rather to create ecological and social values (Jonker, 2012; Wieland, 2017).

A substantial amount of scientific research has explored the phenomenon of social entrepreneurship (e.g. Austin et al., 2006; Cohen and Winn, 2007; Pacheco et al., 2010; Zahra et al., 2013). However, there remain considerable uncertainties regarding the motivational values of SEs (e.g. Yitshaki & Kropp, 2016). Also, previous research is mostly descriptive, based on case studies, lacking prescriptive power. In this paper we study the

contribution of SEs to the systems change needed. We do so by investigating the push and pull factors either stimulating SEs to or keeping them from creating social and ecological value on an increasing scale. First, we identify SEs' internal motivation to scale up their value creation, structured according to the human motivational value structure by Schwartz (1994). Next, the external factors that currently enable or hinder SEs from increasing their value creation are presented. Within the incentives as well as external factors, emphasis is placed on the different actors involved (e.g. communities, governments) inspired by the multi-actor, multi-value matrix by Pennink (2016). This deepens not just our understanding of the motivational values of SEs, but also of the actors that are involved by pulling SEs towards, or pushing them away from, growing their social and ecological value creation by applying larger-scale business models.

Where previous research on SEs mainly targets individual entrepreneurs, this thesis gathers data by conducting semi-structured interviews with NGOs specialized in supporting social entrepreneurs, as these are considered a rich source of entrepreneurial experience. Among the NGOs is Ideas in Motion, a German-based NGO supporting entrepreneurs in Rwanda. Other interviews are conducted with American and European NGOs, among which the Netherlands-based offices of Ashoka and Both ENDS.

Ultimately, SEs pursue a high level of social and/or ecological value with their businesses. They often aim to not just be a 'drop in the ocean', but to realize a truly large positive impact. By identifying the push and pull factors for growing SEs' businesses, on a multi-value, multi-actor level, i.e. knowing what and who stimulates or keeps SEs from growing their sustainable social and ecological value creation, new insights are gained that are beneficial for academics and practitioners working on the development of NBMs.

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How to facilitate social entrepreneurship for developing circular economy into territories? Feedbacks from systemic design methodology applied to the Nouvelle Aquitaine Region

Marion Real*, Iban Lizarralde
ESTIA – RECHERCHE, Technopole Izarbel, 64210 Bidart
*Corresponding author: m.real@estia.fr

Introduction

The shift toward a circular economy is initiated at different scales by a strong diversity of stakeholders (policy makers, industrials, designers, citizens…), approaches (eco-design, industrial and territorial ecology, cradle-to-cradle, systemic design…) and participate to the emergence of new business models (sustainable product-services systems, makerspaces and repair café, resource-based local networks…). The proximity between circular economy and a recent archetype of sustainable business model (Bocken, 2014), the "social enterprise" is high and the processes of social innovation (Ceschin, 2014) and entrepreneurship (Verstraete, 2010) are gaining interest to be studied in both meso and micro levels.

Social enterprises have heterogeneous forms and status (cooperatives, associations, unions, SMEs…). Their business models could be defined by 4 criterions (Le Mouves, 2013): (1) the creation of an economic or entrepreneurial project, (2) a social or societal purpose, (3) No or limited lucrativeness (profits reinvested in the project, limited remuneration of capital, and a supervised wage scale) and (4) a democratic or participatory governance. Social entrepreneurs are perceived as catalyzers of change (FAIVRE, 2010). As any innovators, they navigate in complex environments and are facing numerous difficulties all along the life-cycle of the project and the evolution of their organizations. European commission are encouraging actions to improve the visibility, the access to funding, the legal environment and the international expansion of social enterprises (EU, 2016).

In this paper, we explore how social entrepreneurship could become a key component to foster circular economy into territories and discuss about the support that could offer regional intermediary structures (Howell, 2006)(Agogue, 2012) like public institutions, agencies, incubators, schools….

Methodology

Our findings are based on a current action-research coming from the Interreg Europe project entitled RETRACE (interregeurope.eu/retrace/), which aims to promote circular economy into five regions through a systemic design methodology. Systemic design regards the study of industrial and agricultural processes as complex networks that transform the output of a process in a chain mechanism whose goal is the total elimination of manufacturing waste (Bistagnino, 2010). At regional level, the methodology of the project consists in different steps:

- A holistic diagnosis is framing the metabolism of regions through different dimensions (politics, geographics, urban centers, cultures, flow resources, economics and good practices) so as to identify potentialities and critical issues in different sectors.
- Then, regional and local stakeholders are participating in the co-design of regional policies for circular economy within a systemic vision that will be analyzed and implemented.

The Nouvelle Aquitaine is one of the region involved in the project and is the main focus of our analysis. The participation of the researchers in this ongoing project allowing to both capture the actual structure of social economy in Nouvelle Aquitaine but also to impulse new policies, rules and type of supports in direct relation with circular economy. Currently, our research material consists in:

- An analysis of actual political instruments for social and circular economy in Nouvelle Aquitaine that we realized in the holistic diagnosis of the Retrace project.
- The business models for 15 social enterprises plus 3 intermediary supporting organizations were observed thanks to the interviews with project owners and to the regional platform RECITA.
- Three stakeholder meetings aimed to respectively framing the actual lacks of supports for circular initiatives, transferring knowledge through good practices and sharing around three sectors (agriculture, wood and textile). The stakeholder meetings were co-designed and organized by the authors of the paper with industrials, social entrepreneurs, policy makers, and NGOs.

Key findings

Two kinds of feedbacks are highlighted by this action research. They concern (1) the process of social entrepreneurship and (2) the role of regions in supporting it.

(1) Social entrepreneurs are overwhelmed by dialogisms (Morin, 2007) (Real, 2015): they face individual and collective decisions (Todres, 2016) through horizontal or vertical management for both short and long term visions and share the double objective of job creation and ecosystem healthcare.

It exists two different logics for such business models: the traditional social organizations offer social jobs and training for people in difficulty. They depend on public funds and are built around a strong turn over. A new wave is emerging through the empowerment of citizens and other stakeholders which experiment new forms of participation (cooperatives of citizens, producers or consumers, holacracy management, sharing platforms…) and dare taking responsibility or investing time and money to collectively answer to social & environmental needs. Most of emergent successful business models are hybrids and combine both market revenues, subventions and member fees.

(2) Within the actual political context, regions remain central stakeholders to make visible the needs for the territory and develop local circular economy. In France, the perimeter of social economy need to be redesigned so as to shape to territorial potentialities and criticalities. Regions need to offer a structural and coherent plan for both inspiring and supporting social and circular initiatives in a more transparent and participative way.

Guided by territorial resource-flow evolutions and by a frequent elicitation of stakeholder needs and uses, regions are up to design adapted tools (platform, maps, directory), supports (R&D, equipment, investment) and collaboration mechanisms with local stakeholders (agency, schools, incubators, NgO…) for facilitating the development of social entrepreneurship for grassroots initiatives as well as top-down innovations.

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ABSTRACTS SESSION 5

Designing an ICT tooling platform to support the needs of SMEs in business model innovation

Mark de Reuver[1], Astrid Tarkus[2], Timber Haaker[3], Gert Breitfuss[2 4], Melissa Roelfsema[3], Ruud Kosman[3], Marikka Heikkilä[5]

[1] Delft University of Technology, The Netherlands g.a.dereuver@tudelft.nl

[2] Evolaris, Austria

[3] Innovalor BV, The Netherlands

[4] Know-Center, Austria

[5] University of Turku, Finland

Keywords

Business Model Innovation, Business Models, Digital Platform, Business Model Tooling, SME

Introduction and purpose

The relevance of Business model innovation (BMI) to survival and competitiveness of companies is largely acknowledged by academia and industry. Still, a recent study by Bouwman et al (2016) showed that 37% of Europe's small and medium sized companies (SMEs) are engaged in BM Innovation. This means that almost two thirds of the SMEs do not change their business logic, thus staying within their familiar comfort zone. This can be fine for some, but many more SMEs will need to adjust and innovate their business model as the world changes around them especially due to digitalisation. Moreover, very few SMEs use formal methods to improve their BM - of those SMEs that do BM Innovation, only 19% make use of formal methods (Bouwman et al., 2016). This raises a question whether it is possible to support the BM innovation of SMEs by providing them tools that fit their strategic aims and practical BMI needs.

In this paper, we present two design cycles for an online platform with ICT-enabled tooling that supports business model innovation by SMEs. The platform connects the needs of the SMEs regarding BMI with tools that can help to solve those needs and questions. The needs are derived from our earlier case study work (Heikkilä et al. 2016), showing typical BMI patterns of the SMEs needs - labelled as 'I want to's - about what an entrepreneur wants to achieve with business model innovation. The platform provides sets of integrated tools that can answer the typical 'I want to' questions that SMEs have with innovating their business models.

Method

We follow the approach described by Verschuren and Hartog (2005) for design-oriented research. We derived requirements from interviews with SMEs and SME helpers, brainstorm sessions, literature on existing tooling, the partners' experience with tooling in practice and earlier research results and intermediate evaluation (De Reuver at al., 2016; Heikkilä et al., 2016).

Results

The platform is a first that provides BMI tooling specifically for SMEs. We adapt 29 BMI tools for the specific needs of SMEs, including `paths' that integrate multiple tools for reaching a particular `I want to' goal (Table 1). The platform has been implemented through a prototype, see Figure 1 for the homepage and Figure 2 for the business model innovation paths. Evaluation is ongoing using log data from the platform and action research case studies in which the tools and platform will be applied by actual SMEs in real-life innovation projects. In May 2017, we have about 2,000 sessions by almost 1,000 users, with an average number of 6.4 page views.

Table 1: I-want-to's and business model tooling in the platform

I want to…	Start a new busi-ness	Test my busi-ness	Grow my busi-ness	Make my busi-ness profi-table	Tools in the platform to support the I-want-to		
... know my customers	x			x	Target group selection	Focus group	Persona
... reach my customers			x		Persona	Marketing cards	Marketing mix
... test the attractiveness of my product	x	x			Thinking hats	Focus group	
... test if my business is financially		x			BMC	Profit	

sound						calculator	
... test if my business is futureproof		x			BMC	PESTLE	BM stress test
... better discuss my business		x	x		SWOT	BMC	BM patterns
... develop a (viable) business model	x		x		VPC	BMC	ROI calculator
... improve efficiency		x		x	Process journey	Deadly wastes canvas	
... improve my offering				x	Persona	Competitor analysis	VPC
... explore new ways of making money			x	x	BMC	BM patterns (red cards)	(BMC)
... explore (new) markets	x		x		PESTLE	Five Forces	SWOT
... implement my new business	x				BMC	BMC	BM roadmap
... convince partners				x	Partner analysis	Partner value matrix	

*) Sometimes it may be useful to add an explanatory footnote to a table element

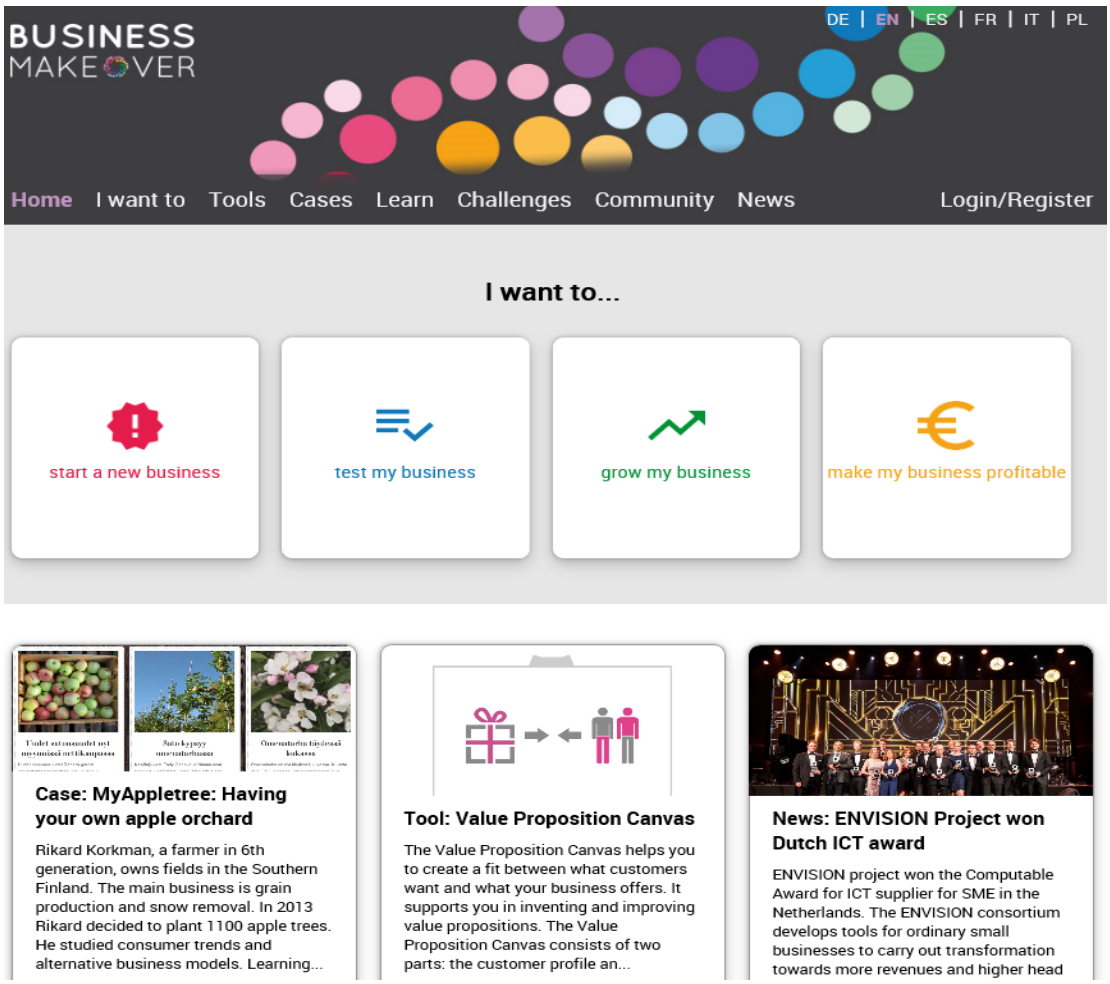

Figure 1: Homepage of the platform www.businessmakeover.eu

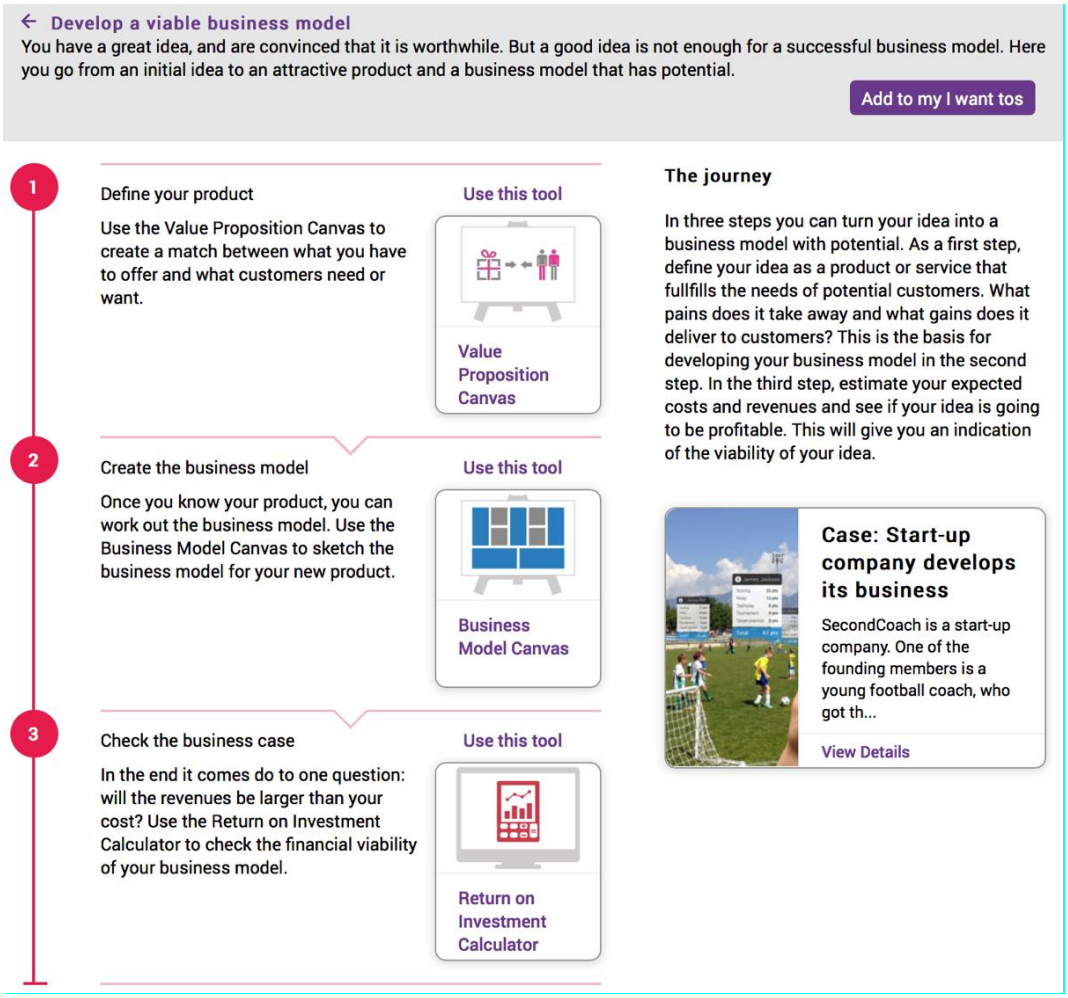

Figure 2: I-want-to paths implementation on the platform

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Towards a better understanding of digitalization and its influence on business model innovation

Wolfgang Vorraber[*], Gundhille Breslmair†, Christiana Müller[*], Michael Rachinger[*], Romana Rauter[˟], Eva Schirgi†
* Graz University of Technology, ˟University of Graz, †FH Campus02
Corresponding Author: wolfgang.vorraber@tugraz.at

Keywords

Business Model Innovation, Service Engineering, Digitalization

Increased availability and fast diffusion of new technologies opens up new opportunities for product and service offerings and inherently changes customer and partner relationships (Kiel, 2016 referring to (Kagermann, 2013)). Technological changes can disrupt entire industries and require changes of used key technologies (e.g. shift from analog to digital photography) for products as well as new ways of value offerings (e.g. shift from product to more service oriented business models – hybrid business models (Ehrenhöfer, Kreuzer, Aschbacher, & Pusterhofer, 2013)). Technological progress is one of the needs requiring "managers to significantly adapt one or more aspects of their business models" (Wirtz, Schilke, & Ullrich, 2010, S. 273) or even design completely new ones. Business models need to be constantly monitored and revised to meet the ultimate goal of business model innovation (BMI), namely the creation of long-term competitive advantage (Wirtz, Schilke, & Ullrich, 2010). Various frameworks have been developed to guide business model innovation (BMI) with focus on start-ups as well as established companies e.g. (Breuer, 2013), (Osterwalder & Pigneur, 2010).

The purpose of this research is to gain insights into how digitalization impacts business models. In this context, BMI is understood as the change of certain elements of a business model or even the introduction of a completely new business model due to increased digitalization. First results of the explorative phase of our study, consisting of expert interviews will be presented. In total seven interviews were conducted with Austrian experts from media as well as manufacturing industry. Aspects such as the relevance of digital technologies for the business model of the experts' company in the past as well as in future were discussed. Furthermore, effects of digitalization on the business model in general and especially on value creation, value proposition and value capture were elaborated.

All in all, this study should improve the understanding of how digitalization influences business model innovation. Particularly it is about (1) a better understanding of specifics of digitalization within particular branches; (2) exploring the ways how companies change their business models with regard to digitalization; and (3) to derive insights and recommendations which can be of help for practitioners in other industries as well.

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Crypto Currency and Hybrid Banking: Exploring community-based business models enabling multi-value transactions fostering sustainability

Niels Faber[1, *], Jan Jonker[1]

[1]Radboud University Nijmegen, The Netherlands *Corresponding author: n.r.faber@gmail.com

Keywords

Hybrid Banking, Blockchain, Sustainable Business Model, Community-Based Business Models

Extended abstract

This conceptual paper explores how contemporary crypto-transaction technology can be used to foster material and social sustainability. Exploring this idea, we touch upon the notion of multiple value creation and business models. We try to assess to what extend the technology of crypto-currency (e.g. blockchain) can be used to shape processes of multiple value creation in business models. From a sustainability perspective, the core of this technology is two-fold. It enables safe and hybrid peer to peer transactions without the interference of third parties and it allows people to use an array of values other than money. We propagate that this technology has the potential to accelerate a transition towards key values such as sustainability, inclusivity and circularity yet it has hardly been touched upon.

The idea of sustainability addresses a long-standing debate concerning the interactions, including the use of, people have with their natural and social surroundings. It questions if these interactions are within the carrying capacities of the earth (Arrow, Bolin, Costanza, Dasgupta, et al., 1995). Since the start (Brundtland, 1987), this debate has provided us with many insights into the extent of the problem and the issues at hand. Social exclusion, natural depletion and growing (micro)pollution are just some of the many issues that urgently need to be addressed. Despite these insights sustained by a constant flow of viable facts, an actionable framework to address these problems within the carrying capacity of the earth and the socio-economic reality of everyday life is still missing. This becomes particularly visible when analysing the nature of the most common business models used to guide transactions in everyday economic life. At best sustainability is an add-on in these models.

Sustainability can be addressed from a variety of perspectives. Here the transactional perspective is chosen since it enables framing the interactions between people relating to

the use of a broad array of natural, social and artificial capitals (Porritt, 2007). It concerns a qualification of the interactions between human actions and the various capitals identified in the sustainability debate i.e., natural, human, social, financial, and constructed capital. These interactions are captured in a transactional framework. I.e., every interaction results in benefits (such as creation or maintenance) and costs (such as degradation, exclusion or depletion). This transactional perspective on human actions linked to a capitals discussion provides the foundations for a different breed of business models.

This perspective is of particular interest here, since value creation takes shape in business models leading to capital conversion, growth and use. On the contrary conventional business models are driven by monetising all transactions. Monetization builds on the economic principle of valuing and of the substitution of capitals. Thus, transactions on natural, social and artificial capitals are all assigned a monetary value. This assumes (1) that all capitals obey to the same rules and principles and (2) the impact of transactions on these capitals is fully captured. Traditional economics perceive all transactions resulting from human actions on capitals from a monetary perspective. That is, each interaction is translated into a transaction that is financially valued. Limitations to this approach are abound. Most importantly, the valuation process taking place prior to and in transactions is inaccurate if not to say incomplete. Externalities i.e., those aspects of production and consumption that cannot or are not valued in terms of integrated prices or societal impact, are not taken into consideration. This leads to a flattered outcome since a considerable amount of expenses is not taken into account and thus not paid for in any way. Furthermore, monetisation heavily leans on the premise that all capitals are comparable and can be similarly valued in financial terms. Hence, valuation of transactions on capitals does not incorporate qualitative differences between the various capitals.

For long this rather one-sided way of monetizing has been contested in the sustainability debate, known as ‘weak sustainability’. Basically, the critique articulated here is the ignorance of the nature of the various capitals at stake (Gutés, 1996). To operationalise the idea of a business model based on strong sustainability necessitates forms of multi-value transactions. The idea of ‘strong sustainability’ feeds into a new generation of business models based on a mixture of capitals expressed in terms of a broad variety of transactional means. This implies that means such as time, energy or even waste can be brought into the transaction simultaneously along-side money. We coin a transactional system that allows the use of a variety of means based on a variety of capitals driven logic and aiming at value preservation and creation ‘Hybrid Banking’ (HB). We distinguish a number of basic principles for hybrid banking. It starts from the perspective of fostering strong sustainability providing an alternative way of shaping and guiding transactions between constituents that are hybrid in their use of means. It does not agree on capital substitutability as a leading principle, that is common practice in traditional economics. On the contrary, Hybrid Banking (1) considers various capitals to be qualitatively

different, (2) identifies that capitals cannot be substituted for other capitals, (3) recognizes that various capitals expressed as transactional means can be used simultaneously in transactions, (4) allows these means to be valued by the constituents involved in various wats and therefore (5) consequently abandons the dominant guiding principle of monetisation replacing is by a collective process of valuing.

A question that arises is what technological infrastructure can support Hybrid Banking. Technology enabling the creation of crypto-currencies seems to provide the proper infrastructure for hybrid-value transactions. Although facing criticism (Bradbury, 2015), crypto-currencies have a long-standing tradition in closed yet large communities (Kim, 2015). Transactions registered in current systems form an open, public and distributed ledger anyone can access and assess (Dilley, Poelstra, Wilkins, Piekarska, et al., 2016). Other purposes are identified such as smart contracts and logistics leading to network-based ways of organising (Swan, 2015). As such it forms the perfect breeding grounds for business models that are designed to create multiple values. Often these models are instigated by groups of people, leading to so-called community-based business models. A starting point for a business model is invariably a group of people who give rise to an idea and to the development of that idea. These people organise a complex value that develops with a collective nature. Helping to create, invest, and realise implies sharing risks and benefits. Parties connect to each other on a basis of common interests, solutions, and stakes. Values at stake do not form a by-product, and they are not a consequence of good intentions, however. They are organised deliberately. This results in a community in which people benefit from what they organise together. Call this collective and shared value creation based on the use of various capitals.

Using divers capitals driven by crypto-currency technology enables hybrid banking within those communities. This underlying technology or architecture enabling crypto currency is Blockchain. Blockchain technology encompasses a distributed administration of transactions. Information no longer resides at specific points in a network of people, but is shared among and accessible by all involved. Its distributed nature gives rise to new, non-hierarchical configurations of organizations. Swan (2015) identifies three generations of Blockchain, starting with cryptocurrency (e.g., Bitcoin) applications. The next step is formed by Smart Contracts (e.g., deeds of ownership, testaments, or birth certificates residing on the Blockchain). The third generation concerns smart organizations such as Distributed Autonomous Organizations (DAO).

The implications of creating transactions based on this technology empowers a community to use innumerable transaction means, thus embedding a broad array of capitals in business models. This builds on the premise of strong sustainability. Yet replacing the current monetary system with a system of hybrid banking will be a transitional process full of institutional confrontations and technological challenges. A broad array of wicked

questions arises. What are the most proper transactional means? How are they linked either to the creation or degradation of various capitals? How to ensure the connection between the real-world capitals and the digital administration thereof? What is their impact on sustainability? How do transactions based on various capitals unfold? Ultimately this raises the issue of the preconditions that need to be met to realise a crypto currency or more general a Blockchain for hybrid banking?

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Bringing Big Data to Adolescence: Specifying Business Models by Practice

Hermann Stern[1], Sebastian Dennerlein[1], Viktoria Pammer-Schindler[2], Robert Ginthör[1], Gert Breitfuß[1]

[1] Know-Center GmbH, Research Center for Data-Driven Business & Big Data Analytics, Inffeldgasse 13/6, A-8010 Graz
{hstern, sdennerlein, rginthoer, gbreitfuss}@know-center.at
[2] Graz University of Technology, Institute of Interactive Systems and Data Science, Inffeldgasse 13/5, A-8010 Graz
viktoria.pammer-schindler@tugraz.at

Keywords

Big Data, Data-Driven Business Models, Big Data Business Model Construction

Introduction

Data represent the gold of tomorrow, but this does not happen automatically. Clever business models are required for the turnover. Especially, on the search for new and disruptive business or revenue models, respectively, data represent a crucial but yet still undervalued and underexploited key resource for sustainable innovation, optimisation and monetarisation.

Established companies hope to turn their data (often in the form of experience) into gold: Manufacturing companies for instance can optimize their processes based on production data. Start-ups benefit from data from the outside and create value for instance by clever analytics, engaging data representation, and disruptive understanding of the domain.

The current trend of automation and data-exchange in manufacturing technologies really lifted off with the term "Industrie 4.0", coined in a project in the high-tech strategy of the German government (BMBF 2016). However, this direction of thought has naturally motivated other business sectors as well to focus on the resources “data” and “experience” and benefit from them. The needs and desires are the same in each domain: to infer valuable insights from existing or newly acquired data and to turn these insights into actionable knowledge that can be used to solve problems, improve the status quo or even lead to circular business model innovations introduced by Antikainen (2016). Often, companies do not have enough know-how for a good strategy or to create real value, and

how to deal with potential pitfalls and law regulations in the area of Big Data, and digitalisation adds another dimension of complexity to consider.

Methodology

To specify the current understanding of business models in the realm of Big Data, we used a qualitative approach analysing 25 Big Data projects spread over the domains of Retail, Energy, Production, and Life Sciences, and various company types (SME, group, start-up, etc.). All projects have been conducted in the last two years at Austria's competence center for Data-driven Business and Big Data Analytics, the Know-Center.

We analysed these projects by iteratively structuring as well as summarizing them alongside several dimensions (type, data, analytics, use case, revenue model etc.) to finally assign them in the categorisation matrix described by BITKOM (2013) – see Figure 1 - which is based on the Product-Market Ansoff (1965) Matrix, and classifies data-driven business models into the four areas Monetarisation (existing data, new business), Breakthrough (new data, new business), Optimisation (existing data, existing business) and Revaluation (new data, existing business). We hence followed Mayring's (2000) method of a deductive qualitative content analysis.

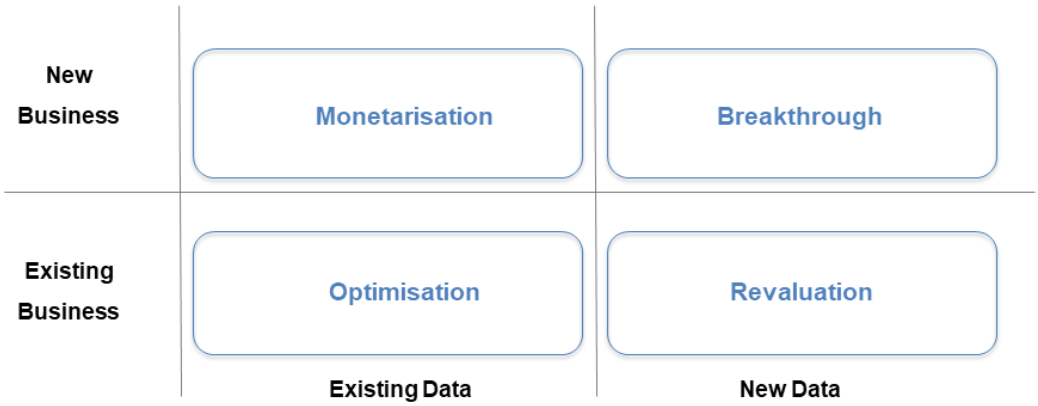

Figure 1: Business Models in the Data Economy described by BITKOM (2013).

Results and Discussion

This analysis gives valuable insights regarding hot topics and aims of current Big Data projects in Austria (such as Personalised Health, Marketing and PR or Mobility), promising business models (such as SaaS Platforms or Data Market Places) as well as best practice examples allowing interested companies and stakeholders to get a starting point for developing data-driven business models and possible next steps depending on their current aims and strategy.

With respect to business models, more than half of the projects examined started with "Optimisation" (mostly targeted towards internal processes) in mind. All the projects directly aimed at "Monetarisation" (creating new business models with already existing data) also had to take a first "Optimisation" step. Most start-ups within this survey have been active in the Life Science area, which corresponds with our experience that biomedical data currently is a highly promising business domain with potential for a lot of niche solutions.

Conclusion and Implications

An enriched understanding of business models in the realm of Big Data contributes in describing of how an organization can create, deliver, and capture sustainable value on those newly emerging data volumes with the help of the right analytical tools, in economic, social, cultural or other contexts. The process of Big Data business model construction, amongst others for instance the collection, cleaning, analysis, visualisation, interpretation and exploitation of data, is an essential part of business strategy.

For sure, the specification presented here is only one step of a longer journey to explore the potentials of digitalisation for business revenue streams. It will nevertheless help local business by providing them with a cheat sheet to understand their potentials and mining their gold out of Big Data.

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Sharing platforms in the hotel industry: How sustainable are they?

Jorna Leenheer*
Marco Kuijten**
Avans University of Applied Sciences, New Marketing Research Group, P.O. Box 90.116, 4800 RA Breda, The Netherlands
*Lector (Professor) of New Marketing: j.leenheer1@avans.nl ; 31-6-83649476. ** Lecturer and researcher

Abstract

Sharing platforms are considered a sustainable business model because by sharing, less durable goods are needed leading to less production of durable goods (Belk, 2010; Botsman and Rogers, 2010). The average car in North American and Western Europe is in use 8% of the time (Sacks, 2011) and the average electric drill is used 6 to 13 minutes over its lifetime (Belk, 2014). This illustrates that there is ample space for sharing durable goods. Whereas sharing is from all ages, digital platforms enable consumers to do it more efficiently and reach a wider network of other sharing consumers (Hamari et. al., 2015). One of the most prominent success stories of the sharing economy can be found in the travel industry. Internet platforms such as Airbnb, Flipkey, and Couchsurfing enable consumers to temporarily rent their property to other consumers. The largest platform, Airbnb, currently offers 3 million accommodations worldwide, of which 25.000 in the Netherlands (Airbnb.com).

The business model of sharing platforms for accommodation is controversial for several reasons. First, hotels argue that it creates an unequal level playing field, because consumer rentals are exempted from most regulation and tax duties. Related to this, it is questionable whether all transactions through sharing platforms are truly consumer-to-consumer rentals or rather "(semi-)professional parties"-to-consumer rentals. Moreover, the critical issue is whether sharing platforms can be considered either as a complement or a substitute for hotel accommodations. If sharing platforms are complements they might be less sustainable than sometimes argued. That is, the availability of more priceworthy accommodations may induce more travelling, in this way even harming sustainability. However if sharing platforms are a substitute for hotels, and therefore the two are competing with each other, it urges hotels to revise their current business models in order to stay competitive.

The rise of the sharing economy seems to cause only a modest concern within the hotel industry. Hotels might not know what to expect of this new type of market player and they lack insights into the developments. This is also due to the fact that the question why

consumers choose for sharing alternatives is understudied and further changes in consumer behavior in the near future are uncertain. Mainly aggregate analyses (Zervas, Proserpio, & Byers, 2014) and anecdotic evidence is available, with the Finish article of Hamari, Sjöklint, & Ukkonen (2015) being one of the few studies taking a consumer perspective.

This paper aims to bridge this knowledge gap for the hotel industry with a large representative survey among 2,591 Dutch consumers. Our research enables us to provide insights into the number of users (tenants and landlords) and their socio-demographic profile. We address the following questions: 1) To what extent are travelers aware of the existence of sharing platforms and what is their attitude towards them? 2) What are the main drivers of consumers for renting accommodation through sharing platforms? 3) What can be expected in the near future and how does this affect hotels? Through the use of a questionnaire with multi-item construct measurements for perceived sustainability, perceived enjoyment, perceived extrinsic benefits of sharing platforms and overall attitude towards sharing platforms have been investigated. To gain insights in the current and future behavior of consumers in regard to sharing platforms multivariate regression models were estimated.

We find that 52% of the Dutch population is familiar with sharing platforms for accommodation with Airbnb as best known platform. Mostly higher educated and younger consumers (<35 years) make use of these sharing platforms, but our results show that other age groups (35-44 and 45-55) are inclined to start using sharing platforms in the near future. Both financial attractiveness and perceived enjoyment contribute to consumers' positive attitudes towards sharing platforms, but only enjoyment actually drives consumer intentions for using sharing accommodations. Remarkably, consumers who perceive the sustainable benefits of sharing highly are less likely to use sharing platforms for accommodation. Though our calculations reveal that the expected number of consumers using sharing platforms for accommodation will significantly grow, the traveler segment that completely ignores hotels and only uses sharing alternatives remains marginal. As such, our results suggest that that sharing platforms will gain a more prominent place in the market next to hotels, thereby offering both a substitute and a complement in the market for overnight stays.

On base of the results we draw conclusions on the business model of sharing platforms for accommodation. We discuss to what extent sharing platforms such as Airbnb can be considered sustainable since sustainability seems to have a rather negative instead of positive influence on the intended use of sharing platforms. Secondly sharing can stimulate additional travelling and thereby put a greater strain on the environment. Furthermore due to the very low percentage of consumers renting out their properties one can ask if there really is a sharing economy or that it is mainly semi-professional organizations that offer accommodation through sharing platforms rather than consumers renting out their temporarily unused living spaces. We also discuss the implications for the hotel industry and

for other sharing platforms. In fact, hotels must adjust their business model in order to stay competitive with this new market player.

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ABSTRACTS SESSION 6

Building and animating a regional business model shifting display? The Hauts-De-France case first.

Demissy Romain,
Associated Adviser - Researcher (ATEMIS) r.demissy@atemis-lir.com
Ledez Simon,
Chief administrative officer (Club Noé) simon.ledez@clubnoe.com

Abstract

The French Hauts-de-France Region experiments with a new way to deal with economic and business models shifting. This experience is based on a regional policy innovation in the way the institution accompany enterprises in their path toward a new economic model inspired by the functional and cooperative economy model (Gaglio, Lauriol & du Tertre 2011; Benqué, du Tertre, Vuidel 2014). The innovation itself consists in building and animating a Functional and Innovative Environment (FIE) that embody in several local displays (Demissy & Kniaz 2016). Those displays support: community animation, broadcasting of enterprises new model, entrepreneurs and local institutions employees training, enterprises' director accompaniment and developing new accompaniment tools and displays.

This experiment lasts for 5 years now. The FIE core actor, the Club Noé, decided to lead the first evaluation of the FIE performance for the enterprises part of the community and engaged in a path toward Functional and Cooperative Economy. This contribution presents the most significant results of this evaluation, linking them to the FIE displays. The rather positive results do not mean that there are no questions left. In fact, those results revealed to the local actors and their partners some new questions which needed to be investigated.

Shifting from and industrially inspired business model toward a servicial one such as Functional and Cooperative Economy, means some changes about labour conception and the way it is organised and evaluated (Blandin 2013, du Tertre 2007; du Tertre 2009). To accompany such changes means other displays than the one in motion nowadays. Take a servicial way of thinking on also change the way solutions are designed. Concepting solution in a Functional and Innovative Environment means cooperation between the community members but it also raises the complexity level of such a conception. At last, a more servicial activity claims for different evaluation displays able to consider immaterial effects with environmental ones. This is necessary to evaluated all the aspect of sustainability about the new solutions developed.

The Functional and Innovative Environment displays have already started to evolve, and investigations are in progress for some of the questions mentioned. The paper concludes on how relevant are the Functional and Innovative Environment implementations and what should be done to improve it any further. At last, we will propose an analysis of what is lacking nowadays to the Functional and Innovative Environment to impulse a more massive economic and business model shifting movement at a regional scale.

In terms of method, the paper is organised in four parts. First a synthesis of the two evaluations produced by the Club Noe. The first evaluation is a qualitative one, taking the form of some interviews lead with accompanied enterprises' directors. The second is a quantitative evaluation about the effect of the Functional and Cooperative Economy accompaniment display. Both evaluations are quite recent (2016). Then, we will analyse the links that can be identified between some of the results and the Functional and Innovative Environment displays. From the results and some business cases we will then list some of the questions the community – actors involved in the Club Noe - is facing now. We will expose the initiatives taken from now to investigates those questions. At last, we will analyse the project and the plausible evolution for the Functional and Innovative Environment displays.

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The role of regional business models in the transition towards mercury-free gold mining

Fritz, M.M.C.
Institute of Systems Sciences, Innovation and Sustainability Research,
University of Graz, Austria,
morgane.fritz@uni-graz.at

Keywords

Supply Chain, Business Models, Stakeholders, Engagement, Dialog

Abstract

Mercury is used in various sectors like the medical sector, but causes particularly concerns in Artisanal and Small-scale Gold Mining (ASGM) for health and environmental reasons. Although it must be underlined that not all ASGM miners use mercury, ASGM is to date the largest anthropogenic source of mercury emissions worldwide. Among the mercury users, ASGM miners are the most vulnerable groups due to several socioeconomic, technical, and political reasons. ASGM attracts about 15 million people in about 70 countries in Asia, Latin America and Africa who produce on average 400 metric tons of gold per year, representing 15% of the global primary mine production. In these regions, agriculture is often the only other option. Studies and programmes on ASGM are mainly focussed on technical solutions to reduce and eliminate mercury. Studies and programmes that consider all site characteristics comprehensively (i.e., available techniques, geology, socioeconomics, politics, regulations, etc.) are missing to provide adapted solutions. Such kind of information is however typically what business models look at to develop sustainable markets. This is the reason why research in business models is needed in this sector to support a fair and sustainable transition of miners towards mercury-free techniques. Indeed, while international regulations and pressures from various stakeholders are increasing to (progressively) eliminate mercury-use in ASGM like the Minamata Convention on Mercury, several researchers keep on claiming the need to consider the site-specific characteristics of the activity. In line with this perspective, this conceptual paper builds on concepts from the business model field of research to advocate the need for bottom-up approaches and highlight the essential contributions the business model field can make to the sector. A focus is set on ASGM miners, their communities and the role of donors and governments who are among the most relevant stakeholder to provide financial support and regulatory frameworks in the sector. The research question addressed is “How can business model concepts support the mercury-free transition of ASGM miners and their community?” It is

shown that depending on the degree of economic stability of ASGM sites, different focuses in business models are recommended that are not necessarily mercury-related. In particular, poverty alleviation and trainings are sine qua non conditions for the success of the mercury-free transition, as well as the redesign of donors' business models and their value proposition. It is concluded that business models are particularly useful to answer the site-specific needs of ASGM miners and their communities and engage stakeholders in a dialog to find sustainable solutions for ASGM sites where mercury is used. This conceptual paper has implications for both researchers and practitioners. For researcher, it lays the ground for an important and very relevant research gap to be further investigated. For practitioners like donors and policy-makers, the recommendations made, if positively tested on the ground, imply considerable changes in current practices, objectives, stakeholder engagement activities, and priority setting.

Learning by doing:
Designing case study research for the exploration of strategy formation in hubs

Moniek Kamm, Jan Jonker, Niels R. Faber
Drs. Moniek Kamm, Saxion UAS, Radboud University, m.a.a.kamm@saxion.nl
Prof. Dr. Jan Jonker, Radboud University, j.jonker@fm.ru.nl
Dr. Niels R. Faber, Radboud University, n.r.faber@gmail.com

Keywords

Territorial Hubs, Strategy Formation, Case Studies, Grounded Theory, Set Theoretic Approach

Abstract

This contribution sets out to develop a valid research design which accommodates the development of a theory in practice (Corbin & Strauss, 2008) about the process of strategy development in evolving territorial forms of organising called hubs. Hubs are thick, polymorph and polycentric networks driven by practitioners, shaped around multiple, wicked and interlinked problems, shared interests, and shared principles (Kamm, Faber, & Jonker, 2016). Throughout Europe we observe an increasing involvement of a broad range of constituents including civilians in these emerging networking forms of organizing, enabling multiple value creation in a cooperative manner while aiming for sustainable transitions on a regional scale.

Constituents invest in hubs through various means such as time, energy, money, and other resources that contribute to addressing collaborative solutions for multi-faceted, 'wicked' problems (Faber & Jonker, 2015; Weber & Khademian, 2008). They commonly benefit from the results generated by processes of multiple, collective, and shared value creation (Faber & Jonker, 2015). Our objective is to develop a valid methodological framework which accommodates the building of a general explanation (Yin, 2009) about the process of strategy development in hubs. It is argued that multiple longitudinal, retrospective case studies are obligatory in order to understand how the process of crafting a strategy emerges in individual hubs. We will test and adjust our methodological framework by conducting three case studies in the spring of 2017. Preliminary findings on both the methodological framework and the results of the case studies will be presented.

Constituents in hubs engage intentionally and implicitly in a process of shaping a strategy in order to realize diverse goals via diverse means. How this process of strategy formation takes place in hubs and under which conditions remains an open question. Hubs are a new and recent (<10 years) phenomenon that has not been researched previously. Our challenge is to accommodate a valid case study research, which enables the exploration of three interrelated and simultaneous developments that can be observed in emerging hubs: i). organisational development, ii). strategy development, and iii). development of multiple value creating goals and activities. Gaining substantial (Fiss, 2011) context-related (Flyvbjerg, 2006) knowledge about the evolvement of these three developments across various hubs is an important step in our research. To investigate this, a case study approach that accommodates the exploration of the strategizing process in European hubs is being developed. The methodological design of the case studies is grounded in an epistemological framework that deliberately combines two different approaches by starting with an interpretive approach (Avenier & Thomas, 2015) of the case studies and a configurative approach (Schneider & Wagemann, 2012) of the analysis of the cases, aiming to unravel causal relations between organisational, strategic and value creating processes in hubs, and providing foundations for a grounded theory development (Corbin & Strauss, 2008) based on the case studies. This design is chosen to enable the combination of within-case knowledge about hubs as social constructs (Avenier & Thomas, 2015) with cross-case comparison by transforming cases into configurations of conditions for the occurrence (Berg-Schlosser, De Meur, Rihoux, & Ragin, 2009) of strategizing and value creating processes.

Hubs can be recognized by seven general properties (Faber & Jonker, 2015, Kamm et al., 2016). These are: (i). Operating in a local or regional setting; (ii). addressing wicked problems; (iii). leading to a broad configuration of constituents; (iv). engaging in multiple value creating activities which facilitate the cooperative crossover between the social and the economic domain; (v). open, dynamic, often unconventional, organizational structure in which constituents participate on the basis of equality; (vi). issue related approach; (vii). leading to a transition over time. Based on these properties an information oriented selection (Flyvbjerg, 2006) of cases (N = 6) will be established in order to enable longitudinal case studies of hubs that furthermore (i). have an addressable organizational level, (ii). have information available about their choice directing, decision making, and strategy developing activities, and (iii). are involved in multiple value creating projects. Acknowledging the possible significance of different circumstances under which hubs form, the research focuses on diverse (Seawright & Gerring, 2008) cases which encompass maximum variation (Flyvbjerg, 2006). We aim to do so by selecting hubs that are (i) initiated by different actors (e.g. entrepreneurs, governmental bodies, and civil society initiatives), (ii) have different organisational structures (e.g. coop, foundation, association), and (iii) are located in different European countries.

A methodological framework is being developed for the collection and analysis of data from the selected cases, starting with a historical process reconstruction (Mintzberg, 1978; Mintzberg, Ahlstrand, & Lampel, 1998). It will be based on multiple sources including but not limited to notes, policy documents, newsletters and social media. Based on content analysis a historical reconstruction of the development of each hub will be constructed and key participants will be selected for group meetings per hub. During these group meetings key participants of the hub will be invited to discuss the historical reconstruction and to signal and explicate critical (i.e. important organizational, strategic and value creating) events in the development of the hub. Interviews (semi structured and open) will subsequently be conducted with selected respondents who have been identified as being involved with goal setting and decision-making processes related to the identified critical events. In order to enable the determination of causal relations between organizational, strategic and value creating processes related to critical events in hubs a set theoretic approach (Schneider & Wagemann, 2012) will be applied for data analysis based on the information gathered during group sessions and interviews. During the spring and early summer of 2017 we will conduct three consecutive case studies in the Netherlands to test and adjust our methodological framework.

Information from the Dutch cases and further case studies in other European countries will eventually lead to a framework for theory building on the strategizing process in hubs based on comparative case studies and set theoretic data interpretation. This framework will ultimately be used for the development of a model of the strategizing process(es) in hubs which will be elaborated, tested, and analysed through process simulation.

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Industrial Symbiosis:
How to assess and link the multiplicity of business models initiated by a synergy?

Stéphane Ogé[1, 2, 3, *], Alexandre Bredimas[1]

[1] Strane Innovation, 2 route de la noue, 91190 Gif sur Yvette, France

[2] University of Lyon 3, CRGA-EVS UMR 5600, 18 rue Chevreul, 69362 Lyon, France

[3] ITECH (Institut textile et chimique de Lyon), 87 Chemin des Mouilles, 69134 Ecully, France

*Corresponding author: stephane.oge@strane-innovation.com

Keywords

Industrial Symbiosis; Business Model; Value; Collaborative Schemes; Networking Economy

Abstract

Industrial symbiosis (IS) engages traditionally separate industries in a collective approach to competitive advantage (Chertow, 2000) by exchanging underused resources from an entity to another one, which use them as a substitute for new resources (Deutz, 2014). IS extends the traditional business relations, exploiting resources with low intrinsic value and no marketplace. It creates a more sophisticated value conglomerate (Jacobsen, 2006), combining value forms initiated by operational, environmental, economic (Chertow and Lombardi, 2005), social and territorial benefits (Maillefert and Robert, 2015). These values must be identified, qualitatively and quantitatively assessed, and captured in specific business models (BM) dedicated to each stakeholder.

In the perspective of developing generic business cases to widely implement the IS concept, this contribution will detail several specific profiles of IS stakeholders, show how they can capture values, how they can internalise the externalities, and how the individual BMs can connect in collaborative schemes.

The types of IS relationships are diverse and complex. They involve a network of at least three actors (Boons et al., 2016), broadening the traditional bilateral B2B contract. Beyond the two central stakeholders exchanging an underused resource, external beneficiaries are always involved, such as neighbouring companies, free-rider local communities and more conceptual entities such as culture, nature and/or society. Additional third parties are often included, such as facilitators, utilities, financers, or other satellite industrial facilities.

Industrial companies usually consider their BM in a traditional way, balancing the expected revenues and the related costs and constraints, while they could boost their BM by

internalising non-monetised values, called “soft” values. Such values can be directly internalised if they impact the own stakeholder’s activity or through more complex mechanisms if they impact external third parties. They may be grasped by private entities on the territory or by the local/regional/national public authorities, depending on the geographic scale of the synergy’s impact and its nature. These values may then be returned to the central partners through innovative BMs or support mechanisms.

The relevance of economic and “soft” values depends on each stakeholder typology. At the micro-level (central stakeholders), BMs consider mainly economic and market-based values even though empirical examples show that “soft” values can also be sufficient to further trigger engagement. At the meso-level (neighbouring stakeholders), BMs would foster economic values for private stakeholders (e.g. utility company) and benefits of general interest (social, environmental, economic development) for public and local authorities. At the macro-level, distant stakeholders are mainly impacted by externalities of general interest (e.g. reduction of GHG has an impact at global level). This multi-scale description will be illustrated through an IS instance of district heating network in Dunkirk (France).

As in any business initiative, IS business cases must be viable for every single stakeholder in order to enhance the interest level of decision-makers. It is especially true for the central synergy partners who invest money and expect direct profits (micro/meso-level). However, profitability – in its traditional economic definition – is often a bottleneck in IS initiatives for such stakeholders. This contribution intends to deepen the understanding of the networking economy created through IS, investigating how far the various synergetic values can be transferred at different levels, and therefore unlock the global economic viability of synergies.

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A network approach to value creation:
Exploring how Adnams Plc have used their influence to craft regional business models

Dr Geraldine Brennan[1,2,*] and Dr Mike Tennant[2]
[1]Middlesex University Business School, [2]Imperial College London (
*Corresponding author: g.brennan@mdx.ac.uk

Keywords

Sustainable Value Creation, Regional Business Models, Power Relations, Value Creation Strategies

Introduction

Developing business models for sustainability is a means to conceptualise transforming our production and consumption systems away from low impact, incremental change (Bocken et al. 2013; Boons & Lüdeke-Freund, 2013). However, despite extensive technical knowledge regarding strategies to reduce negative impacts, we're not implementing new business models at sufficient speed to address sustainability challenges, suggesting social science research on sustainability is a limiting factor (Agyeman, 2011). Moreover, to accelerate the transition to an equitable sustainable society, attention needs to be given to how power is conceptualised at organizational and societal levels (Avelino & Rotmans, 2011; Agyeman, 2011).

In this abstract we argue that to catalyze innovation and embed sustainability, organizations need to better understand how to use their influence to craft network-based business models which create multiple forms of value for themselves and the wider network. We explore this thesis through a comparative qualitative case study of one in-depth multi-party case of how Adnams' plc. regional business models contribute to sustainable value creation in the region of East Anglia, UK. We use a conceptual framework, based on Archer (1995), to analyse Adnams' influence in these business models. Our findings suggest that sustainability pioneers like Adnams, have direct and indirect value creation strategies and some of these business models are characterised by the principle of "paying it forward" and cultural lock-in.

Methodology

We present a qualitative in-depth multi-party case study of how Adnams plc.'s, a UK values-led regional brewery, shapes eight local SMEs and regional development organizations

business models in its' business ecosystem. Traditionally, in business ecosystem research, collective value creation for a community of organizations is characterised by a single platform business model (Moore, 1993; Moore, 1996; Nachira et al. 2007). In contrast, we define business ecosystems as networks of organizations whose relationships are characterised by individual, or multiple, business models.

Building on Margaret Archer's concepts of first and second order power (Archer, 1995) we analyse and interpret Adnams' influence in these business model relationships. Archer's resource-dependency framing distinguishes between: structural resources, (physical goods or man-made artefacts); and cultural resources, (concepts and ideas). This contrasts with resource-dependency theories which do not interrogate how different resource types impact influence and subsequently sustainable value creation, over emphasising structural resources.

Findings

Our findings illustrate that firstly; power differentials have differing impacts on sustainable value creation based on the resource configurations and degree of dependency. This suggests counterintuitively that business models, underpinned by relationships with similar power differential profiles, require distinct strategies to drive innovation which optimises value creation.

Secondly, Adnams' use their influence to create regional value in two ways – direct interactions with local SME's via initiatives like their sustainability supply-chain initiative (SSI) and indirectly through influencing the region's development e.g. as a Green Economy Pathfinder.

Adnams' support of SMEs to develop and grow their brands is a direct value creation strategy. This is neither completely altruistic, nor completely efficient as it is not necessarily driven by an immediate financial return or benefit. Adnams recognise that investing in local SMEs creates future value which cannot be wholly anticipated - a paying it forward approach. The benefits are evidenced by Adnams' ability to "punch above their weight" in the region based on higher influence than their economic size (structural resource) would suggest.

Adnams' use of their influence as a sustainability pioneer to shape regional investment creating opportunities for local SMEs is an in-direct value creation strategy. Adnams' leadership in regional initiatives contributes to mainstreaming of sustainability values (cultural resources), creating a favourable investment environment (structural resource) for local SMEs, who incorporate sustainability values in their core business models, Adnams included, contributing to competitive advantage.

Thirdly, some of Adnams' regional business models were characterised by cultural lock-in. Adnams' sustainability values (cultural resources) reinforces remaining in business models based on shared sustainability values. Thus Adnams' behaviour was constrained by the need to be aligned with their stated values inorder to maintain their reputation.

Conclusion

This research illustrates the importance of understanding power relations in regional business models. Our findings have theoretical implications for the business model and strategic management literature. We conclude by outlining practical recommendations for how organizations can develop regional business models which create multiple forms of value, in the context of power relations.

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ABSTRACTS SESSION 7

Transition of business models towards business models for sustainability: Insights from four Austrian companies about opportunities, drivers and barriers

Petra Stabauer
Salzburg Research Forschungsgesellschaft m.b.H., petra.stabauer@salzburgresearch.at

Key words

Business Model, Business Models for Sustainability (BMfS), Business Model Innovation (BMI), Transition, Barriers, Drivers

Abstract

Based on negative trends like climate change, dwindling resources, the pollution of air and soil as well as social grievances, more and more attention is paid to sustainability and sustainable development. Nowadays, there is already a common accordance amongst society, politicians and academics that companies have the power to contribute to sustainable development by changing their business model towards a more sustainable one. Within the scientific literature the business model concept has received lots of attention in recent years and also sustainable business models get more relevant, even though there is a lack in definition about this concept. But it is evident that only a holistic integration of sustainability into the company's business model is meaningful.

Therefore, this contribution aims to answer the questions about how business models are changing due to the rising importance of sustainability and what are influencing factors within the transition process, as well as which internal and external barriers might hinder companies in the transition towards a business model for sustainability (BMfS) and what are internal and external drivers that promote changing the business model. Furthermore, the role of relevant stakeholders, like customers or employees, during the process of change is investigated.

This contribution is based on a master thesis and highlights the most relevant findings. For answering the questions, theoretical as well as empirical research is conducted. Theoretical research is based on an in-depth analysis of existing scientific literature dealing with the concept of business models and business strategy, the change of business models including business model innovation and business model transition and finally of linking sustainability to the concept of business models in order to deal with BMfS. The empirical

part consists of qualitative, interview-based case studies about Austrian companies that successfully have changed their business model into a business model for sustainability. The business cases were selected by making an extended internet research about companies that act sustainable, in order to further investigate whether they have really integrated sustainability within their business model and if their business model changed significantly from a conventional one towards a business model for sustainability. Whereby about 13 companies were identified. Four of these companies were finally chosen as case studies and semi-structured interviews based on an interview-guideline were conducted. The interviews were transcribed and a content analysis with support of the tool MAXQDA was done.

The results show that BMfS are likely to be the future of our economy, even though the transition process from a conventional business model towards a business model for sustainability is a slow and sometimes difficult process, but according to all interviewees it is worth it and none of the selected companies regrets the change. Several requirements need to be fulfilled in order to make the change possible. The barriers, which are mainly based on lacking resources, financial, human and time resources, are possible to overcome. The identified drivers for changing the business model, like a more efficient value chain, multiple value creation, or the development of new products, customer or markets, have outweighed the barriers for the interviewees. But it should be noted, that the companies chosen for the empirical research are still exceptions and the majority of companies do not (yet) integrate sustainability in their business model and into their core business. It can be concluded that business models for sustainability are a promising concept for the future, but further research is required in order to strengthen the concept in the scientific community, but as well to provide a solid basis of information to the companies. The results of the underlying research show that when fulfilling several requirements, the transition towards a business model for sustainability is possible for different types of companies, either service or production or both, from different sectors and with different structures.

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The impact of digitalization on business models:
An analysis from a sustainability point of view

Gerald Bruckner
University of Graz, Institute of Systems Sciences, Innovation and Sustainability Research
gerald.bruckner@edu.uni-graz.at

Keywords

Digitalization, Business Model Innovation, Sustainability, Smart Grid

Abstract

Digitalization nowadays is a commonly known term and its progress does not only influence our daily private lives, but also the way business is done (Keuper et al., 2013). Digitalization is not just the transfer of digital data, it is more or less the change of our personal environment to an 'always on' community (Keuper et al., 2013). By the means of this interconnection, several business opportunities and business areas emerged. These disruptive business models, where given products or services get totally new aspects, due to technical or digital progress, are challenging existing businesses (Scheer, 2016). Therefore, sustainability management is important as a core task, in managing rapid change. If there is danger of a lack of human adaptation, it is important to create resilient relationships between human systems and a digital environment (Scholz, 2016).

In this context, the chosen field of research is the energy sector, which is facing severe changes due to digitalization. The usual business model of energy providers, namely the production, sale and delivery of power is endangered. Shifted customer needs, higher energy efficiency and decentralized power production are only a few aspects which challenge the energy providers. (Ionescu, 2012) On the other hand, solutions to environmental problems require long-term strategies for environmentally beneficial improvement. The energy sector is often mentioned, when it comes to solutions for a sustainable development (Dincer, 2000). Especially in smart grids, the digitalization brings enormous potential for innovation and sustainable benefits (Rodríguez-Molina et al., 2014). Also block-chain technology has the potential to shape certain parts of the energy market substantially. (Hasse et al., 2016)

Some lead questions that should be answered in the following research are:

- Which new possibilities arise through the influence of digitalization in the energy sector?
- Which new business models are emerging in the energy sector through digitalization processes?
    - Does digitalization change the creation of value in the existing business model of actors in the energy sector?
    - Do these assumptions also change the delivery and capture of values in the business models of the actors in the energy sector?
- Is sustainability, in context with digitalization, a driver for the change of business models for utilities?

After a systematic literature review, the empirical part of the thesis is to accomplish qualitative research. Interviews with experts from the energy sector, mainly from utilities and energy providers, are conducted in order to get insight into current practice and ideas. The interviews are done with a semi-structured interview guideline and are than analyzed in the form of a qualitative content analysis. The analysis after Mayring should guarantee a comprehensible examination of the achieved data and should ideally support the answering of the research questions. (Bortz, Döring, 2003) The goal is to accomplish a case study, of a not yet defined number of cases from the energy sector. A multiple case-study design with embedded units of analysis should help to answer the stated questions of the study. It also should check if the propositions are valid and if the data can be linked to a clear interpretation of the results. (Yin, 2013)

The expected results should clarify, to what extent the ongoing digitalization, has an impact on existing business models, for the energy sector. Therefore, a strong focus is on smart grids, which are a prime example for the influence of digitalization. As smart grids are inseparable in context to decentralized power production, literature as suggested that Austrian utilities could be more active in fostering business models in this regard (Gsodam et al., 2015). The view on best practice examples of smart grids, should provide an overview about the potential for new business models and should deliver conclusions to the researched cases. As the installation of smart ammeters, which are a premise for smart grids, is regulated by law, a look at this situation, should also show if the energy sector is merely complying with law or is using the opportunities for innovations. Also, the question, whether sustainability plays a role for the actors in the energy sector, in shaping their business models, should be clarified throughout the research. Literature suggests In this context, that digitalization offers huge potentials, for a sustainable way of power production. (Hledik, 2009)

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Circular supply process of reused steel:
A new business model for the construction and demolition industry

Lieke de Groot
Bachelor Student – Lectoraat Sustainable Strategy & Innovation
Avans University of Applied Sciences
Hogeschoollaan 1, 4818 CR Breda, The Netherlands
+31 6 48 43 20 41
lgroot5@avans.nl

Keywords

New Business Model, Circular Economy, Steel Reuse, Supply, Construction and Demolition Industry

Abstract

Nowadays we still have the economic system, which arose from the industrial revolution. In this economy, referred to as the 'linear economy', raw materials are used to make products and at the end of their lifecycle they will end up as waste (Ellen MacArthur Foundation, 2013). Our current system focuses mainly on one value, maximizing the profit. This results in a negative impact on the natural and social environment. The demand for multiple value creation is getting stronger. Therefore, the transition from linear to circular economy is essential (Jonker, 2015; TNO, 2013).

A major change is also needed in the conservative construction and demolition industry. The CO2 emission of a steel beam is 480kg CO2 per tonne. The amount of emission released during the process is a sum of the production of raw materials, transportation to site, installation costs, demolition and waste disposal (Bouwen met Staal, 2017). This is equivalent to two times back and forth from Amsterdam to Graz by car. In the current situation a building will be demolished and eventually all pieces of steel from the building will be sold back to the steel manufacturers as scrap. These manufacturers are melting the steel scrap into new steel. This process still causes a lot of emission, which is a major disadvantage. Reusing steel beam constructions is the perfect solution to solve this problem. Waste of buildings will be reused as raw material for new buildings. In this situation steel comes on step higher on the Lansink's ladder (Jurriëns, 2015).

Previous research shows many difficulties and barriers to reuse steel in building constructions (CIB General Secretariaat Rotterdam, 2014;Densley Tingley, Cooper & Cullen,

2015; Hradil, 2014). There is a lot of information in the steel construction industry but sharing between the partners is quite limited, not to mention the cooperation in the chain. Besides the cost and market demand, it appears that supply chain dynamics and availability are the biggest barriers to reuse steel. If there is no supply of reused steel in the industry, it is more difficult to create demand or even to make use of it.

In order to achieve a circular model with reused steel in the construction and demolition industry, it is mentioned that the supply of reused steel is the most important part to change. This problem results in the following problem statement of this research: "How should in the demolition industry the current material flow of used construction steel from non-residential buildings change in order to be offered as donor steel and fit into a new business model?"

This research takes part of a larger project called 'Hoger op de Ladder" (HopLa).[1] The HopLa project consists of two parts, the first part focuses on design for disassembly and the second part focuses on reuse of second hand steel (Avans Hogeschool, 2016). This research is related to the second part of the project. [2]

Firstly, a literature study is conducted. This is because there is already a lot to find about this topic in the literature. This literature study is used to create context for this study and is used as input for the qualitative field research. Secondly, qualitative field research has been conducted to compare this to the results of the literature study and to acquire new insights. For the qualitative field research, there has been taken about twenty interviews with parties from the construction and demolition industry or with experts about circular economy.

To answer the problem statement, the research is divided into four parts. It starts very wide with the current situation and future of the construction and demolition industry. The second part is the current material flow of the demolition industry, this is already a bit narrower. And the third part is about the reuse of construction steel. This three part should be answered first before the fourth part can be answered. This fourth part shows the new business model for the supply of reused steel.

This research about the supply side in the supply chain of reused steel covers one part of a tripartite research. By putting this research together with the two other parts, about the demand and the 'marketplace' of reused steel, a new circular business model will be designed and deployed for reused steel in non-residential buildings within the construction and demolition industry.

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1: Consortium partners: Avans Hogeschool, Koninklijke Metaalunie, Vereniging Bouwen met Staal, Delta Development Group and IMd Raadgevende Ingenieurs
Duration: 09/01/2016 to 31/08/2018
Project number: RAAK.MKB04.028

2: The companies who are participating in this project realize there is a growing scarcity of raw materials. Although steel already is recycled for 100%, the participants in this project want to take circularity to a higher level by taking the step from recycling to reuse. The project is subsidised with SIA RAAK mkb, the aim of this subsidy is the exchange of knowledge among universities and SME companies.

Arranging a circular demand for reused steel:
The realization of a new business model within the steel construction industry

Aniek Akkermans
Bachelor Student – Lectoraat Sustainable Strategy & Innovation
Avans University of Applied Sciences
Hogeschoollaan 1, 4818 CR Breda, The Netherlands
+31 6 51 06 14 36
aakkerma1@avans.nl

Keywords:

Transition, New Business Model, Value Creation, Construction Industry, Steel Reuse

Abstract

The ideas of our current linear economy are no longer sustainable. In this economy materials are extracted by companies, energy is applied to manufacture products and these products are being sold to end-users who dispose them when they no longer serve their purpose (Jonker, 2012; Ellen MacArthur Foundation, 2013). Increasingly there is a need for a shift towards a circular economy (Jonker 2014; Jurriëns, 2015). The key issue in this circular economy is preserving value; the ambition is to extent the life cycle of products. It is about maximizing the reusability of products and raw materials, and minimizing the destruction of value (MVO Nederland, 2016; Faber & Jonker, 2016; Jurriëns, 2015).

The need for this outlined change is also recognized within the steel construction industry in The Netherlands. Steel belongs to the five most requested base materials. The production carries about twenty-five percent of the total industrial CO2 emissions (TNO, 2013). The value of the current circularity mode, which consists mainly of recycling, is even negative (Jurriëns, 2015). The circularity of steel needs to go to a higher level on the Ladder van Lansink[1], by taking the step from recycling to reuse[2]. Reuse assures the deployability of 'captured energy' and consumes less raw materials and energy, which leads to a reduced environmental impact compared to recycling (Expertisecentrum Sustainable Business [ESB], 2016).

By ending the product life cycle of this used steel as a raw material for a new building and taking the first steps to the described transition, the whole chain faces some difficulties and barriers that make it challenging to come to an introduction of a new business model for structural steel reuse. These barriers are experienced both in the demand for reused steel and in the supply of this particular material. It is a chain-wide problem, so in order to solve this problem the entire chain must be investigated. Therefore this thesis covers one part of a tripartite research[3], the aim is of these researches is to design a new business model for the whole steel construction industry.

This thesis is especially focused on the demand for reused steel. The following research question is designed: *'How should the process of demand for reused steel be arranged in order to fit into a new business model within the steel construction industry?'* . The answer to this question will show how the process of demand for reused steel must be arranged in order to be a part of the new business model within the steel construction industry that will be designed. Eighteen weeks will be spent to do research in order to give a thorough answer to the formulated research question of this thesis.

Firstly the literature study and qualitative research will be used to provide knowledge and insights in the current situation within the steel construction industry. By using in-depth interviews important information about the creation of the current demand for steel will be gained from the various partners in the market, which are involved in the process of demand. Besides that, insights will be obtained about potential motivations and incentives, current barriers and their attitude towards the demand for reused steel.

Secondly the desired situation will be developed, based on the outlined current situation. The potential motivations and incentives will be transformed into a specifically designed demand for reused steel and the barriers will be tackled, so they do not obstruct the demand anymore. Briefly this situation will describe how the demand process of the partners needs to be arranged to attend to the desired transition to circularity within the steel construction industry.

Finally this research provides the base for a circular demand arrangement for reused steel within the new business model that will be designed and deployed for the whole steel construction industry.

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1: A waste management hierarchy based on environmental impact. From recycling to reuse is the aim of the companies within de steel construction chain who take part in the project 'Hoger op de Ladder' [HopLa]. Within this project, various consortium partners collaborate to achieve circularity in the whole steel construction chain (ESB, 2016). HopLa consists of two parts, the first part focuses on design for disassembly; different partners within the consortium carry out this part of the research. The focus of the second part is on reuse of second hand steel; this thesis is part of the second focus.

2: Consortium partners: Avans Hogeschool, Koninklijke Metaalunie, Vereniging Bouwen met Staal, Delta Development Group and IMd Raadgevende Ingenieurs , Duration: 09/01/2016 to 31/08/2018, Project number: RAAK.MKB04.028

3: This thesis about the demand side in the supply chain of reused steel covers one part of a tripartite research. By putting this research together with the two other parts, about the supply and the 'marketplace' of reused steel, a new business model will be designed and deployed for non-residential buildings within the steel construction chain.

Reused steel available 'off the shelves':
Fundamental change in the construction industry

Nadine Muffels

Bachelor Student – Lectoraat Sustainable Strategy & Innovation

Avans University of Applied Sciences

Hogeschoollaan 1, 4818 CR Breda

+31 6 23 66 46 52

nje.muffels@student.avans.nl

Keywords

Sustainability, New Business Model, Value Creation, Construction Industry, Steel Reuse

Abstract

The recent global economic crisis has raised fundamental questions about the impact of existing corporate business models (Schaltegger, Hansen, & Lüdeke-Freund, 2016). There is a transition needed from our current linear economy into a more circular one, focused on creating multiple values and the reuse of materials (Ellen MacArthur Foundation, 2013). Products in the end of their lifecycle are the raw material for new products (Jonker & Faber, 2016). This change is needed because our current economic ways of production are no longer sustainable, natural resources are exhausted and the carbon emission is still too high (Jonker, 2012).

With a view to sustainability, companies are realizing their need to create a win-win situation and are adapting to this with new solutions (Rauter, Jonker, & Baumgartner, 2015). However, to engage in a change process is unusual in the Dutch construction industry; many projects were put in the 'too difficult box'. The business is conservative; the focus is on attaining the lowest price instead of the highest quality (Jurriëns, 2015). Business models are focused on how a firm is able to earn money (Boons & Lüdeke-Freund, 2012). Where other branches already changed to a more service orientated business model where value creation is important, the construction industry lacks behind (Rotmans, 2010).
This bachelor thesis lasting for 18 weeks focuses on barriers and motivations for the implementation of a new business model for steel reuse. Steel is known for its high-energy demand. It is suitable for reuse because it does not lose its quality with a technical lifetime of 100 years (Henrar, 2012). Previous research has shown that there are some major barriers for change. The most important ones are the costs, while the price is the key criterium in this sector. Besides the costs, people do not know that it is available, which qualifications it has

and where to find it. There is a lack of awareness, information and integration (Hadril, 2013; Cullen, Cooper & Densley Tingley, 2015).

The purpose of the study is to stimulate the reuse of steel within the construction industry. It is a part of the HopLa project[1]. This thesis is part of a bigger research and focuses on the match between supply and demand. The other parts focus on supply and demand itself. The aim is to develop a new business model for the construction industry to foster the circular economy. The research question is: *How should the process be arranged to match supply and demand of second-hand steel for constructions of non-residential buildings to realise a new business model?*

Firstly, this research shows barriers for the match between demand and supply. Secondly, an approach to solve these barriers is proposed, using literature and desk research and conducting in-depth interviews.

Thirdly, a new business model will be created. The output will be a 'marketplace' for second-hand steel where demand and supply meet.

With the new business model, where circularity is the key feature, added value is created on other aspects than the mere price or the costs involved. Such as ecological quality, indicated by carbon emission and the exhaustion of natural resources. This marketplace should resolve the lack of awareness, information and integration. Important is that there is an overview available off all steel suitable for reuse in a database to increase availability, steel must have the right quality ensured, storage is needed and the government will have to get involved. It will be a lot easier to locate, identify and implement the reuse of steel in the design at an early stage. The high costs will be eliminated when practices become more standardized (Gorgolewski, 2006). Availability will increase and the parts will be in the right place, on the right time, with the right amounts. Reuse will be available off the shelves and it will bring us one step closer to a circular economy.

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1: The Hopla (‘Hoger op de Ladder’) project focuses on developing new business models changing from recycling to the reuse of construction steel to contribute to the circular economy. There are two parts in this project: the ‘design for disassembly’ and the reuse of existing steel. Companies which participate: Avans University of Applied Sciences, companies in the construction industry, Technical University Delft, Association ‘Bouwen met Staal’ and the Koninklijke Metaalunie. The consortium exists of Avans University of Applied Sciences, IMd Raadgevende ingenieurs, DeltaDevelopment Group, Association ‘Bouwen met Staal’ and the Koninklijke Metaalunie. This research is subsidised by SIA RAAK-mkb with the project number: RAAK.MKB04.028. The duration is from 01/09/2016 until 31/08/2018.

Social Entrepreneurship and its Values:
A Complexity Perspective

Dieter Gutschi – University of Graz (Master Thesis)
Dieter.Gutschi@gmx.net

Abstract

Social entrepreneurship is often perceived as a panacea for the complex sustainability issues that humanity faces in the 21st century (Hall et al., 2010). As such, research interest in this topic has been growing significantly over the years, but a major part still focuses on the definition and scope of the concept (Dacin et al., 2010; Weerawardena and Sullivan Mort, 2006). In contrast, the intersection of values and social entrepreneurship has hardly been explored so far (Harris et al., 2009). The thesis investigates the values of *atempo*—an Austria-based social enterprise—from a complexity perspective. Thereby a new approach to the investigation of values is created and a first exploration of the specific values in the field of social entrepreneurship conducted.

A literature review takes a closer look at the core concepts of social entrepreneurship, complexity and value theory. The results are a criteria list for identifying social enterprises and a complexity-understanding of values, which mostly derives from the work of Cilliers (2000). The criteria list shows that *atempo* is an adequate study object. Based on Kurtz's (2014) concept of participatory narrative inquiry, a value research approach is developed that sees values as emergent phenomena (Painter-Morland, 2006). It was applied in a value survey among employees, a workshop with the management level and employee interviews, which ultimately synthesized into a specific list of *atempo* values.

Overall 26 per cent of the company staff took part in one of these steps. Its application shows how participants identify and interpret the emergent values of their own company stories. In the case of *atempo* a very coherent value picture emerged, which revealed that the value orientations of the management level are mostly in line with the ones of the employees. The result was a list of 12 *atempo* values—self-determination, equality, respect, openness, self-confidence, tolerance, team spirit, love, inclusion, self-development, vision, empowerment—that revolve around *atempo*'s main goal of equality. Interestingly this list contains no traditional competition values.

The missing of competition values in the case of *atempo* raises the question, if they are simply not important to the staff or if this is only a result of the research approach. Future research could explore this question, as well as compare values of social enterprises from different sectors to the ones of conventional business organizations focusing on a single

bottom line. In this sense the thesis tried to contribute to a better understanding of the motivation of social entrepreneurs and their employees, which again is based on the question, how we can direct society towards a more sustainable trajectory. Eventually the field of social entrepreneurship also offers an intriguing opportunity for science to develop a new rationality regarding its research methods. The applied methodology tried to achieve this, by defining values as emergent phenomena of the relational dynamics within an organisation, thereby offering an alternative to classical value survey approaches.

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Innovative business models for industrial symbiosis of biomass by-products

Elisa Gramlich
Joint International Master in Sustainable Development, Utrecht University and Karl-Franzens Universität Graz
elisagramlich@gmail.com

Abstract

To meet the requirements of a more environmentally friendly development, new business concepts such as industrial symbiosis (IS) are emerging (Mentink 2014). Through the integration of material and energy flows, IS systems become more effective and the use of scarce resources and discharge of pollutants is reduced (Mirata and Emtairah 2005; Wolf et al. 2005). However, the current body of research focuses primarily on material inputs and outputs and not as much on the social organizational structure for achieving IS. To realise this transformation, traditional business models (BMs) need to be reinvented (Mentink 2014). This paper aims to analyse how commonly used BMs can be adapted for incorporating IS of biomass by-products.

The main research questions are:

- What is industrial symbiosis and how can business models incorporate this approach?
- What are innovative business models for industrial symbiosis of biomass by-products?

The first question will be answered by conducting a literature review, while the second question will evaluate existing literature and selected case studies documenting examples of successfully adapted business models for the use of biomass by-products. This paper endeavours to contribute to the scientific debate by discussing the possibility of creating specific business models for IS. This form of conceptualization can assist researchers in analysing IS networks and can help businesses adapt or create their business model to seize the many opportunities that IS offers.

As one of the most widely used tools for BM generation, Osterwalder's (2004) Business Model Canvas (BMC) was chosen for the creation of innovative BMs incorporating IS of biomass by-products. Bocken and Short's (2013, 2016) BM archetype "creating value from 'waste'" was selected and applied to Osterwalder's BMC with specific focus on the business

value proposition, value creation and value capture. By analysing in detail the business logic behind one of the UK's largest sugar producers, *British Sugar*, a BMC for IS of biomass by-products from raw beet sugar production was developed. *British Sugar* integrated IS in every section of its BM and developed a wide range of synergistic and profitable product lines from its waste streams and by-products like electricity, bioethanol, tomatoes and animal feed (Short et al. 2014, 603). Lastly, the limitations of the BMC as business development tool were discussed and adaptations were made to increase its suitability for sustainable BMs. A sustainable IS BMC was created that incorporates an environmental and societal value proposition, a stakeholder perspective as well as an additional section for generating value from waste and by-products. In addition, a version of a shared BM for a network of IS companies, as in a business park, was developed. This augmented BMC emphasises the collaboration between the various network partners as well as the environmental and economic benefits from generating value from waste streams and by-products. In order for IS businesses to truly be sustainable, sustainability has to be a core part of the BM and a source of competitive advantage (Bocken and Short 2016, 46). This is important for changing the way companies define, create, deliver and capture value.

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Business model and establishment of pathways towards sustainable lifestyles

M.Sc. (candidate) Kristýna Jaklová[1], Prof. Dr. Utz Dornberger[2]
[1] University of Leipzig, Institute for Infrastructure and Resources Management, Grimmaische Straße 12, 04109 Leipzig, Germany. kristyna.jaklova@gmail.com
[2] University of Leipzig, International SEPT Program (Small enterprises promotion and training). Ritterstr. 9-13, 04109 Leipzig, Germany.

Keywords

Sustainable Entrepreneurship, Business Models for Sustainability, Business Model Innovation, Consumer Behavioural Change, Waste Reduction

Abstract

In a modern age where sustainability has become an issue at the forefront of our consciousness, there exists an ever-growing need for responsible consumption/lifestyle options. New businesses aiming at facilitating a consumer switch to sustainable lifestyles are presented with a fundamental challenge of changing the way the consumer behaves. This paper examines and presents measures for environmentally-focused businesses to facilitate effective behavioural change of the target demographic in favour of sustainability. The research is based on business model revision and its assessment with a specific focus on behavioural change.

First, an adapted business model canvas was developed to encompass the additional facets of environmentally-oriented companies. This was achieved by synthesising existing versions of business models for sustainability (Joyce et al. 2015; Upward & Jones 2016) and the traditional business model canvas from (Osterwalder & Pigneur 2010). The resulting business model canvas includes the environmental and social dimensions in the value proposition. It further suggests to separately address impacts and benefits for society and the environment.

Six semi-structured interviews with young sustainable enterprises, developing solutions for waste reduction, prevention and recycling were conducted. The interviews were transcribed and analysed using the qualitative content analysis method from Mayring (2014). The consequent data was then used to fill out the respective blocks of the adapted business model canvases to provide a comprehensive overview of all processes and activities within each startup.

To address the behavioural change aspects of the research inquiry, a model combining the perspectives of behavioural science and marketing was deductively drafted from the literature (Fogg 2009; Koene et al. 2014; Ölander & Thogersen 1995). This model pictures categories necessary to address in order to maximize the likelihood of the target behaviour taking place. Reviewing business models through the lens of the behavioural change model, enables the authors and the entrepreneurs eventually, to spot gaps and point out good practices. The model should ultimately help to better understand the process of internalizing new behaviours and creating new habits to finally facilitate the transition towards sustainable lifestyles.

The collected data have shown that the knowledge about the aspects of behavioural change among the start-up entrepreneurs is rather low. The results imply that the most effort is dedicated to sparking interest of the customer and making the product desirable. Very little thoughts however, are given to the aspect of how to establish structures for a long-term behavioural change. Finally, the presented approach offers guidance on how to better incorporate motivators, triggers and reduce barriers for behavioural change into business models. An overview of possibilities how to address each and every category in the behaviour model as well as implications for persuasive business models are summarized at the end of the paper. Ultimately, supporting sustainable enterprises to better address the issues of behavioural change is an important predisposition for a larger socio-ecological transformation.

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New Business Models in Entrepreneurship Education:
Evaluation of business plans from young academics in fictional startup situations

Alexander Seidenberger*, Remo Taferner, Sabine Bergner, Robert Rybnicek,
Department of Corporate Leadership and Entrepreneurship
University of Graz, Austria
*Corresponding author: alexander.seidenberger@uni-graz.at

Keywords

Entrepreneurship Education, Business Plan, New Business Model

Abstract

One of the greatest challenges in entrepreneurship education is to impart profound, but at the same time highly contemporary knowledge to the students. It aims to prepare them for a demanding work environment in the field of entrepreneurship that is rapidly changing, due to a constant development of new business models. As Bae et al. (2014) stated, entrepreneurship education can increase the willingness to start an new company, for which the awareness of new business models is essential, but even for existing companies, understanding new business models is important to remain competitive (Chesbrough 2010). Edelman et al. (2008) however, found a great discrepancy between the content of entrepreneurship teaching and the actions that entrepreneurs practice in reality. Lecturers in this field are especially prone to the issues of content actuality and practical relevance but research shows that even small changes in the teaching content can have a significant positive effect on the students' entrepreneurship awareness (Edelman et al. 2008). In this study, focus is set on the application of new business models in entrepreneurship education. The paper aims to find out how students respond to new business models by applying them in the situation of starting a business, and how this behavior has changed over the past 5 years. A database of more than 380 business plans was accessed and used to detect possible trends. The business plans were created during the last 10 semesters of an entrepreneurship class, in which students were encouraged to create a fictitious startup company and developed business strategies that were supposed to have a realistic chance for implementation. In the course of this study, business plans were analyzed by the authors with regard to e.g. the type of business model, the industry or the constellation of the founding team. A point system, based on the five sections of the Business Model Canvas

(Osterwalder/Pigneur 2010), was introduced to rate the degree of "newness" of a business plan's underlying business model. Each sample could score at a range from zero to five points depending on how many of the sections were considered new and innovative. Preliminary results show an unsteady increase in new business model-application over the investigated period with an almost equal distribution among male and female students. Team size had no significant effect but interestingly, the legal form of the fictional companies' did. Results further show great differences in the innovativeness between the five sections of the Business Model Canvas and an increase in the application of specific business model types like sustainability concepts. Evaluating business plans, which were developed under great freedom of design, provides a direct and unbiased insight on the actual needs of young academics and can serve to improve actuality and quality of entrepreneurship education. If, for example, a significant increase of e-commerce startups is observed, education in online marketing and internet law can be intensified. The subject is of special relevance because whether students decide to found a business one day, or aim to work in a management position, they will greatly benefit from understanding their own business model as well as their competitors'. This study is expected to make a major contribution to improve entrepreneurship education in this regard. Its results will further be used to set up a more comprehensive panel study, which will also contain before and after course evaluation processes in the future.

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ABSTRACTS SESSION 8

When French Companies Adopt Integrated Reporting:
Any Business Model and New Business Model at the Horizon

Stéphane Trébucq - stephane.trebucq@u-bordeaux.fr
Elisabetta Magnaghi - elisabetta.magnaghi@univ-catholille.fr
Contact address : Université de Bordeaux - IRGO, 35 avenue Abadie, 33072 Bordeaux

Keywords

Business Model, Integrated Reporting, Qualitative Research, Quality of Reports, IIRC

Abstract

Integrated reporting is a relatively recent phenomenon, since its official framework was launched late 2013. One of its key originalities is about the introduction of the "business model" as a new rubric to introduce in reports. After a first year of adaptation and preparation, some first new reports have been published in France. Based on our knowledge of this country and economy, our research tries to assess two points. Firstly, we wonder if companies really apply the official framework, settled by the IIRC (International Integrated Reporting Council), about the "business model" rubric. We suspect that some companies might be reluctant for such a new exercice of transparency. Secondly, we wonder if IIRC's requirements are precise enough to enforce reports, and business model explanations, of high quality. Our sample is composed of 15 listed companies, from different sectors. Based on a qualitative analysis, we first assess the quality of reports, looking at the form of information (graphical, narrative, quantitative, monetary). We then check the quantity of indicated boxes, based on the classical CANVAS model. Our empirical results show on average score of 21 points out of 100 for the quality, with few scores higher than 30 points, and only one company reaching a maximum of 45. Scores of quantity show a better picture with a minimum of 33 points, and an average of 64 of 100 points. These two dimensions are also uncorrelated. Quite strangely, only a third of French companies announce at the beginning of their report that they will present their business model, and then two thirds finally devote some space for developments and explanations about it. Only two companies out of 15, which means less than 15% of our sample, publish informations in all of the four analysed formats (graphical, narrative, quantitative, monetary). We also noticed that only one company was talking about "value proposition", which is in principle, a key concept and

element of a business model. We then raise some doubts about the quality of such reports, and confirm our initial hypothesis about the probability that companies might be reluctant to explain their business model. These first results need to be more detailed and explored. At this stage, it remains difficult to understand why companies do not publish clear informations. Another reason could be their lack of habit and practice in this area. Such an alternative phenomenon could then demonstrate the interest of developping integrated thinking, through the implementation of integrated reporting. Anyway, one could wonder how such big companies could ignore the key elements of their business model, and also key models in this area in order to present themselves. Another clue is given by the only one company making a reference to the "value proposition" concept (Schneider Electric), without giving any more details about it. This means that the concept is known, but used with a low level of information and transparency. Few companies are also able to develop the level of circularity of their business model, and how their value creation strategy might be new and sustainable in the long term. Again, only one company (Engie) mentions the expression of "new business model", in reference to circular economy and the CSR Europe network promoting inclusive practices in direction of low-income communities. Another company, Danone, quite well-known in France for its CSR engagement, also develops a limited project with an inclusive philosophy, without being a general corporate management policy. We finally conclude about the inconsistencies of the IIRC's framework and reporting standard, in order to get precise information about the business model of a company, and the way its strategy and outcomes might contribute to public good, and an enhancement in social and environmental welfares.

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Sustainable finance:
A new share-trade model using virtual currencies

Leslaw Pietrewicz
Institute of Economics, Polish Academy of Sciences
pietrewi@inepan.waw.pl

Keywords

Sustainable finance, business model, blockchain, virtual currency

Abstract

Sustainability is increasingly recognized as a pressing problem facing the modern world. Business models and practices which fueled economic development for decades are increasingly seen as antiquated and exacerbating, rather than mitigating, problems and challenges which our economies, societies and environment face. Addressing these challenges requires vision, tools, technologies, and financing.

Growing social and political demands with regard to sustainability force businesses to embrace the idea of multiple, i.e. financial, social and ecological, aspects of value. New Business Models addressing these principles emerge, supported by technological advances. Businesses are experimenting with and developing new organizational forms, involving customers in innovation and value creation processes, developing sensitivity to ecological issues. New patterns of organizing value creation and value sharing gradually emerge (Jonker, 2012).

An aspect of sustainability which attracted limited interest is financial sustainability. For many authors (e.g. Chouinard et al. 2011) and professional associations (e.g. Swiss Sustainable Finance), sustainable finance comes down to sustainable investing, that is integrating social, environmental (and usually governance) criteria in investment decisions. In this paper, a new, broader definition of sustainable finance is proposed. The concept of sustainable finance should not be constrained to the idea of financing projects and organizations promoting sustainability in its various aspects. It should also encompass developing financial sector structure and institutions that ensure fair distribution and efficient allocation of resources at low cost. Thus, the definition should be expanded to include also business models of financial institutions and the arrangement and relations between business models comprising financial sector.

The scope of the paper is limited to the stock market. Its aim is twofold. First, it is to develop the concept of sustainable finance in its latter aspect. The second one is to apply the concept to the archetypal business model of stock exchanges, currently dominating the stock markets, and to emergent, potentially disruptive business models based on blockchain and virtual currency technologies. A case study of a German startup developing a platform with the aim of bridging virtual currency and equity will be discussed in more detail.

It is found that two types of products that are created on stock exchanges – information and liquidity. Both of them are produced by investors who trade shares driven by their individual profit maximization functions, with the resulting increased liquidity and price informativeness being by-products of the trade. Stock exchanges only co-create these products by means of coordination of trades (bringing buyers and sellers together). Both increased liquidity and price informativeness are, however, of value to all parties involved, including also platform operators (stock exchanges) and even societies at large as they have highly positive economic consequences, including reduced cost of capital for listed companies and more efficient allocation of resources. Stock exchanges can thus be seen as a natural environment for the New Business Models.

The recent pronounced trend of "de-equitization" (Farrell 2017) means that the role of stock exchanges is changing and their business model gets under increased pressure. The new entrants, including the one analyzed in the case study, can expand the market by dramatically reducing costs thanks to disintermediation and by "democratizing" finance. By that means, they can make finance more sustainable.

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IIRC's Business Model conception for integrated reporting: confrontation and comparison with academic literature

Elisabetta Magnaghi - elisabetta.magnaghi@univ-catholille.fr
Stéphane Trébucq - stephane.trebucq@u-bordeaux.fr
Issa Ndiaye - ndeye-issa-ngar.diop@u-bordeaux.fr
Contact address : Université Catholique de Lille - 60 boulevard Vauban 59000 Lille

Keywords

IIRC, Business Model Definition, Conceptual Framework, Integrated Reporting, Quality of Implementation, Corporate Transparency

Abstract

The IIRC is a new international standard setter for corporate reports which might become adopted. In order to achieve such a result, companies have to follow requirements which have been detailed in a clear and public document, entitled : "The International <IR> Framework" (2013). One of the key and new elements that has to be documented is the business model. Unfortunately, the IIRC has not defined what should be or could be a new business model, but a definition of a what should be disclosed about a business model is provided. One can read as follows : " *An organization's business model is its system of transforming inputs, through its business activities, into outputs and outcomes that aims to fulfil the organization's strategic purposes and create value over the short, medium and long term. An integrated report describes the business model, including key: Inputs, Business activities, Outputs, Outcomes*." We then question the quality of such a definition, making the hypothesis that the IIRC could have chosen a too narrow view, or a non exhaustive concept, of what a business model should be. In order to check our hypothesis, we have constituted from the EBSCO (Business Source Premier) database a sample of academic definitions found in 72 academic articles, responding to the three following research criteria : having "business model" or "business models" in their title, abstract and key-words. After a fine analysis of all articles, 103 definitions of 55 first authors have been found and extracted. This corpus or textual dataset has been applied within a lexical analysis software, known as ALCESTE and based on the statistical methodological developed by Reinert. This software has also an open-source version, entitled IRAMUTEQ, developed by Ratinaud. Hence, these two softwares have been used on the same dataset, making possible comparisons between

empirical results. In few words, ALCESTE or IRMUTEQ are able to detect co-occurrent words or lexical forms, which means terms that are fluently used together within a same unit, here something close to the grammatical structure of a sentence. Clusters of words are then proposed, providing some closed form that could be a theme. Empirical results show, after two different tests in ALCESTE and one with IRAMUTEQ, that some authors appear to have provided key and original definitions of what could be a business model. We keep authors that have been selected and considered to be significantly connected to clusters at a minimum of two times. 13 academic definitions are hence selected. After an analysis of previous clusters, three families of definitions are found within these 13 definitions : (1) the first one is called "structuralist", based on a structure and framework proposition, (2) the second one is called "suggestive", giving no guide and asking for reasons explaining how the company makes money, (3) the third one is interactive or process-oriented, making the assumption that a business model is a continuous process, based on the evolution of strategy with a permanent dialogue with stakeholders. We then used IRAMUTEQ with these 13 definitions, tagged by one of these three families, and the text of the IIRC, found to belong in spirit to the structuralist view. The empirical results show two different clusters, making the distinction between the suggestive and interactive views, and the structuralist view significantly related, from a statistical point of view, with pieces of the IIRC's text. The empirical and text analysis results show that the IIRC has discarded two important families of definitions, which might have an impact in the quality of integrated reports. The suggested family should also certainly amended, with a broader view of value creation, in order to integrate social and environmental values, and the "true earnings" concept recently tested by KPMG. The third family of definitions also shows that providing a framework in advance could also sterilize the originality of the proposition, and keep the company more far away from new experiments like inclusive models. Being structuralist might let you be less adaptative, and openminded to exchanges with external stakeholders. We also call for a deeper and more complete view of a "business model" definition, in order to enhance the future quality of integrated reports.

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Presentation of the Reporting 3.0 Blueprint Work Ecosystem

Ralph Thurm, OnCommons/Reporting 3.0
ralph.thurm@kpnmail.nl

Abstract

Reporting 3.0 is a network of ‚positive mavericks' that exists since 2012. After 3 years of conferencing (2013-2015) in order to shape the potential design of new reporting and disclosure that truly serves the green, inclusive and open economy on a global scale, Reporting 3.0 introduced the Blueprint Projects work ecosystem in which 4 projects on future reporting, changes in accounting, a new data architecture and a new business models information requirements have been given shape. Released at the end of May 2017 at the 4th International Reporting 3.0 Conference in Amsterdam the Reporting and Data Blueprint are now available in Version 1, while the Accounting Blueprint has been discussed in draft format and the New Business Model Blueprint was just kicked off. This is a great coincidence with the NBM conference to present the Reporting 3.0 work ecosystem. Reporting 3.0 also starts an 'Academic Alliance', offering possibilities to engage with Reporting 3.0 in the further research, development, testing and training activities. The presentation will mainly give an overview about Reporting 3.0, will present the four blueprints, and will discuss engagement opportunities, so that participants have a rounded up first glance into how they could benefit from Reporting 3.0. Downloads of the existing Blueprints are available at www.2017.reporting3.org.

PART 2: SHORT PAPERS

SHORT PAPERS SESSION 1

Value Creation and Circular Business Models:
What makes a circular business model circular?

Geraldine Brennan[1,2,*] and Fenna Blomsma[2]
[1]Middlesex University Business School, [2]Imperial College London
*Corresponding author: g.brennan@mdx.ac.uk)

Keywords

Circular Business Models, Umbrella Concepts, Resource-Life-Extending Strategies, Scale-Based Typology

Abstract

In this paper we develop a scale-based typology that aids in distinguishing between business-as-usual (BAU) (linear) business models, business models with circular aspects or elements and circular business models (CBMs). With this, we seek to bring clarity to the academic debate around CBMs and support practitioners to assess which CBMs are likely to have small versus transformational impacts.

Introduction

In this paper we develop a scale-based typology that aids in distinguishing between business-as-usual (BAU) (linear) business models, business models with circular aspects or elements and circular business models (CBMs). With this, we seek to bring clarity to the academic debate around CBMs and support practitioners to assess which CBMs are likely to have small versus transformational impacts.

This paper addresses the need for conceptual clarity, as what does or does not constitute a CBM remains unclear. This lack of clarity is largely attributable to the plethora of ways of framing both circular economy (CE) (see Brennan et al. (2015); Blomsma and Brennan (2017) and Geissdoerfer et al. (2017) for overviews) and subsequently CBMs. CBMs are often conceptualised as ranging from, but not limited to, "creating value from waste" value propositions (Bocken et al. (2014); Lewandowski, 2016); or closed-loop supply chains (CLSC) (e.g. Guide & Van Wassenhove, 2009; Morana and Seuring, 2011; Govindan et al., 2014;); or product service systems (PSS) (e.g. Stahel, 1984; Tukker, 2004). Yet, each of these concepts illustrates different ways of operationalising CE.

For example, the "creating value from waste" archetype limits the scope of CE to the level of substances or by-product exchanges. In contrast, CLSC emphasises how forward and reverse logistics can enable the utilization of return flows, whether products or materials. In comparison, PSS predominantly emphasises product or service design and shift from selling

a product to selling a service. However, these concepts represent a spectrum themselves, rather than a singular model, each with different outcomes - for example Wells & Seitz (2005) distinguish between four types of CLSCs and Tukker (2004) eight different types of PSS. Questions remain regarding the degree to which these models overlap (Linder & Walliander, 2017) and their comparative impact.

The associated conceptual confusion makes it difficult to distinguish between BAU practices and CBMs with transformative capacity. As such it can detract from what could have been an investment in business models which underpin the circular economy's transformative capacity and even lead to circular washing. Circular-washing is when business-as-usual activities are rebranded as circular, for example the implementation of singular low-hanging circular strategies, which can lend itself to deliberate mis-framing of initiatives beyond their true impact.

Methodology

To explore the question of what makes a circular business model circular, we conduct a systematic literature review and examine a number of archetypal cases. We start from the definition of CE as an umbrella concept relating to strategies which keep resources in productive use for longer (Blomsma & Brennan, 2017). That is: we define the CE concept as one that highlights the ability of a range of waste and resource management practices to extend the productive life of resources and asks what combination of these strategies should be implemented under what circumstances (ibid). We refer to these strategies as resource life-extending strategies (RLES) (ibid).

The concept of a business model can be applied at multiple levels. For example business models are used to describe the value creation rationale for a single product, firm or particular value network or supply-chain (Breuer and Lüdeke-Freund, 2014; Lüdeke-Freund et al. 2016). In this paper we explore product level and firm centric business models. Similarly to business models, the concepts of circular economy and circularity can be applied at different system levels. To clarify distinctions between levels of circularity we develop a scale based typology which illustrates key differences between linear or BAU business models, linear business models with circular elements and circular business models which have radical transformative potential. This framework is then used to compare and contrast archetypal cases (e.g. Kalundborg, British Sugar, Patagonia, Interface, Xerox etc.) which demonstrate how CBMs can be clustered along a spectrum.

To interrogate the extant academic literature which informs the development of our scale based typology of CBMs we adopt systematic literature review (SLR) as a 'guiding tool' (Tranfield et al. 2003; Wang and Chugh, 2014). Following Tranfield et al. (2003), SLR's seek to develop rigorous and replicable review processes. These begin with a scoping study, to

inform the creation of a research protocol which includes the identification of inclusion and exclusion criteria and key term search strings. This process is informed by feedback of experts, both academic and practitioner, in the chosen subject.

We time-bound our literature review to 1985-2017 due to the fact that while antecedents of the circular economy can be traced back to 1800's (Brennan et al., 2015), findings from previous work by the authors (Blomsma and Brennan, 2017) demonstrate that the circular economy as an umbrella concept emerges around 1985. Moreover, the business model concept is regarded as becoming prevalent with the rise of the Internet in the mid-1990s (Zott et al. 2011) and thus this literature is also covered by our selected time range.

An additional boundary criterion of our review is our focus solely on circularity rather than sustainable business models more generally. While we acknowledge that the relationship between circular business models and sustainable business models is contested and often blurred within the extant literature (e.g. Lewandowski, 2016) unpacking the relationship between these two concepts is outside the scope of this review[1]. Aligning with convention, we limit our SLR to solely peer-reviewed literature from ABS journals ranked 3* and above to ensure the quality of literature included in this review. However, as the circular economy discourse is emerging from academia and practice (Brennan and Blomsma, 2017) we also intend to include in our discussion selected peer-reviewed literature from lower ranking journals and grey literature as a means of sense-checking our findings.

The selection of our archetypal cases (e.g. Kalundborg, British Sugar, Patagonia, Interface, Xerox etc) is based on the frequency of how often these cases are mentioned as exemplars within the academic and grey literature combined with the availability of longitudinal data related to the selected organisations' business models associated with RLES.

Preliminary Findings & Conclusion

Our scoping study illustrates that in addition to the use of the terms "circular economy business models" or "circular business models" there are also a range of broadly synonymous terms used by different scholars and practitioners. These include: "closed-loop economy business models", "closed-loop supply chain (CLSC) business models", "remanufacturing business models", "resource efficient business models", "cradle-to-cradle business models" and "product-service system or service-based business models".

While at the preliminary stages our research suggests that although many business models may enable keeping resources in productive use for longer these business models can be clustered across a spectrum of impact - ranging from small to transformational. This finding reiterates the importance of considering the outcomes that a particular business model can

create in a particular context, e.g. sector, geography or scale, when seeking to distinguish and invest in business models which can contribute to transformational impact. Therefore, we propose defining a CBM as - a business model which captures value from the capacity of RLES in different circular configurations - acknowledging that different CBMs have different outcomes, creating different types (environmental, economic and social), and scales of value.

This paper is presented at NBM2017 as a developmental paper as the research is ongoing. We seek to use the conference as a forum to sense-check the preliminary findings from the scoping study and development of the research protocol which inform our scale-based typology of CBMs.

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Business Model Innovation in Sharing Economy: A Benchmark Approach

Meisam Ranjbari*, Gustavo Morales-Alonso,
Ruth Carrasco-Gallego, Mercedes Grijalvo
Department of Industrial Engineering, Business Administration and Statistics,
Universidad Politécnica de Madrid, Spain
* Corresponding author: meisam.ranjbari@alumnos.upm.es

Keywords

Business Model Canvas, Pillars of Sharing Economy (SE), Heat map, Collaborative Economy, Zero-Marginal Cost Economy

Abstract

A new economic paradigm entitled “Sharing Economy” (SE) has emerged with the growth of sharing assets by using information technology and digital platforms based on more collaborative forms of consumption. Cost structure strongly differs in SE compared with traditional companies, as collaborative rather than capitalistic approach is about shared access rather than private ownership. Millions of people are using various digital platforms like websites and mobile Apps in a network community to share assets like home, car, knowledge, space, money and other items at low or near zero marginal cost. For this reason, companies in the SE steal clients, value and profit from traditional capitalist companies. In this sense, it is worth analysing what the innovations at business model level are that companies from SE do. So, the main purpose of this study is to shed light on the effect of the four main pillars of Sharing Economy (namely Digital platforms that connect spare capacity and demand, Transactions that offer access over ownership, More collaborative and trust-based forms of consumption, and Branded experiences that drive emotional connection) on each of the Business Model elements of a company suggested in the Osterwalder’s business model canvas. A number of companies active in the Sharing Economy environment in the fields of transportation, accommodation and finance are selected and the required information for building their business model is acquired through conducting a content analysis, and a benchmarking process is done. The effect of each of the Sharing Economy pillars on each Business Model element is studied for all selected companies and a heat map, showing the concentration of the companies on each element in the SE environment is provided. As a result of analysing the heat map, some hints are provided for the companies to help them make an innovation in the Business Model, which are valuable for researchers involved in Business Model Innovation.

Introduction

A new economic phenomenon is taking place over the last years and traditional capitalist companies have been defied by a new set of companies which are operated from sharing or collaborative economy. For example Airbnb in accommodation sector, Uber or Lyft in transportation sector and Funding Circle in finance or banking sector have disrupted the businesses of traditional capitalist companies in travel and hotel industry, mobility industry and banking industry, respectively. They do so with new business models that strongly rely on the active use of information technology and trust between users among other characteristics. Those new business models allow for new more effective cost structures being able to grant lower prices for customers.

This is the corner stone of the new economic paradigm as described by Rifkin (2015) in "zero marginal cost society", how the emerging Internet of Things is speeding us to an era of nearly free goods and services, precipitating the meteoric rise of a global Collaborative Commons and the eclipse of capitalism. Innovation in the business model of the companies is a major key to their success in a sharing economy nvironment. Non-ownership, temporary access, and redistribution of material goods or less tangible assets are the main characteristics of such an environment (Kathan, Matzler & Veider, 2016). Therefore, realizing the effects of Sharing Economy on different elements of the BM can help companies to get ideas how to make an innovation in their business models to improve their competitive position.

In this study, a few famous and successful companies active in the SE environment in transportation, accommodation and finance fields are selected and the effect of the core pillars of the SE introduced by PricewaterhouseCoopers (PwC) (Trunkfield, 2015; Atkinson, 2015) on each of their BM elements based on the Osterwalder's business model canvas (2010) are studied. Based on the analysis conducted using a heat map comprising of SE pillars and BM elements, some hints are provided for the companies to make an innovation in their business model.

The remaining parts of the paper is organized as follows. In section 2, the theoretical backgrounds of the SE and BM as well as a brief explanation regarding the SE core pillars and BM elements are provided. The methodology applied in this study is discussed in section 3 and is followed by results and discussion in the next section. In the final section, the conclusions of the research are summarized.

Theoretical Background

The name "Sharing Economy" (SE) may be interpreted under different labels. Examples of the different interpretations currently interconnected to the concept of sharing economy

include collaborative consumption, collaborative economy, on-demand economy, peer-to-peer economy, zero-marginal cost economy, and crowd-based capitalism (Selloni, 2017). The first appearance of the term "Sharing Economy" in the Oxford Dictionaries was in 2015, and its transformation into a popular buzz word happened since the publication of a book by Botsman and Rogers (2010) regarding the rise of collaborative consumption (Hern, 2015; The Economist, 2013). In the SE, information technology is utilized to make connections between dispersed groups of people and companies and provide them the opportunity to share access instead of ownership, so that they can make better use of goods, skills, services, capital and spaces.

Sharing Economy is distinguished by the following four core pillars (Trunkfield, 2015; Atkinson, 2015), which are also considered in the analysis conducted in this paper.

***Digital platforms that connect spare capacity and demand*:** The blossoming of businesses in the SE are powered by technology platforms, through which the businesses are able to connect the available spare capacity and demand fast and dynamically.

***Transactions that offer access over ownership*:** One common aspect in all companies working in SE is that while providing more options for the customers, they reduce costs of ownership. Therefore, what is considered here it is to give an access to a product, not necessarily transferring its ownership, and SE provides the possibility to "access" over "ownership".

***More collaborative and trust-based forms of consumption*:** Nowadays, people are gradually taking some distance from the traditional forms of transactions and are more willing to engage in transactions which involve deeper social interactions. It is stated that 63% of the American adults who are familiar with SE, believe that engaging in an SE transaction is more fun compared with the traditional companies (Atkinson, 2015).

***Branded experiences that drive emotional connection*:** The social connection a brand builds has become a major parameter for the value it obtains. Making such social and emotional connections with customers in the SE can mainly be achieved through experience designs, which provide more sense of friendship for the customers.

In spite of the wide spectrum of practices in SE in today's markets, there is a limited practical knowledge about how businesses involved in the SE should design their business models in order to be successful. Therefore, to find out key elements in the business model of a company, which are more eligible to accept an innovation and help the companies survive in the current competitive environment, an analysis, taking both SE and BM elements into account, seems to be useful in this regard.

There are a lot of definitions for Business Model presented by scholars, among which, could be the defining a Business Model as a tool for business planning that helps managers understand and describe the business logic of their firm (Osterwalder, 2004), as an organization's core logic for creating value (Linder & Cantrell, 2000), or as a description of a complex business that enables the study of its structure, of the relationships among structural elements, and of how it will respond to the real world (Petrovic, Kittl et al. , 2001; Applegate, 2001). Also, Weill and Vitale (2001) define a business model as a description of the roles and relationships among consumers, customers, allies and suppliers of an organization, which identifies the major flows of product, information, and money, as well as the major benefits to participants. In fact, all these definitions commonly agree that business model means how a company can work and make money. For the purpose of this study a business model is defined as "*the rationale of how an organization creates, delivers, and captures value*", which is a famous definition provided by Osterwalder and Pigneur (2010).

According to Osterwalder (2004), the first step to make business models is to define of what elements business models are composed. The nine elements in the Osterwalder's business model canvas (2010), which are used in this paper are listed in Table 1. These nine building blocks cover the four main areas of a business: customers, offer, infrastructure and financial viability.

Table 1- The business model canvas elements (Osterwalder & Pigneur, 2010)

Main areas of business	BM Elements	Definition
Infrastructure	Key Partners	2The key partnerships building block describes the network of suppliers and partners that make the business model work. Companies forge partnerships for many reasons, and partnerships are becoming a cornerstone of many business models. Companies create alliances to optimize their business models, reduce risk, or acquire resources.
	Key Activities	The key activities building block describes the most important things a company must do to make its business model work. These are the most important actions a company must take to operate successfully.
	Key Resources	The key resources building block describes the most important assets required to make a business model work. These resources allow an enterprise to create and offer a value proposition, reach markets, maintain relationships with customer segments, and earn revenues.
Offer	Value Proposition	The value propositions building block describes the bundle of products and services that create value for a specific customer segment. The value proposition is the reason why customers turn to one company over another. It solves a customer problem or satisfies a customer need.
Customer	Customer Relationships	The customer relationships building block describes the types of relationships a company establishes with specific customer segments. A company should clarify the type of relationship it wants to establish with each customer segment.
	Channels	The channels building block describes how a company communicates with and reaches its Customer segments to deliver a value proposition.
	Customer Segments	The customer segments building block defines the different groups of people or organizations an enterprise aims to reach and serve. In order to better satisfy customers, a company may group them into distinct segments with common needs, common behaviours, or other attributes.
Financial viability	Cost Structure	The cost structure describes all costs incurred to operate a business model. This building block describes the most important costs incurred while operating under a particular business model. Creating and delivering value, maintaining customer relationships, and generating revenue all incur costs.
	Revenue Streams	The revenue streams building block represents the cash a company generates from each customer segment (costs must be subtracted from revenues to create earnings). If customers comprise the heart of a business model, revenue streams are its arteries.

In addition to what stated about BM, Business model innovation (BMI), which is defined by Zhao, Pan and Lu (2016) as a pursuing novel form of value creation and capturing mechanism, is increasingly becoming a priority for managers in terms of creating competitive advantage and achieving superior performance. In fact, BMI refers to making changes to the activity system of the organization (Zott & Amit, 2010), the "design of organizational structures to enact a commercial opportunity" (George & Bock, 2011, p. 99), or the element which inks innovation to value creation (Chesbrough & Rosenbloom, 2002), that translates technical innovation into commercial performance (Teece, 2010).

The effect of different pillars of the sharing economy on each of the nine elements of business model mentioned is studied and discussed in section four of this paper. This can

help companies to better decide in which parts of the business model to make an innovation, in order to succeed in today's competitive environment.

Methodology

For the purpose of this research, a list of companies active in the SE are gathered and 7 companies active in transportation, accommodation and finance fields are selected. These companies are listed in Table 2. Secondary information is used as an input for content analysis. Using the information obtained, the business model canvas of each company is obtained and used for benchmarking.

In the next step, a heat map is designed, using the 4 core pillars of the SE in one side and the nine BM elements introduced in the Osterwalder's business model canvas in the other. Heat map is known to be a graphical representation of data in which colors are used instead of the individual numbers in each cell of the matrix. Based on the information and BMs provided in the previous step, the effect of each pillar on each BM element is investigated and each of the cells in the matrix gets a weight accordingly. A range of colors from light red to dark red is used to show the intensity of the concentration of the selected companies in each considered cell, from low to high.

Finally, based on the heat map constructed, analysis are given and suggestions are provided for BMI in companies in section 4 and 5 of the paper.

Table 2- Companies studied in this paper

Name of the company	Filed of activity	Foundation year	Headquarters	Area served	Web address
Airbnb	Accommodation	2008	San Francisco, California, USA	more than 65,000 cities and 191 countries	https://www.airbnb.com/
WeWork	Accommodation	2010	New York City, New York, USA	the globe except Africa	https://www.wework.com/
Uber	Transportation	2009	San Francisco, California, USA	566 cities around the globe.	https://www.uber.com/
Lyft	Transportation	2012	San Francisco, California, USA	USA	https://www.lyft.com/
Car2go	Transportation	2008	Stuttgart, Germany	America, Canada, Germany, Italy, Spain, Austria, Netherlands, China	https://www.car2go.com/
Prosper	Finance	2005	San Francisco, California, USA	USA	https://www.prosper.com/
Funding Circle	Finance	2010	London, UK	Its current activities are limited to UK, US, Germany, Spain, and the Netherlands	https://www.fundingcircle.com/

Results and discussion

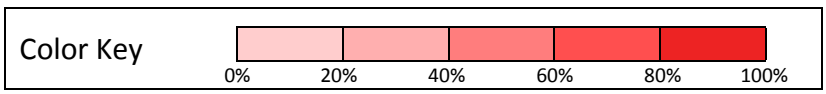
Putting the nine BM elements on one dimension of the matrix and the four SE pillars on the other, the following heat map (Table 3) is derived from studying the 7 selected companies. To classify the information and give a more clear view, the BM elements are put into 4 main areas, which Osterwalder (2010) has identified as the areas constituting the 9 essential elements of a BM. These broad areas are also shown in the table.

Analyzing this heat map, and keeping in mind the fields the companies selected are active in, important points are achieved. Some of these points are as follows.

Table 3- The heat map for the selected companies

Main areas of business	SE Core Pillars / BM Elements	Pillar 1	Pillar 2	Pillar 3	Pillar 4
Offer	Value Proposition				
Customers	Customer Relationships				
	Channels				
	Customer Segments				
Infrastructure	Key Resources				
	Key Partners				
	Key Activities				
Financial Viability	Cost Structure				
	Revenue Streams				

Note: Pillars 1 to 4 in this table indicate "Digital platforms that connect spare capacity and demand", "Transactions that offer access over ownership", "More collaborative and trust-based forms of consumption" and "Branded experiences that drive emotional connection", respectively.



If considering the pillars, "Digital platforms that connect spare capacity and demand" (Pillar 1) influences Key Activities, Key Resources, Value Proposition, Cost Structure and Channels in in all the companies studied in different fields (accommodation, transportation and finance). It also affects customer segments only in those companies, in which a strong link is created between customers through building a network; and that is the most attractive aspect in the decision made by the customers to join the network. In the companies, which are active in the field of finance, the case is somehow different as people and businesses deal with money. Banking system is nowadays powerful enough in terms of technology and IT platforms, and the electronic transactions are not of special interest for the customers to be attracted. Besides, this pillar does not affect those companies whose main resource is owned by the company itself, networking is not of that importance and the main customer segment consists of the ones who need to use that resource. In such companies, although IT can facilitate the process of using that resource, it does not seriously affect the customer segment. Therefore, based on the different and unique connection made with the customers depending on the activity field of the company, Pillar 1 can affect the customer segments.

"Transactions that offer access over ownership" (Pillar 2) does not affect channel and customer relationship, as it mainly focuses on the service/commodity being accessed

through sharing. However, it affects Value Proposition and Customer Segments regardless of the main shared service/commodity being owned by the company itself or by another party, who is going to share that. It also affects Key Partners, Key activities, Key resources and cost structure only in those companies which are an intermediary between two groups of people or businesses, one willing to share something with another. These companies are not the owner of the main service/commodity being shared. Therefore, those companies who own their resource to be shared, are not affected by pillar 2 in the mentioned elements of the BM. Besides, while pillar 2 reduces the costs of providing the main shared service/commodity for the studied companies (since it is provided by another group), it affects the revenue of those companies who are the owner of the shared services/ commodities.

Whether the company owns the shared service/ commodity or not, key partners, key resources and value proposition are affected by "More collaborative and trust-based forms of consumption" (Pillar 3). Besides, the shared service/commodity being owned by the company determines the effect of Pillar 3 on key activities, cost structure and revenue stream. For those companies owning the shared service/commodity, Pillar 3 will affect only cost structure out of the elements mentioned. But for the ones who do not own them directly, Pillar 3 will affect Key Activities and revenue stream (since they have to invest less, but earn much more). This Pillar does not affect customer segments in those companies which are active in the financial field, but can affect companies which are active in transportation and accommodation fields and own the shared resources. It does not affect channel and customer relationship either, since its main focus is on the service/commodity being accessed through sharing. This is worth mentioning that for the companies who do not own the shared resource, the type of services provided and the way to provide it are key parameters to decide whether Pillar 3 has an effect on customer segments or not.

"Branded experiences that drive emotional connection" (Pillar 4) does not affect key activities, key resources and value proposition as it mainly focuses on the emotional connection of the customers. It does not affect cost structure, either. Instead, it affects Customer Relationships, Channels, Customer Segments and the Revenue Stream resulting from customer attraction. In fact, in order for SE companies to be successful, they have to pay a high attention to their 4^{th} pillar as it directly affects current and potential customers. A PwC report highlights the importance of this when stating that 69% of the US adults familiar with the sharing economy will not trust companies active in SE unless they are recommended by someone they trust (Atkinson, 2015). In addition, since one group of the key partners could be the ones who provide something to share (accommodation, transportation vehicle, money, etc.), Pillar 4 can affect those companies who are not the owner of the shared resources and are only a means for sharing that resource between two persons or businesses, regardless of their field of activity. This is highlighted in companies, in

which the owners of the shared resource feel that they are part of a big and branded company.

It worth mentioning that “Digital platforms that connect spare capacity and demand” and “Transactions that offer access over ownership” (Pillars 1 and 2) mainly affect the cost structure, and “More collaborative and trust-based forms of consumption” and “Branded experiences that drive emotional connection” (Pillars 3 and 4) mainly affect the revenue stream. There is an exception in “Transactions that offer access over ownership” and “More collaborative and trust-based forms of consumption” for those companies who are the owner of shared resources. i.e. for these companies, “Transactions that offer access over ownership” (Pillar 2) affects revenue stream and “More collaborative and trust-based forms of consumption” (Pillar 3) affects cost structure.

This type of analysis and the results obtained can help the companies, which are active in SE, to concentrate more on the innovative options in their business model and also can help companies to realize how to make an innovation in their business model to be more successful in a sharing economy.

Conclusion and implications

Competition in the current market environment has lead companies to move towards finding innovative ways to increase their market share. Companies active in the Sharing Economy, whose number is growing in the recent years, follow the same story and finding ways to make an innovation in their business model to make them more successful in such a competitive environment, has become a concern for them.

In this study, 4 core pillars of the SE, named “Digital platforms that connect spare capacity and demand”, “Transactions that offer access over ownership”, “More collaborative and trust-based forms of consumption” and “Branded experiences that drive emotional connection”, and the 9 elements in the Osterwalder’s business model canvas were analyzed for 7 companies in transportation, accommodation and finance fields in the SE regarding the mentioned pillars.

To give a clear image of the level of effectiveness of the 4 pillars of SE on the elements of business model canvas, a heat map was utilized, and the selected companies were analyzed through using that. Results indicate that the affection of SE core pillars on the BM elements, may depend on the nature of the filed the company is active in, the way the company links the customers together, the ownership of the shared service/commodity, and sometimes none of them, i.e. these pillars may have 100% or no effect on some BM elements regardless of the mentioned criteria. Therefore, while the effect of some SE pillars on some BM elements specified to be zero or 100 percent, to analyze the situation of a

company and find solutions for making an innovation in its BM, the BM of the company should be constructed and the effect of each SE pillar on each BM element for the remaining cells be analyzed considering the field of activity, networking customers and the type of ownership of the company. Such an analysis can help companies to find the situation they have comparing with their successful competitors, or to get an idea for making an innovation in their business model. Some novel points and hints can be obtained from such analysis to help companies find their blue ocean and continue their business life in a more personalized, successful way in today's competitive environment.

However, this study can be improved in the future to give more exact results as the number of companies to be studied can increase and the fields these companies are active in can be more diversified.

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Crafting a Sustainable Business:
Applying the Circular Economy and Experience Economy to the Design of Cloud City's Spirit Center

Ana Sanchez Levoso (asanch16@student.aau.dk)
Biraj Adhikari (badhik16@student.aau.dk)
David Lameiras Barrera (dlamei16@student.aau.dk)
Josefine Koehler (jkoehl16@student.aau.dk)
Eva Guldmann (guldmann@plan.aau.dk)
Martin Lehman (martinl@plan.aau.dk)
Aalborg University, Skibbrogade 5, 9000 Aalborg

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Aalborg Akvavit, Circular Economy, Experience Economy, Industrial Business Transformation, Sustainable Innovation System

Introduction

Although Aalborg, Denmark, has historically been an industrial city, such activity has been leaving. One of the latest examples of this is the relocation of the Aalborg Akvavit production to Norway. In an attempt to pay homage to the distinctive spirit produced by Aalborg Akvavit and its unique manufacturing facilities, its former production site will be transformed into Cloud City –a hub for innovation, art, technology and culture. One of the planned projects is the Spirit Center, a micro-distillery whose primary ambition is to represent and dignify the history and heritage of the Akvavit Distillery in the city. On five floors, the Spirit Center will hold a showroom exhibiting the spirit production, an Akvavit tasting area, the micro-distillery itself, a restaurant/bar and an open rooftop garden.

Methodology

The Cloud City project is based on the principles of sustainability, collaboration and innovation. This opened an opportunity to research the potential to combine sustainable energy production with urban agriculture, to strive on a collaborative closed-loop system: the Spirit Center. Through a detailed literature review and interviews with experts and potential stakeholders, areas in the Spirit Center where principles of circular economy could be applied were explored, as it implies the principles in which the Cloud City is based.

Background

Aiming to develop a continuously improving sustainable production and business model, through innovation and collaboration the Spirit Center's "sustainable innovation system" (SIS) (Kraaijenhagen et al. 2016) was designed. This was done by adopting the "partnered system focus" i.e., including strategies for closing, slowing and narrowing the resource loops and creating a network operation scheme, providing an outline for an interdependent supply chain.

Since Akvavit is a consumer good, it is uncertain if the SIS approach would be enough to effectively transmit and pass on the increased value to the costumers. In other words, while the circular economy covers the value creation and capture, it is not able on itself to effectively communicate or deliver such value. In contrast with this, businesses using the experience economy approach have managed to make visible the once invisible added value of their products, making customers aware of the extra benefit they receive and most importantly, making them pay its price.

The experience economy addresses the visitors specifically. As several stakeholders in the craft-spirit market mentioned during the interviews, the backstory of a product has a large marketing potential. Sharing the backstory through conceptual and physical experiences allow the customer to further understand, interact and engage in the production processes, material sourcing and other steps in the supply chain. This experienceable circular production –setup backed by a strong narrative (inspired by the experience economy)– allow the customers to be more aware of the sustainable practices behind the Spirit Center and its business values. Furthermore, given the unique historical importance of Akvavit to Aalborg, it enables the consumers to relate to the product, its story and its urban-local identity at a personal level, enhancing their willingness to pay for it. (Esbjerg et al. 2014; J.Y. Jang et al. 2011).

Results & Discussion

The Cloud City project in itself and the outlined SIS for the Spirit Center possess three particular elements that have been studied separately in terms of their market value. 1) Business sustainability (Kim, Yoon & Shin 2015). The Spirit Center is designed to co-create horizontally with its partners. 2) Organic materials (Sonderskov & Daugbjerg 2011). Organic production involves certain circular economy practices, like recirculating organic material, taking the circular approach off-site and reaching the value chain. 3) Hyper-locality (Mathews & Picton 2014). Locally sourced and consumed craft-products cut down on transportation needs, as well as make a case for small scale production to satisfy local demands.

The relation of those three elements with the circular economy values and practices, and their potential to effectively deliver and capture through the experienceable circular production are a relevant finding of this research. Focusing on the production process, the use of urban farming and locally sourced raw materials contributes to resource efficiency i.e, narrowing the loop, while valorizing waste by converting distillation waste into biogas contributes to closing the resource loop. The creation of a narrative based on the elements previously explained is what will allow the customer to enjoy a unique experience. The visitors of the Spirit Center will see themselves immersed in an environment where sustainability values drive the business.

Conclusion

The Spirit Center provides an opportunity to complement the circular economy with the experience economy, and might be an example on how to transform industrial businesses. However, it still has to be studied which other production-related aspects depending on the industrial sector, can be used to exploit the synergy between the circular economy and the experience economy to achieve this transformation. Is the general set of values of the circular economy apt to be turned into physical and conceptual experiences? For such reason, this project works as a stepping stone for starting a paradigm shift of the industrial activity in the urban context towards a circular and experienceable business in which the creation of narratives can provide benefits throughout all the three dimensions of sustainability.

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Barriers to new Business Model
Innovation in the context of the Circular Economy - a literature review and conceptualization

Anna N. Köhl - Anna.koehl@uibk.ac.at
Martin R. Stuchtey - Martin.Stuchtey@uibk.ac.at
University of Innsbruck – Innovation Lab Sustainable Resource Management

Keywords

Circular Economy, Business Model Innovation, Circular Innovation, Circular Business Models, Barriers

Abstract

The shift towards the circular economy entails business model innovation as essential building block, therefore the understanding of barriers occurring during circular business model innovation is essential. This paper synthesizes barriers to business model innovation with barriers to circular economy derived from two literature reviews. Nine relevant barriers for circular business model innovation were identified, spread across micro, meso and macro level. Additionally 19 interdependencies between these barriers were conceptualized, showing the complex system of barriers companies are facing when innovating their business models towards the circular economy.

Introduction

The circular economy (CE) theoretically gives companies the chance to foster economic growth decoupled from resource constrains (Ellen MacArthur Foundation, 2015; Liu et al., 2009; Murray et al., 2015; Xue et al., 2010). The concept of the CE is receiving increasing attention and the need for a transition towards it is gathering momentum (Buren et al., 2016). Business model innovation (BMI) is necessary to fully benefit from the potential of certain technologies or products of the CE (Hall and Wagner, 2012) and to accelerate a system level change (Webster, 2015). There is a growing number of research on circular business model innovation (CBMI), mostly resulting in frameworks and concepts (Lewandowski, 2016; Mentink, 2014; Antikainen and Valkokari, 2016). Nevertheless, there is still a lack of understanding the barriers occurring during CBMI (Xue et al., 2010) and BMI contains more than the mere application of academic frameworks and tools (Chesbrough, 2010). On the other side, advanced research on 'linear' business model innovation already offers a good understanding of the barriers and challenges of BMI.

Therefore, this paper (1) applies known barriers of BMI literature to the specific context of the CE and (2) identifies additional barriers specific to CBMI, based on CE literature. (3) The paper also conceptualizes the nature of the identified barriers in the micro, meso and macro level and draws interdependencies between them. Understanding the barriers to CBMI is crucial, as in practice a discrepancy between the ambition of companies to shift towards the CE and actual progress can be observed.

Methodology

Two distinct qualitative and systematic literature reviews were conducted (Green et al., 2006), one on barriers to BMI and one on barriers to the CE. In total 40 contributions were reviewed. The synthesis of the literature reviews lead to the identification of nine relevant barriers to CBMI. Fig. 1 outlines the systematic reviewing process.

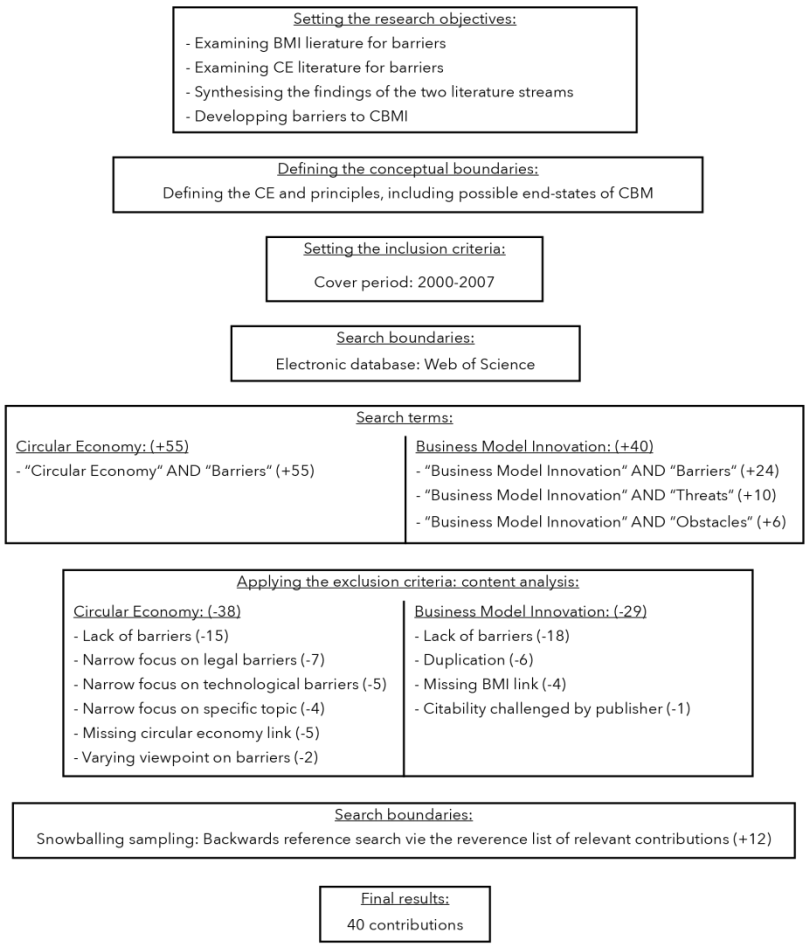

Figure 1: Systematic reviewing process

Results and Discussion

The two literature reviews lead to similar as well as distinct barriers and the synthesis of the two literature review found that the following nine barriers are relevant for the specific case of the CE.

Regulatory barriers

Regulatory barriers play an important role, restraining CBMI in two ways: (1) by a lack of support and (2) by too restrictive regulations. Especially the regulatory barrier mentioned by Stahel (2010), Rizos et al. (2016), Zhang et al. (2011) and Pan et al. (2015) of contradictory fiscal policy instruments links to the principle of the CE that prices should reflect real costs.

Technological barriers

For CBMI technological barriers are occurring when (1) necessary technologies do not yet exist (2) access or availability to necessary technologies is not given or (3) a lack of expertise or knowledge of the CE system hinders the adequate use of available technologies. Additionally CBMI is challenged by the spread of linear technology which can lead to lock-in effects (Rizos et al., 2016). Technological barriers can be located in the macro-level, for example when technologies do not yet exist and are dependent on the overall technological development, in the meso-level, when certain companies do already command technologies but due to competitive behaviour others cannot access them and in the micro-level, when a lack of resources hinders the access or adequate use of existing technology.

Economic barriers

A lack of capital represents a barrier for CBMI because (1) the possibility to experiment is limited (Sosna et al., 2010) and (2) a buffer to react to negative unforeseen events is missing (Bohnsack et al., 2014). Additionally there is a economic barrier due to a higher business risk of CBM. While the barrier of business risk is in the micro level, economic barriers are also in the meso-level, when a specific size is needed to be profitable in a certain market (Helms, 2016). The macro-level also bears economic barriers, namely when economic recession renders access to financial capital, which is according to Rizos et al. (2016) even more difficult for CE propositions.

Market barriers

Market barriers can be separated into (1) barriers when entering existing markets and (2) barriers when creating novel markets. There is a high lack of market attractiveness in existing markets, as without the embeddedness in a CE system, single circular products cannot gain their full potential (Shahbazi et al., 2016; Kuokkanen et al., 2016) and the

products do not fit the system (Johnson et al., 2008). Additionally, CE services often challenge prevailing practices and systems, in which established have invested in and are still profiting from, therefore they will not help in challenging the existing system (Bohnsack et al., 2014). To circumvent these challenges, novel markets can be created (Bohnsack et al., 2014; Eichen et al., 2015). Despite representing a big challenge, creating novel market places for CBMI is the best way to build new systems based on the principles of the CE.

Internal barriers

BMI as well as CE literature mentions corporate culture as a possible barrier to change (Eichen et al., 2015; Shahbazi et al., 2016). Internal resistance can appear due to employee culture and behaviour, lack of commitment of top management or high risk reluctance (Matsumoto et al., 2016). For CBMI, not only change averse culture is a barrier, but also a linear culture. The principles of the CE should be embedded in the thinking of leadership as well as employees. Finding adequate talent can be a barrier. Especially as employees being familiar with or having work experience in a CE environment are still uncommon.

Conflict barrier

When a CE business model is introduced as one of several business models within a company, a risk of cannibalization exists (Amit and Zott, 2001). The conflicting risk may be even bigger than for two linear business models operating next to each other as manufacturers face the risk of reduced sales in one business model through offering circular business models, f.e. repair services (Zhang et al., 2011). Additionally, it can lead to a lack of credibility (Helms, 2016). The stimulus mentioned by BMI literature to explore new opportunities and simultaneously exploit existing capabilities (Richter, 2013; O'Reilly and Tushman, 2004) can be a massive barrier for circular development, as exploiting current capabilities hinders circular systems and possibilities.

Cognitive barrier

The cognitive barrier is described as a unconscious process, where irrelevant information is consequently filtered out (Chesbrough, 2010). A lack of knowledge about the CE also leads to the case that information is filtered in a wrong way, as data and information is analysed in a ‘linear’ way of thinking (Richter, 2013; Bohnsack et al., 2014). This can lead to a perceived lack of consumer demand (Prendeville et al., 2016) or a wrong application of technology (Case et al., 2017). To overcome the cognitive barrier of CBMI, our underlying behavioural model has to be changed. This starts with the spread of knowledge (Buren et al., 2016). It is therefore argued, that the cognitive barrier for the CE is even bigger than for normal BMI, as the concept and idea of the CE is not yet widely spread or even anchored in the thinking and therefore many possible and disruptive business opportunities are not identified.

Information barrier

The authors see this barrier as a very important overarching barrier, being essential for the general transition to the CE. This barrier is located in the macro-level, acknowledging the general lack of knowledge about the CE in society. Without a further spread of knowledge and the idea and system of the CE, new business models will not emerge and the system conditions will not change towards a more favourable system for CBMI.

Value chain barrier

When looking at the underlying idea of the CE, the closure of resource loops as well as the principle of system-thinking, it becomes apparent that a well-functioning value chain is essential. In the linear system and when entering existing markets, partners may be unsupportive because of a resilience to change and protectionism. The missing awareness of each other's existence constitutes a barrier to form win-win cooperation between CBM (Buren et al., 2016). Additionally, businesses creating value through closing the loop face a barrier in difficult return flows (Rizos et al., 2016).

Spread over micro, meso and macro level, the identified barriers are mostly connected to each other and partially overlapping. The connections were conceptualized on the basis of the literature reviews and 19 interdependencies were identified, presented in Tab. 1. The understanding of these interdependencies is essential for the development of strategies to overcome the barriers, as it shows that focus on one single barrier will only partly lead to success. System thinking, one of the principles of the CE is essential to successfully tackle CBMI.

Table 1: Interdependencies of barriers

	Barriers		**Interdependence**
1	Information	Regulatory	Lack of information lowers the societal and economic pressure on regulations // Lack of specific CE regulations reduces society-wide information spread
2	Information	Value chain	Lack of information minimizes awareness of each other's existence // Lack of platforms for CE businesses reduces spread of knowledge and win-win possibilities
3	Information	Market	Lack of customer awareness and knowledge leads to low demand
4	Information	Technology	Lack of information and awareness lowers the pressure to develop novel technologies

			and hinders adequate use of existing technologies, prompting companies adapting linear technologies they are familiar with
5	Information	Internal	General lack of knowledge hinders the spread of circular thinking within businesses and a circular culture as essential basis for successful CBMI // Doubt of economic potential of the CE and different knowledge status leads to internal resistance
6	Information	Cognitive	Information of the CE and its value opportunities does not reach companies decision process due to dominant logic
7	Regulatory	Economic	Lack of regulations (externalities in prices, taxes, subsidies) lead to market distortion and unfavourable situations for CE concepts.
8	Regulatory	Market	Lack of or wrong regulations lead to a missing market pull or complication of novel market creation
9	Regulatory	Technology	Lack of governmental support hinders the spread of novel technologies and their market wide availability
10	Value Chain	Market	Linear designed market places hinder the operation of a circular value chain // Lack of key partners along the value chain restrains the creation of novel markets
11	Value chain	Conflict	Conflicts between business models can lead to a conflict between key partners along the value chain // Conflicting key partners can lead to internal conflicts
12	Value chain	Technology	Lack of functioning circular value chain restrains full potential of technologies // Lack of circular design restrains functioning value chain
13	Value chain	Economy	Lack of circular design magnifies business risk // Lack of investments restrains circular design
14	Market	Cognitive	Dominant logic leads to ignorance of circular value opportunities
15	Market	Economic	Lack of scale leads to exclusion from markets // Lack of economic buffer leads to inability to react to external events

16	Technology	Internal	Lack of internal expertise impedes adequate use of circular technology
17	Technology	Cognitive	Dominant logic hinders creativity in using existent technology for the CE
18	Technology	Economic	Lack of adequate investments hinders spread and availability of novel technologies
19	Internal	Cognitive	Lack of circular culture leads to a dominant logic for the linear system and hinders the development of CBMI

Conclusion

Currently there is a gap in the understanding of the barriers businesses are confronted with when innovating towards the CE. The clear clustering of barriers and development of associated issues can help companies to better prioritize and utilize their resources (Shahbazi et al., 2016) and support their ambition to shift towards circular business models. This contribution makes a first attempt to identify relevant barriers to CBMI, based on BMI and CE literature. Nine relevant barriers were identified and it is concluded that barriers to CBMI are even higher than for 'linear' BMI, especially because the spread across meso and macro level and the complex interrelations between the barriers. Illustrated in Fig. 2, it becomes obvious that CBMI faces a complex system of interlinked barriers. Overcoming this interdependent system of barriers is often unfeasible for single companies. The complex system of barriers to CBMI therefore presents a huge challenge for the general transition to the CE. This contribution calls for a focus on the meso-level and how companies can collaboratively innovate their business models. Solution strategies could for example be collective engagements against meso and macro level barriers whilst innovating the corporate culture and micro level barriers independent from each other.

This contribution shows that the general lack of information constitutes an important barrier, influencing and magnifying almost all other barriers. Tearing down this information related barrier as first level offense would decrease the complexity and magnitude of the other barriers. The metaphor of an upward spiral can be used here. The more information and awareness is available, the more companies are joining the CE and the easier it will get for others to join and innovate their business model.

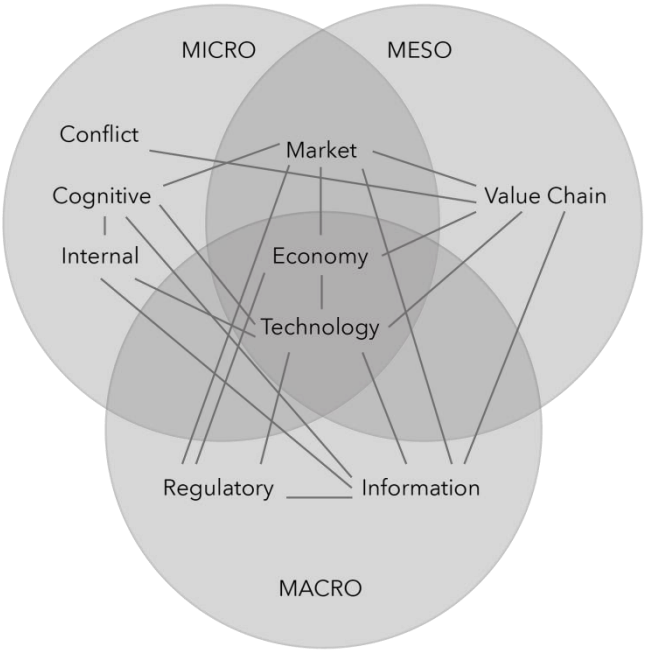

Figure 2: Overview of barriers in the micro, meso and macro level with interdependencies

This work is limited due to its conceptual boundaries set to the literature of BMI and CE only. Nevertheless, the authors experienced the point of satisfaction early during the content analysis, as insights turned asymptotic (Lincoln et al., 2011).

Future work will need to test these theoretical derived barriers in case studies. Based on the testing of these barriers, solution strategies need to be developed which can inform regulatory interventions, business strategies, sector agendas and NGO influencing strategies. Here, a link to strategies applied for wicked problems in the linear system should be drawn, for example open innovation, as these wicked problems are also characterized by complex interdependencies (Head, 2008).

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Changing economic model:
What consequences for business model?

Romain DEMISSY
Associated Adviser - Researcher (ATEMIS)
r.demissy@atemis-lir.com
Pierre-Yves LE DILOSQUER
LADYSS - Le Monde de la Propreté - Université Paris Diderot,
Sorbonne Paris-Cité
py.ledilosquer@gmail.com

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Abstract

Along with the critics addressed to the industrial economic model (Du Tertre 2009), new economic models inspired by a more servicial way of thinking emerge. These new economic models, such as Functional and Cooperative Economy (FCE) seems to be more relevant regarding sustainable development (Benqué, du Tertre and Vuidel 2014).

When an enterprise chooses to take the path toward a service-based economic model, it means changes in the way the enterprise is organised, in the way value is created and the way the value produced is then transformed into monetary flux. Those changes take the form of new kind of relationship between producers and clients whose are closely cooperating. This means new kind of contracts and new invoicing practices. The units chosen to summarize the company offers should change as well.

Contractual issues and invoicing practices are two important dimensions in companies' business models. We make a distinction in this paper between economic model – dealing with the way value is created – and business model – the way value is changed into monetary flux (Gaglio, Lauriol and du Tertre 2011). An enterprise engaged in a path toward new economic model should face tension about its business model as well.

The contribution would propose an analysis of the links between economic model shifting and business model evolution through business cases studies.

Introduction

The socioeconomic environment has met some deep changes in the 20th century's last decades and the 21st century first one. Structural economic changes leading to enterprises economic model shifting issues have been identified by some authors from human and social sciences. Among them, Christian du Tertre identifies four main changes (du Tertre 2009; 2013). First, the technological and digital innovations have changed the way labour is organized, spatially and temporally. Another structural change lies in the transition from an economic dynamic led by industry toward a dynamic led by services. In addition, the services development is simultaneous with the predominance taken by immaterial and relational aspects into activities, notices du Tertre. Therefore, non-tangible and non-measurable effects resulting from those relational and immaterial activities are getting central in today's economy. At last, environmental and social issues are now well known. This calls for new growth models and sustainable development as defined in the Bruntland report (1987). The French economist concludes that all these structural changes should lead to rethink the conceptual framework inherited from the industrial age to develop a servicial and cooperative one.

Mainly, Enterprises' economic models are still based on the industrial way of thinking, no matter their activities. We have to introduce a difference between tertiarization and servicialization following François Hubault (2013). Tertiarization refers to the way activities are listed in traditional activities' classification – agriculture and extraction; manufacturing; and services). Servicialization deal with the specific changes in value creation process induced by the development of relational and immaterial aspects into activities. So, there are some enterprises from the manufacturing sector in which we do observe a servicial logic in action. On the other hand, there are enterprises from the tertiary sector in which the industrial logic is the main reference. We will present some cases showing that remarkably in this article. According to the logic inspiring the enterprises' manager, the economic performance conception changes as well.

Classically, the industrial way of thinking considers performance as a sequence made of quality, productivity, and profitability. Quality is though as a stable dimension. It corresponds to measurable and countable dimensions of the production, even if the production does not result in a good but in a service. In that case, the quality takes the form of the material support of service or measurable aspect of the service done – time spend, amount of contacts, amount of operations done… This focus on countable aspects of the production meet the idea of matching rules between human workforce and the machines. So, with a standard quality, any enterprise director should be able to find tasks that might be automatized and clearly evaluate the value creation process efficiency. The quality supposed stability makes the work division by task possible. The clear identification of the result allows directors to think of productivity relying on three king of lever: scales economies, labour

intensification and technical improvements. If a productive unit's director is good enough in the quest for productivity, then profitability should develop.

This economic model has shown its efficiency for the years following World War II in France. But in the late 1960's it started to lost some of its relevance. In 1970's it reaches its limits because of market saturation for amenities such as cars or domestic electricals. Consequentially, the sequence quality, productivity and profitability have been turned upside down by the financialization phenomena. This phenomena refers to a process linking two dimensions: first the increasing of the non-banking financing in the economy; second, the subsequent leadership taken by financial motives in companies' strategy (Bourguinat 2006; du Tertre 2005 & 2009). It means that profitability rate is now the first reference for the production planners. Investors determine the expected profitability rate. To reach that amount of profitability, production units' directors have to find ways to increase productivity. Then, quality is seen as a residue. In a saturated market, low quality means the capacity to assume low prices, allowing the market growth for a moment. But quickly it leads to an over competitive situation, in which prices are the main weapon. This has led a lot of enterprises in a pathway leading to a dead end. In that situation, sustainability is radically against the enterprise trajectory.

For the developing immaterial and relational activities, the tension is even higher because of the activities' nature itself. In these activities, beneficiaries enter production processes, bringing in non-manageable sources of dictate. They also bring their subjectivity in, making each service singular. The relational aspect of these activities also results in involving the workers' subjectivity. All this make the value creation process more complex and less predictable. The subjective commitment rises and the temporal aspects of labour change toward something harder to count, indeed uncountable (Dejours 2015).

The traditional approach considering a homogenous, divisible, and objectively measurable worktime is not relevant for such activities. The worktime cannot be the reference for value creation measure anymore. Multiple effects of this lack of relevance from the industrial conceptual framework and its practical translations can be identified today. Economically speaking, it leads to dysfunctions, low quality, value destruction, and an incapacity to summerize the value created. In social and health terms, it causes new labour pathologies as musculoskeletal problems and psychosocial troubles as burn out. Induced sides effects, known as *externalities* are not considered in the industrial model (du Tertre 2005; 2006; 2009). Those *externalities* can't last any longer, regarding to nowadays knowledge about global warming and other environmental issues. All this make the authors getting to the conclusion that the industrial model is in a dead end (du Tertre 2013; Benqué, Vuidel & du Tertre 2014; Dejours 2015; Demissy & Kniaz 2016; Vuidel 2016).

From this assessment, new economic models inspired by a more servicial way of thinking emerge. These new economic models, such as Functional and Cooperative Economy (FCE) seems to be more relevant regarding sustainable development (Benqué, du Tertre and Vuidel 2014). When an enterprise engages itself toward a service-based economic model, it means several changes in the way the enterprise is organised, in the way value is created and the way the value produced is then transformed into monetary flux. First the quality cannot be considered as stable and foreseen dimension anymore. In servicial activities, the quality does not lie in the result of the service, but also in the production process. In addition, quality in co-created with the beneficiary. This means that the quality depends on his commitment in the process. So, the resources mobilized in the production includes the beneficiary ones. In such activities, productivity is not a matter of scale anymore, nor a matter of labor intensification or a question of technical innovation. Trust helps getting more productive, as the capacity to adapt to the beneficiary or the capacity to find complementary skills according to the situation. As a result, productivity is based on responsiveness and flexibility; relevant goods and services association; skills complementation; and adoption economies resulting from the "*stability if the links with the beneficiary*" (Benké, Vuidel and du Tertre 2014).

Those changes take the form of new kind of relationship between producers and clients whose are closely cooperating. This means new kind of contracts and new invoicing practices. It also means new displays to evaluate the relation's production. The evaluation should not only take account of the result, but also of the effects generated along the whole production process. This evaluation should consider the externalities, and the effects on the people involved as a part of the overall performance. With these evaluation changes, the units chosen to summarize the company offers must change as well. Contractual issues and invoicing practices are two important dimension in companies' business models. We make a distinction in this paper between economic model – dealing with the way value is created – and business model – the way value is changed into monetary flux (Gaglio, Lauriol and du Tertre 2011). An enterprise engaged in a path toward new economic model should face tension about its business model as well.

To investigate these questions, we will expose enterprises experimenting an economic model shift. These enterprises have been accompanied by ATEMIS and more specifically by both the authors on their pathway toward a new economic model. For each case, we will expose the kind of change in which these enterprises are engaged, and the difficulties they are facing in terms of new business model building. We will develop two business cases here. The first one is cleanliness French enterprises. This sector has developed a deeply industrial conception of its activities which appears in these enterprises organization, evaluation process and business model. In practice, these activities are getting more servicial, and rely on a real-time cooperation between producers and beneficiaries. The second business case refers to an enterprise from the French Hauts-de-France region. This

enterprise first was a medical call center. It progressively changes its relations with general practitioners toward a health prevention service. The pathway toward a new economic model continues toward a local medical desertification prevention service. Those changes are questioning this company, especially about the kind of contract it can propose and the business model it could refer to.

From the industrial model to the servicial model: what new business model for cleanliness enterprises ?

In France, the cleaning industry first enterprises were founded in the 19th century. They were developed to support industrial activities as production plants, upkeep activities or harbour activities. This emerging sector has grown fast from the 1970's and the externalization phenomena affecting industrial activities in that period. Since then, the sector was developing continuously. Nonetheless, in the last twenty years, the sector is facing economic and social issues. The cleanliness activities suffer from a negative representation (Hughes 1996), and endure difficulties to enhance the value of their production. The customers are constantly pressuring to get prices as low as possible. Margins get lower and lower consequently since 2007 (4.2% in 2007, 2.6% in 2012[1]). Prices tend to be the main purpose in the competition on cleanliness market. At the same time, the work organisation and the underlying economic stakes are producing several social unwanted effects – part time jobs, out of sync worktime, tiresome labour, lack of acknowledgement, lack of social enhancement… In addition, the service is not fully satisfying the customers.

Facing these difficulties, some enterprises in this sector have started to change the way they organize their service and workforce. This change opens new economic possibilities calling for new kind of contract, of invoicing and evaluation practices.

Cleaning; a service thought in an industrial way.

Even if in France Cleaning is classified as a service, it is mainly thought and organized as an industry activity. The activity's result is thought as the absence of dust or some material removal. Secondly, the technical aspects of the service are the only aspects considered. The service is defined as an amount of square meters to clean, a frequency of cleaning and a price by hour. In this sector, performance is thought as in the classical industrial way, by a sequence of quality – productivity – profitability. The quality is considered as something objective and reproducible from a client to another. This means that the offer may always fit into the same specifications bill, no matter the client. Productivity mainly relies on labour intensification. A certain rate of square meters cleaned by hour must be reached to get some profitability. Increasing the amount of square meters cleaned per unit of time is seen as a sign of performance. Time is the central reference in the performance approach (Le Dilosquer & De Gasparo 2017). This is a striking dimension form the industrial model greatly

influencing the way contracts are built. Effectively, in that sector, enterprises transform value into money by selling, not an amount of goods, but of cleaning time understood quite as a good.

In addition, since the externalization phenomena in the 1980's, the cleaning services took place in displaced times from the customers' activity. The cleaning work is done very early in the morning or very late in the evening. This contribute to build a separation between production time and consumption time as it is in the industrial activities. It also creates social *externalities* for the workers – family time or health issues for example.

When cleaning in co-activity brings some changes.

For ten years now, some enterprises from cleanliness sector have adopted a new temporal organization to avoid some of the negative consequences exposed here. They first tried to develop cleaning intervention in daytime, to reduce the amount of part time jobs. This change appears to be more than a working time change. Cleaning in daytime means that the beneficiary is here, opening the possibility for a relational service. The nature of the service itself changes because of the subjective commitment, the cooperation with the customer's worker and the arbitration needed between every kind of prescription resulting of the co-presence. From all this, the point is not to intervene in an inert environment to clean furniture and floor areas anymore, but to intervene into singular and unpredictable situations.

The traditional economic concepts are unsettled by this activity based on relation. Productivity cannot be reduced to the optimization of a relation between time and surface. In co-activity, the cleanliness agent must deal with the workers' different uses of the place. The agent should consider the customer's workers' habits. Knowing these habits allows him/her to adapt his intervention to get more efficient and more relevant. Adoption economies supplant scales economies. Time/space ratio is not relevant anymore.

Though this example of cleanliness sector, we see how the activity changes. We do understand the emerging difference in the way value is created into the co-activity situation. But if the activity business model is still strongly inspired by industrial logic then, those changes are not acknowledged which may cause *externalities* and may lead to more difficulty for workers.

Toward a new business model

In French cleaning industry, displays are getting set to accompany the enterprises evolution toward a more servicial activity. The dynamics meet difficulties about contract conception and invoicing. The point is to find an alternative to contracts based on selling an amount of

technical work expressed in hours. The aim is to find a way to allow agreement between stakeholders about the value effectively created. Some of the enterprises we have accompanied have experienced new practices with their clients. The first thing they have done was to plan time with their customer to build a specification bill as close as possible to the building users' expectations. The result of this is an agreement on what is cleanliness adapted to a specific workplace and the specific uses of this workplace. To do so, the joint contractors build up a hierarchization of the actions to be taken rather than a list of tasks. It results in a new specification bill defining the performance to reach, adapted to the workplace uses and not in an amount of hours calculated from standardized criteria.

Labour evaluation displays are also questioned in those experiments. In the industrial model, labour evaluation is based on compliance controls. In these controls, the point is to measure the gap between the obtained result and the forecast result. In case of a gap, the contract plans financial sanctions. In the experiment, evaluation have two main objectives: professionalization and innovation. The performance agreement forecasts the overtaking of prescription. Therefore, the point is not to check the compliance anymore, but to check the relevance of the intervention. This relevance cannot be totally forecasted. This means that evaluation times are occasions to improve the arbitrations done by the cleanliness agent to answer a specific situation. Doing so helps the agent in their capacity to act in cooperation with the beneficiaries in situation. In other words, the evaluation time improve the agent's proficiency. In the same time, the evaluation process reveal some of the customer's expectation which were unthought in the performance agreement. These lacks may be corrected and then reintroduced in the cleanliness companies' offer.

From the industrial call center to an ecosystem struggling against local medical desertification

In France, general practitioners often work alone in their own office. They were used to deal with their agenda management by themselves or by employing a medical secretary. Like the cleanliness sector, the medical secretary work has been externalised in the past 20 years. Digital technologies have allowed new actors to deal with incoming calls from the patients and organizing the doctors' agenda. In that quite new activity, an industrial logic quickly dominates. The doctors seemed not willing to pay much attention to the quality of the service as long as their agenda got full enough. On the offer side, the pioneers on this market search to offer the lowest price by call and build a strategy based on a volume growth. Years later, the race toward the lowest cost have led those enterprises abroad. Patient started to complain about the quality of the answers they have got to their phone calls. They mainly complain to the doctors about the fact that the persons answering seems to not be able to deal with anything else than giving a rendezvous, when they are expecting medical advices or just somebody that listen to them. On the general practitioners' side, health issues started to mount seriously. These issues were the result of the growing lack of

doctors in some places, because of their rarity, or the growing need in the most populated areas.

In that context, a company from the French Hauts-de-France region was seeking for an alternative to the industrial model. The owner did not resign himself to leave France to find workforce at a lower price. He decided to search for a solution based on a new relationship with the practitioners. In 2012, after an accompaniment in his pathway toward functional and cooperative economy (FCE), he started to build up a new offer. Building this offer had two main consequences: First he had to imagine a new way to make his invoices; second, his service attracts local governments improving the purpose of the solution.

From selling an amount of calls toward health prevention and qualitative answers.

In the industrial perspective, this enterprise was selling an amount of calls dealt with. Basically, when a patient wanted to get a rendezvous, he/she calls the company which check the doctor's agenda and fills it with the requested rendezvous. The more the company filled the doctor's agenda, the more it earns money. From time to time, the company's workers noticed that some doctors do not fulfil their rendezvous. Other were said to be unpleasant with their patient. All complains were getting to the company who has no way to deal with it.

Facing this, the company owner decided to experiment a new value offer toward some practitioners. He asked them about their main problem and expectations. Most of them worried about the lack of time to rest. The company soon proposed a solution to reduce practitioners' activity when some signs of overwork are detected. To do so, the company have to deal with some of the patients' questions. The enterprise should also propose to the patient to meet another practitioner less occupied in the same area. By this solution, the company succeed in selling something else than an amount of calls dealt with. The problem is that something appears to be more complex to identify and understand.

A part of it was health issues prevention for the practitioners. As this effect could be obtained by limiting the amount of rendezvous taken, it cannot be paid on the same basis as before. Moreover, a part of the solution is to make some of the rendezvous shift to another doctor. Invoicing the rendezvous effectively taken would have meant reducing the cost to the one benefiting of the solution and rising it for the one who is helping! Another part of the solution is to deal directly with some of the patients calls, which means reducing the amount of rendezvous. At last, to get the performance, the company's worker must spend more time on the phone to decide if they can deal with the demand or if it could be taken by any doctor, or if the patient must have a rendezvous with his/her doctor.

In the former service, invoicing was quite easy. The company just have to count the amount of rendezvous taken. Nowadays, the company have to evaluate the quality of the service to determine how worth it is for each practitioner. As a result, two directions have been taken to invoice this service. The first one is to continue to count the amount of rendezvous with a higher price per unit because the doctors acknowledge the value of the service even if they can't give it a price. The other solution is to create a fix monthly payment satisfying the company and the doctor and allowing the company to continue its efforts to prevent doctors overwork situations.

From an individual solution to a territorial policy to struggle against medical desertification.

The company's capacity to take care of the doctors' overwork issues, quickly had a positive side effect: some retiring doctors advises the new comer replacing them to use the service. This positive sign paired up with a change in general practitioners' general expectation. The retiring doctors gave a big part of their personal time for their professional activity. The new generation of general practitioner seem to pay more attention at the balance between their professional and their personal life. The company started to imagine solutions to help new doctor' installation, by helping them getting patients from overworked doctors, and keeping the precious balance between professional and personal times. This solution soon attracts the local governments' attention. Indeed, the French Hauts-de-France region, as other region in France, suffers from medical desertification in several areas. Some of the local government started to call the company to get some help to attract doctors.

To do so, the company had to rely on its good relationship with the doctors' professional organization (French medical association) within the region. The company was already working with some replacement doctors. An agreement was found to help those replacement doctors to locate in places where medical presence is needed. The result is the possibility to get replacement doctors in an area to prevent a local doctor's overwork situation. Doing so, it also brings new access to medical services to inhabitants. At last, it gives to replacement doctors an occasion to test locations in areas needing them, right now or a bit later. The result is that some of these doctors effectively decided to locate in the places where they had the occasion to work in.

The uprising question interesting us here is: who should pay for this solution? The fact is, several actors do benefit of the solution. How the company should conceive its new business model for this solution? Is it still a matter of business ?

From a business model to an ecosystem financing.

When this medical call centre changes to a solution carrier for practitioner and local governments, the actors' system got more complex too. Meanwhile, the economic model gets more complex too. The industrial way seems particularly irrelevant for the new solution as the main effect result in avoiding health issues and creating attractiveness for territory by reducing the amount of rendezvous taken by doctors. Those two main effects are particularly difficult to forecast and uncountable. Creating a new convention about how a monetary retribution should be addressed to the solution carrier do not seem to be a business model question anymore. It rather seems to be a question of financing a territorial solution, a territorial ecosystem.

In terms of contract, this solution calls for a multilateral contract including at least the local government, the doctors and the solution carrier. As a health prevention service, the solution might also interest the French Social Security System. The problem that emerges from now is that each actor has their own logic and their own temporality. This solution would need time to get built. The company is now working to get all the ecosystem together which means spending a lot of time explaining how the solution works and revealing the potential value it could bring to the local population. Out of the solution conception issues, there is another task particularly complex to deal with for the company owner: this enterprise is creating a new profession, radically different from the call centre one. Developing the new solution would mean getting the whole team ready.

Conclusion

In both situations, we have seen how getting into a more servicial economic model leads to important changes in the business model. We also notice that putting some distance with the industrial references do not solve the question. In fact, it just open wide the question of new invoicing and contracting practices. In both cases, the instruction of the new business model goes through a deeper cooperation with the former customer and partner about the service conception and its evaluation. The conception and evaluation processes themselves are supposed to changes deeply. Evaluation is not meant to stand a compliance test as conception is not finishing when the service started. Evaluation appears as a key point of the new model conception. Therefore, the new services must integrate evaluation displays allowing the stakeholders to contribute to the solution performance in a quite long period. Such relationships mean to take some distance with the market conception of the exchanges, as it means the broadcasting of a servicial conceptual framework.

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SHORT PAPERS SESSION 2

Translating the Sustainable Development Goals into Societal Value Contributions of Businesses

Fiona V. Stappmanns, University of St. Gallen (fiona.stappmanns@unisg.ch)*,
Tabea Bereuther, University of St. Gallen (tabea.bereuther@unisg.ch)*
*both contributed equally

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Introduction and Theoretical Background

Research and practice on business sustainability is mainly framed using an instrumental logic that asks how can businesses benefit from incorporating sustainability issues into their activities rather than how can businesses significantly contribute to sustainable development. In contrast to the increasing emphasis on an integrated and balanced approach, the number of studies on the relationship between financial profitability and sustainability prove the scientific and practical dominance of the economic domain (Montabon et al. 2016; Eccles et al. 2014; Bonini & Görner 2011; Orlitzky et al. 2003). Yet, many concepts already exist which describe how companies can create value for the common good, apart from maximizing financial profits. Amongst those approaches are discussions on an ethical level like conscious capitalism, theories on the purpose of business like shared value (Porter & Kramer 2011), or practical suggestions by NGOs or consultancies. But nevertheless, researchers conclude that academics and practitioners still predominantly focus on the financial outcomes of sustainability activities rather than on the impacts on society and a broader understanding of value creation (Crane et al. 2014; Banerjee 2011; Hahn et al. 2010; Margolis & Walsh 2003). Thus, current sustainability management approaches fail to support businesses "in identifying and attaining goals that contribute significantly to sustainable development" (Baumgartner & Rauter 2017). This predominant inside-out perspective leads to an overemphasis on the business and the economic domain and results in an asymmetric value creation in which the needs of the wider society and the planet are neglected. Hence, there is a discrepancy between microeconomic-level improvements and macroeconomic-level deterioration which is described as a *big disconnect* between business activities and the overall state of the planet (Dyllick & Muff 2016; Whiteman et al. 2013). Besides, researchers in the field of strategic sustainability management argue that the reason for the limited impact and effectiveness of sustainability

management approaches is the lack of strategic orientation of sustainability practices and the incompatibility between strategy content and societal needs (Baumgartner & Rauter 2017; Baumgartner & Korhonen 2010). They call for an improvement of the strategic relevance and integration of sustainability management in the sense that both businesses and sustainable development benefit. Besides this tension between business and society, companies are confronted with intertemporal tensions between short term and long term. Slawinski and Bansal (2015) conclude that the reason for the misalignment between business and society is the separation between short-term business goals and long-term societal goals. In reality, these two levels are interrelated and businesses need to juxtapose the intertemporal tensions and treat them as a paradox in order to align business goals and societal needs in the long run. Consequently, in order to ensure that sustainability efforts on the business level effectively contribute to the goals of sustainable development, business activities need to be directly linked to global sustainability challenges and integrated into a firm's core business.

The importance of the private sector to successfully tackle sustainability challenges have become integrated into a joint global consensus around the Sustainable Development Goals (SDGs) (United Nations 2015). Those goals are replacing the Millennium Development Goals (MDGs) and shape the agenda for sustainable development until 2030. Unlike the MDGs, the SDGs explicitly address the responsibility of businesses in sustainable development, and - for the first time ever - point to their important role for a success (von Angerer et al. 2016). Although the MDGs were never really addressed by businesses, the private sector largely contributed to their success, mainly indirectly through the creation of jobs (Stuart et al. 2016). Since the adoption of the SDGs, governmental institutions, NGOs and different actors in the private sector developed several guidelines and tools to support businesses in fulfilling their responsibility (e.g. Corporate Citizenship 2015; GRI, UN Global Compact & WBCSD 2015; UN Global Compact, KPMG 2015). Besides, there are studies showing the different relevance of global sustainability challenges and assessing the attainment of the SDGs on a national level (Muff, Kapalka, Dyllick 2017; Globescan & SustainAbility 2017). The Gap Frame by Muff et al. (2017) translates the global SDGs into relevant actions on national level and provides a business tool to address them strategically. Recent studies show, that less than one in ten businesses do not intend to consider the SDGs for goal setting and general sustainability management (Globescan & SustainAbility 2017; BSR & GlobeScan 2016). Quite contrarily the same study reports that businesses see the SDGs as a chance to align their core activities as well as innovation efforts with societal needs. Climate action was identified as receiving the most attention within corporations. Another study shows that 92% of businesses are aware of the SDGs but only 13% identified the appropriate tools they need to take action (PwC 2015). Hence, consistent approaches and clear instructions or tools how the complex SDGs can be addressed by the private sector are still missing (Corporate Citizenship 2015).

Agarwal et al. (2017) criticize current forms of engagement which are often based on a limited business case thinking and a focus on win-win situations which lead to self-serving sustainability activities. Accordingly, companies fail to meaningfully contribute to some of society's most pressing sustainability challenges. The pressure on the private sector to effectively support sustainable development not only comes from international institutions or NGOs but also from customers. More and more people value sustainable products or services and expect businesses to act in an environmentally and socially responsible manner. A study shows that 90% of citizens believe the private sector is important to reach the SDGs and 78% prefer goods and services of companies that had signed up to the SDGs (PwC 2015). But solely reacting to customer's wishes is again another form of taking advantage of a win-win situation. What we need is a robust framework that helps to guide businesses towards addressing the SDGs.

Research Questions and Objectives

Against this background, the overarching research leading question for this working paper and bigger research project is "*How can companies effectively contribute to sustainable development?*".

In order to answer this question, three sub-questions will be addressed and working-packages will be defined to answer these questions respectively. At this early research stage, the working paper addresses mainly the first research question. The second and third questions have to be left to future research objectives. The following explanations describe the questions in more detail and illustrate how they are embedded in a broader context.

> RQ1: What are the societal value contributions a company should aim at in order to contribute effectively to sustainable development?
>
> RQ2: How can these societal value contributions be translated into strategic goals?
>
> RQ3: What does a business model look like that effectively guides companies in putting their strategies into action?

When analyzing the SDGs it becomes apparent that the goals are interconnected and interdependent (Nilsson et al. 2016). Due to this complexity it is difficult for companies to find appropriate goals which fit their competencies and at the same time effectively address a specific sustainability challenge. Therefore, the need to clarify what sustainable development means for businesses emerges. In order to enable business to contribute to sustainable development and to improve the strategic relevance of SDGs, they have to be more specific and focus on company level. To do so, it is necessary to find a mechanism which translates the SDGs on a global level into concrete sustainability topics on business level, which can be addressed strategically and integrated into corporate strategy. We call

this transmission societal value contributions (SVCs). The SVC concept should serve as a translator for companies to translate the global SDGs and to formulate sustainability topics which can be addressed effectively. This means to focus on issues and themes which can explicitly be addressed by companies. Strategically addressing the SVCs and their deducted themes can help to overcome the missing effectiveness and prevalent reductionism identified by Baumgartner & Korhonen (2010). This is a first step to operationalize an outside-in perspective developed by Dyllick and Muff (2016), which allows for effective contributions to sustainable development and represents what they call *true business sustainability*. By defining relevant sustainability challenges and taking them as a starting point for strategy and business model development, companies are enabled to make significant contributions towards sustainable development (RQ1).

On a next level, the SVCs build the starting point (i.e. the purpose) for the business strategy and define a vision of success. To develop strategies for business, they need to be based on its core competencies in order to be efficient. Several studies show that the SDGs receive different attention and relevance within organizations (Globescan & SustainAbility 2017; Corporate Citizenship 2015). Agarwal et al. (2017) conclude that businesses should not aim to address all SDGs but prioritize goals and focus on those areas where the greatest impact is possible. At the time they need to take their resources and capabilities, respectively its core competencies, as well as the country and sector the business is operating in into account. This should not be confused with 'cherry-picking' those goals that are most comfortable for the company to address. Prioritizing makes sense as companies have limited resources, different abilities and relative advantages or disadvantages for problem solving so that it becomes necessary in order to address global sustainability challenges most efficiently.

Additionally, the SVCs provide not only orientation but also purpose for the business. *Purpose* is defined "as a concrete goal or objective for the firm that reaches beyond profit maximization" (Henderson & Van den Steen 2015). In research and practice, purpose-driven businesses are an increasing phenomenon with promising impacts regarding value creation for both business and society (Henderson & Van den Steen 2015; Zendlmayer 2015). By aligning the core competencies towards relevant SVC, business strategies that effectively address global sustainability challenges can be developed. Taking SVCs as a starting point for iterative strategy development and incorporating them into strategy content, supports both the operationalization of an outside-in approach as well as enables a strategic integration of sustainability management. This process and the concrete business themes help companies to set appropriate goals that align their strategic orientation and strategy content with societal needs. Following figure illustrates the conceptual basis and shows the duality of purpose and core competencies. (RQ 2)

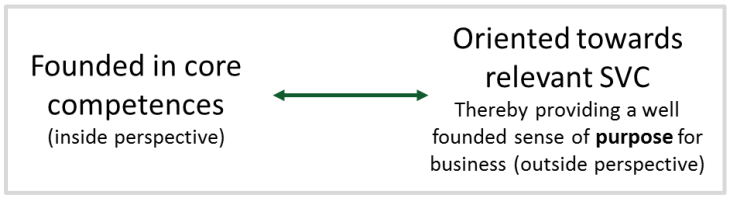


Figure 1: SVCs and strategy - Duality of core competences and purpose (own illustration)

Finally, the specific topics and strategies need to be integrated into an effective business model that guides companies in putting their strategies into action. In the literature there is still no satisfactory distinction or relation of the two concepts. For the sake of this paper, we will consider them as interdependent, closely related but distinct aspects of a company. It can be argued that the decision for a certain business model is a strategic one, on the other hand this decision also influences the course of strategy a company pursues. Strategic decisions are often based on the core competencies of a firm, yet some of the building blocks of a business model, e.g. the key resources, or even the business model as a whole can be considered as such a strategic advantage. Although this very rough description serves the purpose of this working paper, this complex relationship needs to be further analyzed and defined in order to answer the second and third research question. Yet it already illustrates the complexity and ambiguity when working with those definitions. Foremost, in this paper the concept of corporate strategy and business model will be used to break the global SDGs down to company level and to operationalize business contributions to SDGs. (RQ 3)

The following figure illustrates the transmission paths and the relationships between the different levels.

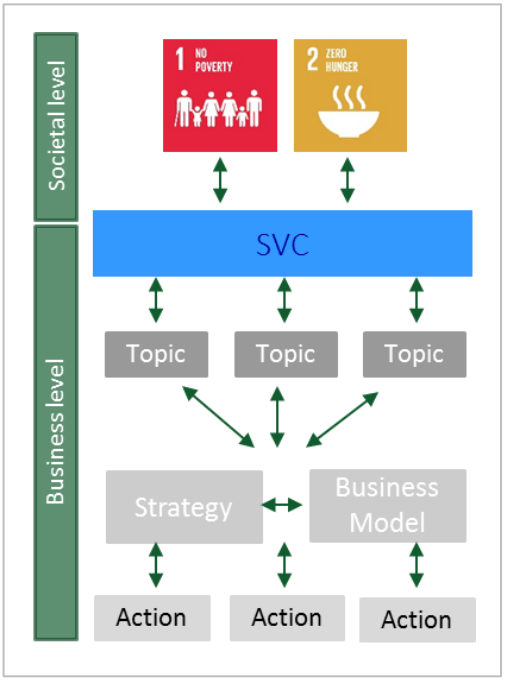


Figure 2: Connecting SDGs to the business level (own illustration)

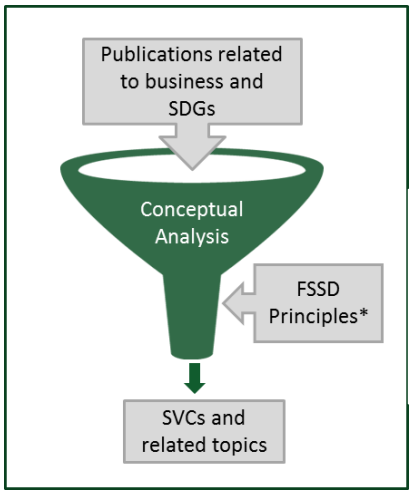
By answering the research questions, the research project aims at connecting the global, societal level (i.e. the state of the planet) and the business level, manifesting in the firm's strategy and business model. The introduction of business themes and SVCs shall serve as a transmission mechanism to bridge the gap between the societal- and business-level and aim at an inclusive and symmetric value creation as well as at a strategic integration of sustainability management. By translating SDGs into concrete sustainability topics for business action, the SDGs can be addressed more effectively by companies and integrated into strategic management in a language business understands rather than abstract, global goals. Furthermore, this research also aims at contributing towards the theoretical foundation of a new way of doing business, connecting concepts like the resource-based view of a firm, its strategy, business model and sustainable development.

Methodology

In search for the values business should aim at in order to effectively address sustainable development and to contribute towards a more just and sustainable planet, existing concepts related to businesses and sustainable development respectively SDGs need to be analyzed carefully for recurring communalities. This qualitative meta- or conceptual-analysis of existing concepts aims at systematizing and restructuring the value discussion in order to identify important elements and similarities. It does not aim at establishing a universal truth and general approach towards sustainable development for businesses because the challenges and actions to address these challenges highly depend on the industry and context of the company. Instead, it has the goal to support companies in their efforts to contribute towards generating societal value in a very specific, case dependent manner for a single firm or an industry at most.

Initially following publications were analyzed: *SDG Compass* (GRI, UN Global Compact, WBCSD 2015), V*aluing the SDGs prize* (AlphaBeta 2017) and *SDGs mean business* (Ugarte et al. 2017). These three contributions were selected based on their high relevance for the research question. In a first step their suggestions for business actions to address the SDGs on a company level were identified. In a next step those suggestions were aggregated and clustered into topics on a generic level. Through logical deduction and in various feedback rounds the authors identified overarching patterns in value creation, which were defined as SVCs. The program atlas.ti was used for documentation and structuring of the analysis (see figure 5 in the appendix).

In order to refine the results, the idea and principles of the Framework for Strategic Sustainable Development (FSSD) by Broman and Robèrt (2015) were used and combined with the previously conducted analysis of societal value creation. "It is difficult to know whether any given scenario is a truly sustainable or not if it is not framed by and assessed against a principled definition of sustainability" (Broman & Robèrt 2015). Consequently, these principles were applied to enhance the analysis.



* The FSSD Principles were translated into positive statements/ contributions and related to resp. combined with the identified categories of SVCs (see table 3 in the appendix)

Figure 3: Method and research process (own illustration)

Early Findings and Preliminary Results

Whereas in the past business contributions to sustainable development were rather a byproduct of economic development (e.g. increased wealth through the creation of jobs and industrialization), a prospering future demands a strategic and coordinated approach for actions in this area. The interconnectedness and interaction of the SDGs reveal and highlight the necessity of SVCs.

Our initial research identified 11 distinct SVCs, ranging from topics like transparency to biodiversity, environmental protection and animal welfare (see Table 1), covering the dimensions of environment, society, economy and governance.

Table 1: Societal Value Contributions across four dimensions

Dimension	**Societal Value Contribution**
Environment	Efficiency
	Sustainable sourcing
	Biodiversity and environmental protection
	Animal welfare
Economy	Economic inclusion and participation
Society	Reliable and affordable (basic) services
	Training, education and competences
	Labor conditions
	Non-discrimination, equal opportunities and inclusion
Governance	Transparency

Each of the 11 SVCs covers several themes, from which in turn the topics for businesses can be deducted. For example the environmental SVC "Efficiency" comprises topics such as resource and energy efficiency and concepts like the circular economy, optimized packaging and modular design, across products and services, as well as processes. "Reliable and affordable (basic) services" specifies the provision of services for a range of areas, including healthcare, food and water, electricity and energy, sanitation, resources, infrastructure, housing, financial services, mobility and education. For each of those SVCs concrete business actions shall be defined in the next step of the research process. This means after aggregating several concepts in order to define the SVCs, the next step is to combine the strengths of each concept and build a comprehensive list of topics for businesses to effectively address sustainability challenges. "Reliable and affordable (basic) services" (see Table 2) shall serve as an illustration of this step of the research process.

Table 2: Example for business topics of "Provision of reliable and affordable (basic) services"

		Businesses should promote access to...
Provision of reliable and affordable (basic)	healthcare	affordable medicine
		affordable quality essential healthcare services
		occupational health and safety
		sexual and reproductive healthcare

services	food & water	healthy and affordable food
		clean drinking water
	electricity and energy	reliable and clean sources of energy
	sanitation	basic sanitation services
		waste water treatment
	resources	all necessary and affordable natural resources
	infrastructure	necessary public infrastructure
	housing	affordable and safe housing
	financial services	basic financial services
	mobility	safe, reliable and affordable public transport
		alternative mobility concepts
		vehicles with alternative propulsion systems
	education	affordable quality education
		vocational training
		on-the-job-training
		affordable childcare

The following figure illustrates how the results of the example above are related to each other in a broader context.

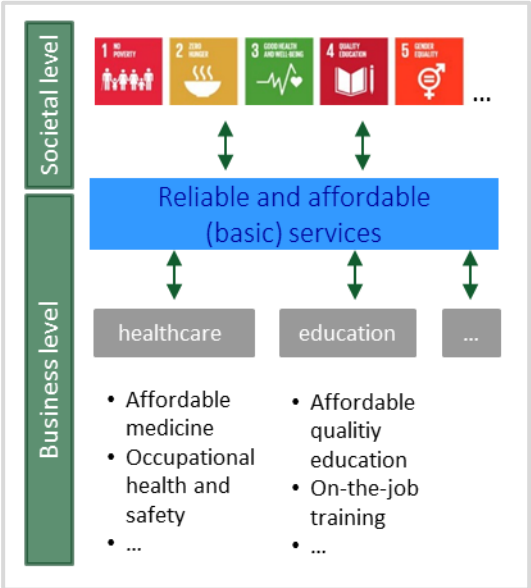


Figure 4: Example of the connection between the societal and business level

From these topics, concrete actions can be deducted. Those actions symbolize a concrete way to achieve the ideal state, namely the SVCs. Those actions are highly dependent on the specific industry and context. In the context of the provision of food and water, a company like Nestlé might include measures such as the reduction of unhealthy ingredients (saturated fat, sugar, conservatives) or the promotion of healthy living into their business. The reduction of pesticides and efficient use of fertilizer within their supply chain is another example and suitable for grocery retailers like Aldi Süd, who banned the use of certain pesticides for their fruit and vegetable suppliers in 2016 (Neue Zürcher Zeitung 2016).

Although the research is in a very early stage it already shows some interesting preliminary results. Besides the SVCs and business topics, further interesting observations regarding the contribution of businesses towards sustainable development can be made. Based on the analysis, a distinction between direct and indirect influence can be identified. This means for instance that "Non-discrimination, equal opportunities and inclusion" can be created by either implementing measures within the organization, which address the goals directly, like equal pay for men and women. Or it can be addressed indirectly by supporting access to sexual and reproductive healthcare services and providing information for both men and women in the local community. The distinction between direct and indirect influence is highly important as it reveals a set of different business topics and actions within the SVCs. Furthermore, it illustrates the complexity and interdependency of the topic as a whole.

Besides the direct and indirect influence on different SVCs, several so called 'transmission paths' (or modes of implementation) were identified throughout the analysis. In addition to the concrete SVCs and topics businesses can aim at, the ways to implement appropriate measures form an important building-block in the discussion about how businesses can contribute to sustainable development. Besides 'indirect or direct', the two identified dimension are 'alone or together' and 'organizational or institutional level'. The first distinction refers to the degree of cooperation whereas the latter points to the scope of action (organizational aspects or a change the rules of the game on a broader level). In these three dimensions, six transmission paths for SVCs were identified, which show possibilities for companies how to address the SVCs effectively. These transmission paths can support the definition of a robust framework for business contributions and reveal options for strategy or business model development.

1) Investment and innovation (including technological, environmental investments and investment in infrastructure and R&D)
2) Awareness and education (e.g. customer education, awareness rising)
3) Industry standards (require and support business partners to do the same)

4) Collaboration and partnerships with other stakeholders throughout the value chain, academics, governments, civil society and international organizations or NGOs
5) Knowledge sharing and technology transfer (open innovation, open source knowledge platforms), capacity building
6) Establishing long-term business relationships

Conclusion, Implication and Outlook

The list of SVCs build a solid basis for further specification and deduction of concrete business topics and actions. The extensiveness of this list of SVCs does not mean that one company should address all of them, on the contrary. Comparable to the SDGs, companies should focus on the areas with the highest possible impact and prioritize SVCs based on their capabilities, resources and market position. Additionally, state governments and other private or public institutions have a shared responsibility to provide the 11 SVCs. Although the role and power of businesses should not be underestimated, it needs to be specified which SVCs businesses are able to directly contribute to, which one the government or other institutions need to provide and which ones can be achieved through joint efforts or by business alone.

In order to explore more angles on possible societal value contributions of businesses, further publications and studies will be analyzed to enhance and refine the list of business topics and actions. Those results will undergo several feedback rounds with experts. In a next step those generic findings can be adjusted and broken down to fit the needs of a more concrete industry contexts and to define strategic business goals as well as building blocks of business models for sustainable development. This can happen through workshops with industry experts, at the same time testing for the applicability and usefulness of the whole concept.

The developed list of SVCs can serve as a starting point for strategy formulation (strategic content) and business model development. The identified transmission paths can supplement the framework for business contributions to sustainable development and, especially in a specific industry context, facilitate effective contributions towards sustainable development from businesses. Yet, some critical points need to be taken into account. First of all this area of research is fairly new and unexplored, which limits the theoretical foundation it can build on. Additionally, the scientific method is based on qualitative and conceptual work as well as it is a qualitative method by itself. This could lead to weaknesses regarding robustness and validity, and especially replicability of results. Nevertheless, this approach shall serve as a solid basis for further investigations about the role of businesses in addressing sustainability challenges and most importantly the identification of effective business actions to contribute towards the generation of positive societal value.

6. Appendix

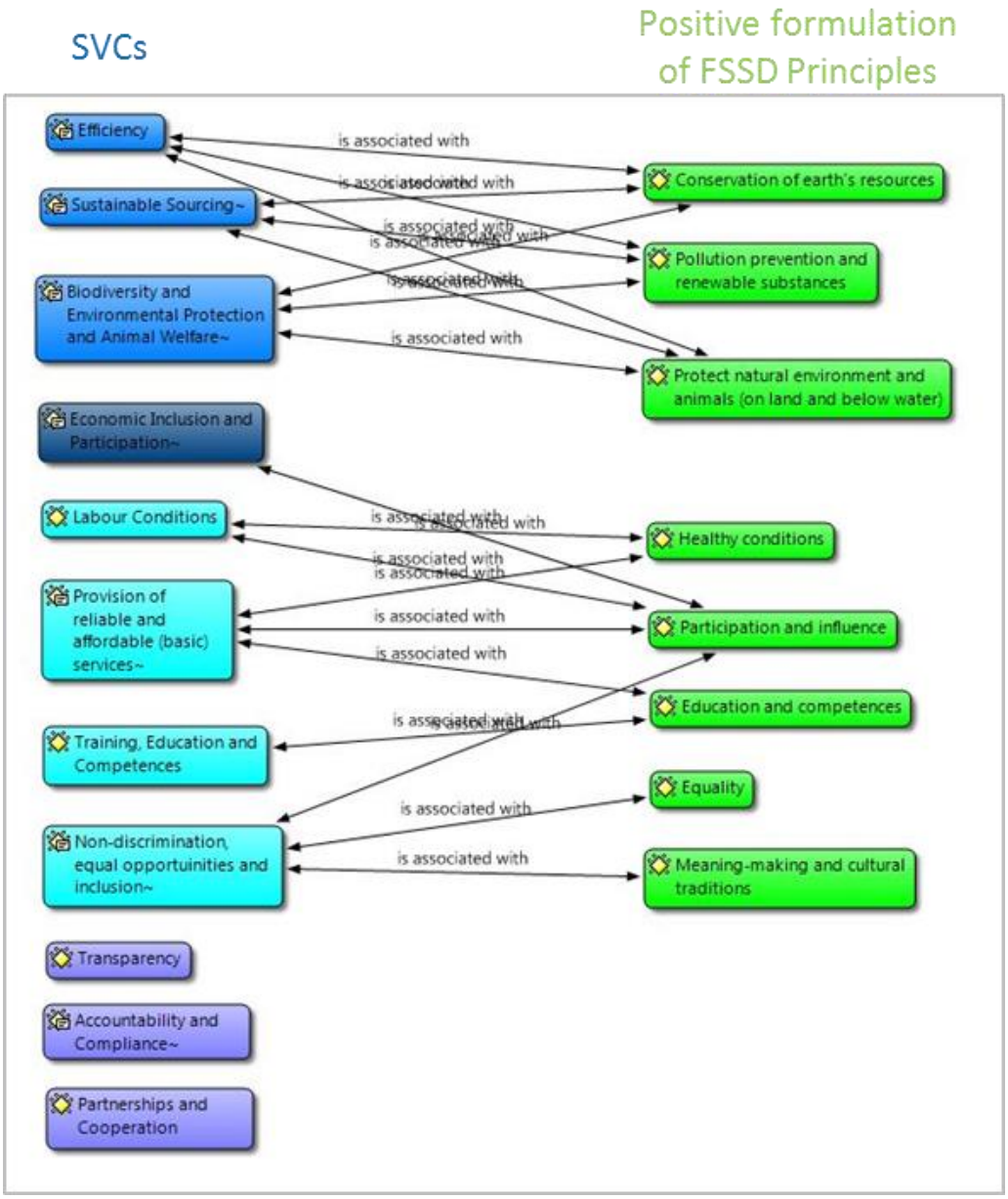


Figure 5: Research process and analysis - Combine SVCs with FSSD Principles

Table 3: Positive Formulation of FSSD Principles

	FSSD Principles by Broman & Robèrt, 2015	Positive Formulation of FSSD
Environment	Don't systematically increase concentration of substances extracted from earth's crust (metal, fossil carbon)	Conservation of earth's resources
	Don't systematically increase concentration of substances produced by society (plastic, CFCs, NOx)	Pollution prevention and renewable substances
	Don't systematically increase degradation by physical means (biodiversity, freshwater, forests, fishing)	Protect natural environment and animals (on land and below water)
Society	Don't systematically expose people to social conditions that undermine their possibilities to avoid injury and illness (e.g. dangerous working conditions, insufficient rest of work) (health)	Healthy conditions
	Don't systematically hinder people from participating in shaping social systems (e.g. suppression of free speech) (influence)	Participation and influence
	Don't systematically hinder people from learning and developing competences (competences)	Education and competences
	Don't systematically expose people to partial treatment (e.g. discrimination) (impartiality)	Equality
	Don't systematically hinder people from creating individual meaning and co-creating common meaning (e.g. suppression of cultural expression) (meaning-making)	Meaning-making, Culture and Tradition

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Factors influencing the success of business model innovation:
Dynamic capabilities and environmental dynamism

Arash Rezazadeh, Ana Carvalho
School of Economics and Management, University of Minho, Portugal
a.rezazadeh@eeg.uminho.pt
anac@eeg.uminho.pt

Keywords

Business Model, Business Model Innovation, Dynamic Capabilities

Abstract

Increasingly, the topic of business model innovation (BMI) is getting attention from management scholars. Defined as the practices to develop new ways of creating, delivering, and capturing value, BMI occurs by either designing and implementing a radically new business model (BM) or by improving the current BM. Resting on the notion that a new, more effective BM has greater value than a novel product or technology per se, numerous studies have been carried out to broaden its theoretical horizons. The success of BMI implementation is one of the emerging research areas, addressing the circumstances under which the implementation of a new BM enhances firms' performance. In this sense, we propose the inclusion of factors affecting the success of BMI as one of the future research directions in BMI literature. This study thereby intends to identify the most critical factors influencing the performance effect of BMI. To achieve this, we conduct a literature review to build up a conceptual model consisting of four propositions regarding three antecedent roles of knowledge management capability (the ability to create, retain, and transfer new knowledge), organisational agility (the capability to rapidly detect environmental changes and adapt in response to them), and BM ambidexterity (the ability to manage two different BMs concurrently), as well as the moderating influence of environmental dynamism (the extent to which the business environment is changing and volatile). This study contributes to the growing BMI literature by taking the dynamic capabilities perspective and developing a conceptual model that further explains which variables affect the success of BMI.

Introduction

Since the explosion of the World Wide Web and the "dotcom" boom of the mid-1990s, attention is being paid to the topic of business model (BM) and especially recently to business model innovation (BMI). The term BM has been defined as a conceptual schema that explains the logic of doing business and the way a firm creates, proposes, delivers, and captures value (Osterwalder and Pigneur, 2010; Zott et al., 2011). Extending the BM concept into the realm of incremental innovation, a body of scholars acknowledge BMI as the practices to innovate the firm's BM, in a way that one or multiple elements of the BM change to improve the performance (Frankenberger et al., 2013).

BMI, relative to the other types of innovation, potentially influences firm performance (Kim and Min, 2015). That is, a number of scholars have recently begun to enrich the BMI literature, probing into the ways it drives the odds of business performance. In this sense, the success of BMI seems to be studied without going deeply into the influencing factors. This review article thereby tries to bridge a portion of this gap by proposing a framework to answer the question of which factors influence the success of BMI and in which way? To achieve this, after a brief literature review, the propositions arising from prior theoretical and empirical research are developed to support the proposed framework. The paper, in the final section, draws the conclusion and recommends several ideas for future research.

Brief review of the recent literature on business model innovation

A common starting point to define the concept of business model innovation (BMI) is to spell out the business model (BM) concept first (Chesbrough, 2007), which cannot be easily distinguished from similar terms such as strategy (Teece, 2010), business plan (Ghezzi et al., 2015), or financial model (Stampfl et al., 2013). More recent definitions of BM recognise its conceptual, rather than financial nature (Teece, 2010), stressing the notion that BM is not only about revenue generation, but should comprehensively describe the way the firm creates, delivers, and captures *value*. Accordingly, drawing from recent literature, BM can be defined as a conceptual tool describing the logic of the business (Casadesus-Masanell and Ricart, 2010), a particular configuration (Jabłoński, 2015) of the content, structure, and scope of activities (Zott and Amit, 2010), the external network of relationships (Zott et al., 2011), how to create value for stakeholders (Casadesus-Masanell and Ricart, 2010), which markets to enter and which class of customers to target (Osterwalder and Pigneur, 2010), what to offer to the targeted customers (Zott et al., 2011), how to deliver the offerings to customers (Zott and Amit, 2010), and how to maximise benefit from the created value (Stampfl et al., 2013).

A commonly applied systematic approach to narrowing BM definition is the identification of its elements or building blocks. From the early works (Mahadevan, 2000) to the most recent ones (Arbussa et al., 2017), scholars find it of advantage to point out the dimensions of BM. The variety in number and nature of the proposed elements however is

high. It ranges from the three-dimensional framework of Mahadevan (2000) with value, revenue, and logistical streams, to Alt and Zimmermann (2001)'s six-dimensional categorisation with mission, structure, processes, revenues, legal issues, and technology, and the nine-dimensional classification by Osterwalder and Pigneur (2010), presented in the famous *business model canvas* that includes customer segments, customer relationships, value propositions, distribution channels, key resources, activities, and partnerships, and revenue and costs structures.

A review of the BM literature, especially recent contributions, reveals that innovation is one of, if not the, most frequently discussed and researched topics introduced into the BM domain. Although a consensus on its definition and conceptualisation has not yet been reached (Planing, In Press; Spieth and Schneider, 2016), a considerable number of BMI definitions are anchored in two underlying principles, viz. the importance of value and the change in one or more elements of the firm's BM. Frankenberger et al. (2013), for instance, define BMI as "a novel way of how to create and capture value, which is achieved through a change of one or multiple components in the business model" (p. 253). Following this school of thought, therefore, BMI practices lie in changing one or multiple BM value-based components, including *value creation* which addresses the production processes and the reconfiguration of the required resources and capabilities; *value proposition*, the products/services offered to customers; *value delivery* that explains the way to reach and interact with customers; and *value capture* describing how a firm deals with its financial issues to gain maximum profits.

Conceptual framework and proposition development

Firms engage in innovation activities in pursuance of competitive advantages, differentiation, and financial benefits (Baregheh et al., 2009) that are recognised as certain aspects of business success (Škapa and Klapalová, 2012). A review of the BMI literature reveals the tendency to study the success of implementing this type of innovation from various viewpoints. The conceptual framework proposed in this study tries to highlight the importance of the key capabilities required to effectively implement BMI. Further, the perceived influence of the environment in terms of the extent of stability, transparency, uncertainty, and change is proposed to be included in the framework. As depicted in Figure 1, the framework entails three antecedents of successful BMI together with the moderating effect of environmental dynamism. The following sections discuss the propositions associated with the dynamic capabilities-BMI relations.

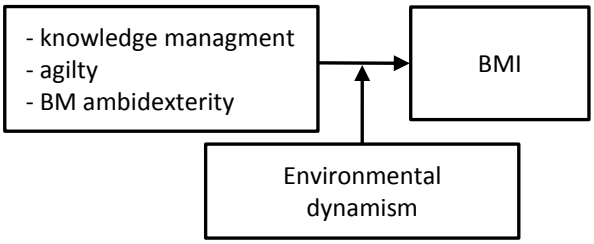

Figure 1. Conceptual framework

Knowledge management capability as preceding the success of BMI

The design and implementation of a new BM is always linked to the creation of new knowledge (Malhotra, 2001). The adoption of a new, different way of doing business potentially comes with new experiences and the feedback derived from those lessons increases the level of knowledge. Since knowledge acquisition is viewed as a key determinant of performance in various areas, such as product innovation (Song et al., 2005), proactiveness (firm's ability to anticipate demands and seize new opportunities ahead of the competition) (Li et al., 2010), or operational performance (Zhang et al., 2016), the subject of its impact on successful BMI is worth studying, especially given that BMI has been discussed rigorously from the knowledge management point of view (See, for more details, Week, 2000).

Studying BMI through an organisational learning lens, scholars argue how learning processes affect BMI. *Knowledge management capability* is defined as the firm's ability to acquire, assimilate, retain, protect, transfer, and put into practice the knowledge, derived either from external sources or generated internally (Lee and Tsai, 2006; Pérez-López and Alegre, 2012). A more detailed review of the literature reveals the importance of knowledge to implementing each dimension of BMI. In accord with Song et al. (2005), knowledge application is essential to ensure the success of new product development practices (value proposition innovation). Svetlik et al. (2007) suggest that the effective integration of new

processes into organisational culture and structure (value creation innovation) depends highly on the effectiveness of knowledge sharing across the management hierarchy, so that a better interaction between employees and managers enhances firm innovation capability. Soliman and Youssef (2001) advocate the role of new knowledge-based technologies in making delivery systems smarter and consequently, increasing customers' satisfaction. In Braganza and Ward (2001)'s study, devising new ways of delivering products/services (value delivery innovation) is recognised as one of the facets of strategic innovation which is influenced by retaining the knowledge of people within the organisation. As discussed by Teece (2006), to better capture value from innovative efforts, it is necessary to protect intellectual property, as to prevent the imitation of new products or processes. This way, the profit generated from those innovations is more likely to be sustained as competitors find it more difficult to react in time. New knowledge may also arise out of BMI. Sosna et al. (2010) find that the design and testing of a new BM (the exploitation phase) coincides with the generation of new knowledge through trial-and-error learning. Afterwards, the implementation of a new BM (the exploitation phase) paves the way to integrating new knowledge into organisational climate and culture.

On the basis of the discussion provided above, the following proposition is offered:
Proposition 1: Firms with better knowledge management capability are more likely to achieve performance enhancing BMI.

Organisational agility as preceding the success of BMI

In an organisational context, the term "agility" refers to the firm's ability to rapidly and easily move or change in response to market turbulence and uncertainty (Sherehiy et al., 2007). The most important characteristics of agile organisations are identified as flexibility, market sensitiveness, responsiveness, information drive, speed, lean structure, openness to change, process integration, and customised products/services (Agarwal et al., 2006; Sherehiy et al., 2007). The positive effect of agility on performance is well and extensively documented. Agile enterprises are quick to respond, proactively flexible and open to innovation, leading them to improve firm performance in terms of sales, profits, or assets and market share (DeGroote and Marx, 2013).

Schneider and Spieth (2013), in a systematic review of BMI literature, recommend studying the potential linkages between strategic agility and BMI as a promising future research field. In their view, to innovate the BM, it is crucial to foresee what environmental changes are likely to affect the business, so as to suppress any harmful effects and anticipate opportunities. Even though agility is less studied in BMI literature, the underlying interconnections can be detected. As a classic study on BMI, Chesbrough (2010) addresses "the need for firms to have strategic agility if they are to be able to transform their business models in the pursuit of strategic innovation" (p. 361). Highlighting "successful BM renewal and transformation as being one of the main outcomes of strategic agility" (p. 371), Doz and Kosonen (2010) ENREF 19 argue that strategic sensitivity, leadership unity and resource fluidity (as three dimensions of agility), enhance the firm's ability to either implement a new

BM, or switch between parallel BMs. Bucherer et al. (2012) identify agility and responsiveness as elements promoting BMI. Proposing *market adaptability* as one of the enablers of BMI, Berman et al. (2012) assert that agile companies, thanks to their ability to swiftly respond to varied and unpredictable customer demands, are better positioned to generate new BMs in order to exploit new markets and opportunities.

Organisational agility can be reflected in the BM itself. The concept of *agile BMs* is echoed in the manufacturing systems literature, concerning the value creation dimension of BM. As posited by Loss and Crave (2011), under an agile and dynamic BM, the firm is more likely to extract information from external resources, in particular customers. If this translates into customer satisfaction, financial performance improvement can also be expected. Hyland and Beckett (2005) also conclude that agile BMs accelerate the exchange of information among supply chain members.

Proposition 2: Agile organisations are more likely to achieve performance enhancing BMI and develop agile BMs.

Business model ambidexterity as preceding the success of BMI

Intense competition and unpredictable market preferences in today's business environment compel firms to base their decision-making processes upon customers' demands (Lee and Tsai, 2006). Heavy reliance on customers' preferences, however, can be of major disadvantage especially when the company is not able to quickly and easily adapt to new demands. This brings to the fore the relative ability to meet the conflicting needs of customers. In some situations, for instance, companies should supply customers who demand certain low-cost products or services. Other situations, however, cause an increased demand for higher-cost offerings that are of higher quality. Organisations competing with dual strategies are more likely to fulfil such conflicting demands.

Ever since Duncan (1976) introduced the idea of designing dual organisational structures, scholars have been extending the concept into other domains. BM ambidexterity, as one of the outcomes of such efforts, addresses the advantages of being able to perform under dual BMs. One of the assumptions of the ambidexterity theory is that the firm's sustainable growth hinges upon its ability to simultaneously exploit existing capabilities and explore new ones (Raisch et al., 2009). BM ambidexterity, in a similar vein, can be described as the ability to leverage the resources and competencies under the current BM, while at the same time seizing new opportunities under a new BM. As summarised in Table 1, Markides (2013) proposes two major aspects of ambidexterity through which the BMI literature can be advanced.

Table 1. The contribution of the concept of ambidexterity to BMI literature

Ambidexterity dimension	*The content*	*Contribution to BMI literature*
Temporal separation	The organisational capability to incorporate incompatible activities at different times	It is crucial sometimes to exploit a particular market niche under a certain BM and change it later to a different one which was designed and prepared beforehand.
Contextual ambidexterity	To better promote ambidexterity among staff, a suitable organisational context and structure should first be defined and implemented.	To achieve BM ambidexterity, a flexible, open to change structure is required to deal with issues of authority, communications, roles, power, and responsibilities in handling divergent BMs.

BM ambidexterity is often viewed as a key capability to improve BMI. Chesbrough (2010) underlines the value of the ability to simultaneously monitor the environment (external concentration) and reallocate internal resources for successful implementation of new BMs. Probing into the effect of using parallel BMs on research-based spin-offs' innovativeness, Clausen and Rasmussen (2013) argue that they are more likely to thrive if developing a different BM from their mother company and performing under both BMs simultaneously. Velu and Stiles (2013) point to the *cannibalisation* as one of the obstacles to BMI, so that the introduction of a new BM might potentially diminish the value of the existing one. They therefore suggest developing the ability to organise parallel BMs as a remedy to the challenge of changing the BM.

Proposition 3: Firms with business model ambidexterity are more likely to achieve performance enhancing BMI.

Environmental dynamism as moderating the dynamic capabilities-BMI relationships

The firm's competitive environment has been largely argued to be of fundamental importance in determining innovation success (Simerly and Li, 2000). Employing different perspectives, scholars justify the importance of environment. Taking the resource-based view of the firm, Sirmon et al. (2007) assert that the environment and its features determine the type of resources needed the most. For instance, they find that in environments with higher information asymmetry (the extent to which the market players have private information), knowledge-based resources are of greater significance. Drawing on the social network theory, Li and Liu (2014), argue that since altered dynamic environments make it more difficult for firms to gain resources, those with strong social network ties are more likely to survive and thrive. Reviewing the literature on the influence of environmental contingencies, it is commonplace to come across articles emphasising the importance of environmental dynamism, seen as the extent to which the business environment is instable, uncertain, changing, and volatile (Li and Simerly, 2002). The degree of dynamism mostly

stems from the level of information transparency defined by the players of the market (Sirmon et al., 2007).

Even since the seminal work of Burns and Stalker (1961), the influence of environmental dynamism on firm success has been the focus of management scholars, and has been widely recognised as moderating the relationship between different concepts (e.g., structure (Burns and Stalker, 2000), strategy (McArthur and Nystrom, 1991), or firm ownership (Li and Simerly, 1998)) and performance. For Burns & Stalker (1961), the level of dynamism in the external environment dictates different organisational structures: the mechanistic structure with bureaucratic, hierarchical, and centralised decision-making systems, is more suited for stable environments, whereas the organic structure, that entails more flexible and decentralised management systems, accommodates better the demands of changeable environments (Burns and Stalker, 1961).

As indicated in the literature, "the use (and usefulness) of dynamic capabilities is greater in dynamic environments" (Zahra et al., 2006p. 923). As such, dynamic capabilities are more likely to generate and maintain competitive advantages in changing environments (Li and Liu, 2014). Having said that and in the context of innovativeness, it is surmised that certain capabilities are conducive to innovation attainment, especially in dynamic environments. Knowledge-based capabilities, for instance, are viewed as critically important in enhancing performance when the environment is highly changeable (Miller and Shamsie, 1996). Jiao et al. (2013) demonstrate the positive moderating impact of environmental dynamism on the relationship between dynamic capabilities and organisational change. Opportunity-sensing (one of the identified dynamic capabilities in their study), as they argue, is highly dependent on knowledge acquisition from the environment. Organisational agility, as another dynamic capability, is conceptualised as the capability of changing when uncertainty is high and is seen as improving the product innovation processes (Fliedner and Vokurka, 1997). The relationship between dynamic capabilities and competitive advantages become stronger, therefore, in turbulent environments and frequent innovative practices are key competitive advantages in such environments (Li and Liu, 2014). The above discussion can be also applied to BM ambidexterity. The literature on ambidexterity is well positioned to address the competitive features of the environment: "the more dynamic the firm's environment, the higher the likelihood of ambidexterity" (O'Reilly and Tushman, 2008p. 196). In line with Koen et al. (2011), ambidextrous organisations are generally better able to implement BMI by virtue of their managers' leadership skills at handling conflicting, disparate circumstances. Therefore, in the light of the above discussions, it can be suggested that dynamic capabilities are more likely to drive BMI in changing environments.

Proposition 4: Environmental dynamism positively moderates the relationship between dynamic capabilities and BMI.

Conclusion and future research

Our purpose in this study was to identify key factors influencing the success of BMI. Having conducted a literature review, we found the perception that three dynamic capabilities, viz. *knowledge management*, *organisational agility*, and *BM ambidexterity* enhance the firm's ability to innovate its BM. In addition, we propose that *environmental dynamism* moderates the dynamic capabilities-BMI relationships, such that these relationships are stronger in dynamic than in stable environments.

Given the proposed conceptual framework, this study contributes to the BMI literature in at least three ways. First, it stresses the importance of studying BMI from the *dynamic capabilities* perspective. Second, it incorporates three antecedents of successful BMI implementation, highlighting the need to further explore the dynamic capabilities required to implement successful BMI strategies. Finally, the moderating influences of environmental dynamism are weighted supporting the premise that environment is a key concept when studying innovation.

Future research is suggested to, first and foremost, empirically examine and verify the relationships proposed in the current study, namely the effects of knowledge management, organisational agility, and BM ambidexterity on BMI implementation, as well as the moderating influence of environmental dynamism on dynamic capabilities-BMI relationships. Second, qualitative research is recommended to identify the other critical success factors in the implementation of BMI. Taking the *resource-based view of the firm*, *social network* perspective, and *performance frameworks* might be of help in doing so.

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New business models in the Nordic wood construction towards 2030

Toppinen, A.*[1,] Sauru, M. [1], Berghäll, S., [1] & Autio, M.[2]
1) University of Helsinki, Department of Forest Sciences, Finland,
*Corresponding author: anne.toppinen@helsinki.fi
2) University of Helsinki, Department of Economics and Management, Finland;

Introduction and purpose

New sustainability driven innovations are clearly needed to renew traditional sectors of economy into bioeconomy. Stimulating collaboration between agile and new niches (start-ups and SMEs) and more risk-aversive large-scale incumbent firms is needed to break free from existing strong silos. The rise of wooden multistory construction (WMC) in the Nordic countries has turned out to be the most evident new business opportunity in the emerging bioeconomy. Also according to Bosman and Rotmans (2016), in the Finnish national level transition to bioeconomy, bio-built environment based on wooden buildings and construction materials is among the four key activities. However, there is a lack of business model related innovations in bioeconomy, especially from service development point of view (Hansen 2016), which emphasizes the need to better understand both how value is created and the roles various parties within and outside the firm play in it.

Previous literature on business models in construction sector is quite extensive (see or a review by Mokhlesian and Holmen 2012). However, regarding the specific viewpoint of renewable wood based construction, there is a very scarce literature combining business model perspective to the wood building sector as a holistic view on how companies do business. In order to differentiate between strategic and operational effectiveness, Brege et al. (2014) focused on market position, system offering and operational platform are key business model blocks in the Swedish house-building sector. Using a case study approach, they found five business model elements to be important for WMC: prefabrication mode, actor roles in the building process, end-user segments, system augmentation and the use of complementary resources. In a follow-up study on two case companies, Lessing and Brege (2015) found that the use of end-customer knowledge to identify target segment, development of an offering and sequentially increasing control over the production and value chain would be a recipe for success in construction business development.

In a conceptual study by Pelli (2016), when relying on Service-Dominant-Logic (SDL, Vargo and Lusch 2016), buildings were perceived as service platforms or built environment was integrated with built natural environment. A partnership model, in which construction participants work together as an integrated, collaborative team with joint management

structure under multi-party contractual arrangements of project partnering, alliancing and integrated delivery has also in recent years gained growing interest and used in analyzing the Finnish market (Lahdenperä 2012).

In this paper, we combine business model literature to the SDL as a platform to analyze the changing WMC business and the involved value networks towards 2030 using data from Finland and Sweden. Methodologically the study uses three round Delphi process conducted in 2016-17among construction value chain professionals in Finland and Sweden.

Conceptual background

According to Vargo and Lusch (2008), Service Dominant Logic essentially builds upon "the application of competences for the benefit of customers; customers are operant resources, rather than operand resources, and they can contribute as value co-creators to the service process". For the S-D logic to renew the traditional industries like forest or construction business (Toppinen et al., 2013) would require the users and consumers to be more actively involved in the development process of the products or services.

Teece (2010) describes a firm business model as how it converts resources and capabilities into economic output, i.e. creates, captures and delivers value. Business model and company strategy are two constructs that bear close connection, and some scholar have even used the terms interchangeably (Magretta 2002). In a famous Osterwalder et al. (2005) conceptualization of business model, there are nine elements under four pillars: product, customer interface, infrastructure management and financial aspects and are in empirical world approach using tools like business model canvas.

In a systematic literature review, Mokhlesian and Holmen (2012) analysed 38 studies on business models for the greening construction sector using the nine elements from Osterwalder et al al. (2005). They found that the most important elements that facilitate change towards green construction practices falling under the pillar infrastructure management are capability, partner networks and value configuration. Based on this, we will also focus in our empirical analysis on these same elements, although it is important to note that they are interconnected with each other and the other six elements present in Osterwalder et al. (2005) as well (see Table 1).

Table 1. Infrastructure management part of business model by Osterwalder et al. (2005)

Business model block	**Description**
Value Configuration	Describes the arrangement of activities and resources.
Core Competency	Outlines the competencies necessary to execute the company's business model
Partner Network Management	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value

Data and methodology

Data collected with a three stage expert Delphi during 2016-17 was used to elicitate perceptions on sustainable business model innovations related to WMC. Our dissensus-based Delphi approach consisted of both thematic interviews (Rounds 1 and 3, altogether 18 + 16 interviews) and an online survey (Round 2, 17 respondents). The panelists involved in our study were of Finnish and Swedish origin, and they were required to have in-depth knowledge of the usage of wood in multistory construction in the Nordic region. The Swedish data was a smaller proportion and used mostly to benchmark Finnish perspectives. The panel composition is given in Appendix.

In the first round data, this study focuses on the structure and cooperation of the wood construction value chain, but in the interviews also overall state of the wood industries, raw material and end-use market issues and role of sustainable development were discussed. In the second Delphi round, the emphasis was given to the themes and topics that were seen as the most thought provoking or controversial in the first phase, and the questionnaire consisted of 42 closed-ended questions, of which we again focus on business development related items. The data from Round 3, which was built upon on previous rounds, deepened understanding on particularly the business model development. The data was analysed using qualitative methods (thematisation) and simple descriptive statistics.

Tentative results

Partner network

During the first round interviews, it became obvious that the current co-operational schemes and the future direction of this is the most complex and difficult topic to panellists. In general, the most experienced in prior co-operative efforts were the respondents who had worked at larger companies. For example, one respondent who worked at a large processor was familiar with working with builders, planners and architects. Respondents from smaller processors were also used to working with architects, but from the more further upstream the respondents were from the end users, the less they seemed to actively co-operate.

What should be noted is that the builders were interested in offering their expertise, and already did utilize it in co-operation with the solution providers when bringing the validated products into market. Networked structures, co-operation with competitors, the necessity of standards, issues with the complexity and time consuming nature of construction projects, large operators taking control of a bigger part of the value chain, hybrid building, online marketplaces, and even competing ecosystems within the WMC were all mentioned, but with little coherence between the respondents. "*It could be [that in the future] we will see competitors as partners. One manufactures the walls and the other manufactures the flooring."* ***Executive at a processor, 22 years of experience, Finland;*** *"It is more and more important to find strategic alliances"* ***Executive at a processor, 11 years of experience, Sweden***

Furthermore, the respondents did see co-operation as an important factor in the future, however their views differed largely on how and with whom it should be undertaken. Smaller, and more local operators were more prone to discuss networked models, in which they co-operate with other small operators. For the respondents that worked at larger organizations, the concept of hybrid-building solutions seemed interesting, as well for the respondents that represented smaller builders. However, the co-operation between the wood construction sector and for example concrete solution providers was also challenged by some respondents due to for example different optimum dimensions and because of the on-going 'wood vs. concrete' rhetoric. Examples from respondents from both countries illustrate this well:*"I don't think the co-operation [with concrete] will happen – there is just too much competition"* ***Executive at a processor, 11 years of experience, Sweden;*** *"The way construction has been developed by concrete builders for the past 50 years is not optimal for wood construction. We should get the optimal of our material out."* ***Executive at a processor, 5 years of experience, Finland***

Based on Round 2, there was a strong faith in organizational co-operation between different types of players, while *the* topics that divided opinions most commonly were: *"Concrete builders will be significantly more interested in the opportunities offered by wooden building solutions than today" and "By 2030, the amount of companies involved in the wood construction value chain will be much higher than today".*

Table 2. Delphi round 2 evaluations of statements related to the configuration of the partner network.

Id	**Statement**		**Likelihood (%)**	**Desirability (%)**
9	*By 2030, strong business networks within the industry will help us build competitive products more effectively and faster.*	Low	6	0
		Medium	18	18
		High	**76**	**82**
28	*By 2030, concrete builders will be significantly more interested in the opportunities offered by wooden building solutions than today.*	Low	12	0
		Medium	35	24
		High	**53**	**76**
29	*In 2030, the wood construction industry could be described as a network of specialized organizations of different sizes rather than a value chain consisting of only a few large companies.*	Low	0	0
		Medium	**65**	41
		High	35	**59**
38	*In the future, my organization will co-create value with different types of players, including customers and suppliers*	Low	0	0
		Medium	6	6
		High	**94**	**94**

41	*By 2030, the amount of companies involved in the wood construction value chain will be much higher than today.*	Low	12	6
		Medium	41	35
		High	**47**	**59**

The key findings from Round 3 emphasized the need to increase quality and availability of new business solution to WMC. Respondent voiced hope for getting new players to the market and to add more competition among large-scale construction businesses and improve quality of construction.

Furthermore, good examples on newly established alliance structures among different types of players were brought up, e.g. wood-material based new hospital project under construction in Kainuu in Finland. Overall, the health benefits from natural materials and indoor quality issues in public buildings were seen as a stronger driver towards future diffusion of WMC especially, but maintaining cost competitiveness is still elementary. Addressing health impacts in industrial construction business with the use of renewal materials seems to be a more instrumental channel for the uptake of wood than intrinsic motivation towards sustainability among key construction value network actors.

Capability

During the first round interviews, the development of more sophisticated building solutions was seen as a capital demanding process for which only a few of the biggest operators have the necessary resources. Builders, especially the ones that build with a range of different materials were not interested in developing the solutions, and would rather only be interested in bringing them to the markets. This is further illustrated by the quote below: "*We will not do this validation [of wood based building solutions], that needs to be undertaken by the wood industry itself."* ***Executive at a builder company, 26 years of experience, Finland.*** This kind of attitude would seem to indicate limited interest in acting in a role of resource integrator in line with Vargo and Lusch (2008).

Differing timespans on which operators in the value chain plan their actions as well as the resources that different organizations have to develop building solutions based on wood were cited as key issues in co-operation on several accounts. Respondents also identified an issue with the timespan being the length of a single project. "*[Building] processes can be very long, even unbearably so."* ***Research manager at a forestry expert organization, 15 years of experience, Finland***

In the second round, necessary core competencies were approached using the claims listed in Table 3. Based on it, there was highest conformity for an item *"a building process from start to finish will be significantly shorter than today".* Statement *"Small companies will lack the money and knowhow to develop more competitive and advanced wooden building solutions"* was perceived with low desirability but higher likelihood.

Table 3. Delphi round 2 evaluations of statements related to the capability base

Id	**Statement**		**Likelihood (%)**	**Desirability (%)**
8	*By 2030, there will be many experienced professionals both buying wooden building solutions as well as selling them.*	Low	12	6
		Medium	6	18
		High	**82**	**76**
31	*Small companies will lack the money and knowhow to develop more competitive and advanced wooden building solutions.*	Low	18	**53**
		Medium	**59**	41
		High	24	6
33	*By 2030, organizational cultures will be more prone to co-operation and strategic alliances between different organizations.*	Low	0	0
		Medium	29	24
		High	**71**	**76**
34	*By 2030, a building process from start to finish will be significantly shorter than today.*	Low	0	0
		Medium	6	18
		High	**94**	**82**

Furthermore, in the Round 3, the availability of skilled personnel was still found as a bottleneck among few respondents while others felt this is not an issue, but further analysis is needed to connect this capability dimesion.

Value configuration

As the future of the value chain, especially how the actors view the operating logic of it is the key point of interest in this study, many of the statements the respondents were faced with in the second phase of the Delphi process had to do with these aspects. Likelihood and desirability of related claims are given in Table 4. According to it, there was highest conformity for an item "*by 2030, prefabrication will be the main operating logic, with less on site building".* Instead, item *"Best business model is to control a bigger part of value chain than today"* divided opinions, both in terms of likelihood and desirability. more in depth analysis is yet lacking on the Round 3 results regarding value configuration.

Table 4. Delphi round 2 evaluations of statements related to the value configuration.

Id	**Statement**		**Likelihood (%)**	**Desirability (%)**
5	*By 2030, we will sell and buy more wood construction products and services through open online platforms, such as web shops or professional digital networks.*	Low	0	0
		Medium	12	29
		High	**88**	**71**
10	*By 2030, prefabrication will be the main operating logic, with less on site building*	Low	0	6
		Medium	0	6
		High	**100**	**88**
39	*By 2030, we will have more standards, open access platforms and public data banks for the wood construction businesses to use.*	Low	0	0
		Medium	24	18
		High	**76**	**82**

40	*In 2030, the best business model is to control a bigger part of value chain than today.*	Low	6	12
		Medium	**59**	**53**
		High	35	35

Conclusions

In line with Brege et al. (2014), key aspects that were emphasized (under his system offering) were cost competitiveness, prefabrication and the role of hybrid building solutions, as well as to some extent the perceived role of wood in combatting climate change. Under the *market position*, our expert panelists brought up the level of standardisation and regulation, the role of public procurement in piloting solutions and making wood more visible in built environment. Urbanization was emphasized to be a big driver for multi-story construction in both countries. Early involvement of wood as a key material solution in the city planning phase of a building project was therefore found to be crucial. From the viewpoint of *operational platform*, our results highlighted the complementarity of resources as a long-term partnership among developers, architects, material providers were brought up as a key issue, and the question arises which organization acts as a resource integrator. In a study by Brege et al (2014) in Sweden, picture was seen more diverse: some firms are capable of doing designer planning by themselves, or new more multi-skilled entrants to construction business are entering, which changes the roles and responsibilities in the value network.

Our results illustrate only to some extent scope for changing business models towards wood material based multistory solutions and addressing sustainability any other than very instrumental way Competition from new players entering the industrial construction market, and collaboration between WMC and traditional concrete-based construction businesses are among key topics that need to be analysed in more depth in future research, in addition to formation of alliance models.

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Appendix: Composition of the Delphi panel.

Country	Gender	Years of Professional Experience	Title	Type of Organization	Participation in rounds
Finland	Male	14	Senior Vice President	Wood industry	1-3

Finland	Female	22	Director of CSR	Wood industry	1 and 2
Finland	Male	31	Managing Director	Forestry	1-3
Finland	Female	1	Executive	Building Industry	1-3
Finland	Male	16	Owner	Forestry	1 and 2
Finland	Male	15	Research Manager	Forestry	1-3
Finland	Male	3	Field manager	Forestry	1-3
Finland	Male	26	Production Director	Building Industry	1-3
Finland	Male	5	Senior Vice President	Wood industry	1 and 2
Finland	Male	22	Sales Executive	Wood industry	1-3
Finland	Female	16	Planning Executive	Building Industry	1-3
Finland	Male	23	Managing Director	Wood Industry Association	1,3
Finland	Male	15	Senior Advisor	Public sector	3
Finland	Male	12	Technical Manager	Building Industry	3
Sweden	Male	21	Senior Advisor	Forestry	1 and 2
Sweden	Male	15	Managing Director	Wood industry	1-3
Sweden	Male	11	Managing	Wood industry	2-3

			Director		
Sweden	Male	11	President	Wood industry	1
Sweden	Male	17	Vice President Market Development	Forestry	1 and 2
Sweden	Male	12	Academic expert	Building Industry Expert	1-3
Sweden	Male	8	Sales manager	Wood industry	1 and 2
Sweden	Male	15	Academic expert	Building Industry Expert	3
Sweden	Female	10	Managing director	Public sector	

Technology Shifts as a Catalyzer for Business Model Innovation

Stefan Vorbach[1], Christiana Müller[2], Michael Rachinger[2],
and, Harald Wipfler[2]
[1, 2]Institute of General Management and Organization,
Graz University of Technology
[1]Corresponding author: stefan.vorbach@tugraz.at

Keywords

Technology Shift, Disruptive Technology, Business Model, Business Model Innovation

Abstract

This paper sheds light on the process and mechanisms of disruptive technological change and the impact on business model innovation. Considering the specific characteristics of disruptive technologies, their influence on different elements of business models and especially on the process of business model innovation is examined. To better understand how technology shifts drive business model innovation we take exploratory interviews with high technology companies situated in multiple branches. Together with a literature analysis we get insight into the intersection of technology and business model.

Introduction

Throughout history, successful firms have often experimented with new technologies to forestall their replacement by new firms (Tushman, O'Reilly 1996). While some firms in mature industries have successfully managed this transformation (Bergek et al. 2013), research has demonstrated many examples of how incumbent firms encounter severe difficulties when facing radical technology change (Utterback 1994, Tushman, O'Reilly 1996). Disruptive technological developments and technology shifts therefore are among the most lethal threats to any successful business. However, if these new technologies develop, new entrants tend to outcompete established firms, which often fail to respond in time to the threat from such disruptive innovations (Christensen 1997).

Technology shifts replace existing technologies of incumbents by sacrificing features that are important to current customers and offering different attributes (Bower, Christensen 1995), and change the performance metrics along which firms compete (Danneels 2004). Technological innovations therefore increasingly influence the

transformation of business models. As technological innovations are influencing business model´s development (Baden-Fuller, Haefliger 2013), it is important to understand how disruptive technologies drive business model innovation (Tongur, Engwall 2014).

In recent years, several studies have emphasized that problems with radical technological change are often related to business model inertia. The fundamental challenge of disruptive technologies is a business model problem, not a technology problem, meaning that the key challenge of technology shifts lies in the interaction between technological development and business model innovation (Markides 2006). However, while a new business model can be crucial to commercializing and capturing the value of a technological innovation (Chesbrough, Rosenbloom 2002, Teece 2010), an existing business model can also constitute a lock-in that hinders technology shifts (Tripsas, Gavetti 2000).

However, in spite of recent strides forward in the understanding of the drivers, processes, and catalyzers of business model change, there is still little knowledge of how firms adapt their business models in response to external threats and opportunities (Saebi et al. 2016, Battistella et al. 2017). The long-standing challenge posed by Chesbrough (2010), who asks when a novel technology requires a novel business model, and when the combination of a novel technology and novel business model lead to competitive advantage is still not answered sufficiently.

Theoretical Background

Technology Shifts: sustaining and disruptive Technologies

Technological change is critically important to firms for several reasons. First, it has the potential to obsolete assets, labour, and intellectual capital of incumbents in the market. Second, it can create entirely new markets, with new products, new customers, and exploding demand. Third, technological evolution enables firms to target new segments within a market with improved products. Fourth, and most importantly, incumbents often misinterpret the potential impact of the new technology, and this error causes their demise (Sood, Tellis 2011).

The failure of firms in the face of technological change has been a topic of intense research and debate in the strategy literature. An early attempt to understand this phenomenon was by Foster (1986). He posited the theory of S-curves, which suggested that technologies evolve along successive S-curves. Incumbents fail if they miss to switch to a new technology that passes the incumbent's technology in performance. Tushman and Anderson (1986) refined this theory by distinguishing between competence-enhancing and competence-destroying technological changes. They argued that failure occurred only when the new technology destroyed, rather than enhanced, the expertise of the incumbents.

Other researchers built on the theory of punctuated equilibrium to propose a demand-side explanation for the phenomenon of disruption (e.g. Levinthal 1998, Adner 2002). They suggested that disruption occurs when a new technology that starts in one domain moves to a new domain with potentially higher demand and additional resources. Christensen (1997) proposed the theory of disruptive innovations. It posited that disruption occurred when an initially inferior technology introduced by a new entrant improved to meet the needs of the mass market (Bower, Christensen 1995).

At the firm level, the challenge of managing displacement threats has often been attributed to an unwillingness to cannibalize existing technology investments, organizational inertia, and the inability to adopt the necessary skills needed to engage in the new technology (Adner 2002). Closer examination of technology competition, however, reveals that technology transitions are not necessarily due to the incumbent technology's inherent limits, the new technology's ability to provide superior performance, or incumbents' inability to master new skills. While these factors are important, numerous cases of innovative incumbents who did not suffer from these handicaps, yet nonetheless mismanaged the challenge of technological transition (Adner 2002).

According to the level of newness disruptive technologies can be distinguished from sustaining technologies (Christensen 1997): (1) Sustaining technologies improve the performance of established products measured against criteria customers and competitors are used to assess. Examples of such criteria in the context of motor vehicles include engine power or range. (2) Disruptive technologies underperform established products in terms of the traditional performance criteria. However, they provide other benefits (e.g. a car´s CO2 footprint). These features do generally not attract interest within the existing mainstream markets, but are valued by a few fringe customers.

While sustaining technologies serve the needs of most customers, and are improved along the trajectory valued by mainstream customers, disruptive technologies take on a different trajectory as they diffuse in the marketplace. Therefore, as a basic characteristic, disruptive technologies lead to a shift in value-creation giving rise to new market segments (Amshoff et al. 2015). Typically, disruptive technologies are often cheaper and inferior in performance, yet they involve features that may provide competitive advantage in the future (Rao et al. 2006).

The disruption in the term "disruptive technologies" is not an attribute of technology. Rather, it describes the effect that some technologies appear to have on markets affected by technology-based innovation and the frequent downturn in the success of major firms that compete in those markets when they fail to adopt the new technology in a timely way. It is a disruption in the business model: what do we sell; how do we make it; how do we sell, distribute and support it; to whom; and against whom? It often is accompanied by a

disruption in the fortunes of firms using the old business model, because they, and often their customers, fail to recognize that new needs are driving the business (Paap, Katz 2004).

The most influential expression of a demand-side role in technology competition has been Christensen's examination of disruptive technologies. Disruptive technologies are technologies that introduce a different performance package from mainstream technologies and are inferior to mainstream technologies along the dimensions of performance that are most important to mainstream customers. As such, in their early development they only serve niche segments that value their nonstandard performance attributes. Subsequently, further development raises the disruptive technology's performance on the focal mainstream attributes to a level sufficient to satisfy mainstream customers. While improved, the performance of the disruptive technology remains inferior to the performance offered by the established mainstream technology, which itself is improving as well. Technology disruption occurs when, despite its inferior performance on focal attributes, the new technology displaces the mainstream technology from the mainstream market. Christensen plots the performance-provided and performance-demanded trajectories for different technologies and market segments, and shows that technology disruptions occur when these trajectories intersect. He documents these dynamics in numerous contexts, including hard disk drives, earthmoving equipment, retail stores and motor controls (Christensen 1997).

Business Model Adaptation and Business Model Innovation

New business models are required in order to meet the changes in the business logic. The main challenges in developing new business models are managing the complexity of the upcoming disruptive technologies and anticipating the business logics in nascent markets (Amshoff et al. 2015). Increasingly, the literature has been moving from conceptualizing, characterizing and explaining a business model at a given point in time, towards a more dynamic view that examines phenomena like business model innovation and adaptation (Saebi et al. 2016).

Adaptation may imply changes of the firm's value proposition, market segment, value chain and value-capture, or how these are linked in an architecture. Given organizational inertia and outcome uncertainty, firms are unlikely to change their business model unless they have rather strong incentives to do so. Even in cases where the need for adaptation seems evident, the firm's strategic orientation and the associated path dependencies are likely to impede the process of adapting an existing business model to new market demands or competitive threats (Saebi et al. 2016).

The difference between a pre-existing BM and a new one has also been highlighted by Velu (2015): the more radical is the change in the BM component the more the resulting BM

is radical. Cavalcante et al. (2011) adopted a process-based conceptualization of BM and have identified four main typologies of business model change (i.e. BM creation, BM extension, BM revision and BM termination) and then have linked those typologies to the degree of innovation of the new BM.

The strategic reconfiguration of business models is associated with many difficulties which need to be overcome, such as: (1) identifying change needs, (2) overcoming inertia, (3) accepting new structures and choosing adequate approaches to renovation (Wirtz et al. 2010). Due to the complexity of the commercialization of emerging technologies-based venture, it is conceivable that the firms will go through many cycles of design of their business model within the entire innovation process. As recently suggested by Lubik and Garnsey (2016), and before by Sosna et al. (2010), emerging-technologies-based ventures will most likely go through a 'trial-and-error' process of learning to build their business model. Therefore, these companies will encounter many trigger points that will starts constant cycles of adjustments.

Enablers and Facilitators of Business Model Innovation

The success of a business model is naturally dependent on numerous factors such as market conditions, strategic synergies (or conflicts), competencies and assets, financial arrangements (pricing policy, revenue-sharing schemes), robust technological infrastructure, effective governance mechanisms and organizational design (Battistella et al. 2017).

Whilst, according to Johnson et al. (2008), a BMI cycle happens after new knowledge is gained, Demil and Lecocq (2010) and Dmitriev et al. (2014), showed that the BM cycles can be triggered by several factors such as: the interaction between and within the BM components, the interactions across firm's capabilities (e.g. market and technology) or inputs that come from the external firm environment. Generally, BMI triggers can be divided into three categories: external, internal and contextual (Demil, Lecocq 2010). Internal triggers can be related to the effects of decisions that can affect the organizational system (e.g. decisions related to outsourcing a part of production). Changes in the BM can also be triggered by external factors such as changes to demand, new technological advancements or country-dependent environmental issues (Dimitriev et al. 2014). Ultimately, the dynamism of a BM can be launched by contextual factors, such as the nature of an invention, the specific team of employees and the target market (Dimitriev et al. 2014).

The BMI process is triggered by exogenous or endogenous factors. While for exogenous triggers we mean all the factors that lead, for instance, to a new market opportunity and to technological advancements, for endogenous triggers we refer to all the factors related to a cognitive perspective (Hock 2015). Building on other scholars works (e.g. Velu 2015; Dimitriev et al. 2014; Cavalcante et al. 2011; Demil, Lecocq 2010), in the framework one or

more triggers initiate a BM cycle, and will influence one or more of the BM dimensions leading to a new BM, whose degree of innovation will vary from incremental to radical (Flammini et al. 2016).

Technology as a Catalyzer of Business Model Innovation

Technology by itself has no single objective value. The economic value of a technology remains latent until it is commercialized in some way via a business model. The same technology commercialized in two different ways will yield two different returns. In some instances, an innovation can successfully employ a business model already familiar to the firm, while, other times, a company will have a business model that can make use of the technology via licensing (Chesbrough 2010).

In fast-evolving industries technological shifts have been identified as major catalyzers of change. Agarwal and Tripsas (2008) distinguish three stages of evolution – emergence/growth, shake out and maturity – and identify the technological changes that drive firm performance and trigger industry evolution at each stage. As industries and their technologies evolve, the mature industry stage is characterized by competition between incumbents, low firm entry and exit rates, and incremental innovations, a configuration that can allow for the profitable disintegration of value chains, allowing greater specialization of inputs and outputs that lead to improved efficiency and greater speed to market. The advent of further technological discontinuities at this stage may either speed the transition from maturity towards decline, or it may fuel a new and reinvigorating cycle, taking the industry back to an emergent stage (Ararwal, Tripsas 2008). At such times, when new entrants are trying to create and dominate nascent markets incumbents must avoid resource and routine rigidities. Both incumbents and new entrants will be attempting to identify correctly which are the industry's most strategically valuable competencies, and the value propositions that align best with what customers find - or will find - valuable, and make their business model decisions accordingly (Sabatier et al. 2012).

When technological discontinuities are introduced into an existing industry, they confront an existing industrial organization, established market relationships, specifically developed assets, and stable and predictable collaboration patterns. Technological discontinuities do not change dominant industry logics until they begin to usher in different business models that modify asset specificities, create new dependency ties and reshape collaboration patterns, and thus change players' appropriation strategies, modifying the balance between intellectual property rights, asset specificity and bilateral collaboration. Even if a breakthrough technology is involved, as long as it can be integrated within the existing industry value chain, it will not alter the balance of power between its actors or its established appropriation modes. But when one of these components is affected, dominant industry logics may be challenged: technological discontinuities have the potential to lead to

business model innovation and proliferation, and it is these changes that trigger the disruption of an industry's dominant logic (Sabatier et al. 2012).

Methodology

Our paper is a conceptual contribution based on a literature analysis. Additionally we took 16 explorative interviews with high technology companies situated in multiple branches in the area of Austria. Data gathering took place with the help of semi-structured interviews with experts in the field of business models and technology management. The interviews were conducted either face-to-face at the company site or via phone. All interviews were recorded and transcribed. From both streams – the literature analysis and the empirical insights – we develop a deep insight. The intersection of between technology shifts and business models proposed, relating the core technology of the firm to its value proposition, value creation, and value capture, enables further inquiry into the complex dynamics of this phenomenon.

Results and Discussion

Previous research on technology shifts has focused primarily on the changes in technology. By adding a business model perspective to the analysis, the challenges of incumbent firms facing technological discontinuities are revealed in their full range. Furthermore, while previous research typically applies a retrospective perspective on technology shifts, our contribution addresses the strategic challenges of firms facing a potential technology shift. In many of the classical cases of technology shifts, the incumbent companies that went out of business did so because they did not adapt their business models to the emerging competitive landscape. Our more future-oriented perspective on technology shifts reveals the profound difficulties incumbent firms face when addressing the uncertainties of an ambiguous future.

Our findings suggest - in accordance with Tongur and Engwall (2014) - that when incumbent firms encounter a technology shift they also face a business model dilemma. As concluded by Christensen (2006: 48), the fundamental challenge of disruptive technologies is “a business model problem, not a technology problem”, meaning that the key challenge of technology shifts lies in the interaction between technological development and business model innovation. Because the incumbent technology offers superior performance on these dimensions, incumbent firms’ investments are directed towards extending the existing technology, rather than the (potentially) disruptive technological opportunity. Incumbents have an additional incentive to ignore disruptive technologies because, with their lower performance, they appeal to the low-end, low-profit portion of the mainstream market. In contrast, entrant firms, whose decisions are not constrained by an existing customer base and whose technology offers inferior performance on the focal mainstream dimensions, are

forced to identify consumers who value the new features offered by the new technology and support its further development. Firms are not by definition paralyzed by the new technology through their established customers, but have the option of preparing an appropriate strategic response. The business model dilemma illustrated above is a profound strategic problem that, if left unsolved, risks holding back necessary radical changes within the firm's value proposition, value creation, and value capture processes. However, while a new business model can be crucial to commercializing and capturing the value of a technological innovation, an existing business model can also constitute a lock-in that hinders technology shifts.

We agree with Sabatier et al. (2012) that business model innovations follow technological innovation - and when they appear (even following quite minor technological innovations) they introduce new logics into the industry. Disruptive technologies often create new markets, which obey entirely different rules (Amshoff et al. 2015). They sometimes have a radical nature, and are exploited via a technology-push effort (i.e. when an innovation is driven by advancements in science, or where the technology and applications are the drivers). The commercialization of radical emerging technologies can happen also through a technology-market coupling strategy (Flammini et al. 2016). When business model innovations follow major technological breakthroughs, a delay is required before the technology can be set up and specific assets and capabilities built and deployed, during which time established value chains prove adaptable enough to accommodate emerging innovative technologies.

During the first phase after new technologies are introduced, the discontinuities they represent are not enough to induce major changes in the industry or to usher in a new logic: the industry logic remains as it was, and new ventures participate in value creation within existing value chain structures. Our findings argue (in line with Sabatier et al. 2012) that the early stages of the introduction of technological discontinuities - which are often characterized by technological uncertainty due to competition, both between new technologies and between them and existing technologies - are less favorable to business model innovation.

The survival or death of incumbents is not only due to the competence enhancing or destroying character of technological discontinuities - in fact, during this first phase, technological breakthroughs seem to have reinforced incumbents' positions in this industry. Even in the presence of major technological changes, while business models remain similar, the logic of the industry remains unchanged. But, when actors - by themselves or via alliances - are powerful enough to promote new business models offering new value propositions and working via new value chains, the dominant logic is challenged, and evolves.

Dominant logics are disrupted by the arrival of business models from other industry sectors, when large diversified entrants enter the market. At the same time these discontinuities which enable new technologies that disrupt dominant logics, create opportunities for new products and process, and thus fuel new business models. When technological discontinuities come from start-ups, the dominant logic of the industry evolves slowly - when they are supported by diversified entrants, we can expect faster and more radical change in dominant logics.

Conclusion

This paper aims to summarize the process and mechanisms of disruptive technological change and to discuss the impact on business model innovation. Considering the specific characteristics of disruptive technologies, their influence on different elements of business models and especially on the process of business model innovation is examined.

The paper therefore inquires into the dynamics of the intersection between technology and business models. The business model framework proposed, relating the core technology of the firm to its value proposition, value creation, and value capture, enables further inquiry into the complex dynamics of this phenomenon. It reveals why technology shifts are so difficult to master and suggests that discontinuous innovation is not about either technological innovation in order to gain a viable business model, but is instead a compound of both. The critical challenge for a company facing a technology shift is overcoming the technology shift as such, while simultaneously crafting a business model matching the unknown competitive context after the shift. Our research hence is addressing the interrelationship between technological and business model innovation after a technology shift occurs.

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The Influence of Sustainable Technologies on Elements of Business Models:
The Example of the Fuel Cell the in Automotive Industry

Rachinger Michael[1], Vorbach Stefan[2], Wipfler Harald[3] and Müller Christiana[4]
[1] Institute of General Management and Organization, Graz University of Technology, michael.rachinger@tugraz.at
[2] Institute of General Management and Organization, Graz University of Technology, stefan.vorbach@tugraz.at
[3] Institute of General Management and Organization, Graz University of Technology, harald.wipfler@tugraz.at
[4] Institute of General Management and Organization, Graz University of Technology, christiana.mueller@tugraz.at

Abstract

The understanding of the relationship between sustainable technologies and business models is only at its beginning. Therefore, this paper investigates the influence of technologies on business models using literature and empirical data. Based on this investigation a generic model of the influence of technologies on business models is established. The established model is used to discuss the influence of the potentially sustainable technology of the fuel cell in the automotive industry. Subsequently, changes in business model elements as well as factors responsible for these changes are identified.

Keywords

Business Models, Technology, Sustainability, Fuel Cell

Introduction

Technologies have proven to influence a firm's ability to compete in the market. New technologies represent strategic resources with the potential of growth. However, they also threaten companies which base their success on outdated technologies (Klappert 2006, Klappert et al. 2011).

Many successful innovations of business models are based on technological developments (Vorbach et al. 2017, Gassmann et al. 2013). Relevant aspects according to Chesbrough (2007) are the influence of technological shifts on a firm's mechanism to create and capture value as well as its position in the value chain. Drivers for this innovation may be due to exterior changes (e.g. changes in technology, regulations, customer needs) or come from the company itself. In that regard one has to keep in mind that the successful implementation of technological innovation requires appropriate business models (Teece

2010). Therefore, technology is not the only, but one of the most relevant drivers for revolutionary adaption (Chesbrough 2007). The innovation of a business model goes hand in hand with the change or the development of business model elements as well as the firm as a whole (Schallmo, 2013). Business model innovation aims to change value-creation in a firm, an industry-sector or even enables access to new fields of business (Stähler 2002). Schallmo (2013) identifies three different roles of technology in the innovation of business models:

1) Technology as support for business models (e.g. to enable customer contact or improve processes)
2) Technology as enabler for business models (e.g. the creation of a value otherwise impossible)
3) The business model as instrument to market technologies (e.g. the marketing of technologies available to a firm using a business model)

Therefore, the relationship can be seen as bidirectional. Business models can contribute towards the distribution of technology (Chesbrough et al. 2002) and therefore potentially provide solutions for sustainability matters. Further, new technologies show major influence on the generation of business models (Schallmo 2014).

Eckert et al. (2000) characterizes sustainable technologies through making better use of natural resources and thereby contributing to a cleaner world. Major categories for sustainable technologies are resource preservation, renewable energy utilisation and pollution prevention (Elms & Wilkinson 1995). Heinz (2009) identifies the following characteristics to describe sustainable technologies:

1) Technologies that enable significant savings of materials and energy
2) Technologies that enable shifts from non-renewable to renewable resources, from non-bio-degradable to bio-degradable substances and from ecosystem consuming extractive systems to renewing and restorative ones
3) Technologies that preventing emissions, contaminations and overall negative environmental impacts

Subsequently, it is assumed that sustainable technologies show promise to contribute towards sustainable business models. However, sustainability is not an end in itself and inherently sustainable technologies do not exist (Mulder et al. 2011). Therefore, sustainable technologies need to be applied in appropriate business models in order to be able to contribute towards sustainability. In that regard firms need business models that transform the specific characteristics of sustainable technologies into new ways to create economic value and to overcome barriers standing in the way of their market penetration (Bohnsack et al. 2014). Unfortunately, the understanding of the relations between sustainable

technologies and business models is only at its beginning. In order to contribute to the research towards more sustainable business models following research question is addressed:

What is the influence of sustainable technologies on elements of business models?

To do so, this paper uses a two-step approach: First literature and empirical data are used to establish a generic model on how technologies influence business models. Second, the established model is used to discuss the influence of a potentially sustainable technology on business models. Therefore, this paper uses publicly accessible documents as source to discuss the influence of fuel cell technology on business models in the automotive industry.

Generic Model of the influence of technologies on business models

The following section describes the process of establishing a generic model of the influences from technologies on business models. To do so, this section outlines the method of the generation of underlying empirical data. Following, relevant aspects concerning the investigated relation are presented.

This model bases on 16 explorative interviews conducted with firms situated in the region of Austria and Germany in the time of December 2015 till April 2016. The criterion for the selection of the companies was a technology focus in their entrepreneurial activity. The size of the firms ranged from start-ups with less than 100 employees to multinational companies with more than 100.000 employees. In order to establish a generally valid data basis no specific differentiation between the firm's branches was laid on. To further ensure the general validity of the results, decision-makers with a strategic as well as a technical background were interviewed. The interviews were conducted as semi-standardized guided interviews. All interviews were recorded and transcribed. The gathered data were subsequently investigated using a qualitative category-guided text-analysis approach as described by Mayring et al. (2014). Thereby relevant text-passages were extracted covering the field of analysis:

1) Statements regarding the adaption of business models
2) Statements regarding the requirements of business models towards technology

The established units of analysis were subsequently used to inductively establish categories. This process required several iterations performed on parts of the data before the finalized categories were applied to the complete data set. Further, as described by Mayring et al. (2014) the objectivity of the procedure was ensured by a second coder. Differing interpretations were discussed and adjusted. Therefore, intercoder-reliability as well as intracoder-reliability is ensured. The rigor of the procedure is seen as sufficient.

Influences of technologies on business models

Figure 1 lays out the basic relation regarding the influences between technologies and business models. Influencing factors are grouped, allocated to their internal or external origins and discussed in this section. The investigated relationship is highly complex, dynamic and influenced by a multitude of factors. Therefore, this paper only focusses on the influence of technology on business models. However, influences in both directions exist.

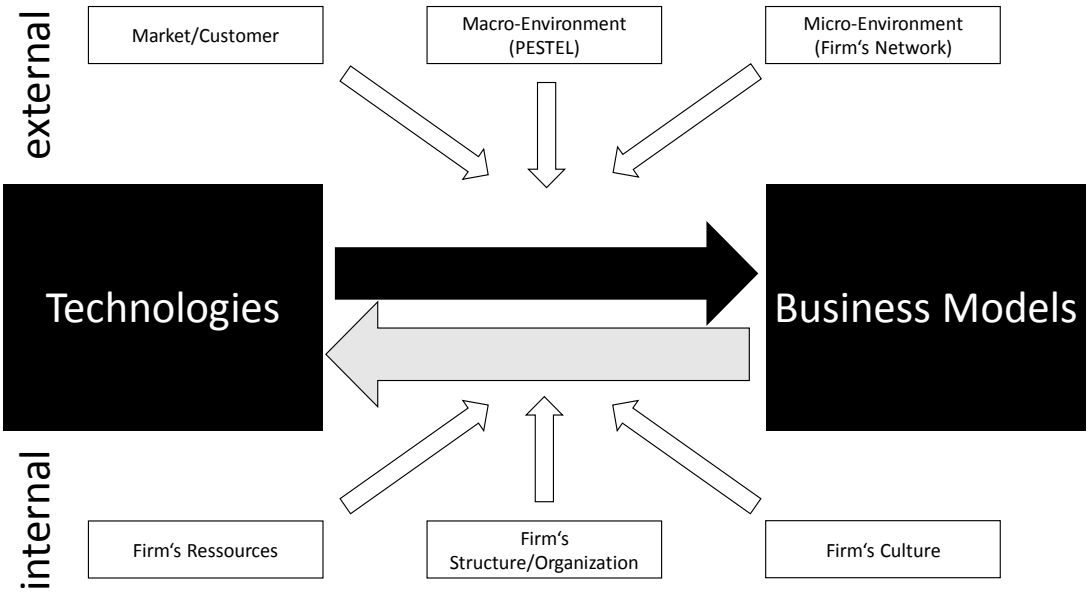

Figure 1: Model of influencing factors on the relation between technologies and business models

The possibility to generate value is unanimously stated to have the highest priority for firms regarding the influence of technologies onto business models. Ongoing technological development forces firms to review their existing business model and ensure its viability. A major aspect thereby is the investigation of the usefulness of new technological possibilities. Simultaneously also the viability of the currently deployed technologies has to be questioned. If needed, business leaders have the task to establish new business models enabled by technologies (compare Chesbrough 2010). It is possible, however, that even pronounced changes in a firm's technology have only little influence on a firm's business model (compare Teece 2010). Further, business leaders are faced with the decision if technologies are best utilized in existing or new areas of business and their respective business models.

A critical aspect is the generation of income with a current business model while adjusting to technological developments (e.g. substitutional technologies). The practical impact of this adjustment depends on a firm's technology strategy (e.g. technology leader,

late follower) and its capability for organizational change. Additionally, the relationship between technologies and business models is influenced by factors, that can be attributed to origins inside as well as the outside of a firm (compare Teece 2010).

External factors

External factors that have been stated to affect the relation between technologies and the business models are the firm's macro-environment (compare Worthington & Britton 2009), the firm's market as well as the respective customers on this market and the firm's micro-environment.

Changes in the political, economic, socio-cultural, technological, environmental or legal surroundings can show effects on how technologies influence business models. However, depending on what scope firms operate, the influence of said factors may vary through regional differences (e.g. through different legislative regimes). Further, aspects like the typical length of innovation-cycles in a sector (compare e.g. firms in the electronics, automotive and energy sector), cultural tendencies (e.g. progressive, traditional) or its basic orientation (e.g. infrastructure-oriented, profit-oriented) can play a major role for the inquired relationship.

A firm's network (e.g. its suppliers, customers or competitors) is seen as a major influencing factor for the relationship under investigation. The specific influence of the elements in a firm's network thereby depends on the respective level of collaboration (compare Schulte-Gehrmann et al. 2011). Further, depending on factors like a firm's position in the value chain, its core competences, investment-costs for certain technologies or the sector a firm operates in, technologies can be pulled by the market or pushed by the firm. Additionally, further down the value chain the impact of technologies on firm's business models is seen as less severe. However, it has to be noted, that firms not necessarily need to be limited to just one sector or position in a value chain. In addition, external causes, like a shift of competences in a firm's network and the connected potential change in a focal firm's performance range can be seen as a relevant factor influencing the relationship between technologies and business models (compare Casadesus-Masanell & Ricart 2009).

Internal factors

Internal factors influencing the investigated relationship that were identified are a firm's resource base, its structure and organization as well as its culture.

Resources are seen as enabler for technological and structural adjustments. Access to technology can be realized via internal R&D or acquisition. Further it can be stated, that the level of technological innovation not necessarily correlates with the respective amount of

invested resources. Subsequently additional factors, like a firm's strategy need to be taken into consideration as a moderating factor when investigating the influence of technology onto a firm's business model.

Results indicate that resources needed to establish changes in a firm's technology are not limited to technology access. For instance, technological changes may require adaptions in a firm's organization subsequently leading to follow up costs. Resources, especially in the form of physical assets can also be a hindrance for technological change. This, however, is also dependent on external influences, like for example the sector a firm is operating in (e.g. firms providing immaterial products typically require less physical assets than firms producing high volumes of physical goods).

Further, a firm's culture can be seen as moderator for the influence of technologies on business models.

Discussion on the example of fuel cells in automotive industry

One technology that shows potential for sustainability is the fuel cell. Using fuel cells, more sustainable fuels can be converted at high efficiencies. Therefore, fuel cells represent a viable alternative to current energy-conversion technologies (Singhal 2000, Milewski et al. 2013). Although at the moment fuel cells relegate to a niche in the market, they show a high market-potential and high growth-rates (U.S. Department of Energy 2015).

Based on the model outlined above, the influence of the potentially sustainable technology of the fuel cell on business models in the automotive industry is discussed. Since the discussion is based solely on publicly accessible documents, only external factors were taken into consideration. Table 1 summarizes identified examples.

According to Hart et al. (2016) the fuel cell industry is fragile and highly driven by governmental support (e.g. through the Paris climate agreement). Past and current policies, however, already positively affected the industry (e.g. in form of a solidified supply chain). Further, industry has responded well to policies as well as signals from the market. Hart et al. (2016) find that companies are working towards solutions not only relying on policies but are driven by economic advantage, customer needs or corporate ambitions.

Table 1: Identified examples for external influences outlined in Figure 1 based on public documents

INFLUENCE	Example
Market/Customer	A firm's customers understanding of technology (Toyota, Hyundai, Linde, Hydrogen Mobility Europe) Differing needs of a firm's customer groups (Riversimple, Nissan)
Makro-Environment	Legal motivated selection of areas for technology application and sale (Toyota) Local availability of resources (Nissan)
Micro-Environment	Technology access through increased collaboration (network partners) Limited supplier production capabilities (network partners) Enabling access to technological solutions (Toyota) Fuel cells infrastructure requirements (Linde, Toyota)

Partners in a firm's network (e.g. suppliers) providing fuel cell technology often have technical expertise unavailable to OEMs. Therefore, they are able to suggest modifications to components of the technology potentially improving performance or lowering costs. Additionally, strategic considerations (e.g. the desire to capture a potentially higher value part of the supply chain), considerations of risks or the availability of technological solutions (e.g. fuel cell components) are influencing factors. In case of the fuel cell technology this can lead to a higher level of collaboration along the supply chain or even the integration of suppliers. Further, suppliers affect OEMs in their ability to scale up production. From a technological point of view intermediate "freezes" in technology may be necessary, to ensure that investments in production capacities can be paid back before a following design iteration makes investments obsolete (Hart et al. 2016).

Practical examples show that companies already operating in the automotive industry tend to use the technology of the fuel cell in adaptations of their usual business models. Hyundai offers their fuel cell cars only for lease (Hyundai, 2017). Toyota introduced its latest fuel cell car, the Mirai, initially only to certain markets (i.e. California) via conventional sale as well as lease agreements. The selection of target markets is assumed to be influenced by infrastructure and legal policies (compare CEPA 2016). Toyota subsequently expanded the sales-area, however kept production numbers low compared to other models in its portfolio. In addition, the technology was made publicly available (in form of a notable number of royalty-free hydrogen and fuel cell patents). Toyota accompanies this behaviour with marketing activities, explaining the benefits of fuel cell technology to customers. (DoE 2016).

It can be noticed, that a large part of these business models aim to establish the technology of the fuel cell on the market. A likely reason for this is the underdeveloped status of the infrastructure required to operate fuel cell cars (Hart et al. 2016). Therefore, establishing cars using fuel cell technology on the market requires different approaches as well as the participation of different key partners than in existing business models.

For example, the company Linde bought 50 fuel cell cars to use them in their car sharing program BeeZero in the area of Munich (Linde 2017). Goal thereby was to demonstrate the ability of fuel cell cars to drive longer distances compared to conventional battery electric vehicles (Hart et al. 2016). In this case the operator of the car fleet also represents a key partner for automotive firms in providing the required refueling infrastructure.

To give another example on how the fuel cell technology influences business models in the automotive sector, the UK start-up “Riversimple” can be named. Riversimple aims to sell sustainable mobility for an all-in price covering maintenance, fuel as well as insurance using a fuel cell powered car of their own design (Riversimple 2017, Hart et al. 2016).

However, also adaption of the technology to certain regional requirements can be identified. Nissan, for instance, introduced a fuel cell vehicle at the Olympic summer games in brazil, that utilizes bio-ethanol, a fuel sourced from sugarcane and corn readily available in the region (Nissan 2016, Pleskot 2016, RFA 2015).

Furthermore, fuel cell operated vehicles are seen as highly suited for operation in environmentally sensitive urban areas (Hart et al. 2016). This shows potential to add value for customers in certain areas or even, depending on local policies, may be a unique selling point.

Conclusion and Outlook

The established empirical and theoretical generic model of the relation between technologies and business models is seen as suitable to investigate the influences of technologies on business models. From the discussed example it can be concluded, that the technology of the fuel cell has the potential to highly influence the creation of value (e.g. different key partners) as well as the value capture aspects of business models in the automotive sector (e.g. mobility as a service). Main drivers for the technology are given through legal policies (e.g. laws regarding car emissions, areal restrictions) as well as firm’s aspects to generate income through fuel cell technology. Therefore, fuel cell technology is gaining momentum leading to an increased application of the technology. Drawbacks for the application of the technology are given by a partial lack of technical expertise in the value chain and a lack in infrastructure. However, companies already committing to the technology are likely to face a shift in their business environments. New key partners (e.g.

providing infrastructure or enable access to technology) already are emerging subsequently leading to a change of firm's key activities in the automotive industry (e.g. providing alternative infrastructure, use of different propulsion technologies). Depending on internal company factors (e.g. revenue streams from existing business models, resource base, strategic focus) gradual changes like using already established approaches as leasing fuel cell cars up to radical new business models, like the one "Riversimple" introduced, are brought into application. Stated practical examples show, that through the application of the potentially sustainable technology of the fuel cell more sustainable business models in the automotive sector are being established.

Limitations

The introduced model only shows very generic relations describing the influence from business models on technologies. Looking at the example of the fuel cell it becomes clear that detailed investigations of firms, along firm's value chains or even in a firm's the value network are needed to improve the understanding of the influence of the technology of fuel cells onto business models in the automotive sector. Further, also the restriction to publicly accessible documents as base for discussion of influences in the automotive industry represents a limitation.

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SHORT PAPERS SESSION 3

Managing Business Model Innovation:
The Case of a Social Enterprise in the Electricity Market

Fawzi Halila*, Maya Hoveskog, Mike Danilovic and Sandra Olofsson
School of Business, Engineering and Science,
Halmstad University, Kristian IV:s väg 3, 301 18 Halmstad, Sweden
*Corresponding author: fawzi.halila@hh.se

Keywords

Business Model Innovation, Social Enterprises, Electricity Market

Abstract

This paper focuses on social enterprises which work to address sustainability related aspects and to create social value through business. Those enterprises use elements from both for-profit and non-profit logics which induces unique challenges to their development and survival. Thus, the purpose of this paper is to explore how the components of the business model of a social enterprise have changed since its establishment. This qualitative study applies a single case study approach. The case enterprise is from the Swedish electricity industry. The data collection includes 16 interviews and 2 focus groups. This study contributes to the field of BMI in the context of social enterprises by looking at how the different business model components have changed in different phases from the establishment of the firm until present day. The practical contribution of this study is to support the founders and managers of such enterprises during the business model innovation process by providing insights of how the business model could be changed in order to improve competitiveness.

Introduction

More than one billion people in the world live on less than 1.25 dollar each day (World Bank, 2014) and approximately one fifth of the world's population lacks access to water (United Nations, 2014). Each minute equivalent to 36 football fields of forest is lost throughout the world and the global warming is threatening to heat up our planet, followed by extreme weather changes and drastic livelihood changes of billions of people (WWF, 2014).

These issues have planted the seed of awareness in the world, causing a rapid increase of active non-profit organizations over the last decade. For-profit organizations are also

striving to create social and environmental value while non-profit organizations are adopting more and more commercial and business oriented logics in order to survive increased competition (Lumpkin, Moss, Gras, & Kato, 2013; Doherty, Haugh & Lyon, 2014).

This means that the two traditional business forms of for-profits and non-profits are slowly drifting towards each other. While this is happens the social enterprises (SEs) take a more direct approach, in order to address that sustainability related aspects, since they sits in the middle between for-profits and non-profits with the goal to create social value through business (Battilana, Lee, Walker, & Dorsey, 2012).

The SE concept has gained increased attention during the last decade among practitioners as well as researchers (Doherty et al., 2014; Wilson & Post, 2011). SEs use elements from both for-profit and non-profit logics, which creates tensions between the two within these enterprises (Battilana & Lee, 2014) and this induces unique challenges to their development and survive. Available research on how SEs succeed in managing their dual mission to avoid mission drift is limited (Ebrahim, Battilana, & Mair, 2014). Thus, this study focuses on the exploration of how the business model components of a SE have changed since its establishment. More specifically we study how the business model of a SE in the Swedish electricity industry has developed from its establishment until present day.

Theoretical background

Researchers and practitioners today frequently refer to the business model (BM) and to business model innovation (BMI) (Chesbrough, 2010; Lambert and Davidson, 2013; Spieth et al., 2014). Traditionally, the BM concept, which is multifaceted at the systems level, takes a comprehensive approach in its description of how companies strive to be profitable. An increased understanding of BM management would equip SEs with better tools to plan for the future as well as increase their survival rate.

Every BM consists of a number of interrelated building blocks that form different configurations that can be used to evaluate change choices (Teece, 2010). Such configurations are almost always limited to the BM elements that contribute to the economic performance of the organization (Breuer et al., 2016; Upward and Jones, 2016). When the components of the BM are changed, we talk about BMI (Klang, Wallnöfer, & Hacklin, 2014).

BMI is a relatively new field of research and has gained increased traction during the past decade (Zott et al., 2011; Spieth, Schneckenberg, & Ricart, 2014; Osterwalder & Pigneur, 2010). One main reason for this is that BMI can help organizations to gain a competitive advantage by dealing with the entire business system, and not only products or processes (Teece, 2010; Waldner et al., 2015; Spieth et al., 2014). Teece (2010) argues that

organizations should actively seek and consider improvements to their BMs at all times, which means that BMI should be a continuous process in order to adapt to the continuously changing environment.

According to Amit and Zott (2015; Zott and Amit, 2010), a BM describes the system of interdependent activities used by a firm and its partners. These activities include the mechanisms that link these activities to each other for the creation and delivery of value to customers while still allowing the firm to capture some of the value. The literature on SEs has a similar description of BMs (Lee, 2015; Yunus et al., 2010).

Building on the research that conceptualizes BMs as configurations, Bocken et al. (2014) list three main elements in their definition of a BM: value proposition, value creation and delivery, and value capture. Value proposition mainly involves the customer offerings that generate financial profit. Value creation and delivery focus on creating value by entering new business areas and markets and by generating additional revenue. Value capture deals with the return from selling products, services, or processes to customers. According to Lee (2015), the changes in one BM component can directly or indirectly lead to changes in other BM components. Academics and practitioners have adopted this conceptualization of the BM (Klang et al., 2014).

Methodology

This study relies on Van de Ven's (2013) definition of the narrative process for investigations of how BMI evolves in an organization. According to Van de Ven, process is "a narrative describing how things develop and change" (p. 148). As a continuous process of change, the BM change should be explored over a period of time that preferably includes multiple BMs so that triggers for changes and actual changes can be identified. In this study we view the change of the BM process as a sequence of events that lead to change in the components of the BM over time.

The research employs a case study approach where the qualitative data has been collected via 16 interviews and 2 focus groups.

The case company, AlphaEl (fictive name), is a Swedish electricity retailer that provides 100% renewable and environmentally certified electricity to its customers. A non-profit foundation owns AlphaEl, and a County Administrative Board supervises its operations. Because AlphaEl is a not-for-profit SE, it donates its profits to non-governmental organizations (NGOs). AlphaEl's philosophy is that its customers contribute to a better world each day through the consumption of the electricity it sells. Operating costs, including the salaries of its approximately 50 employees, are held at comparatively low levels. In 2015, AlphaEl had approximately 100,000 customers. Over the years, AlphaEl has donated almost

41 million Swedish crowns to NGOs. Its long-term goals are to have 500,000 customers and to make annual donations to charity of 100 million Swedish crowns.

AlphaEl was chosen for the case study because of its more than ten-year record of success in the Swedish electricity market, its selection as Sweden's most sustainable electricity company for six consecutive years, and its commitment to the sustainability of the environment and society.

Results and conclusion

AlphaEl's history related to sustainable BMI is presented in four time periods: Creation (2001-2004), Growth (2005-2008), Challenge (2009-2010), and Treading Water (2011-March of 2015). During each time period the company innovated the whole BM by changing different components of the value proposition, value creation, value devilry and value capturing. The last time period, Treading Water, the BM of the company is visualized in Figure 1.

The focus of this period was to increase profitability through optimization of the internal processes and to be as cost-efficient as possible. Before this period AlphaEl had been making many ad hoc solutions, which are not always the most cost-efficient. The main changes in the company BM are in customer segments, value proposition, customer relationships and key activities. One significant change is the increased focus on customer retention and customer segments. It is important to be able to follow the customer life cycle, and to see the value of each customer. This is also connected to the increased work on optimization, trying to make each customer as profitable as possible. This BM also reveals an increased focus on digital platforms. This is shown by improved presence in social media, a rebuilt webpage and a striving towards digital payment methods.

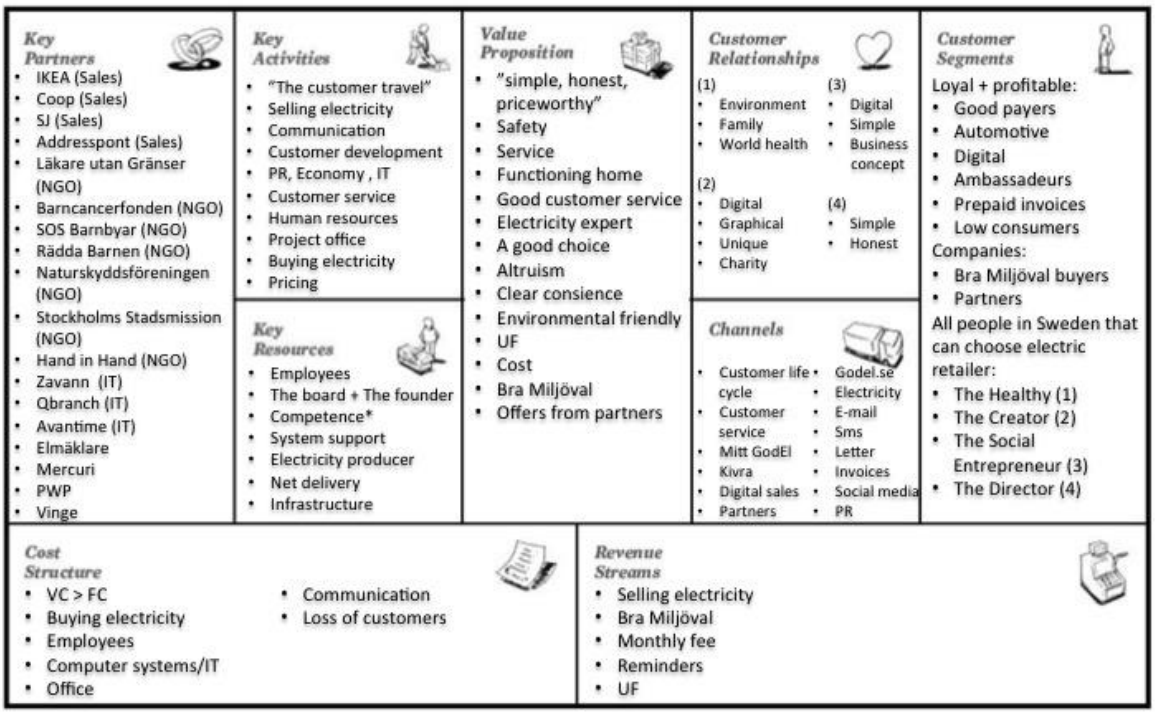

Figure 1: The BM of AlphaEl during the Treading Water time period

This study contributes to the field of BMI in the context of SEs by looking at how the different BM components have changed in different phases from the establishment of the firm until present day. The practical contribution of this study is to support the founders and managers of SEs during the BMI process. This study gives managers of SEs deeper understanding of how the BM could be changed in order to improve competitiveness.

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Network business models for sustainable innovation:
A case study in the bio-based economy

Cantele Silvia*, Moggi Sara, Vernizzi Silvia, Campedelli Bettina
Department of Business Administration – University of Verona
*Corresponding author: silvia.cantele@univr.it

Keywords

Business Network, Sustainable Innovation, Bio-Economy, Bio-Based Economy, Sustainable Business Model

Introduction and purpose

When sustainability has to be implemented in business practice and management, new opportunities can stem from business model (BM) innovation. The literature has recently highlighted the synergies created by this two fields of research (Boons & Lüdeke-Freund 2013), where real innovation is usually radical and thus could not be limited to new products or processes introduction, but rather extended to a novel, comprehensive value creation and capture perspective (Bocken et al. 2013).

Sustainable innovation usually requires a systemic, network-centered approach; in fact, when different partners in the network are considered, a collaborative business modelling emerges (Rohrbeck et al. 2013), where the building-blocks of business model should be redefined to a network-level BM (Lindgren et al. 2010). In networks, sustainable innovation is not limited to the idea of sharing the "value" (in terms of expected outcomes), but also the "values", in a normative management perspective (Breuer & Lüdeke-Freund 2014; Breuer & Lüdeke-Freund 2017).

This process is a dire challenge and scant is still know on how the BM is defined and employed in this context. Filling the gap, this study aims to explore peculiar aspects in the design and implementation of network business models based on sustainable innovation.

Methodology

The paper presents a case study of business network, the CR 2050 Network, a partnership among nine farming and 11 manufacturing firms aimed at doing research to develop a new supply chain model in the field of bio-based economy. The data were collected through

semi-structured interviews to the key-informants of the network (e.g., executives and managers of the participating firms), and document analysis on available sources from their press, the web, and other documents and reports (Creswell, 2007).

Findings

The CR 2050 network agreement was drafted at the end of 2013 by the use of a specific Italian regulation (L. 33/2009) the “contratto di rete” (business network contract), a private agreement where two or more firms agree to a defined common program, to exchange information or services, to collaborate for specific issues, or jointly manage common activities.

The main purpose of CR 2050 is the coordination of the research efforts of firms already using raw materials from biomasses (or going to use them), with farms willing to conduct experimentations, in order to match supply with demand, create new supply chains, increase employment in the territory, use local raw materials and open new perspectives for both manufacturing and farming businesses. The vertical integration in CR 2050 is guaranteed by the presence of farmers, firms specialized in the transformation of agriculture products, chemicals and oleo-chemicals companies, biofuels producers and biogas plants.

As emerged from the interviews, the transition to bio-based economy is a great challenge and the design of a shared BM is quite complex. The interviewees described several critical aspects: biomasses are located on all earth surface and their intensive use cannot disregard the respect towards the ecosystems; it implies logistic and environmental problems coming from the handling of enormous amount of raw materials, the disposal of large quantities of wastewaters, and the removal of fertilizers from the soil; the EU regulation has been also described as a critical factor because it promoted the energy use of agricultural waste (biofuels and biogas) rather than starting from green chemistry, in order to create value within the whole supply chain.

Conclusions

The case highlights how radical sustainable innovation is affordable within a network perspective; the Italian regulation on business network contracts is an example of institutional change offering the opportunity to develop collaborative approaches (organizational innovation) to implement technologically-new business model archetypes like in the CR 2050 case the move from non-renewable to renewable energy sources (Bocken et al. 2014).

The network can overcome the barriers to an effective sustainable business model innovation (Laukkanen & Patala 2014), like the need to meet new legislative requirements

and the distortions created by related economic incentives (e.g. destined to energy industry rather than to the whole bio-based supply chain), but also the lack of awareness and understanding, by creating a vertical cluster dedicated to research, where each actor can share knowledge with other actors in the upstream and downstream supply chain. From a value mapping perspective, the CR 2050 network avoids value missing and create new value opportunities also for the weak partners in the supply chain (the farmers usually depending on state contribution). Shared values and principles on which the network is based are: the cascade use (hierarchy of use: first food, than feed, chemicals, biofuel and burning/disposal); the idea that the chemicals and the energy from renewable sources have to adapt to the territory, not the opposite; the optimization of logistics in the use of waste products from agriculture and the reduction of environmental impacts; the equal dignity to agriculture and manufacturing and the "everybody or nobody" principle of action. The interviewees assert that these values are implicitly recognized by the engagement in the network, even if the main driver referred was the need or the opportunity to convert the business in response to regulation and other environmental challenges.

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SHORT PAPERS SESSION 5

Changing business models arising from digitalization

A best practice case study based on two Austrian companies

Petra Stabauer, Gert Breitfuß, Markus Lassnig
Salzburg Research Forschungsgesellschaft mbH
(petra.stabauer@salzburgresearch.at; markus.lassnig@salzburgresearch.at)
Know-Center GmbH (gbreitfuss@know-center.at)

Keywords

Business Model Innovation (BMI), New Business Model (NBM), Digitalization, Value creation network, Sustainability

Abstract

Nowadays digitalization is on everyone's mind and affecting all areas of life. The rapid development of information technology and the increasing pervasiveness of digitalization represent new challenges to the business world. The emergence of the so-called fourth industrial revolution and the Internet of Things (IoT) confronts existing firms with changes in numerous aspects of doing business. Not only information and communication technologies are changing production processes through increasing automation. Digitalization can affect products and services itself. This could lead to major changes in a company's value chain and as a consequence affects the company's business model. In the age of digitalization, it is no longer sufficient to change single aspects of a firm's business strategy, the business model itself needs to be the subject of innovation. This paper presents how digitalization affects business models of well-established companies in Austria. The results are demonstrated by means of two best practice case studies. The case studies were identified within an empirical research study funded by the Austrian Ministry for Transport, Innovation and Technology (BMVIT). The selected best practice cases presents how digitalization affects a firm's business model and demonstrates the transformation of the value creation process by simultaneously contributing to sustainable development.

Introduction

The fast-paced development of information technology and the increasing pervasiveness of digitalization represent new challenges to the business world (Turber et al., 2014).

Digitalization and the so-called fourth industrial revolution have not only an impact on an organization's range of products and services, but also to the value creation processes. Access to information for suppliers or customers is available 24/7 and people are used to get in touch with companies and their services or products regardless of time and place. These new requirements but also new possibilities and chances push companies to rearrange their strategy and furthermore adapt or renew the business model.

On that account the Austrian Ministry for Transport, Innovation and Technology commissioned a study conducted by three Austrian Research and Consulting companies, Salzburg Research Forschungsgesellschaft mbH, Evolaris and Syngroup, in order to evaluate the current status of digitalization and Industry 4.0 within Austrian companies and the effect of digitalization on a company's business model. Thereby 68 mainly Austrian companies were interviewed. The main findings of the study presented within this paper, summarizing which types of new business models are being considered or already implemented due to digitalization. In addition, the paper focus on two selected best practice case studies. The changes in the respective business model are described in detail and illustrated by means of a business model canvas (Osterwalder & Pigneur, 2010).

Furthermore implications of new business models on sustainability and sustainable development are considered. Some authors (e.g. Seele & Lock, 2017) argue that digitalization might be one driver for sustainability. But so far it remains unclear whether and how digitalization "facilitates or impedes the development of a more sustainable world" (Seele & Lock, 2017, p. 184). Hence, a closer look on how new business models contribute to sustainable development will be covered within the paper.

Theoretical Background

Even though the digital transformation just started and is considered to be at an early stage, it has already significantly affected organizations in all areas. Not only B2C relationships are changing in terms of connected devices and digital networks but also B2B relationships already have and will further change in the near future. Especially traditional value chains are developing towards new ways of value creation and multiple value creation networks. Fundamental changes in organizations ecosystems are forcing a company to change its strategy and its business model (Paulus-Rohmer et al, 2016). Furthermore the level of complexity is increasing based on (upcoming) large-scale digital networks, occasionally in conjunction with disappearing industry boundaries and the aforementioned changes from linear value chains towards complex, dynamic value creation networks (Lassnig et al., 2017).

Business model innovation and digitalization

Even though, the business model concept is discussed for several years within scientific community and practitioners, there is still a lack of a commonly accepted definition (e.g. Baden-Fuller & Morgan, 2010; Shafer et al., 2005). Generally speaking, the term "Business Model" refers to a description or model that represents a firm's logic to create, provide and capture value from and for its stakeholders (Bouwman, 2008). Within this paper we referring to the often used and tested Business Model Canvas (BMC) by Osterwalder & Pigneur (2010) for visualizing the business model of the two case studies presented in this paper (see chapter 4.2). By Business Model Innovation (BMI) we refer to the ways organizations establish or change their business logic from the moment that an idea is created, analyzed, tested and in the end adapted to form their business model (Heikkilä, 2010) in parallel with technological, social, product or service innovation. Advances in digital technologies have led to the emergence of new business models that potentially challenge the status quo of many industries. In particular IoT and big data technologies play a central role for adaption and/ or entirely new developed business models.

Business models for sustainability

Additionally to conventional business models, there is a rather new topic within the scientific community, dealing with business models for sustainability (BMfS). Similar to the business model concept, there is not yet a commonly accepted definition about what a BMfS is and how it looks like (i.a. Baden-Fuller and Morgan, 2010; Wells, 2013). The difference to conventional business models is that BMfS focus on the three different aspects of sustainability, the social, environmental, and the economic dimension instead of focusing solely on financial profit. Furthermore, BMfS focus on stakeholder consideration (Wells, 2013) and on multiple value creation. Additionally, ethical sourcing and an efficient use of resources are essential within a BMfS, as well as cooperative collaborations and network building (Jonker, 2012). In general, sustainable development can be supported by digitalization in not only the environmental but also the social and economic sphere (Hebling et al. 2012). Due to the increasing use of digitalization within companies more transparency and accountability is possible which leads to new possibilities of shaping, monitoring, communicating and governing sustainability within a company (Seele & Lock, 2017; Heemsbergen, 2016).

Methodology

Firstly, an in-depth literature research was carried out by covering German and English scientific literature and actual studies in the field of "Industrie 4.0", "Industrial Internet", "Internet of Things", "new business models" and "digital transformation". More than 90

relevant studies, reports, books and papers were identified and 14 selected articles were summarized in a study report in order to provide a solid literature basis.

Secondly, 68 interviews with middle and top managers of mostly Austrian industry companies were conducted. The interviews were based on a semi-structured interview guideline covering questions about experiences within the field of digitization e.g. actual and future projects, drivers and barriers and effects on the current business model. The average duration of the interview was approximately one hour. The interviews were recorded, transcribed and evaluated by means of a qualitative content analysis.

The case studies were implemented by applying the case study methodology from Yin (2014), following the steps of planning, doing, preparing, collecting, analyzing, and sharing. Based upon the company interviews, further research within already existing literature, the webpages of the companies and additional open interviews were conducted. All information were collected and revalidated by the companies. For this paper two out of the five best practice cases studies are presented.

Results and discussion

The aims of the conducted study were to identify business model patterns that are already implemented or to be considered within Austrian companies and which challenges companies are facing by innovating their business model. The main focus on the presented paper is to provide insights into how digitalization affects a company's business model and simultaneously contributing to sustainable development by providing insights out of two best practice case.

General results of the study

Based on a theoretical framework combined with the findings from the 68 company interviews, seven business models patterns could be identified that are considered within Austrian companies. Companies consider the digital transformation to be more evolutionary than revolutionary. The analysis justifies the classification of the detected business model patterns into evolutionary business model patterns (the underlying business model remains the same → minor changes) and into revolutionary patterns (radical changes related to the entire business model).

Evolutionary business model patterns can be summarized as:

1) Smart automation,
2) Digital Add-Ons,
3) Connected products and data-driven Services, and

4) Object Self Service.

Revolutionary business model patterns include:

5) Everything as a service,
6) Pay per X, and
7) Digital Lock-In.

ad 1) Smart automation refers to changes within the product process that tends to be smarter, better connected and more efficient. Especially the trend towards mass customization benefits from new technologies and the possibility to produce small lot sizes up to production with lot size one.

ad 2) Due to the increasing connectivity and the industrial internet of things it is possible for a company to offer additional digital services to their physical products, which is called digital add-ons. Variations of this business models are also known as freemium model or physical freemium. In this case physical products are sold and digital basic services are offered for free. Free services are offered in order to attract many customers, whereas only a limited amount of customer want to use further “premium” services that need to be paid.

ad3) The business model pattern “connected products and data-driven Services” refers to products that are equipped with sensors collect data about themselves, their use, the user and their environment. These condition data may help to reduce default risks and provide a solid basis for decisions about the planning and improvements of the production and maintenance process.

ad4) Object self-services provide a possibility in order to reduce costs and implement a more efficient value chain. Resources, intermediates, or spare parts can be ordered not only online, but also automatically due to new technologies.

On the contrary to evolutionary business models, revolutionary business model patterns cause radical business model changes e.g. new value proposition, new revenue model, new customer segments.

ad 5) The first example for this category is “Everything as a service” (XaaS). With a XaaS the value proposition of a business model is changed completely. Products, software, and hardware might be offered as service in order to fulfill customer needs and create additional value.

ad 6) Due to new technologies, sensors, information and data, it is possible to offer products and service to the customers that are only paid when in use. Mostly companies offer full service packages where maintenance is included as well.

ad 7) The final business model pattern identified is “digital lock-in”. In this case customers are “locked-in” the environmental system of a company. Lock-in is generated either by technological mechanisms or considerable interdependencies of products or services.

Case studies

The aim of the case studies is to demonstrate how digitalization impacts well-established business models by indicating changes in the business models and trying to point out relations to aforementioned business model patterns. Furthermore we indicate possible sustainability aspects of the respective business model.

Atomic Austria GmbH

The Atomic Austria GmbH is an Austrian based company in the sector of winter sports equipment. It was founded in 1955 and has between 650 and 800 employees. Atomic is operating mainly within the B2B sector within the European, US, Canadian and East Asian market and belongs to the Finnish Amer Group. Atomic is world market leader in the field of alpine ski production.

The business environment of Atomic is constantly changing and Atomic is facing several challenges. The market for alpine skiing is regarded as stagnant, to some extent also declining. One of the main challenges for Atomic is on the one side the decreasing amount of ski sales due to the trend towards a sharing economy, facing on the other side an increasing customer request for a wide range of products. Therefore, the topic of optimizing the lot size is getting into the focus of attention. After each lot the production machines need to be refitted manually. The degree of automation within the ski production process is, especially compared to other manufacturing companies, quite low.

In general, Atomic is dealing currently with two major projects concerning digitalization and Industry 4.0. One is dealing with topics like control technology, data collection, and traceability. The other project is dealing with smart automation, in order to make the production process smarter and more efficient.

The production process of a single ski consists of up to eight different steps. This process need to be designed as efficient as possible, in order to avoid downtimes and reduce response times in case of incidents. Furthermore, all relevant data and information need to

be gathered, in order to optimize the production. The collected data help to retrace the single steps of the production. Therefore, Atomic is cooperating with the Austrian company COPA-DATA and is using the software HMI SCADA. Additionally, set-up times are reduced by one third. In consequence a smart test system was implemented. This makes it possible to measure the quality of the products in real-time for reducing additional sanding processes by simultaneously ensuring a high quality standard.

Furthermore, the material stock of Atomic is reduced based on new interface with their ERP system.

Furthermore, collected data about energy use, air humidity, temperature, and compressed air are linked together via a platform and provide information for an autonomous production system, in order to avoid rejects and low quality projects.

But digitalization does not only affect Atomic productions, it also affects their value proposition towards their customer, their customer relationship and their distribution channel. Atomic is the first company within its sector that is offering an online shop, where it is possible for customer to design their individual skis. This implies a totally new way of customer relationship, as this is Atomic's first direct connection to their end customer.

The following figure shows which elements of the business model changed due to digitalization.

Figure 1: Changes in the Atomic Business Model

The business model of Atomic changed significantly within the age of digitalization. The company's **supply chain** changes by integrating suppliers in the production process and by connecting data, in order to make the supply chain smarter and more efficient. The **production process** itself, as described above, is getting more efficient and smarter and so do the **products**. Skis are equipped with a QR Code in order to connect it with information and data useful on the one hand for the customer and on the other hand for Atomic. Furthermore, the **distribution channel** changed significantly as totally new ways of sale in terms of an online shop are used. **Customer relationship** is also changing by means of the first direct contact to the end consumer instead of the distributer. Key partners are changing due to new collaborations, also beyond the industry sector. Due to the new offers like individualized, self-designed skis the **value proposition** is changing. As a consequence of new distribution channels and a changed production, also the **cost structure** is changing.

In relation to the above defined business model patterns, Atomic's new business model fits to the business model pattern smart automation, as well as to digital add-on's. Within the near future also the business model pattern 3) connected products and data driven services might be relevant.

Sustainability aspects

As the business model is changing significantly due to digitalization and smart production so does the environmental and social performance of the company.

Atomic is a company that cares for regional, social and environmental aspects already since a long time. These efforts can be seen as for example in 2009 the first boot for skiing was developed which consisted up to 80% out of materials from renewable resources (Süddeutsche Zeitung, 2009). Furthermore, Atomic uses wood chips instead of oil for the whole production (Standard, 2016).

Nevertheless, due to the digitalization and the changes within the business model further potential for the contribution towards sustainable development emerged. Due to new machines and a smarter and more efficient production process not only the level of energy consumption is reduced. Less waste is produced and due to quality test with real time information, fewer products are rejected. Thanks to the use of new technologies and machines the cooling water of machines is used for heating, the heating system is optimized due to variable circuits and efficient circulation pumps. Due to automated block systems, it is possible to optimize the system for compressed air. All together this leads to reduction of 12 tons CO2 per year and electricity saving of 233.000 kWh. Which leads to a cost reduction of about 223.000 € for the company.

Furthermore, Atomic is firmly established in the regional economy and it creates lots of jobs in the region. The company is the third largest employer in the region (Pongau/Sbg). Therefore, the headquarter and the Austrian production sight are highly valuable for the regional value creation.

Zumtobel Group

The Zumtobel Group, an international lighting group and a leader in the field of innovative lighting components, works together with Bosch Software Innovations to develop energy-efficient and intelligent commercial buildings. In the pilot project "Life Cycle Tower ONE" (Rhomberg Group) in Dornbirn, an innovative lighting management system was installed, which takes advantage of IoT with networked light solutions.

The overall system provides real-time insights into the areas of energy consumption, energy saving per luminaire, per floor and for the entire building, as well as visualization of the presence data (persons in the room) and the area use. In terms of maintenance, the system provides notifications of faulty lights, provides insights into the operating hours and the usage history of the lighting system. On the basis of this data a new business model for the service called NOW! was established. The new service offering NOW! provides customer lighting as a service and guarantees an optimized lighting level, efficient lighting solutions and long-term functionality. The innovative sales approach relies on professional project management and flexible service contracts, which allow customers to submit the issue of lighting to the Zumtobel Group as an experienced partner. This also means that customers do not necessarily have to buy the new lighting, but can purchase light as a pure service.

This also results in a number of financial advantages for the customer: the investment capacity is not burdened, possibilities are shown and thus the immediate saving of operating costs is realized. The monthly fixum for the lighting service is clearly defined in advance and can partly refinanced by the saved electricity and maintenance costs thanks to modern IoT and LED technologies. This innovative business model is also implemented through tailor-made financing options, from leasing or hire-purchase to managed service contracts. In order to be able to meet the needs of the customer in the best possible way, the contracts are composed of various service modules. In addition to guaranteed lighting levels and energy efficiency, modules for improving the comfort of the user can also be selected. For example changing the color temperature, automatic daylight and presence control and individual lighting control.

Figure 2: Changes in the Zumtobel Business Model

In summary, almost the entire business model is changing through the establishment of NOW !. As illustrated in figure 2, the orange marked business model segments have changed significantly through the implementation of the new service offer. The biggest changes are in the areas of value proposition (tailor-made full service package of product & service for the entire duration of the contract) and revenue model (conversion from purchase model to monthly installments over a certain period). However, changes also result in customer relationships, sales channels, key activities and key partners. In addition to the new business model of Zumtobel NOW! it is also possible to provide new data-based services for the customers from the sensor data of the light system (e.g., presence sensors). To which extend these new services are offered to the customer and whether or how these services are monetized has not yet been established. With regard to the business model patterns elaborated in chapter 4.1 the Zumtobel business model matches to pattern 5) Everything as a Service (lightning as a service) as well as to pattern 3) Connected products and data driven services provided out of all kind of sensor data.

Sustainability aspects

Buildings account for almost half of global energy consumption. As a result, future lighting infrastructure will play a key role in enabling energy and cost savings. It is projected that most of the building-based IoT equipment installations will be carried out by 2020 on the basis of lighting infrastructure. The advantages of a light-based Internet of things go far beyond the benefits of light management. For example, the data from the presence sensors also provide information on how defined areas (e.g. office rooms or entire floors) are used

or utilized at all. If there are some spaces detected where hardly anyone is present, these areas can be re-purposed - for example, in meeting rooms or in flexible offices, where several users share a desk. This optimizes space management. At the same cost, you can increase productivity, make offices easier to work with, or save on premises and reduce rental and operating costs. Simultaneously, this information can also be used to better evaluate energy saving measures, optimize room management and consequently increase sustainability.

Conclusion and Implications

In general it can be summarized that the topic business model innovation due to new (digital) technologies has arrived and gained importance for Austrian companies. However, there is a major difference in the implementation pace and the degree of innovation of the business models. The evolutionary development of business models is preferred by most of the surveyed companies, since the basic nature of the service offer remains. In contrast, there are also companies that are already making radical changes that affect the entire business logic (see cases in chapter 4.2). To achieve this, new interactive and agile development processes must be introduced, which ensure a rapid customer feedback. In this dynamic environment of uncertain planning requirements and permanent new orientations, a good vision and a digital strategy are recommended.

As changes in the business model often have functional, interdepartmental, but also across-company impact, cooperation over existing borders is essential. In most companies, this is rather difficult due to existing structures, which often leads to conflicts. Proactive communication at all organizational levels is thus a key success factor for digital transformation projects. In principle, it can be said that the awareness and ideas for new digital business models are available, but the companies will have to be even bolder in their implementation. A stronger action orientation is required.

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Quantified Cars:
An exploration of the position of ICT start-ups vs. car manufacturers towards digital car services and sustainable business models

C. Kaiser[1*], A. Stocker[1], G. Viscusi[2], A. Festl[1], P. Mörtl[1], M. Glitzner[1]
[1]Virtual Vehicle Research Center
[2]École Polytechnique Fédérale de Lausanne
*Corresponding author: christian.kaiser@v2c2.at

Keywords

Quantified Car, Car Generated Data, Connected Car, Business Models, Digital Business Innovation

Abstract

In the age of digital technology cars will have to exceed their former functionality as a tool for transportation to survive as status symbols. One feasible approach is to provide valuable digital services based on car sensor data which currently is used for the sake of driving only. Hence the 'quantified self phenomenon' can be transferred to modern cars - becoming 'quantified cars'. The paper provides insights into the quantified car phenomenon and explores the approaches of car manufacturers and tech start-ups on their journey to develop novel digital services and sustainable business models. At the moment, cars are an ideal playground for innovative US tech start-ups backed with risk capital to establish new ecosystems following the examples of Google and Facebook. In contrast to that, especially German-speaking car manufacturers have been rather reluctant to reap the value of 'their' car operation data in delivering successful digital services to stakeholders. However, two recent reports from 'Verband der Automobilindustrie' (VDA) – the German automotive industry association – suggest that Original Equipment Manufacturers (OEMs) have to hold a stronger position in the future and may limit the capabilities of third parties to freely access car data. If implemented as described in the VDA reports, then the battle for a car data-service-ecosystem will progress to the next round.

Introduction

Capturing real world events and digitizing them into machine-readable information has become increasingly important. The digital age has transformed humans to data generators, while they consciously or unconsciously have left behind their 'electronic traces' (Wolf 2013). 'Quantified self' is a term coined to describe the intended collection of any measurably characteristics about a person, including biological, physical, behavioral, or environmental aspects (Swan 2009). Usually data is collected through the consumer devices of 'Quantified Selfers', most notably through smartphones.

Quantified self has become a major creator of value through Android/iOS mobile applications. One example is the Austrian start-up Runtastic which provide a smartphone application (105 million registered users) to analyze how users perform when they run, bike, etc. Runtastic was acquired by Adidas in 2015 for about 220 million EUR. Adidas now holds the power to the knowledge of designing sportswear combined with the digital knowledge on usage gained through the user base of Runtastic, which can offer new insights for individual product development. This acquisition demonstrates that big industrial players invest into innovative quantified self start-ups with an exploitable mass of collected data from a broad user base. So what can this acquisition of a quantified-self start-up contribute to the car domain? During the last two decades, passenger cars have slowly turned into computers on wheels (Haeberle 2015) equipped with many sensors used for functionality, safety and joy. Taken into account that cars capture sensory data about themselves and about their environment, the behavioral patterns of self-tracking can be transferred to cars (and vehicles in general), which in this sense become 'Quantified Vehicles' (Stocker et al., 2017).

Obviously, quantifying cars in terms of analyzing driving data and developing innovative applications is a comparably new phenomenon. The continuous collection of car operation data can enable the analysis of both car- and driver behavior and thereby facilitate the generation of innovative digital products, services as well as sustainable business models for many beneficiaries, including e.g. drivers and organizational customers. There are many opportunities to reduce emissions by stimulating safer driving and improving road safety while caring more about the natural environment by using novel digital services as the following Table 1 suggests.

Table 1: Stakeholders and their interest towards digital services

STAKEHOLDERS	INTEREST FOR DIGITAL SERVICES
Individual drivers	Individual drivers may be empowered to assess their personal driving style and get improvement suggestions to drive more safely or economically friendly.

Various organizational customers	Insurance companies, to name a typical beneficiary heavily investing into quantified car start-ups, can provide new kinds of insurance contracts for safer drivers and will be provided with new means to infer driving risks. Driving schools can be supported in supervising students based on digitally monitored driving styles, teaching them to drive safer and economically friendly.
Governmental authorities	Road traffic departments of cities can be empowered to make informed decisions based on their gained knowledge about traffic patterns, thereby increasing road safety and reducing driving emissions in urban environments.
Automotive industry	Car manufacturers may use digital services to optimize powertrain calibration for special usage behavior (e.g. in postal delivery transport). Automotive engineers may improve the accuracy of driver models and testing for advanced driver assistance systems.

There are many stakeholders who have an interest in exploiting the data generated by cars either supporting their current business processes and models or adapting them towards establishing digital ecosystems. However, in the scope of this paper, two stakeholder groups are of particular interest: Car manufacturers as the owners of the underlying technology and ICT start-up companies especially from the tech savvy USA, who are keen to develop new digital ecosystems in the automotive domain. Against this background, the paper outlines the following research question:

> *What are the roles of start-ups vs. car manufacturers in delivering novel digital services and sustainable business models built on car operation data analysis?*

After this introduction in section one the paper will introduce background, motivation and the research approach in section two. Based on that, the paper will present approaches towards novel digital services and elaborate on the positions of ICT start-ups versus car manufacturers, exploring suggestions of the VDA in section 3. The paper will conclude with a discussion on future opportunities of these two stakeholders in section 4.

Background and research approach

Background and motivation

Digitalization is a sociotechnical process on encoding analog information into a digital format (*digitizing*) applied to social and institutional contexts, transforming their sociotechnical structures, thus rendering digital technologies infrastructural (Tilson et al., 2010). Digitalization results in digital artifacts characterized by *editability*, *interactivity*, *reprogrammability/openness*, *distributedness* (Kallinikos et al., 2013), also implying a shift in product design moving from modularity to generativity (Yoo et al., 2012). Quantified cars are one of the key results of digitalization in the automotive industry, where incumbents have to face competing concerns systematically interrelated, as shown by Svahn et al. (2017) through the case of Volvo Cars: *innovation capability*, *innovation focus*, *innovation collaboration*, and *innovation governance*. Thus, from a strategy perspective, digitalization enforces *internetworking* considered as "those business processes/activities conducted or mediated online between employees, customers, suppliers and partners of firms, using internet-based technologies accessed through internet-based infrastructures." (Brews & Tucci, 2007, p.224). Besides incumbents digitalization enables digital entrepreneurship providing less bounded entrepreneurial processes and outcomes and less predefinition in entrepreneurial agency (Nambisan, 2016), as shown also, e.g., by the rising number of start-ups focusing on quantified cars. Accordingly, the role of information value is a central challenge in the competitive scenarios emerging from digitalization as well as information capacity of companies (Viscusi & Batini, 2014). Key questions here are: What data do I have? How is their quality? Can I exploit them in their full potential? What can I infer from them? While ICT start-ups have already started to apply the quantified self phenomenon to cars, launching apps and services to generate a new market, car manufacturers are currently in the transition process from vehicle manufacturers towards integrated mobility and data service providers. According to Dedrick (2010) researchers have framed the impacts of IT on environment as first-order (impacts from IT hardware during the product lifecycle), second-order (impacts of ICTs on other processes such as transportation or industrial production), and third-order effects (changes in lifestyles and economic structures). The latter are relevant when considering the increased use of social media transformative potential of 'green' information systems on the demand side, encouraging practices such as, e.g., carpooling and ridesharing applications coupled with the Internet of things (Malhotra et al., 2013). According to Malhotra et al. (2013) this two- way, sensor-driven communication is blurring the boundaries between the production side and the demand side. Furthermore, information systems and interdisciplinary strategies for quantified cars may provide models to assess the value of information, in particular the social value of related open data (Viscusi et al., 2014).

Taking the above issues into account, business models are a key element for competing in markets characterized by extensive use of ICTs and currently transformed by digitalization. In general terms, a business model describes the rationale of how an organization creates, delivers, and captures value (Osterwalder & Pigneur, 2010). Massa et al. (2017) provides a systematic view on the different perspectives on business model research pointing out that business models can be considered as i) attributes of real firms, ii) cognitive/linguistic schema, and iii) formal conceptual representations/descriptions of the former two issues. As for conceptual representations, Al-Debei & Avison (2010) identified four key dimensions of business model: *value proposition*, *value architecture*, *value network*, *value finance*. As for business models as attributes of real firms it is worth mentioning the definition by Zott & Amit (2010), who conceptualize a business model as "a system of interdependent activities that transcends the focal firm and spans its boundaries. The activity system enables the firm, in concert with its partners, to create value and also to appropriate a share of that value" (2010, p. 216). This definition is useful for understanding business models of companies interested in quantified cars when linked to the above concept of internetworking and current pervasiveness and strategic relevance of digital platforms (Parker et al., 2016). Considering quantified cars, despite the "analyzing" stance of the main market players, a set of traditional and new business models can be applied (Shipilov, 2016), in particular the *infomediary* one (Afuah & Tucci, 2000) can be adopted under a utility perspective and extended from data collection for, e.g., marketing purpose to data useful for social value, as capability and functioning they enable (Viscusi & Batini, 2016), and finally for sustainability issues.

Besides environmental and societal issues, business sustainability refers to "business models and managerial decisions that creates value over the short, medium, and long terms, based on mutually beneficial interactions between the company's value chain and the social and environmental systems on which it depends" (Lüdeke-Freund et al., 2016, p. 18). Furthermore, Schaltegger et al. (2016, p. 6) points out that 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." Still, business model innovation in automotive industry asks for understanding the different ways the various actors can follow to innovate their business models; in particular, as pointed out by Massa & Tucci (2014, p. 424), business model design in newly formed organizations, which refers to their "entrepreneurial activity of creating, implementing and validating a business model", and business model reconfiguration in incumbent firms, encompassing the reconfiguration and eventual acquisition of organizational resources to change an existing business model.

Research approach

This paper is aimed to provide a first exploration of the position of innovative ICT start-ups vs. car manufactures towards establishing new services and sustainable business models. Although the topic quantified car per se is in the domain of car manufacturers, an increasing number of ICT start-ups have used their innovation capabilities to develop own means for capturing this valuable data source.

Against this background the authors of this paper conducted a desk research approach analyzing information available on the Web to further explore the activities of quantified car start-ups and car manufacturers. They have used a combination of the terms quantified, connected, vehicle, car, and start-up in search engines to capture the current developments. Furthermore they have used crunchbase.com to capture additional meta-information on company location, business and funding.

After having identified the major quantified car start-ups, which are listed in Table 2, two authors have studied start-up websites in detail to find out more about their visions and goals as well as about their business models, products and services. Both authors have reviewed the websites of all start-ups and discussed their knowledge with the other person afterwards to come to a common understanding. The information was then validated by two additional persons, which are co-authors of this paper as well.

Results: An exploration of novel services and business models

The position of ICT start-ups in the USA towards exploiting car data

In analogy to the quantified self movement, the dominating IT/Web industry of the USA has already lined up a series of quantified car start-up companies backed by risk capital, reaching more than 20 million USD in some cases, demonstrating how high investors perceive the market value of a car data ecosystem for quantified cars (Stocker et al., 2017). The start-ups exploit data generated by cars while driving. The crucial source for any data-driven start-up is data and this statement also holds for quantified car start-ups. The following table lists start-ups which have been identified in desk research. It provides an overview and includes the company names, their URL as well as their value propositions provided on the website.

Table 2: Quantified Car Start-ups

COMPANY	URL	VALUE PROPOSITION
Automatic	automatic.com	Unlimited car monitoring, zero fees. The only connected car adapter with unlimited 3G included.

Automile	automile.com	#1 Fleet & Asset Tracking
Dash	dash.by	Connect your car to Dash, to make driving smarter, safer, greener and more affordable.
Metromile	metromile.com	Metromile's pay-per-mile insurance offering saves low-mileage drivers a ton of money.
Mojio	moj.io	The Leading Open Platform for Connected Cars
Vinli	vin.li	…the leading car platform for bringing smart car functionality to any car on any lot, in any fleet, or in any shop.
Zendrive	zendrive.com	Smartphone-powered road safety for cities, fleets, and individuals.
Zubie	zubie.com	…connects your car to the internet to deliver real time location, trip history, maintenance alerts, engine diagnostics and driving insights.

For data acquisition purposes, start-ups must involve car drivers/owners somehow. The car driver creates data while driving his car and therefore has to be understood as the owner of the driving data. While car manufacturers have a comparatively easy technical access to the data a car generates during its operation, tech start-ups have to identify novel ways on how to capture this data before they can use it in applications. The conducted research has identified two major data acquisition approaches pursued by the start-ups:

- The first approach, pursued by the majority of quantified car start-ups including e.g. Automatic or Mojio, is to utilize a branded hardware plug connected to the OBD-II interface, a standardized interface for all modern cars. This allows them accessing certain car sensor data, e.g. speed or rpm. They may equip their devices with additional sensors including GPS or accelerometer to collect additional relevant data describing the movement of the car. Both plug and internet connectivity are usually not free of charge. They produce a lock-in effect to the particular business model of a quantified car start-up and are one way to safeguard revenues.
- The second approach, e.g. pursued by Zendrive, is to use the sensors built into modern smartphones, e.g. GPS, accelerometer or luminance, to capture data while driving. This makes smartphones suitable devices to track car trips, too. However, smartphones lack information provided by car sensors including emission data or rpm. Nevertheless smartphones have the advantage of an 'always on' connectivity for event extraction and service provision.

The reviewed start-ups have specialized in capturing, storing, and analyzing large quantities of car data and offering services in smartphone applications to motivate for sharing valuable driving data. The majority of start-ups are capable of extracting interesting driving events including e.g. hard brake, hard acceleration or speeding to name a few. These events are hidden in the field data and have to be revealed through applying data analytics. Mobile applications running on the user's smartphone then pull the results and visualize them on the driver's smartphone. Figure 1 provides snapshots of such mobile app user interfaces.

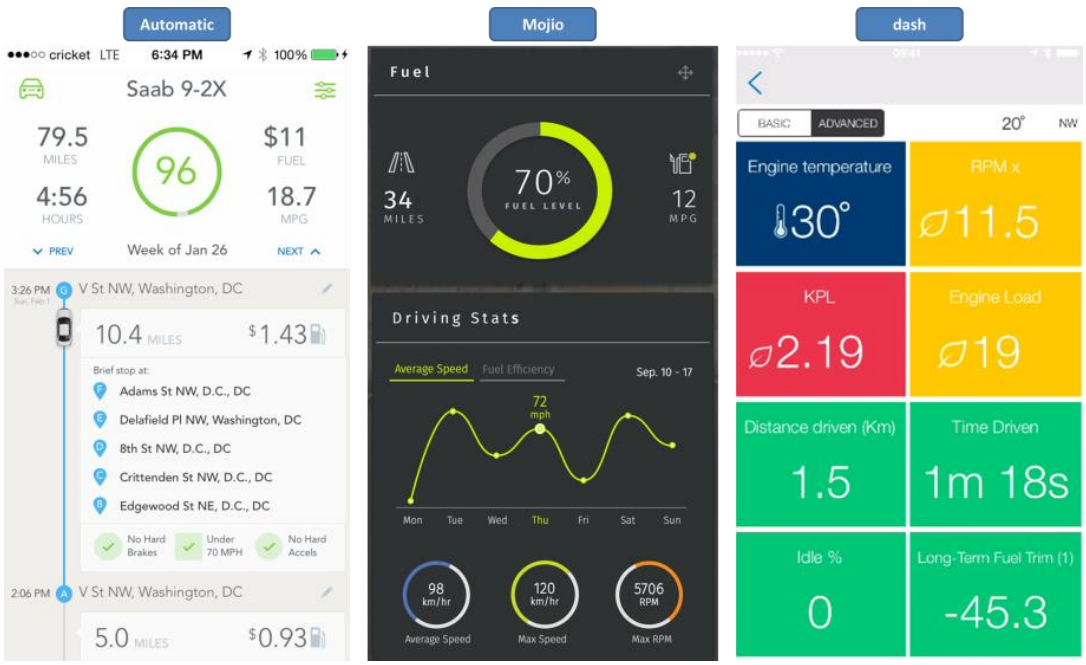

Figure 1: Start-up Apps: Automatic, Mojio and dash (Stocker & Kaiser, 2016)

Some start-ups even provide APIs and software development kits to software developers in order to increase their market reach through third party apps or even to become the most important car data service platform, through a business model comparable to Apple iTunes. Some may even pursue the strategy of being bought by a big player in the future. These start-ups are definitely eager to increase market penetration. Their main competencies are applying novel data analytics on large quantities of trip data, storing large quantities in their datacenters, providing innovative mobile applications to the user including gamification apps as well as dashboards and interfaces for other parties (e.g. fleet managers) to allow analytics on fleet data.

The position of car manufacturers towards the quantified car phenomenon

Regarding access and ownership of car generated data, car manufacturers are in a comparably lucky position. However, they were not very successful in exploiting this market yet. The potential to exploit car lifecycle data for purposes other than driving currently remains almost untapped by automotive OEMs (Stocker et al., 2017). According to the EU research project AutoMat (AutoMat, 2016), the automotive industry has not yet been able to successfully establish an ecosystem for apps and services equivalent to that of smartphone manufacturers. The project mentions three reasons why OEMs are currently struggling: Brand-specific business approaches dominate, and as a consequence there is a lack of brand-independent car lifecycle data. Current proprietary car services focus on the individual customer, what leads to privacy concerns, and few ideas exist how anonymized car data can be used to establish other services. The implied or required collaboration between OEMs on car data and services is considered risky in terms of competition.

However, success and interest in car data start-ups seem to have made an impact on OEMs business strategies. As the AutoMat system structure (Figure 2) illustrates, OEMs are interested in taking over the data provider role and to establish a car data ecosystem: Data acquisition systems will be integrated into cars. Cat data is transmitted to an OEM backend, where it can be cleaned and enriched with further relevant information before publishing it to service providers, e.g. tech-start-ups, which then can provide third party applications on a marketplace. Though there is an OEM backend, the Automat System terms its approach an ‘open ecosystem’ in its deliverables, where the willingness of other stakeholders to pay for digital business models is an important topic, too.

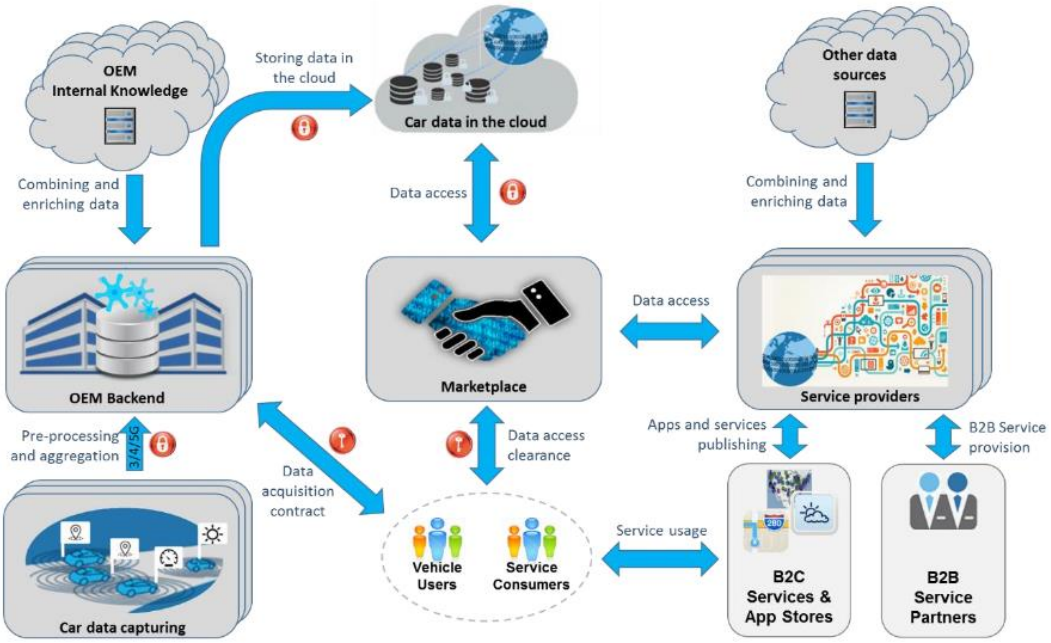

Figure 2: The AutoMat System (AutoMat, 2016)

Tech start-ups heavily depend on the OBD-II interface yet. If access to this interface would be limited or denied, their business models would be endangered. A recent eeNews Automotive (2017) article titled 'German car industry plans to close OBD interface' emphasizes the hypothesis that car manufacturers want to take over the data provider role, it states:

> *Instead, the data will be made accessible to interested third parties through a neutral server, and basically under control of the automotive industry.*

There are two relevant recent position papers from VDA concerning the role of the German-speaking car manufacturers towards digital car data ecosystems. The position paper 'data protection principles for connected vehicles' (VDA, 2014) refers to the continuous transformation of vehicles towards 'connected vehicles' with a permanent uplink to the internet and the feasibility to connect various data sources for establishing new services. The position paper suggests three principles for VDA members to handle the advancements in connectivity and the new services associated with respect to responsible data handling as well as with data protection:

- Transparency: VDA members strive for adequate information about the data in connected vehicles and the use of these data.
- Self-determination: VDA members are striving to enable customers to determine themselves the processing and use of personal data through various options.

- Data-security: VDA members strive to implement the strong safety culture in connected vehicles.

The short paper closes with a chart of data categories in connected vehicles and their relevance for protection:

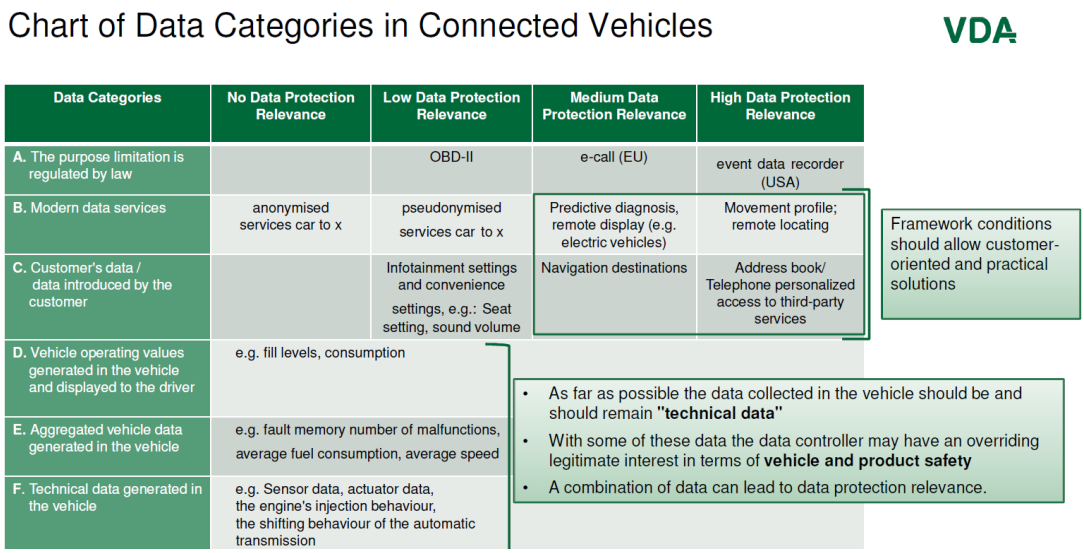

Figure 3: Data categories in connected vehicles (Source: VDA, 2014)

The second position paper titled ‘access to the vehicle and vehicle generated data’ (VDA, 2016) discusses data-centric requirements for security, privacy, and discrimination free innovation. According to this report, each OEM has the role of a system administrator and is hence responsible for the safe and secure transfer of car data to a business to business (B2B) OEM interface. Third parties can access this car data directly over the OEM B2B interface or via neutral servers, which gather the data from the cars.

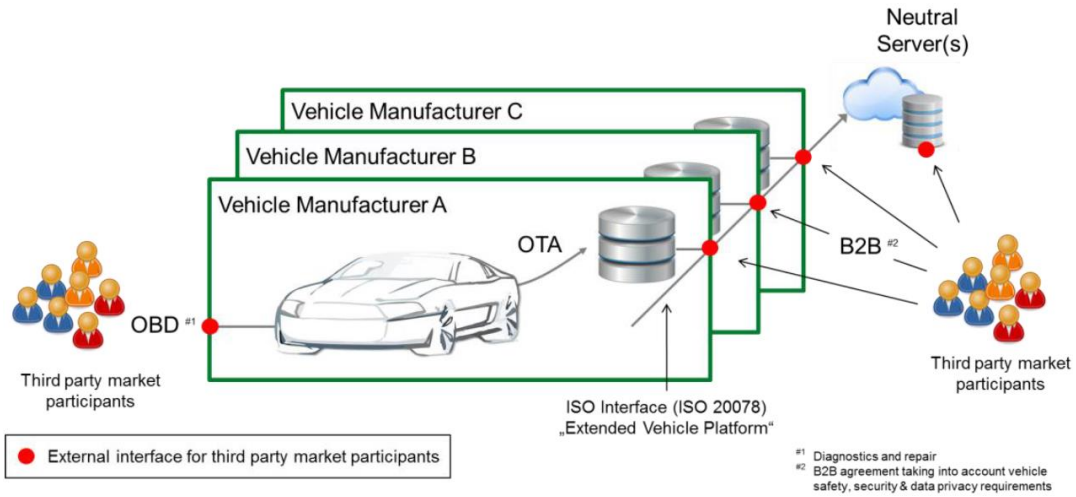

Figure 4: Access to vehicle generated data (Source: VDA, 2016)

According the information contained in the position paper, direct access to this data for third parties will be disabled. As a result, access to car data may be very limited in the future for start-ups, because OEMs want to increase their influence on what stakeholders can do what with the data cars generate.

Conclusion and Outlook

Modern cars have become data generators. Hence, their data can be collected, stored in databases, analyzed, and finally aggregated to generate new products, digital services, and business models. In analogy to the quantified self phenomenon which is about capturing the data about oneself to provide new insights to people's behavior, the authors have coined the trend described above with the term quantified vehicles (Stocker et al., 2017).

The authors expect that many stakeholders have an interest in exploiting car data to provide digital services. There are certainly a lot of benefits to achieve if this is done accordingly, which will increase individual driving safety as well as road safety. Furthermore many of these activities will have a direct influence on the environment as safer driving through less speeding, fewer braking, and smoother accelerating will positively correlate with reducing emissions while driving.

Two concrete stakeholder groups were focused, US ICT start-ups and German car manufacturers. While ICT start-ups adopt either an OBD-II interface plug or smartphone sensory to capture data, car manufacturers would have a direct access to car data - at least from a technical perspective. US ICT start-ups have occupied the market in a new freshness by creating new services and business models based upon analyzing large quantities of car data. They have built up an enormous expertise in gathering and exploring field data, detecting patterns and events in the data or providing analyses which are of interest to

drivers. However, recent articles and reports from VDA suggest that German car manufacturers have become aware of the huge market which is at loose to the ICT industry. Hence, OEMs start to advance own projects and discuss restricting the OBD-II interface. Car manufacturers are seeking new opportunities and may establish a data market for third party services. If German car manufacturers will pursue the approach described in both VDA reports, then the battle on setting up a successful car data-service-ecosystem will progress to a very exciting next round.

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Data Market Austria:
Austria's First Digital Ecosystem for Data, Businesses, and Innovation

Matthias Traub[1], Heimo Gursch[1], Elisabeth Lex[2], Roman Kern[1]
[1]Know-Center GmbH (mtraub, hgursch, rkern@know-center.at)
[2]Graz University of Technology (elisabeth.lex@tugraz.at

Keywords

Data Market Austria, Digital Ecosystem, Matchmaking, Brokerage, Data Value Chain

Abstract

New business opportunities in the digital economy are established when datasets describing a problem, data services solving the said problem, the required expertise and infrastructure come together. For most real-word problems finding the right data sources, services consulting expertise, and infrastructure is difficult, especially since the market players change often. The Data Market Austria (DMA) offers a platform to bring datasets, data services, consulting, and infrastructure offers to a common marketplace. The recommender systems included in DMA analyses all offerings, to derive suggestions for collaboration between them, like which dataset could be best processed by which data service. The suggestions should help the costumers on DMA to identify new collaborations reaching beyond traditional industry boundaries to get in touch with new clients or suppliers in the digital domain. Human brokers will work together with the recommender system to set up data value chains matching different offers to create a data value chain solving the problems in various domains. In its final expansion stage, DMA is intended to be a central hub for all actors participating in the Austrian data economy, regardless of their industrial and research domain to overcome traditional domain boundaries.

Introduction

The modern economy with its digitally supported processes lays the foundation for new, data-driven businesses opportunities. Enterprises in various different industries are recognising the potentials hidden in their own data or in data spread across their partners. But data alone is not enough to leverage the potential hidden within, hence additional data, data services and the right infrastructure are required assets to solve problems or derive new business opportunities (Immonen et al., 2014, Desai et al. 2007):

- **Problem:** At the beginning stands an unsolved problem or a need for improvement of a process. The problem needs to be clearly defined and the requirements of the solution outlined.
- **Data:** Data is the means to represent the problem and the underlying process explicitly or implicitly. In many cases the data might be provided by the problem owner, at least partially. If the problem owner has none, not enough, or not the right data, further data sources are required and the different datasets need to be merged accordingly.
- **Service:** One or more pieces of software and algorithms are commonly needed to work on data to create a workflow from raw data to reliable and interpretable information. These are called data services or just services for short. Typically, the workflow starts with data cleaning and pre-processing, flowed by merging the datasets, then the main analytics and processing steps take place before the results are textually or visually reported. All of those steps require the appropriate, compatible and interconnected services.
- **Infrastructure:** A computing infrastructure is required to store the data and provide the computing power for all the necessary data services. This could be provided by the problem-, data-, or service owner or by an independent party offering an Infrastructure as a Service (SaaS) product.
- **Consulting:** For any aspect mentioned above, consulting might be required as the respective owner might not have the needed expertise in all possible scenarios. This is usually the case if a new combination of data, services, and infrastructure is set up by the involved partners.
- **Matchmaking:** Matchmaking can be seen as a special kind of consulting, namely the support in finding the right partners supplying data, services, and consulting to solve the problem at hand.

Each of these aspects corresponds to a role or an actor responsible for it. The Data Market Austria (DMA) (Research Studios Austria, 2016) is a nationally funded lighthouse project to create a digital ecosystem i.e. a multi-sided market where the matchmaking between the roles takes place. In its final expansion stage, DMA is intended to be a central hub for all actors participating in the Austrian data economy, regardless of their industry sector. Hence, DMA is the important link to bring Problem Owners (PO), Data Providers (DP), Service Providers (SP), Infrastructure Providers (IP) and Consulting Providers (CP) together. In DMA, POs get a central address point to find the required partners and DPs, SPs, IPs, and CPs get a common distribution platform to offer their products. The difference between the interactions of all the participants in the DMA compared to the current situations is illustrated in Figure 1 and Figure 2.

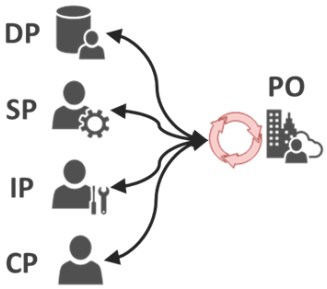

Figure 1: Currently, Problem Owners (PO) have to constantly coordinate the Data Providers (DP), Service Providers (SP), Infrastructure Providers (IP), and Consulting Providers (CP) in order to create their solution.

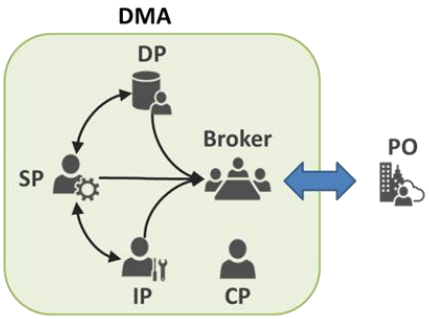

Figure 2: With DMA, POs are given a single address point to find the required DPs, SPs, and IPs. Similarly, the DPs, SPs, IPs, and CPs have a common platform to presents their products and interact.

Very important for the success and the benefits of DMA are the various brokers. A broker is the central instance to establish the connections between the PO, DP, SP, IP, and CP (Immonen et al., 2014). Each broker has to know the offers available on DMA to find the right solutions to satisfy the needs of the POs. Such an extensive knowledge about the potentially very volatile content cannot be kept by a human, but requires extensive support via a DMA software service. This software service in question will be the recommender service, or recommender for short. It keeps track of all the offers on DMA and can suggest potential collaborations between the different actors to a human broker or to the actors in DMA directly.

Related Work

Bold claims along the lines of “Data will be the new oil” summarise the potentials and hopes associated with data today. The similarity is even used further, namely data in its raw from is, like crude oil, next to useless (Rotella, 2012). In other words, the potentials hidden in raw data can only be used when data is processed by the right services, and even more when different kind of datasets are linked together to find new coherences between different domains. The process from raw data to new knowledge solving problems is often referred to as data value chain (Cavanillas et al., 2016). Data ecosystems offer a common platform to share and trade all building blocks for data value chains (Immonen et al., 2014). Many of these ecosystems are founded along the paradigm of Open Innovation, meaning that companies offer previously confidential data to an open community since they expect better results from the bigger, open community active on a data ecosystem compared to the smaller and closed community within their enterprise. The openness can manifest itself in different degrees, reaching from collaboration with only trusted partners based on a clear

billing model right up to completely open collaboration with any parties free of charge (Dahlander et al., 2010). Leading the way in Open Innovation are governments, NGOs, and other public entities, while commercially oriented organisations are dragging behind. Nonetheless, multinational enterprises like Nike, Master Card, Twitter, and IBM (Buda et al., 2016) are also contributing to data ecosystems. Buda et al. (2016) contribute this to four major motivational factors:

- **Generating new revenue streams:** This is the most common motivator for commercial organisations to take part in in data ecosystem. The idea can be to sell the data directly or generate a revenue by analysing the data and improving or extending the current business with information from within the data. In the latter cases, the participation at a data ecosystem might be motivated by a lack of knowledge or resources insight the company.
- **Community building:** When partners, customers, and other entities are jointly working on a problem, a new community is established. Hence, the company can interact with the community to find new employees or customers.
- **Internal business improvement:** Providing data or services as part of a data ecosystem requires knowledge about how to prepare and publish the offers in a data ecosystem. This knowledge can also be useful when a data-oriented collaboration with business partners is required. Participation in a data ecosystem can be a good training ground for such data-oriented collaboration with partners.
- **Publicity and PR:** The participation on a data ecosystem can be used to generate public attention and to shape the public opinion about an enterprise.

The success of any digital ecosystem, and of DMA in particular, depends on lively interaction in the digital ecosystem. Hence, the broker is most important in establishing the matchmaking between the individual parties starting the desired interactions (Immonen et al., 2014; Desai et al., 2007). The “broker” concept is usually associated with an intermediate person involved in commercial negotiations or transactions. Specifically, a broker might be an agent who buys stocks, land, or any other kind of goods or assets and sells them for others (Bissinger, 2015). From a high-level perspective, the same principle can be applied when facilitating the mapping between offerings and demands of data and services in the DMA. The state of the art analysis implicates that there are only a few research works that built upon the basis of recommender systems and data/service brokerage. The work presented in (Laleh et al., 2015) is among the few addressing not only the issue of service brokerage between providers and consumers but also the issue of data brokerage. This work proposes a context-aware cloud service brokerage framework as a mechanism enabling the inter-mediation between SaaS clients and providers, and supports the process of data integration among SaaS providers. This initial concept has been picked up and is transformed into the DMA environment were the two concepts are brought together.

The core concept behind the broker in DMA is a human strongly supported by a recommender system. In recent years recommender systems have become an integral part in many applications (such as Amazon, Netflix and MovieLens) supporting humans in finding interesting information in an overloaded information space. Although the first recommender systems were developed already in the mid-1990s, the interest in this research area still remains high due to its problem-rich characteristics. The main problem targeted by recommender systems can be formulated as suggesting a set of domain-specific items I (e.g., data set, services, infrastructure etc.) to users which are of interest for the users while the same time are also new to them. In order to determine this set of items, several recommender approaches have been developed. (Ricci et al., 2011)

Since traditional recommender systems mostly focus on a single domain (e.g., books at a bookstore, hotels at the travel agents), they adapt and apply a recommendation approaches best suitable for the domain model at hand. Commonly, the recommendation approaches are selected depending on how easily (or hard) it can be adapted to the existing domain model (Traub et al., 2015). Since the prediction task is usually viewed as a two-dimensional problem, user-item interactions are the easiest to apply, and are therefore the most commonly utilised data feature (Lacic et al., 2015). However, if supporting a diverse set of domains becomes an important issue in modern recommender systems (Lacic, 2016). Since DMA is recommending basic tuples containing datasets and services (respectively dataset and service providers) the two can be seen as two domains with different intrinsic relationships.

Proposed System

The central architecture of the recommender system in DMA (illustrated in Figure 3) is focused around the matchmaking framework responsible for the data ingestion and information enrichment. The enriched information will further be used by the search and recommender engine based on ScaR (Scalable Recommender Framework). It has already been used in various domains from basic item recommendation to finding social institutions based on free text problem statements (Traub et al., 2016).

a. Data input and matchmaking

The data input service is divided into separate modules, one for each data source. Hence, there are four modules one for dataset metadata, one for service metadata, one for user profiles, and the last one for interaction data. Each module encapsulates the API of the respective data source to minimise the required changes if an API gets modified or extended. Each source actively pushes new data or updates to the source connection modules minimising the latency between the occurrence of a data change and the effect of the data change on the recommendation and search service. The next step in the data input service is the information extraction (IE) which itself is divided into a pre-processing and a

main stage. The pre-processing step is executed for each data source individually. It covers merely a unification of the vocabulary in the input data and generates a common data representation. In the main stage, the actual IE is carried out. The IE transforms the unstructured texts from the input metadata into structured information interpretable by the recommender. Furthermore, a cross-referencing and validation of the input data between all input sources is done.

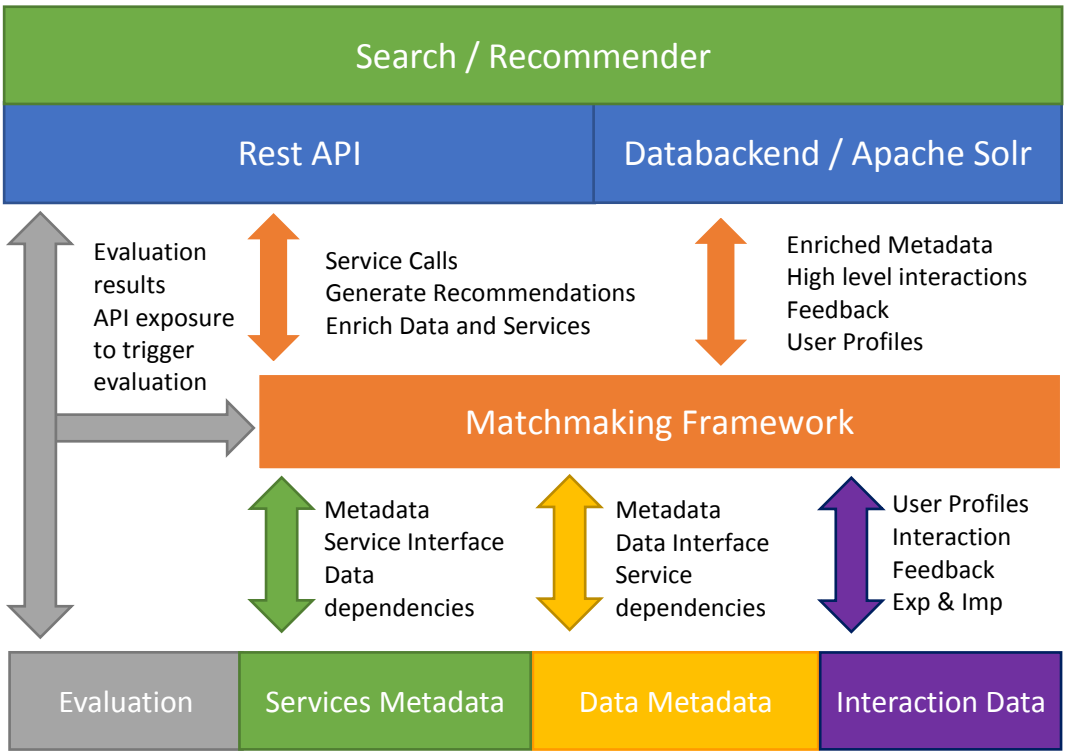

Figure 3: General system overview showing the various interactions between the matchmaking and recommender services in relation to the other central DMA services managing the available services, datasets and the DMA portal tracking the user interactions.

b. Service evaluation

The evaluation module assesses the suitability of services under two different aspects. First, the output generated by services will be evaluated in terms of task-specific efficiency and effectiveness. Second, for assessing a complete process (consisting of one or more datasets and services), specific and significant evaluation metrics are needed. The requirements for metrics will be examined, developed, and made available as services which are used by the recommender to identify the best service for the given problem.

c. Search

The search enables users to execute queries against the metadata catalogue to find services and datasets. Further, the results can then be filtered by so called search facets. Facets are filters to narrow the search results and help the users to find the right results.

d. Recommendation

The recommender service is the core of all services. It automatically generates suggestions of possible datasets and service combinations on the DMA portal. In contrast to the search, it also incorporates user profiles and interactions made by users on the platform to generate the suggestions. The recommendations are automatically generated meaning that they are not triggered by the users explicitly but implicitly when they navigate to a page of the portal. Recommendations in DMA are primarily based on metadata and interactions (Damiani, 2015) of users with services, datasets and other users creating a context and enabling the matchmaking based on this context. By using this metadata and profile of each user, personalised recommendations for collaboration between different parties on DMA are generated. DMA will extend this matchmaking functionality to incorporate insights about user interactions with the DMA Portal to also include implicit and explicit feedback (Jawaheer, 2015) by the users. Explicit feedback is given directly by the user like assigning a one to five start rating to an item), while implicit feedback comes non-intrusively from interactions such as clicks on item descriptions. We propose to alter the recommendation strategies to be adaptive and incorporate the feedback into the process, which leads to a system capable of learning and adapting to current needs and situations.

e. Backend

The search and recommender services use Apache Solr (Smiley et al., 2015) as a data backend. Solr provides the capability for horizontal scaling, by creating either shards (i.e., splitting the data into smaller indices to increase the performance of search queries for huge data sets) or replicas (cloning the existing shards to another machine to increase the fault-tolerance of the whole system). Furthermore, the built-in MoreLikeThis (Smiley et al., 2015) search method uses the vector space model represented by Term Frequency – Inverse Document Frequency (TF-IDF) values to find similar items. This functionality is particularly useful for developing recommender approaches which need to process large amounts of data and still provide high performance. All modules can be deployed and started in multiple different instances either on the same or on different machines, thus supporting horizontal scaling. To keep track of all deployed modules, we make use of Apache ZooKeeper (Haloi, 2015). All registered services are coordinated by ZooKeeper and they can be divided into hierarchical namespaces to deploy several different recommender domains on one system.

Vision and implications

DMA was commissioned in 2016 by the Austrian Research Promotion Agency (FFG) and the Austrian Ministry for Transport, Innovation and based on the recommendation by the results by Berger et al. (2014) to bring Austria on the forefront of the European digital economy. While DMA is outlined as a research project, it should develop a fully functional data ecosystem capable of leading the Austrian data economy. DMA is designed as the central hub for the data driven economy in Austria. I.e. all industry, academic, NGOs, or research

parties can take part regardless of their main business domain. DMA follows the principle of offering a breeding ground to start data driven projects and applications. Hence, DMA is not targeted at any specific domain or application all the different players in the data economy are invited to use the DMA infrastructure to find new partners or to extend existing partnerships. This is a major differentiator to projects like the Industrial Data Space in Germany (Otto et al., 2016) or EUDAT (Lecarpentier et al., 2013) focused on specific domains. The DMA brokers supported by the recommendation services are committed to help DMA participant to find the partners the needs. Hence, DMA sees itself as an domain-agnostic enabler for digital business in Austria.

To show the potentials of the DMA platform and the possible collaboration in the Austrian data economies, two pilot systems implementing complete data value chains are already planned. The first pilot is a holistic taxi fleet coordination system solving the problem of taxis working on full capacity at one location, while there are empty taxis waiting unoccupied somewhere else. Based on the weather forecast, timetables of public transport network, the entertainments and event calendar, traffic information, and historical data, the ideal distribution of the taxi fleet is predicted. The second pilot focuses on the field of earth observation, where data from the European Space Agency (ESA) will be used to judge the heath of parts of the Austrian forests and to track the changes over time given new insights into the environmental developments in Austria.

These two examples should highlight the potentials for DMA to become the central hub for the data driven economy in Austria with connections to the European community. Commercial and non-commercial organisations, governmental institutions, private parties, universities, research institutions, and any other legal entities are invited to participate on DMA offering their datasets, services, infrastructure, and expertise. Particular focus will be given to the start-up community, where special funding opportunities are created to kickstart the development of services tailored for datasets within DMA. Human brokers working with the offers on DMA are supported by the recommender service to create value chains and setting up collaborations between the involved parties on DMA. The brokers foster the collaborations and create a thriving ecosystem out of the individual offers presented on the DMA platform.

Conclusion and future work

In its final expansion stage, DMA is intended to be a central hub for all actors participating in the Austrian data economy, regardless of their industry sector. Comparable initiatives target limit themselves to only a single specific domain, for example the Industrial Data Space in Germany (Otto et al., 2016).

By the end of the project, we expect to have a sustainable Data-Services Ecosystem in Austria, initially running on Austrian cloud infrastructure provided by multiple project partners, using the innovative foundational technology and business models developed during the project. Through the pilots, the Austrian mobility and space communities will be well established in the ecosystem, with further communities beginning to use it. The start-up support during the project will lead to first demonstrations of commercial use of the ecosystem.

The matchmaking and recommendation service will be a crucial element of the success of the platform. It will enable the DMA customers to find the right services and data using the best suitable infrastructure for their given problem. It helps to decrease the time and effort when bringing together all the necessary elements.

In the current phase of the project, the technical work packages finalised the technology foundation and specification of the required central services. The next phase of the project will create the first prototype of the platform with all the central services in place. At the beginning of the second phase there will be an extensive screening, validation, and evaluation of the current implementation state. The results of this evaluation will determine the concluding steps in creating the final platform.

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The Relational Factors Affecting the Transition to New Business Models

Sarah Ebadzadeh Semnani* and Tomas Nord
Linköping University, Department of Management and Engineering 581 83, Linköping, Sweden
*Corresponding author: sarah.ebadzadeh@liu.se

Keywords

New Business Models, Digitalization, Legitimacy, Social Capital, Trust

Abstract

This conceptual study, aims at contributing to theoretical development of New Business Models (NBMs), by creating a better initial understanding of relational factors affecting the transition to NBMs in the age of digitalization. Considering that co-value creation with stakeholders is one of the main characteristics in NBMs, the studies on how the relationships with stakeholders are created, maintained and utilized are of great importance. Furthermore, the relationship intensive nature of B2B exchanges made them an interesting area of focus in this study.

The study objective was achieved through incorporating the scholarly contributions in three interconnected relational concepts of legitimacy, social capital and trust in NBMs and digitalization studies. An interesting observation was the existence of an interplay between opposing economic and social values when implementing NBMs in light of digitalization. This was evident in all three relational concepts under the focus of this study and in line with a proposition previously made by other scholars. This interplay can be between information transparency and privacy, opportunism and trust or between efficiency and legitimacy. This study has also developed this proposition further by suggesting that apart from their complementary nature, it is possible for the opposing values in these three areas to reinforce each other as well.

Introduction

Manufacturing companies are gradually adopting a servitization strategy by moving towards offering a bundle of goods and their associated services rather than the goods alone (Visnjic et al. 2016). Digitalization had been argued to play a significant role in this process. As there is a widespread belief that digital technologies can act as both enablers and drivers of

servitization (Holmström & Partanen 2014; Vendrell-Herrero et al. 2017). Therefore, one immediate consequence of these changes, is the need for implementing New Business Models (NBMs) that incorporate the elements of both digitalization and servitzation as part of the business offering logic of these product firms (Spieth et al. 2014; Takey & Carvalho 2016). One of the main underlying assumptions in NBMs is the major departure from the previous narrowly defined concept of value creation (Porter & Kramer 2011). The value creation in these NBMs will be in a more shared and collaborative form with the stakeholders of the business (Takey & Carvalho 2016). Therefore, stakeholders and particularly customers are undeniably an important source of value creation in NBMs (Spieth et al. 2014; Ulaga & Eggert 2006). Thus, it is important to study how relationships with these stakeholders are created, maintained and utilized.

Noteworthy to mention, is the distinction that should be made between business models of Business-to-Customer (B2C) and Business-to-Business (B2B) companies. As these two models, tend to differ from several aspects. The exchanges in B2C models, does not capture the social relationships which are established in B2B segments (Robey & Cousins 2005). Such relationships are typically facilitated through embedded and interpersonal interactions between the involved parties (Schultze & Orlikowski 2004). Manufacturers in many business markets have a tendency towards forming closer relationships with certain key customers and suppliers (Ulaga & Eggert 2006). Moreover, the business exchanges of B2B companies are usually associated with higher demands on maintaining the privacy of business actors (Robey & Cousins 2005). In addition, customization is becoming central in value creation of B2B offered services and is characterized by knowledge and relationship intensity (Kindström 2010; Madhavaram & Hunt 2017). The above discussions signify B2B companies as an interesting area of focus, when studying the transition to NBMs.

As discussed above, there is a clear shift in focus from transactions to relationships in NBMs (Barnett et al. 2013). Considering that the shared value creation in NBMs has proven to be a reciprocal practice (Simmons et al. 2013). This will result in restructuring of stakeholders' interactions with organization under NBMs. This restructuring is even more pronounced in customer relationships of B2B companies, in light of prevalence of digitalization in NBMs. Since managing complementarity of digital technologies and customer-relationships can create tensions (Schultze & Orlikowski 2004). There had however, not been enough research addressing what it takes to manage such complementarity (Schultze & Orlikowski 2004). A few studies have shown that this process of integration between digitalization and relationships is more challenging when digitalization is substituting or cannibalizing traditional products (Vendrell-Herrero et al. 2017), supports arm's length and impersonal linkages or reduces the necessity for traditional embedded relationships with customers (Schultze & Orlikowski 2004). Having in mind that one of the key factors in generating value and repeat business had been the embedded relationships with customers in B2Bs (Schultze & Orlikowski 2004); provision of digitalization

can indeed “produce a paradigm shift in consumer valuation” (Vendrell-Herrero et al. 2017). This complexity can further increase in the case of NBMs where the actual relationship becomes a value parameter itself (Ulaga & Eggert 2006).

The wave of digitalization in New Business Models of B2Bs, often leaves firms in a crossroad between the opposing economic and social values (Robey & Cousins 2005). That is, the choice between transparency and privacy in information access (Robey & Cousins 2005), between opportunism and trust in relationship of actors (Nooteboom 1996; Williamson 1993) and finally, between the advantages of efficiency and legitimacy in business relationships (Grewal et al. 2001; Son & Benbasat 2007; Robey & Cousins 2005). Hence, these underlying relational issues in NBMs highlight the importance of three intertwined concepts of *legitimacy*, *social capital* and *trust*. The objective of this paper is therefore to bring together the scholarly discussions on these three relational concepts in regard with digitalization and NBMs. With the aim of providing a common and conceptual understanding, that can act as a starting point in addressing the relational issues in NBMs.

Digitalization & Relational Factors

This section discusses the three concepts of legitimation, social capital and trust in light of digitalization in NBMs. This is followed by the analytical discussion that takes place in the next section.

Legitimation

Achieving legitimacy is an objective, undertaken by companies when embarking on a new area of activity (Suchman 1995). The broadly accepted definition of legitimacy that was decided to be adopted in this paper, is the definition proposed by Suchman (1995); whose work in synthesizing the diverse literature in legitimacy is considered as one of the main reference points in legitimacy literature to this date:

> *Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions* (p.574).

The digitalization in NBMs can expose companies to concerns about gaining/regaining legitimacy in two different ways. *First,* it can be in the form of *pragmatic legitimacy* which arises from the “self-interested calculations of an organization’s most immediate audience” (Suchman 1995, p.578). In this case, an organization can be considered as legitimate if its practices and business model, conform to the expectations of its immediate stakeholders (Robey & Cousins 2005). However, the legitimacy of the firm can be questioned if its practices after the transition to NBMs, does not comply with self-interest of customers and

other stakeholders. *Second,* is in the form of *organizational isomorphism*. That is, when organizations seek to achieve legitimacy through adopting processes, strategies and structures that had already been implemented in their industry (Deephouse 1996). Therefore, adopting to new technologies and NBMs, can be a legitimacy motive for firms who are active in industries where their suppliers and competitors already practice NBMs (Grewal et al. 2001; Son & Benbasat 2007). There are no consensus in literature on whether larger or smaller sized companies engage more heavily in legitimating behaviour. Since there are contradictory claims arguing for either one of them (Dowling & Pfeffer 1975; Stone & Brush 1996).

Suchman (1995) divides legitimation strategies into three groups of gaining, maintaining and repairing legitimation. He claims that there are not enough scholarly contribution when it comes to strategies for maintaining and specially repairing legitimation. His argument stands true to a large extent even to this date. He summarizes the literature on strategies to gain pragmatic legitimacy into: 1) Conforming demands, by responding to needs, co-opting constituents and building reputation; 2) Market selection, by locating friendly audiences and recruiting friendly co-optees and 3) Advertising product and image (Suchman 1995). As for strategies to maintain pragmatic legitimation: 1) Monitoring tastes, through consulting opinion leaders and 2) Protecting exchanges, by building reliability, communicating honestly and stockpiling trust (Suchman 1995). There are also studies suggesting that different types of marketing activities such as market sensing are recommended tools to be used as legitimating devices, when B2Bs attempt to re-build their legitimacy after their transition to NBMs (Simmons et al. 2013). Moreover, Hart & Sharma (2004) propose that networking with fringe stakeholders (i.e. those beyond the core stakeholders) of the business, is another way for preserving operating legitimacy of the company. Alternatively, Woodward et al. (1996) suggest that through communication, organizations can attempt to amend the definition of social legitimacy, in order to conform it with their own current practices.

As we have already briefly touched upon it in introduction, there are always two opposing values of efficiency and legitimacy when B2Bs decide to adopt digitalization. The legitimacy aspect have already been discussed above. Efficiency on the other hand, suggests that B2Bs who adopt digitalization, base their decision on the rationalistic expectation of improving their economic efficiency and transactional processes via digitalization (Son & Benbasat 2007). There are quite different and all equally interesting findings in this regard in the literature. Robey & Cousins (2005) argue that organizations do not need to be efficient to be successful. They can increase the probability of survival by adopting legitimating strategies that make them isomorphic with their environment. They further posit that the benefits of digitalized exchanges should outweigh its costs for costumers to adopt them (Robey & Cousins 2005). On the other hand, Grewal et al. (2001) claim that for a firm to achieve an expert state in digitalization, a proper mind-set should be developed that stresses on efficiency and de-emphasizes legitimacy motives. Almost in line with this argument, Son

& Benbasat (2007) posit that if the decision to adopt digitalization only has legitimacy motives, it should be kept on hold until there are efficiency motives in the picture as well. They argue that this may otherwise waste the resources of the firm (Son & Benbasat 2007).

Social Capital

Woolcock (1998) defines social capital as the "information, trust and norms of reciprocity inhering in one's social networks" (Woolcock 1998, p.153). It is believed by majority of scholars in this field, that social capital benefits in relationships are realized through three main means of: 1) Information flow, 2) Trust, 3) Norms (Burt 2000; Coleman 1990; Granovetter 2005). For some scholars such as Uzzi (1996), having interpersonal and embedded relationships, is the answer to achieving all three means of social capital benefits (i.e. information flow, trust & norms). Scholars such as (Granovetter 1973) on the other hand, despite agreeing on positive role of embedded relations (or as Granovetter would call it, strong ties), in achieving trust and norm related benefits of social capital; argue that novel and heterogeneous information can only flow through arm's length relations (or weak ties). As according to these group of scholars, embedded relations over time, tend to only flow homogenous and redundant information (Burt 2000; Granovetter 1973).

As already mentioned in introduction, the nature of business exchanges in B2B settings are often in the form of embedded and interpersonal relationships (Schultze & Orlikowski 2004), with fewer key suppliers and customers (Ulaga & Eggert 2006). There is also a tendency towards maintaining privacy of information being shared (Robey & Cousins 2005) and their offered customized services are mainly knowledge and relationship intensive (Kindström 2010; Madhavaram & Hunt 2017). The emergent of digitalization can have significant effects on B2Bs' social capital related factors. In some instances, the implementation of new technologies, negatively influence conditions of embeddedness. Schultze & Orlikowski (2004) argue that arm-length relations facilitated through implementing Information Technology (IT) tend to undermine the trust generated in embedded relationships. Consequently, organization actors will begin expending the previously generated social capital with their customers, in an attempt to mend their relationships or to promote the newly introduced technology (Schultze & Orlikowski 2004). Digitalization can also lead to more transparency in the information being shared within B2B relationship networks (Robey & Cousins 2005). This may cause a reduction in the exchange of situated and privileged information and therefore, a decline in prospects of sustaining and creating social capital with stakeholders (Schultze & Orlikowski 2004).

There is however, another side to every story. There are therefore also studies that illustrate either the benefits of social capital during transitions to NBMs and digitalization, or how digitalization can further improve the social capital creation in B2Bs. For instance, Wagner et al. (2014) propose that alignment of IT and organizational goals, can be mediated

through non-strategic and operational social capital. Moreover, Schultze & Orlikowski (2004) posit that using new technologies can also be effective in strengthening embedded relations, as a complementary support for interpersonal relationships. Furthermore, several studies have pointed out the important role that intermediaries play in digitalization process of B2Bs. Intermediaries are the connection point between organization and the external networks they are linked to, such as their customers (Coleman 1990). Almost all major scholars in this field had touched upon the important role that these actors play in social capital creation. However, they labeled them with different terms such as intermediaries, representatives (Coleman 1990), brokers (Burt 2000) and a "strategic player" who maintain bridge ties (Granovetter 1973). Robey & Cousins (2005) point out that "the structure of B2B e-commerce intermediaries is socially shaped, rather than the product of purely economic forces" (p.225). Schultze & Orlikowski (2004) claim that the problem with studies on digitalization and relationships is that they mostly focus on organizational level and fail to consider that inter-firm relationships with stakeholders are initiated by actions and interactions of individual actors (e.g. sales people and customers) who represent these firms.

Similar to discussions in legitimacy section, the opposing economic and social values leave their trace in social capital considerations as well. That is, between the rational theories that argue for arm's length relations facilitated by the help of new technologies and relational theories that support social embeddedness through interpersonal relationships (Schultze & Orlikowski 2004). Interestingly, there is now an increasing body of literature that recognize these economic and social behaviours as complementary, despite the previous belief on their contradictoriness (Adler 2001; Granovetter 1985). It is argued that cooperative relationships and network technologies are indeed mutually reinforcing (Schultze & Orlikowski 2004).

Trust

Before discussing trust as a standalone concept, it is noteworthy to point out its visible role in both legitimation and social capital concepts that were previously discussed. There is an immense amount of scholarly contribution on the positive role of trust in facilitating the process of integration between digitalization and organization-customers relationships (Alsaad et al. 2017; Kim & Noh 2012; Robey & Cousins 2005; Schultze & Orlikowski 2004; Ulaga & Eggert 2006). However interestingly, many of the contributions in this area call attention to the indirect and moderating role that trust plays in this process (Alsaad et al. 2017; Ulaga & Eggert 2006). Trust tends to have indirect effects such as increase in the likelihood of doing business in future (Ulaga & Eggert 2006) or moderating effects on perceived desirability of intent to adopt digitalization (Alsaad et al. 2017).

However, there are also studies that do not recognize trust as a necessarily positive contributor in the transition process to digitalization. Alsaad et al. (2017) argue that the rigidities inherited in presence of trust, may hamper the flexibility of firm to acquire new technologies even if there are enough technological motivation to do so. They believe in balanced relationship structures that only ensure the positive and flexible side of trust when it comes to adopting new technologies (Alsaad et al. 2017). Moreover, there are also stimulating findings suggesting that trust is in fact not related to the supplier choice of professional buyers in industrial contexts. Such buyers instead rely on objective assessment measures such as superiority of supplier's offering, relative price/ cost and delivery performance (Doney & Cannon 1997; Ulaga & Eggert 2006) These propositions takes us back one last time, to the initial discussion on the opposing economic and social values. As it appears, the same struggle to find the balance between social and economic aspects is present in trust related factors in relationships as well.

Discussion

Two basic observations can be made from the scholarly contributions discussed in previous section. First, the evidence of how conceptually intertwined are the three notions of legitimacy, social capital and trust. Second, the existence of opposing economic and social values when studying these relational factors in light of digitalization in NBMs.

There are several undertaken studies in different contexts, with all having a goal in common, attempting to bridge the gap between social and economic values in order to benefit from their complementary nature. Granovetter (1985) calls for an optimal balance in types of relationships and believes that the companies should maintain few strong ties but many weak ties in order to be able to convert the produced social capital into economic capital. In line with this discussion, Kindström (2010) argues that it is not possible to maintain good relationships with all customers. As sometimes, the costs of maintaining those relationships exceeds their benefits. He therefore suggests that customers should be segmented in accordance to their strategic importance. This segmenting at times, may involve shifting some relationships back into a more transaction-based nature (Kindström 2010). Moreover, there are many similar propositions arguing for concurrent operation of new and old business models (Schultze & Orlikowski 2004), business model portfolios (Sabatier et al. 2010), service offering portfolios (Kindström 2010) or hybrid exchanges with both traditional and digital capabilities (Robey & Cousins 2005) in order to manage the complementary nature of social and economic aspects. Last but not the least, the role of intermediaries that was briefly mentioned in social capital section, should not be neglected in management of this complementarity.

One study that had been a constant source of inspiration in this paper, was the work of Robey & Cousins (2005). As already mentioned, Robey & Cousins (2005) introduced the idea

that the revision of business models in light of digitalization, will result in an interplay between the opposing pressures of economic and social values. They posited that this interplay can be between information transparency and privacy, opportunism and trust or between efficiency and legitimacy (Robey & Cousins 2005). After carrying out the study in this paper, the scholarly discussions on three relational factors of legitimacy, social capital and trust assisted us in further developing Robey & Cousins' (2005) proposition. First, if their proposition is viewed from a social capital perspective, an interesting revelation is the presence of all three means of social capital creation in Robey & Cousins' argument. That is, the information flow, trust and norms (i.e. in which norms and values are the main elements of legitimacy). It can therefore be argued that on one side of the extreme of relationships lays embedded relations and this is where the social pressures are at their strongest. Moreover, on the other side lays the arm's length relations where the presence of economic values are at their strongest.

Second, in line with above discussion on presence of the three social capital creation means of information flow, trust and norms, this study argues that it will be an oversimplified view to consider these three elements independent from one another. As scholars in social capital studies believe that it is not possible to draw clear border lines between them (Nahapiet & Ghoshal 1998). Therefore, by having in mind the prospect of interdependency between these three elements, this study propose that it is possible for some of these opposing values to reinforce each other. There are studies that claim that transparency in information flow can lead to creation of trust (Akkermans et al. 2004). Existence of trust on the other hand, can lead to more transparency in information being shared between actors (Coleman 1990). In addition, trust in certain situations can lead to efficiency of outcomes (Valley et al. 1998). Efficiency in transactions on the other hand, may lead to trust building between the actors (Fukuyama 1995). Fig. 1 depicts the propositions that were made in this study by further developing Robey & Cousins' (2005) argument. It may not be safe to claim that these reinforcing roles can exist between all other opposing values of privacy, opportunism and legitimacy as well. Nevertheless, these possibilities cannot be ruled out either. It is therefore that these linkages are presented in dashed-lines in Fig. 1.

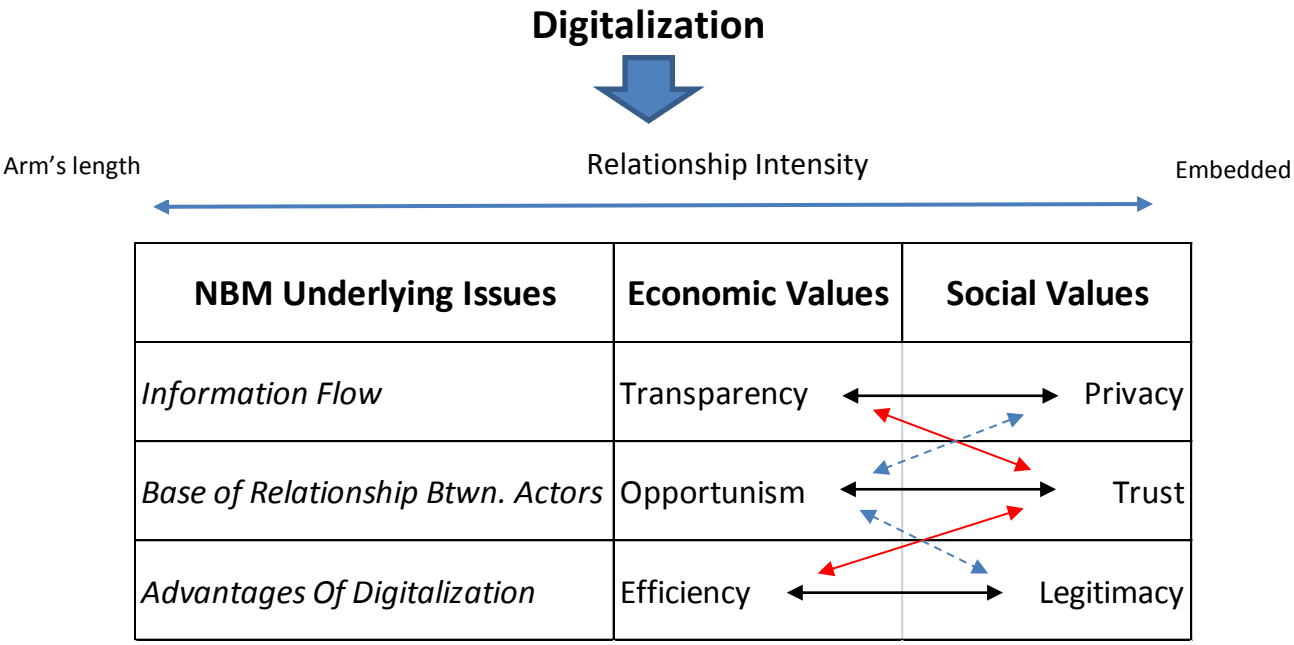

Figure 1: The complementary & reinforcing nature of social & economic values in NBMs

Conclusion

This study, focused on relational factors, which are believed to play an important role in the transition to NBMs in light of digitalization. The observation made, was the existence of an interplay between social and economic values when transitioning to NBMs in all three relational concepts of social capital, legitimacy and trust, which were the focus of this study. As mentioned in the beginning, this study has only acted as a starting point in theoretical development of NBMs with a relational focus. There is therefore, room for many further studies to gradually shape the theories in this area. The first and foremost, is the need to have industry-specific research in this field. As it is not possible to provide a single recipe for all industries. The industry-specific characteristics of firms can highly influence the optimal balance that should exist between these economic and social extremes. Moreover, the industry-specific studies can also assist researchers in identifying the optimized extent of incorporating digitalization in company's value proposition.

Furthermore, a proposition was made in this paper in regard with the reinforcing role of opposing economic and social values in addition to their previously proposed complementary role. There is therefore need for further studies that support or reject this proposition, shed light on significance of each of these reinforcing roles or study them under an industry-specific context. Last but not the least is the need for more focused studies on the role of intermediaries that had been briefly touched upon in this paper. It is argued that intermediaries can play a critical role in business model transition process. Therefore, studies that further incorporate and discuss their role in managing stakeholders'

relationships and in maintaining the optimal balance of social and economic values are recommended.

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SHORT PAPERS SESSION 7

Closing loops in Cloud City:
Towards Zero-Waste in Aalborg

Erick Zimbrón Escutia, Martin Lehmann
Aalborg University, Department of Development & Planning
erick.zimbron@gmail.com
martinl@plan.aau.dk

Keywords

Circular Economy, Organic Waste, Ecological Transition, Material Flow Analysis

Abstract

Problem/Idea

Waste Management in the EU has in the past decade been guided by the 2008 directive (2008/98/EC) – itself a revision of the 2006 Waste Framework Directive (2006/12/EC). Now, however, a new and more ambitious package, the Circular Economy Package, including revised legislative proposals on waste, has been adopted (EC, 2015). This shift (from Waste Management to Circular Economy) underlines both the problem and a possible solution: In 2013, total waste generation in the EU amounted to around 2.5 billion tons per year of which more than 60 percent were not reused or recycled; valorization of waste (as a resource or secondary raw material) would increase competitiveness, create a substantial number of new jobs, avoid a considerable amount of GHG emissions, and reduce EU dependency on material imports.

For Denmark, long considered a pioneer in waste management despite it also being the EU country producing the most waste (759 kg per person in 2014, 60 percent higher than the EU average of 475 kg per person), the circular economy package introduces new challenges and opportunities. A very high fraction of the municipal waste in Denmark is being incinerated (54 percent), thus linking the waste system very closely with the energy system through highly effective and widespread district heating networks. However, despite being an effective way of waste management, such high rates of incineration are inconsistent with more ambitious recycling targets at EU, national and local levels.

As is the case in most Danish cities, in Aalborg, the reliance on incineration as a waste management and energy producing strategy is high. Almost 23 percent (1467 TJ) of the energy used in the city's district heating system comes from Reno Nord - the central waste incineration plant. Currently, for household waste, metal, plastics, glass, paper and carboard

are source collected. The rest, namely the refuse waste, is sent for incineration. The organic fraction, one of the largest groups in municipal waste, is currently still disposed within the refuse material.

Approach & Principles

With the introduction of a new waste management plan, Denmark Without Waste (2012 to 2022), the city has begun its own transition – under the heading 'Aalborg without Waste: 2014-2025' – towards more re-use of discarded materials from households. One target to live up to is the national goal of 50% recycling. A goal that is not achievable without a strong focus on the organic fraction identifying solutions to on the one hand prevent for example food waste, and on the other valorize the waste created and prepare for recycling.

In Aalborg, the new waste management plan is closely connected to political ambitions and goals for the transition towards a more sustainable future, and other official strategies and actions, such as Smart City Aalborg, the Sustainability Strategy and the Climate Strategy. It is also obvious, however, that the traditional and socially accepted model of waste incineration will need to be challenged, and that new solutions must be co-designed and co-planned to close loops and promote zero-waste society. The principles of Circular Economy (especially as presented by Ellen MacArthur Foundation) inspires politically and administratively in Aalborg, and their model is thus point of departure for the understanding and discussions of the possible circularity and loop-closing.

Case & Data

To exemplify opportunities for embracing circular economy business models, we propose utilizing current district and project developments underway in the city, and in early planning and design phase integrate to the extent possible functions that support waste prevention and recycling. The project, Cloud City, currently under planning (and with expected first-dig mid-2017) has been selected for a potential first zero-organic waste site in Aalborg. The Cloud City project, named after the central art piece by Tomás Saraceno that is to be installed, is a brownfield development in Aalborg's city center. It will transform a non-working industrial area into a multi-functional urban center. The project includes functions such as art exhibition, housing, rooftop urban gardens, food markets, hotel, restaurants, a micro distillery, and a chocolate factory.

A project this size and with these specific activities creates an opportunity for innovative design that focuses on closing loops in the organic resource and waste stream. To achieve a zero-waste district, the material flows must be identified and calculated, and resource utilization/treatment solutions needed proposed. The outflows were intended to be analysed through a material flow analysis, with data collected in a local context. However,

due limited feedback from stakeholders, appropriated data collected through literature review were used instead.

Design & Perspectives

The organic waste output in Cloud City was estimated at 16.7 tons per month. Assuming a 25% reduction in food waste (due to food waste prevention strategies), the estimated amount of waste is 12.8 tons per month. The second phase of study (ending June 2017) is now underway aiming at identifying areas of opportunity and proposing ways to close organic waste loops. The second section is inspired by the concept of circular economy and value creation. The expected results include a proposal for organic waste treatment that contributes to the general ecological transition of the district (and if scaled, the city). Moreover, it is expected to create enough knowledge that promotes further research on the topic.

Introduction

Waste and the organic fraction

Among the various aspects of sustainability, waste, specifically reduction and management, stand as one of the many imperative topics to be addressed. According to Hoornweg et al. (Hoornweg, Bhada-Tata, & Kennedy, 2013) , "*waste is being generated faster than other environmental pollutants, including greenhouse gases*". The present waste generation rates are already causing relevant phenomenon such as the marine-debris "Great Pacific Garbage Patch" between Japan and the US west coast. However, if this is not worrying enough, it is calculated that global solid waste generation could triple in the following century if a "business as usual" system is maintained; going from 3.5 million tonnes per day in 2010, to 11 million tonnes per day in 2100 (Hoornweg et al., 2013). Under this context, it is possible to identify waste management as a "*critical matter of public health, environmental quality, quality of life, and economic development*" (The World Bank, 2013).

In a European context, waste management practices have been guided by the Waste Hierarchy and the EU Directives. The next figure shows the waste hierarchy (Figure 1) followed by the European Union.

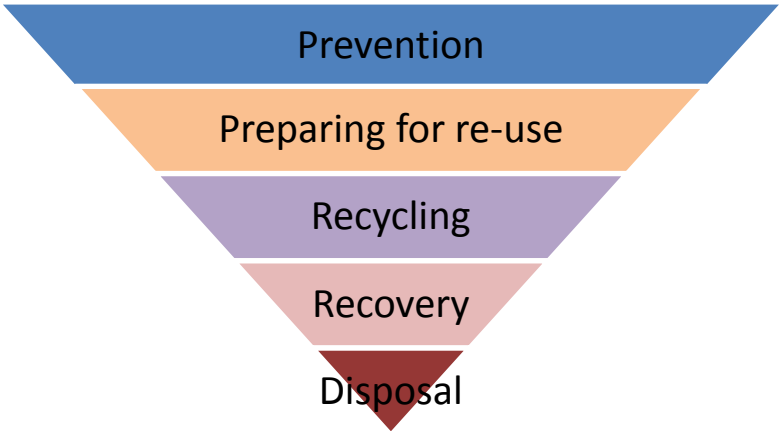

Figure 1- Waste Hierarchy

Within the EU directives, the most important highlights related to waste are: the EU Directive on Landfill (1999/31/EC), the EU waste Directive (2006/12/EU), the revised EU waste directive (2008/98/EC) and finally the Circular Economy Package adopted in 2015. The latter contains proposals "*on waste, with long-term targets to reduce landfilling and increase recycling and reuse*" (The European Union, 2017).

In cities, organic waste becomes a relevant fraction to consider for increasing recycling and reuse. Firstly, because on a global average, the organic fraction in municipal solid waste is 46% (Hoornweg & Bhada-Tata, 2012). Secondly, organic waste is linked to climate change due to methane emissions when decomposition takes place in landfills (European Commission, 2016). Thirdly, organic matter is concentrating in cities -due to urban area's high consumption- with nutrients not being returned to the soil. This is causing soil degradation on a global scale, affecting one quarter of land globally with a cost of USD 40 billion per year (Ellen MacArthur Foundation, 2017).

Denmark and Aalborg

Denmark is not only the country with more municipal waste generation in the EU (759 kg/person in 2014), it is also the second one regarding waste incineration (with 54%)(Eurostat, 2016). Moreover, the country falls behind Germany and Austria (countries with similar GDP per capita in 2015) (Eurostat, 2017) in terms of waste treatment. Germany performed better in recycling (47% against 27%), while Austria performed better in composting (32% against 17%). Under this context, and considering EU policy, it becomes attractive the analysis of a possible shift from an incineration dominated management to one focusing on prevention, reuse and recycling.

Given the circumstances, the Danish Government decided to take a new approach to waste management. On 2013, a new resource strategy "Denmark without Waste" was

implemented. With a motto "*Recycle more- incinerate less*", the Danish Government opted to promote a series of actions, focused on household waste recycling, to modify waste management in Denmark in a 10-year period -from 2013- to 2022-. A core goal of the strategy is to achieve a 50% recycling rate in household waste (up from 22% in 2011) (Government, 2013) for selected waste streams (organic waste, paper, cardboard, glass, wood, plastics and metals). However, the process will take place at different rates across the country. This is mainly because "*Municipalities are primarily responsible for the waste area, specially for household waste*"(Government, 2013). And different municipalities may decide to take different approaches into fulfilling targets and objectives. In this context, the Denmark Without Waste Strategy specifies: *"[…] the strategy contains no new requirements for individual municipalities. It will still be up to the individual municipality to set the level of service and organization of waste management*" (Government, 2013). Therefore, focusing in a specific location, or municipality, becomes relevant when analyzing waste management further.

Aalborg municipality is located in North Jutland and is Denmark's third largest municipality. The city of Aalborg is the largest city in the municipality but also it is North Jutland's capital. The city has actively participated in the European Conference on Sustainable Cities & Towns; events that have concluded in urban sustainability initiatives in the form of the Aalborg Charter in 1994, the Aalborg Commitments in 2014, and the Basque Declaration in 2016. In the latter, although many topics and scopes are mentioned, there is a strong connection with the concept of circular economy. This can be observed in some of the pathways statements stablished in the Declaration: "*We will turn the challenges in front of us into opportunities for our local economies*", "*We will create and close local value chains*", or "*We will pursue the development towards a Circular Economy*" (Declaration, 2016).

Approximately 129,000 tons of household waste were collected in Aalborg municipality in 2014 (Forsyning, 2014). This corresponds to 1,256 kg per household. According to the same report, the waste treatment for the same year was: 50.5% incineration, 44.4% recycling and 5.08% Landfill. Incineration is carried out by Reno Nord, in a local plant that burns waste from five different municipalities. From all the waste incinerated, the waste coming from Aalborg's municipality came primarily from the "refuse" category and from fuel waste (~72% and ~28% respectively)(Forsyning, 2014). The refuse category, which is entirely incinerated, refers to municipal waste that is left after separating things to recycle -such as paper, carton, plastics, metal, glass- and hazardous waste. Household organic waste is considered as non-recyclable, and therefore is separated within the refuse fraction along with items such as dipers, pizza boxes and multi-layered containers (chips, milk and juice cartons).

In this situation, it is possible to observe that the organic waste fraction is: 1) not collected separately, 2) it's collected inside the refuse category which normally contains non-recyclables, 3) it is incinerated entirely. Considering compliance with the national recycling targets for 2022 (of at least 50%), then it is possible to observe an area of opportunity regarding waste in Aalborg. The following graph (Figure 2) shows the incinerated refuse waste in Aalborg's plant (with data until 2015) and a linear forecast until the year 2022. A second line has been established to show the expected decrease in incinerated refuse waste if 50% of organic waste is being recycled by 2022 (considering that organic waste recycling nowadays is 0%).

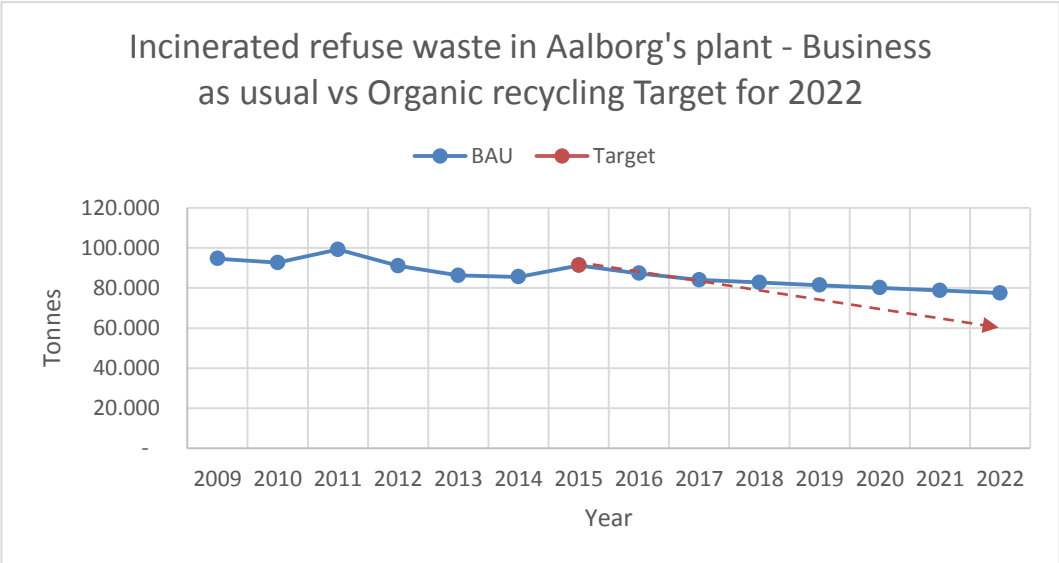

Figure 2- Incinerated refuse waste in Aalborg's plant - BAU vs Organic recycling target for 2022

The difference between the two scenarios that can be addressed through the design and implementation of innovative solutions. The solutions should be focused in the promotion of waste prevention, reuse and recycling -closing loops- above other options. Moreover, proposed solutions should not only need to be innovative, but should be able to break the present waste treatment trends on which the City, and the country, are at the moment. However, before designing potential solutions, a holistic understanding of the situation in Aalborg is needed.

The fact that organic waste is incinerated not only prevents waste recycling and reuse, but also links the waste sector with the energy one; particularly in the area of district heating. Reno Nord is one of the main contributors to Aalborg's District Heating system along with Aalborg Portland and Nordjylland Power Station (Nordjyllandsværket). According to Aalborg Varme (from Aalborg Forsyning), in 2014, the heat supply to the District Heating system was as following: Nordjylland Power Station with 56%, Reno Nord with 23%, Aalborg Portland with 18%, and 3% coming from the reserves (Aalborg Forsyning, 2017). In this

context, the importance of waste within the energy sector creates a circumstance where different interests, of different stakeholders, might compete. Moreover, this competition could slow down the ecological transition that the city is experiencing at the moment.

Therefore, the analytical framework will analyze Aalborg in terms of ecological modernization and institutional theory. Moreover, additional information will be given in terms of Circular Economy and Value Creation for organic waste.

Analytical Framework

Ecological Modernization

The sociological theory of Ecological Modernization will be used to provide a general framework on the current situation in Aalborg regarding its green transition. It should be highlighted that it is not the purpose to engage in a theoretical questioning or development approach; but simply into a descriptive task. According to Mol and Sonnenfeld (Mol & Sonnenfeld, 2000), Ecological Modernization appeared as an attempt to provide explanations regarding environmental transformations in practices, discourses and institutions. The theory was first developed in the beginnings of the 1980's, and has been, since then, under constant transformations due to multiple scientists contributing with various publications. Nevertheless the constant changes, at the core, "*the theory tries to analyze how contemporary industrialized societies deal with environmental crisis*"(Mol & Sonnenfeld, 2000).

In general terms, it can be argued that the approach in Aalborg is that of relating the "social" with the "natural". The very creation of the Center for Green transition (Center for Grøn Omstilling) in 2013, shows how the institutional context is constantly evolving due to environmental-induced changes. This approach is influenced by the EU policy, the Danish strategies and the city's commitments (Ex. Basque declaration), and is reflected in the specific approach of Aalborg's municipality. The municipality's Sustainability strategy is focused on "*consumption and resources and how SMART solutions based on circular economy can create green growth and social development in the municipality*"(Aalborg Kommune, 2017). In general, the strategy aims to benefit citizens, businesses and the environment at the same time. Moreover, other initiatives, such as the Green Agents (Grønne Agenter) -which support to citizen-driven initiatives- and the Green Stores (Grøn Butik) -an environmental labelling scheme-, relate the social and the natural within the already stablished institutions. Considering this context, it is possible to argue that the approach of the city is closer to a moderate position rather than a radical one. The municipality's sustainable initiatives support the idea of a need for reforms and transitions, but always within the current capitalist system. Furthermore, apparently, the sustainable strategy does not prioritize the environment above or below the social; rather they seem to

have the same importance. In the municipality's web information it states when referring to the sustainability strategy focus: "*it combines the desire for a sustainable transition with the citizens' well-being and quality of life*" (Aalborg Kommune, 2017).

In the context of waste, changes towards an ecological transition are evident. Regarding household waste, paper, cardboard and glass were already being separately collected by the municipality. And just recently, the streams of plastic and metal were added up to this list. This recent institutional change facilitates the possibility of increasing recycling and reducing incineration. However, when analyzing in greater detail, this is not the case for organic waste yet.

In general terms, although the city appears to be through a holistic process of ecological modernization (supported by EU policy, Danish policy and the municipality's strategies), there appears to be conflict that slows down the progression in terms of organic waste. Organic waste, along with other refuse material, is being incinerated. Considering that plastics and metals are currently being recycled in a higher percentage, a further reduction in waste going to incineration could represent a challenge in terms of energy supply. In this case, involved institutions could influence the path the city is going to take in the future. Moreover, political aspects influence the process as well. According to Dorte Ladefoged (Ladefoged, 2017), Waste Planner from Aalborg's Municipality, the city is planning on implementing biogas solutions in the close future. However, there are two reasons that prevented a separate collection of the organic fraction during the last years:

1. There is concern about the cleanness of the pulp (due to the presence of plastic material) produced in anaerobic digestion processes. The presence of plastic complicates the process of defining the "accepted values" for disposing pulp in the soil, along with defining where or to whom is the pulp going to be delivered. In this matter, currently there is no regulation in Denmark that stablishes limits. Thus, the decision is taken by the local government.

2. Joined to the previous point, future government changes also slow down the process. Elections are happening in 2017, and a new government bureau is expected for 2018. In this case, certain decisions, such as organic waste treatment, will be addressed until the new government comes (in order to avoid contradicting points of view between the past and new administration).

All things considered, a combination of circumstances is creating conflict among stakeholders that slows down the ecological modernization process in the waste setting. This conflict might be explained by the combination of both: the relationship of the waste and energy sectors, and the current political uncertainty (including future changes and the definition of limit values for pulp from anaerobic digestion processes). The previously

mentioned aspects involve the interaction of different institutions in Aalborg. These institutions might be competing to each other. Even more, certain institutions might be influenced by multiple factors the slow down the process of ecological modernization in terms of waste. Therefore, in order to describe and analyze this conflict, institutional theory will be used.

Institutions in Aalborg

In general terms, Institutional theory analyses the structures in society that shape and guide human behavior through systems such as laws, norms, common beliefs, etc. Such structures, which might seem static, can arise, transform and even disappear. Institutions are part of these structures.

According to Scott (Scott, 2001), the institutional characteristics are given by the "building blocks": regulative, normative and cultural-cognitive elements. The regulative, normative and cultural-cognitive elements conform what is known as the three pillars of Institutions. All of them are related to each other and sometimes they fall on a process of mutual reinforcing. Nevertheless, they are often separated since scholars, with different approaches, usually give a primary importance to a single pillar.

Even though all three elements might be seen as divergent conceptions (mainly to underlying assumptions, mechanisms and indicators (Scott, 2001)), in this present paper an integrated conception will be used. This means that all three elements are going to be considered equally relevant. Furthermore, the description will include different levels of analysis (from world system to organization sub-system). In this way, the current institutional situation of Aalborg will be explained.

The waste situation in Aalborg is characterized by conflict within different institutions that slow down the process of Ecological Modernization. Furthermore, the conflict is heightened by the relationship among the energy and waste sectors. This relationship among different institutions promotes a situation where behavior is guided differently depending on particular interests. Thus, having multiple conceptions of how society should develop slows down ecological progress. In this context, institutions in Aalborg will be identified within the three pillars.

On the regulative approach, actions are guided by coercive mechanisms through rules, laws and sanctions. Regarding waste in Aalborg, regulation can be seen all the way up to EU policy (specifically the EU directives), Denmark's Waste Strategies (Denmark without waste) and the local government in Aalborg. In the case of the EU directives, behavior is shaped by formal law; which in case of non-commitment could signify sanctions. In the case of Danish strategies, behavior is shaped by rules. And even if there are no proper sanctions to failing

targets, a case of non-commitment could be related to negative consequences. These two, EU and Danish regulation, are now focusing on the prioritization of waste prevention, reuse and recycling, and a general reduction on landfill and incineration. This stablishes clear objectives on the energy and waste sectors in Aalborg. However, conditions for the local government institution are not that clear. It should be considered that the waste targets are established on national level but the municipality is open to deal with the problem in their own way. In this context, according to Dorte Ladefoged (Ladefoged, 2017), in Aalborg, politicians represent the main stakeholder which decides what to do and how far to go. Coincidently, waste is now very popular in politics (Ladefoged, 2017). Thus, it is very likely that the local government implements rules and laws that fall in line with the approach taken by the regulation on EU and Danish levels. In this case, it would seem like the regulative institutions direct themselves into the same direction. However, the local government perception is influenced by other factors. This open the opportunity of decisions being made based on a normative or cultural-cognitive approach (something that might signify conflict when analyzed further).

On the normative approach, actions are guided by normative mechanisms through certifications/accreditation or pressure of social obligation. As an example, let's consider the European Union, but now through the Circular Economy Package. So far, the package is integrated by revised legislative proposals and an action plan. In this context, the proposals, as a whole, do not represent a formal rule or policy. Therefore, the European norms can be considered as something that is socially expected (through pressure of other environmental legit institutions) in a normative setting. In this context, the circular economy concept would promote a scenario with more recycling of waste. Nevertheless, in this pillar, other institutions might share, or not, the same point of view. As mentioned before, social obligation is relevant. However, such social obligation is created by several institutions which expect to guide actions based on different approaches. As an example of this, and considering the waste-energy connection in Aalborg, the European Sustainable Cities Platform would support a transition to more recycling, while Reno Nord might support the supply of services (district heating). In the same context, such differences on what is "socially obliged" would create conflict within the local government. Politicians, in this case people deciding what is going to happen, might take different points of view. This circumstance could slow down the ecological transition process within Aalborg. Additionally, in the normative approach, a moral aspect provides legitimacy. And morality is created within society through institutions. In this matter, the cultural-cognitive is intertwined with the normative approach.

On the cultural-cognitive approach, actions are guided through mimetic mechanisms through common beliefs and shared logics/understanding. What becomes culturally supported is what guides future processes. On one hand, In Aalborg, and Denmark in general, there is a strong historical incineration approach to waste. Even more, the

incineration processes are closely linked to the District heating systems which provide energy to households in a specific country with specific weather conditions. In such context, incineration can be seen as something that is taken for granted (therefore being mimicked) as the best (and maybe only) solution to the waste challenge. On the other hand, another part of the population could be aware of different methods to treat organic waste and could support their reproduction (treatment processes in other countries for example). In general, what is common belief depends almost in each person and in what they consider to be legit. This is the same case for politicians which could support different approaches to organic waste treatment.

A conflict between the three pillars of institutions is evident in Aalborg. Firstly, there is a regulative set of institutions pushing strategies that, in general terms, intend to reduce incineration. Secondly, another set of institutions, on a normative level, might legitimize actions towards circular economy but also to the supply of services -such as district heating- and the provision of jobs. In this context, it is morally accepted to incinerate waste in order to supply the city's energy demands. Thirdly, in the cultural-cognitive level, incineration could be -or not- supported by the population depending on the specific group of people. The historic use of incineration in the country could represent a solution that comes from a "common understanding". However, recent changes on regulative and normative levels, could modify these cultural-cognitive institutions into bodies that support prevention, reuse and recycling. Considering all pillars: a) the regulative might contradict the normative and the cultural-cognitive, b) the normative might have contradictions within what is morally accepted (what is socially obliged), but also might differ from the regulative and cultural cognitive, and c) the cultural-cognitive might have contradictions within what is understood as "normal behavior" and what should be mimicked; plus having differences with the normative and regulative levels.

All pillars of institutions are intertwined. Even more, differences arise within the same institutional levels (ex. variances inside cultural-cognitive). Thus, the differences, in what is considered legit, create a conflict that slows down the general sustainable transition of the city. In this context, it is necessary to initiate a new trend in a way that addresses the waste challenge considering these conflicts. Under the assumption that reducing incineration is the best option, waste treatment solutions should have as an objective to align the different institutional pillars. This means that actions towards incineration reduction should be socially accepted and validated. Support from people would provide proper legitimization, which in turn, would promote potential environment-induced changes in the present institutions in Aalborg.

Circular Economy and Value

Circular Economy is about leaving behind the linear economic model that has been around since the industrial revolution. The linear model is based on the assumption of unlimited inputs to production and consumption systems. However, recent pressure on resources, such as materials and energy, have led to the awareness that the number of available resources in the world is limited. In order to decouple resource scarcity from economic development, the obsolete linear model has to be substituted by a new approach. In this context, the concept of Circular Economy is highlighted. According to the Ellen MacArthur Foundation, Circular Economy "*is one that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles*" (Ellen MacArthur Foundation, 2015). In more detail, to keep the "highest utility and value at all times", an economic model which includes recirculation (circles rather than lines) of products, components and materials is proposed (see Figure 3 for Circular Economy Figure).

Following the Circular Economy definition and principles, it is possible to link the circularity concept with Value Creation. If production systems are going to implement

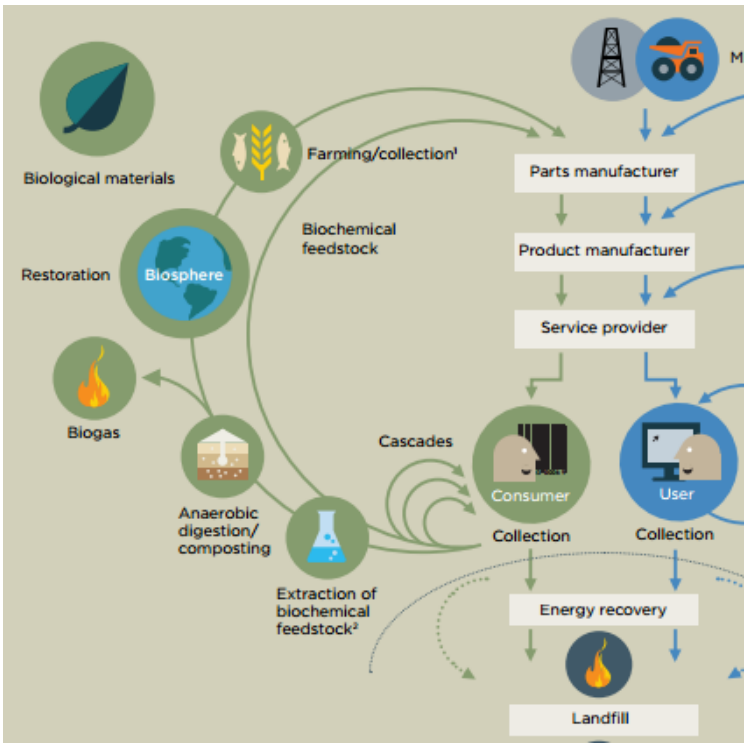

Figure 3- Circular Economy System - Biological Materials. Source: (Ellen MacArthur Foundation, 2014)

Circular Economy principles, then a restructuration of the supply chain needs to take place. It is in the new structure than value opportunities need to be identified and exploited. For example, one of the characteristics of Circular Economy is that "*waste does not exist, and is*

designed out by intention" (Ellen MacArthur Foundation, 2015). In this scenario, a company may be confronted with the need to creating value for spare materials.

The opportunities and mechanisms to implement the Circular Economy model in the biological cycles have been mostly unexplored (Ellen MacArthur Foundation, 2017). "*For biological materials, the essence of value creation lies in the opportunity to extract additional value from products and materials by cascading them through other applications*" (Ellen MacArthur Foundation, 2015). In this context, cascading refers to the potential to diversify reuse when compared to just landfilling. This becomes the only option since, in contrast with technical cycles, biological materials are "designed" to be consumed and then be used directly to regenerate the new raw materials. Nevertheless, it should be mentioned that this does not close the opportunity for waste prevention strategies. For the specific stream of organic municipal waste, the cascading to other applications could include: the production of concentrated NPK fertilizers (such as composting), energy recovery through anaerobic digestion, and the manufacture of products and materials traditionally derived from fossil fuels (ex. biorefineries) (Ellen MacArthur Foundation, 2017).

Considering the need to recycle organic waste in Aalborg, the present state of ecological modernization, the potential conflict among institutions and the multiple options to create value, it was decided to develop a proposal for a possible solution. In order to narrow down the scope of the research, it was decided to select a specific location for further analysis. This means that the present paper won't aim at changing the whole waste system in Aalborg, but will only aim at initiating a transition, through changes in a specific location, into a city with less incineration of organic waste. The location is defined by a new project that is under development called Cloud City. Cloud City is located in Aalborg's city center, and is integrated by a series of activities -within specific boundaries- that will generate municipal organic waste. Since the Cloud City project is currently under development, an area of opportunity is open to bring innovation.

Once the location and the problem were identified, the research statement and the research questions were established:

Closing loops in Cloud City: A zero-organic waste district in Aalborg.

a. *What are the expected solid organic waste flows in Cloud City?*

b. *How to treat the organic waste output and what value can it bring?*

Methodology

The present paper will develop a Case Study provided that the project happens in a real-life context, that it has defined boundaries -and therefore can be considered a defined unit of analysis-, and that the research will include a detailed analysis. In more detail, the present Case Study will take a problem-oriented approach -focusing on the "how to act"- rather than a cause/consequence analysis.

Case Study

Cloud City is a brownfield project currently under development -with expected first-dig mid 2017- in the western area of Aalborg's City center. The name is inspired by the central art piece, by Tomás Saraceno, that is going to be installed. In general terms, the Cloud City project will transform a non-working industrial area (previously a historical aquavit distillery that finished operations in 2014) into a multifunctional urban center.

The Cloud City project is expected to become an iconic center for art, innovation, smart solutions and sustainability, while preserving the historic identity of the city. The project aims at creating a vibrant space that brings life to the city by attracting residents (through housing), as well as local and foreign visitors. Furthermore, development will be divided into two: preservation of old industrial buildings and construction of new infrastructure. The following image (Figure 4), taken from the "Spritfabrikken I Aalborg" report (2016) from Bjarke Ingels Group, shows how Cloud City may look in the future. It shows the expected preserved old industrial buildings (red bricks) along with the new constructions.

Figure 4- Cloud City Project. Source: (Bjarke Ingels Group, 2016)

Cloud City is being developed by Martin Nielsen and by A. Engaard A/S. The project is expected to include functions such as: a theater, rooftop urban gardens, a food market, hotels, restaurants, a micro-destillery, art galleries, housing and a chocolate factory. Including everything, the total built area is approximately 75,000 m^2, and corresponds to a building percentage of 157% (Kommune, 2015). A report from Ramboll estimates, that in the first year, 1.6 million people will visit Cloud City (Ramboll, n.d.). Out of this number, it was estimated that 748,000 would correspond to "unique and paying visitors", of which 10% would be foreign.

By looking at the multiple activities within the area, it is possible to observe that many of the systems will be future sources of organic waste. This organic waste, which would fall on the classification of municipal waste, would mainly come from households, commercial/services, green areas/gardening and external sources (waste brought by visitors). In this context, the area could rely on the municipality for collecting the waste, or it could implement its own approach which may initiate a more radical change by breaking present trends in waste treatment.

Data Collection

In the present work, a combination of quantitative and qualitative methods is going to be used. The methods for data collection include literature review, interviews, surveys and mathematical calculations. Different methods and concepts will be used to answer the main research question and sub-questions. The following table (Table 1) will specify the methods and concepts used to answer the questions, and will give details on how data was collected.

Table 1- Methods and Concepts

Sub-questions	**Methods and Concepts**	**Details**
What are the expected solid organic waste flows in Cloud City?	Material Flow Analysis.	Data collected from literature review, surveys, interviews and mathematical calculations.
How to treat the organic waste output and what value can it bring?	Circular Economy, Value Creation	Data collected from literature review.

For the first sub-question, the first step was to identify the organic waste sources within Cloud City. Sources will be identified by analyzing data provided by the developers and maps of the site. Once the sources are identified, other data can be estimated. The research design for data gathering will carry out: a) personal contact with relevant services in Aalborg (such as chocolate factory, hotels and restaurants), and b) contact through phone and email to services not found in Aalborg but which are present in other parts of Denmark (such as food courts). Brief unstructured interviews will be used in local services, while surveys would be done for long distance communication. It is intended to obtain information in the most "local context" with the purpose of providing validity to the calculations. Literature review will be used to obtain the missing data.

Once the estimations for outputs are calculated, a proposal will be developed on how to treat the waste. This proposal is going to be described in the discussion section of the present paper and will answer the second sub-question. The proposal is going to be developed based on the concept of circular economy and value creation (briefly explained in the analytical framework) and will promote an ecological transition in synergy with the local institutions. Finally, the potential value will be identified in terms of the three bottom line aspects: social, environmental and economic.

Results

Waste Sources

To perform the flow analysis of organic waste in Cloud City, the first step was to identify the "processes" that could generate organic waste. To identify such processes, a specific procedure was carried out. First, a map of Cloud City was analyzed and buildings were identified. Then, each building was categorized in "Primary", "Secondary" or "housing". The classification was done based on the specific developers of each area and on the expected waste output. The buildings categorized as Primary and Secondary are being developed by Martin Nielsen. Primary refers to the buildings with the most expected waste output, while the secondary buildings are expected to have a small output. "Housing" is being developed by A. Engaard. All buildings in this category are houses, except for grocery store, and therefore it was decided to label them in a different category. The considered buildings were then analyzed further to identify the specific activities that are planned inside. Finally, the activities were analyzed to define the processes that could generate organic waste.

The following image (Figure 5)(based on the Spritfabrikken I Aalborg strategy report pg. 14) (Bjarke Ingels Group, 2016) shows the expected plans for Cloud City, and highlights the considered buildings of the project.

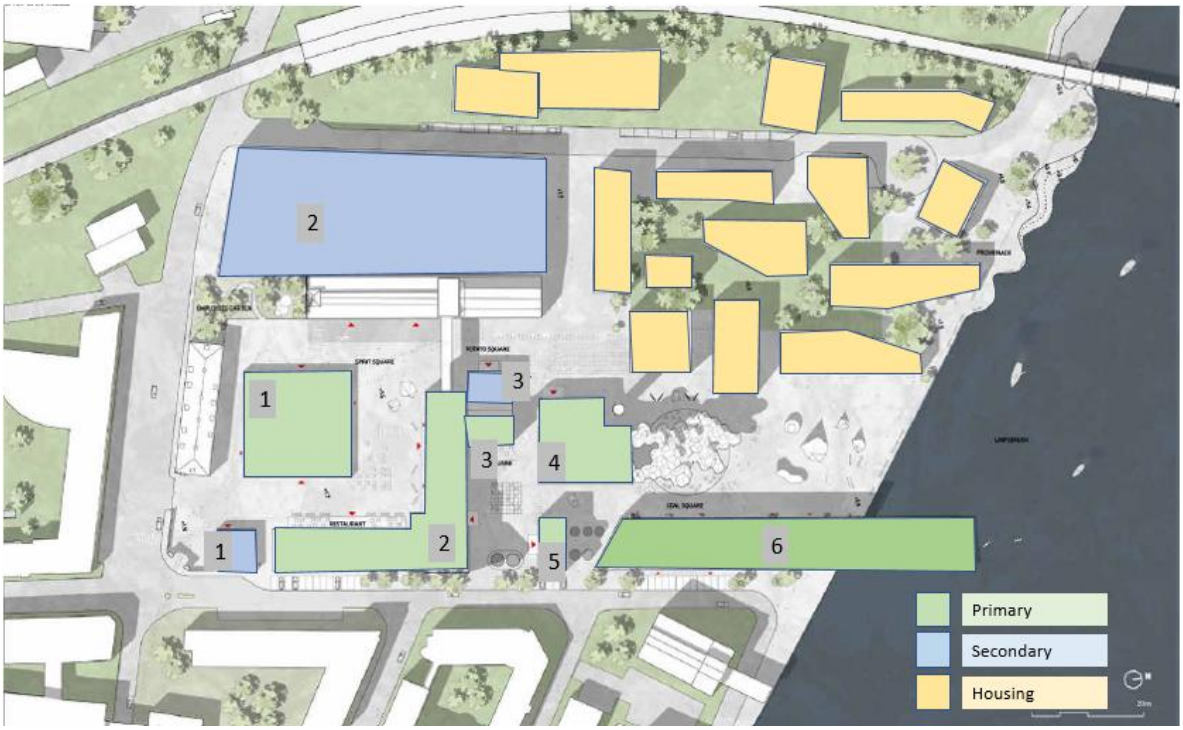

Figure 5- Cloud City considered areas

The following table (Table 2) specifies which buildings are considered.

Table 2- Considered buildings

Elements	**Buildings**
Primary	1) Market Hall (Torvehallen)
	2) Hotel
	3) Chocolate factory
	4) Art Hall + Coffee shop
	5) Micro-destillery
	6) Harbour Gate (Havneporten)
Secondary	1) Shop

	2) Theater
	3) Boutique Shop
Housing	1) Housing 2) Grocery Store

In more detail, each building is composed of at least one activity; and each activity of at least one process. The following table (Table 3) shows the primary buildings "processes" that were considered in the calculations. Most data was gathered from the "Spritfabrikken I Aalborg" strategy report from Bjarke Ingles Group (Bjarke Ingels Group, 2016) and by information provided by Martin Nielsen, developer of the Cloud City Project.

Table 3- Processes in Primary Buildings

Building	**Activities**	**Processes**
Market Hall	Restaurants	Kitchen, cutlery Clients (food disposal)
Hotel[1]	Hotel	Food consumption in Rooms
	Restaurants	Kitchen, Leftovers
	Apartments	Regular food consumption
Chocolate Factory	Chocolate factory	Chocolate production
Art Hall + Coffee	Cafeteria	Kitchen

Micro Destillery	Destillery	Alcohol production
Harbour Gate	Apartments	Regular food consumption
	Restaurants	Kitchen, leftovers
	Roof Garden	Garden Maintenance, garden output

Secondary elements are considered to have very small organic waste outputs. In this context, secondary elements are not going to be taken into account as organic waste sources.

The processes for housing elements are simply household. The following table (Table 4)provides more details about the specific characteristics in the housing buildings:

Table 4- Processes in the Housing Elements

Buildings	**Activities**	**Processes**
Housing	Apartments	Regular food consumption
Grocery Store	Retail store	Non-sold organic material

Waste Outputs

Once the organic waste sources were identified, the next step was to estimate the waste flows in the system. Initially, it was expected to use the concept of Material Flow Analysis to describe the organic waste “digestion” in Cloud City. However, due to time constrains and the specific needs of the present work, it was decided to focus on the Organic Material Outputs only (and not consider inputs or stock). Therefore, the study didn’t carry out a

Material Flow Analysis, but considered only material outputs of each process within Cloud City. The decision was made since it was considered that having the output information would be enough to design a solution for organic waste recycling. In this case, having the output calculation would allow to calculate the size of needed infrastructure and potential energy production.

Gathering data from local sources, as expected from the research design (see Data collection section on page, was the main challenge. Contact in person was stablished with local hotels and chocolate shops. Contact by phone and email was stablished with a chocolate factory, hotels, a recycling company and food courts/food markets. No data was gathered from any of this sources since: a) they didn't have the information or b) No answer was given after several contact attempts. Therefore, the output calculation is completely based on literature review assumptions (see Annex in page for full list of assumed values) and assuming the project has been running for 5 years. The expected waste outputs for the different processes are summarized in the following table (Table 5):

Table 5 - Expected Organic Waste Outputs in Cloud City

Building	**Detail**	**Size**	**Organic waste output (kg/month)**
Market Hall	Food Market Booths	5 booths – 33.6 m^2 2 booths – 16.8 m^2	2191.52
Hotel	Rooms	-	No Data*
	Restaurant 1	200 seats	554.76
	Restaurant 2	150 seats	416.07
	Restaurant 3	140 seats	388.33
	Restaurant 4	140 seats	388.33
	Restaurant 5 / skybar	200 seats	554.76
	Apartments	6 apartments	21.6

Chocolate Factory	Production	330 m^2	5.22
Art hall / Coffee	Coffee Shop	-	9.16
Micro Destillery	Production	880 m^2	1,071.61
Harbour Gate	Apartments	13 apartments: 65-100 m^2	205.4
		19 apartments: 101-150 m^2	431.68
		1 apartment: 350 m^2	23.2
	Restaurant 1	150 seats	416.07
	Restaurant 2	75 seats	208.0375
	Terraces	-	No Data*
Green areas	-	-	Not included**
Bins	Bins within Cloud City	-	No Data*
Housing	Youth housing	120 apartments: 50 m^2	883.2
	Small Families	120 apartments: 65 m^2	1,516.8
	Family	100 apartments: 85 m^2	1,704
	Big Family	175 apartments: 100-150 m^2	3,248

Grocery Store	-	1,200 m^2	2,458.35
Total		(Kg/month)	16, 696.15
		(Tons/month)	16.7

* No data was not found in literature review or other sources. Moreover, it was considered to be negligible and therefore was not accounted for.

**Green areas waste is not considered in the calculation since this waste can be collected by the municipality and taken into compost. This is the normal procedure for garden waste in the municipal fraction in Aalborg.

The estimated total output of organic waste, in year 5, in Cloud City is: 16.7 tons per month. However, this number might change if we consider present, and future, strategies that target organic waste prevention. For example, considering the United Nations Sustainability Goals, there is an adopted target to reduce the per capita food waste, in retail and consumer level, by 50% by 2030 (European Commission, 2017). In this matter, European countries are committed in fulfilling this target. As a second example, Denmark, in an exemplary change within the European countries, has cut down food waste in 25% in the period between 2011-2016 (Senet, 2016). If we consider both facts, and assume the values in 2011 as the initial period when considering the UN targets, it could be assumed that the country would need to reduce an extra 25% of food waste by 2030.

According to the Cloud City's project developers, the area is going to be managed in a sustainable and responsible way. Assuming prevention strategies are going to be implemented, and considering the targets for 2030, it was decided to stablish a 25% reduction in the calculated organic waste output number for restaurants, apartments and the food market. Therefore, the total organic waste output in Cloud City would be 12.8 tons per month, or 153.6 tons per year.

Discussion

The calculated amounts of generated organic waste in Cloud City are approximations. This is expected since the information, regarding the place and its planned developments, was limited. Moreover, the information which was expected to be gathered in a local environment was not provided by the stakeholders. Therefore, as a last resource, the data was calculated assuming a variety of numerical assumptions based on literature review. Most of the information was gathered from Danish sources, however, there are some sources based in other geographical contexts. In this context, the accuracy, and therefore the validity, of the numbers becomes questionable. Nevertheless, the importance of having such assumptions resides in the possibility of estimating potential treatment options and their possible impact. Even more, this could serve as a starting point for planning waste

management details -such as waste collection-, or for estimating the whole impact of developing such a project in Aalborg. In this particular case, specific attention is given to waste treatment.

Following the concept of circular economy, and value creation through cascading, possible solutions for waste treatment in the area include: Anaerobic Digestion and Aerobic composting. Both solutions would provide a higher value -when discussed in terms of the waste hierarchy- if compared to the current trend of incineration. Considering this, it is intended to design the basis for a waste treatment solution based on Anaerobic Digestion (see Notes) that would benefit the ecological transition of the city, while possible setting common goals among institutions.

Notes

The waste output calculation would serve as a basis for designing a proposal for waste treatment in Cloud City. However, the proposal is not finished yet at the time this paper was submitted. The reason for this is that the present work is based on a Master Thesis paper that is begin developed by the author as part of his studies (from February to June 2017). Therefore, the second sub-question is not answered in the present work. However, it is intended to include this last section in the final Master Thesis paper. The last draft will include the proposal basis along with an identification of the total value a project like would bring to the City.

For further information it is recommended to contact the author through email.

Conclusion

Organic waste treatment through recycling solutions is the trend for Denmark for the future. This statement is supported by the regulation on EU level, the national level and by the municipal objectives. Even though the road towards less incineration seems clear, the process has been slow. In general, the ecological transition of Aalborg, in terms of waste, has been slowed down by different institutions -and their different pillars- including politicians and the waste/energy sectors. Therefore, waste treatment solutions should integrate institutional differences in their design, while creating the most value possible.

Providing a localized solution in Cloud City not only creates a zero-organic waste district in the city of Aalborg, but also builds the foundations towards a transitions towards less incineration. A project with this dimensions works as a knowledge creator that not only could benefits the city, but also the municipality and the country in the long term.

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1: A fitness/ well-being center not included since the organic waste flows are expected to be negligible

PART 3: WORKSHOP DESCRIPTIONS

Workshop 1

Designing Sustainable Businesses with the Honeycomb Business Model Design Tool: Stakeholder cells

Organized by Karen Miller

Karen offers a 90 minute hands-on experience developed through an iterative process with practitioners and academics. The workshop will focus on the principal stage in Sustainable Business Model Innovation (SBMI) of understanding stakeholders within a business value network, and the value forms and exchanges.

Participants will be guided through the process using a short case-study example. Next, working in groups, participants will tackle step-by-step a live SBMI challenge using stakeholder mapping and segmentation techniques. Then using cellular templates and instructions, key stakeholders identified in the previous exercise will be co-created as personas. Subsequently each group will interrogate and plot using their personas the value exchanges across the stakeholder network. These exchanges and relationships across the business' value network will be captured visually. The workshop will culminate with groups ideating a 'seedling' value proposition in response to the live challenge using the knowledge they have generated through the process.

Through the workshop participants will help to refine the process and materials, which are part of an overall Cambridge sustainable business model toolkit.

Personas for sustainability

Personas are fictitious representations, typically of end-users (customers), that are widely used in product/user interface design and marketing. Karen has refined classical persona development techniques in order to unearth a broader set of stakeholders' specific needs in relation to value within business' networks, with stakeholders expanded to include society and the environment (Evans et al. 2017). Innovation opportunities may be revealed by more clearly understanding stakeholders and how value flows; value may be in tangible and intangible forms, and in complex bundles.

The personas help not only in the initial business model innovation phase but also in designing experiments to test business model assumptions. Experiments provide a more rapid and cost effective method of learning what will resonate with stakeholders' needs.

What you will gain by attending the workshop

An understanding of how to tackle a crucial stage in Sustainable Business Model Innovation using a step-by-step process including:

- Stakeholder mapping
- Stakeholder segmentation
- Persona co-creation
- Value exchange plotting
- Ideating seedling value propositions

Who will benefit from attending the workshop:

- Academic researchers and lecturers with an interest in Business Model innovation (BMI) and Sustainable Business Model Innovation (SBMI)
- Students studying Innovation, Entrepreneurship, CSR or Management
- Practitioners interested in enhancing their knowledge of BMI and/or SBMI techniques
- Consultants keen to expand their repertoire of techniques in relation to BMI and/or SBM

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Values-Based Innovation Management - Tools and Methods to Innovate by What We Care About

Organized by Florian Lüdeke-Freund (facilitator) and Henning Breuer

Henning and Florian demonstrate a business model innovation process based on real cases. Using exercises, content, and templates of the Business Innovation Kit and Sustainability Innovation Pack we will model sustainability-oriented new business. These tools have been developed and are iteratively refined in numerous workshops with innovation managers, start-ups, researchers, and students. They contain exercises to clarify values, facilitate ideation and refinement of business model components, scenarios to challenge assumptions and additional content to spell out the customer journey or revenue models. They are now available in English, German, Spanish and Polish. A basic download version in English is available for free: www.uxberlin.com/starter_kit.

A values-based view on innovation

Every human and every company holds values, but these notions of the desirable remain widely untapped as sources of and drivers for innovation. We take a values-based view on innovation and its management (based on Breuer & Lüdeke-Freund, 2017). We demonstrate the potential of values to integrate diverse stakeholders into innovation processes, to direct collaborative efforts, and to generate innovations that matter. Reframing existing methods and techniques allows us to realise ideals by the means of business, and to drive innovations that cater to what we really care about.

Learn how to model values-based business:

- We take a values-based view on innovation management, and introduce a self-explanatory workshop format with gamification elements to model new business.
- In a 90-minutes session we demonstrate the card-based Business Innovation Kit at work. In small groups you will experience each step in the process.
- Participants will learn a new method for sustainability-oriented remodelling of existing businesses, and a set of exercises for various application domains.

Who may wish to attend:

- Practitioners with an interest to expand into new markets based on a reconsideration of their own values and those of their key stakeholders.

- Consultants in search for new business modelling techniques that help navigate complex issues.
- Academic researchers and lecturers will learn about a new, values-based perspective on innovation and a valuable do-it-yourself tool for their students.
- Students in the fields of innovation management, management studies, corporate social responsibility (CSR), business psychology, and entrepreneurship.

References

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Workshop 3

Exploring Model for the Organization of the Circular Economy

Organized by Hans Stegeman

The circular economy (CE) is mostly studied at the firm-level leading to insights in organizational and design principles. Circular Business Models can be seen as the micro building blocks of the circular economy. Existing business cases, different typologies and policy papers deliver the scattered evidence of what in the end sums up to a circular macro economy. A conceptual understanding of CE on meso and macro levels is however also highly needed, since there is a belief that these micro practices lead to sustainable development on a higher (systems) level. Yet the empirical proof for that claim is insubstantial. There is no structured insight into what constitutes a circular economy on a meso or macro level. The question we want to address in the workshop is how circular businesses work together: how do they close value cycles? What are the effects on added values, on sustainable outcomes and on the structure of chains? There is no clear empirical evidence on these questions. However, there is a lot of scattered knowledge, especially in the head of people working on business models.

This workshop sets out to explore and develop a System Dynamics (SD) model for the CE-value cycle using a Group Model Building (GMB) approach. We consider SD to be a suitable approach to address this conceptual problem, as it helps to conceptualize a system model with closed feedback loops.

The 90 minutes of the workshop will be a crash course in participating in real-life model building. Participants are invited to actively bring in their knowledge. Participants' contributions will be synthesized in a causal loop diagram, clarifying interrelations and feedback loops between different elements. Knowledge on business models is very helpful to make a next step in understanding the circular economy: from business models to value cycles.

The workshop forms part of a PhD project at the Nijmegen School of Management (Radboud University – The Netherlands).

Identifying Value Opportunities with the Sustainable Value Analysis Tool

Organized by Doroteya Vladimirova (facilitator) and Miying Yang

The Sustainable Value Analysis Tool addresses a critical need for tools that can help companies integrate issues and opportunities related to sustainability into business model innovation. Working through the concepts of value captured and uncaptured, the tool can help companies understand both the positive (value captured) and negative (value uncaptured) aspects of their current business models and identify value creation opportunities presented by both.

Many companies think rather narrowly about value creation and where value may be found, focusing only on customer value (value in the eyes of the customers) and value created in production. The Sustainable Value Analysis Tool can change mindsets about what is regarded as value and open participants' eyes to a wider universe of value opportunities. In this way, the tool provides a new lens through which companies can understand value and a structured approach to discovering value opportunities embedded in a sustainability-focused approach to business model innovation.

The Sustainable Value Analysis Tool was developed to help companies discover new value opportunities by identifying value that had been uncaptured by key stakeholders across the entire product life cycle. The tool has been used for sustainable business model innovation in numerous companies from various sectors. In this workshop, the organizer will demonstrate the use of the tool and lead participants through an example case study during the session. The workshop is hands-on; all participants will use the tool to identify new value opportunities and learn how to integrate sustainability into business model innovation with the tool. The Sustainable Value Analysis tool has been integrated in a broader research programme on sustainable business models run at the Centre for Industrial Sustainability, Institute for Manufacturing at the University of Cambridge.

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Epilogue

The International Conference on New Business Models had two successful editions. The first one was organized in 2016 at Toulouse Business School (France) and focused on "Exploring a changing view on organizing value creation". The second, NBM@Graz2017 at University of Graz, covered the topic of "Exploring a changing view on value creation: Developing New Business Models". Looking closer at NBM@Graz2017, we had a great variety of ideas organized in 8 sessions and 4 workshops:

Session 1: Organising Business Models for the Circular Economy
Session 2: New Business Models, Sustainable Development and Corporate Strategic Management
Session 3: Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases
Session 4: Business Models for Social Entrepreneurship
Session 5: Business Models in the Age of Digitalisation
Session 6: Crafting Regional Business Models
Session 7: Insights on Business Models from Young Academics
Session 8: When Business Models Have To Be Explained In Corporate Reporting

Workshop 1: Designing Sustainable Businesses with the Honeycomb Business Model Design Tool: Stakeholder cells
Workshop 2: Values-Based Innovation Management – Tools and Methods to Innovate by What We Care About
Workshop 3: Exploring a model for the organization of the Circular Economy
Workshop 4: Identifying Value Opportunities with the Sustainable Value Analysis Tool

Altogether, at NBM@Graz2017 we had a great variety of topics that have relevance for both academia and practice. The ideas presented here are valuable contributions to the field, for which we would like to thank all authors, session chairs, and workshop organizers. But most of all, we are grateful to the team who made this stimulating conference possible – Romana Rauter, Rupert J. Baumgartner, Aisma L. Kiesnere, and Martina Zimek – thanks very much for all your efforts!

As we are looking forward to have a series of conferences on New Business Models, the tradition prescribes to announce the topic and the venue of the next conference. Next year, we are going to Sofia, Bulgaria and NBM@Sofia2018 will be hosted at the University of National and World Economy. While the NMB@Toulouse2016 and NBM@Graz2017

conferences have covered a great number of topics, there are still many stones left unturned in the field, and many further contributions possible. For NBM@Sofia2018, we would like to draw your attention to the topic of *impact.* Hence, the title of next year's conference is:

"New Business Models with Impact: Focused, Scalable, and International?"

With NBM@Sofia2018 conference, we would like to stimulate the discussion on how to create business models with greater social and environmental impact. Yet, the conference topic is meant to encourage and further develop our thinking in the direction of *impact*. The notion of impact is essential to NBMs. A focus on impact is looking beyond the mere outputs of NBMs and considers organisational operations and their long term and lasting effects. NBM@Sofia2018 aims at stimulating the discussion on how NBMs unfold the creation of social and environmental impact. Of course, all other topics related to NBMs are welcome as contributions to next years' conference. In the context of impact, one could address any of the below questions, which are not limitative:

- How do NBMs realize impact?
- How to increase the impact of NBMs?
- How to measure the impact of NBMs?
- How to report the impact of NBMs
- How to create international impact with NBMs?
- Under what circumstances do NBMs decrease their impact?
- What are the determinants of scalability of new business models?
- What are the barriers for scalability?
- Small is beautiful – how to focus on resolving local sustainability issues?

In addition to the central conference topic, please do not hesitate to submit contributions related to the broader domain of NBMs. Both scholarly and practitioner's contributions are welcome. For the realization of your contributions, we are developing various publication outlets also for NBM@Sofia 2018. We have already a commitment of the International Journal of Corporate Social Responsibility (https://jcsr.springeropen.com/) and Accountancy & Bedrijfskunde (http://accountancybusiness.be/about-the-journal#/), and are working on other opportunities for publications in good quality outlets.

NBM@Sofia2018 conference is scheduled at June 27 and 28, 2018 at the University of National and World Economy, Sofia, Bulgaria and will be the third edition of this annual conference.

More detailed information will be disseminated as soon as possible throughout the next year!

If there are any questions please feel free to contact: nikolay.dentchev@vub.be.

We look forward to seeing you next year in Sofia!

On behalf of the organizing committee,

Prof. Dr. Nikolay Dentchev, Dr. Ivan Bozhikin, Drs. Philippe Eiselein

Appendix 1: Call for Contribution

2nd International Conference on New Business Models

NBM@Graz2017

Call for Contributions

Exploring a changing view on organizing value creation: Developing New Business Models

20-23 June, 2017 | University of Graz, Austria

Welcome

The first conference on New Business Models took place in Toulouse in June 2016. It was meant to be the starting point for a series of international conferences on New Business Models (NBM). With over 65 international participants, inspiring key-note lectures and an attractive and impressive range of presentations and discussions, this initial conference was a great success! This success also indicates that the NBM is considered a promising concept that is currently influencing and shaping our society's development and, with luck, its future sustainability. However, this was only the beginning; there are still many questions to be answered and problems to be solved. As a result of this initial conference, the idea of holding an annual international conference on New Business Models was born.

Second NBM conference

Following up on the success of its predecessor, the second NBM conference will take place at the University of Graz, Austria in June 2017. It will provide a platform to continue the work that has been started and offer a venue for fruitful discussions, interesting

presentations, inspiring key note speeches and interactive business modelling workshops to further stimulate and support the promising work on NBMs. Specifically, we invite researchers and students as well as practitioners from various backgrounds to share their experience and insights with regard to NBMs.

A bird's-eye view of the conference

This Call for Contributions aims to attract submissions from various research fields and backgrounds, all of which address the generic topic of New Business Models from a broad range of perspectives. The sessions (see list below) will draw attention to specific topics that range from business models in the context of Circular Economy to digitalization and how such trends drive the development of and need for NBMs. Moreover, there will be a session explicitly dedicated to ongoing or research projects that have recently been finished by Bachelor's and Master's students. The conference will also host various workshops on business modelling. As a new feature, the three best papers will each be awarded an **Annual Cloverleaf Award.**

Why sustainability matters

The 'tissue' of our Western society is constructed from a myriad of transactions that involve the common, individual functions of almost all aspects of our professional and private lives such as the provision of workforces, goods, or services. These transactions are carried out in a variety of ways by organizing and enabling the delivery of outcomes that are perceived as valuable. These outcomes are not only profitable in an economic context, but also reflect a broad range of principles by offering various solutions to pressing social and environmental problems. Creating new value propositions (which are based on a combination of products and services) enables the delivery of outcomes such as improving living conditions for mankind and preserving and renewing the natural environment. This extended perspective is seen as a contemporary – and much needed – fundamental basis for *true* value creation. Hence, the purpose of this kind of value creation is the simultaneous creation of multiple forms of value, such as financial, ecological and social values (e.g., Stubbs and Cocklin, 2008, Jonker, 2016). These forms of multiple value creation, however, might only be possible and applicable if new and alternative (inter)organizational structures of value creation are created. These must be based on the collaboration of new and additional actors who take

part in such value creation processes from all societal and economic domains. This not only leads to (1) new business models but (2) also the formation of new roles for these actors and (3) the question of the tangible and intangible forms of value upon which our societies are willing to agree. Moreover, the discussion not only focuses on debates about already existing types of business models but also on identifying the building blocks and logics that allow the creation of new configurations that address the need for multiple value creation. In addition to exploring new ways of value creation, contributions at this conference will also shed light on how to enlarge the positive societal impact of these types of business models.

Perspectives on New Business Models

Given the increasing social and political demands with regard to sustainability, a generation of business models is emerging that can be referred to as New Business Models (NBMs). They provide a logic (rationale) for value creation that is based on an array of principles that encompass cooperation, dematerialization, sharing, or servitisation (e.g., "product as a service"). These new forms of business models lead to outcomes based on the following guiding principles (Jonker, 2016):

1. The principle of *collaborative value creation*, which is the idea that constituents invest in creating value together.

2. The principle of *shared value creation*, which is the idea that constituents share the value they have created collaboratively.

3. The principle of *multiple value creation*, which is the simultaneous creation of ecological, social and economic values.

Following these principles has led to the emergence of a breed of business models that are also being discussed in the context of green or sustainable business models, which are also called business models for sustainability. A recent definition of a business model for sustainability was proposed by Schaltegger et al. (2016, p. 6): "*A business model for sustainability helps describing, analysing, 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." This definition of business models is particularly applicable to companies. The roots of this application in subsequent business model research has been presented by Osterwalder (2004) and others. The aforementioned principles on which new business models should be based enrich this perspective and emphasize an understanding of business models as a system of activities between various constituents which intentionally lead to the collaborative creation of a broad array of valuable outcomes. As a consequence, this not only means that multiple forms of value should be created simultaneously but also that companies do not necessarily need to be the centre of the value creation process. Evidently, this is a much broader perspective that also refers to inter-organisational or even regional business models based on multi-actor approaches. Example include the city as a level upon which business models can be developed, or HUBs and regional value-creating networks, all of which fit under the umbrella of the definition and principles of New Business Models.

Due to the different facets, building blocks and functions that are involved in analysing and creating business models, many streams of research contribute to the ongoing discussions; among these are innovation management, sustainability management, strategic management, entrepreneurship and organizational theory. However, while *"the relevance of business models for corporate performance in general and corporate sustainability in particular has been widely acknowledged in the literature"* (Schaltegger et al., 2016, p. 264), many unanswered questions and research gaps still need to be explored. These topics range from the theoretical grounding of NBMs to empirical research to provide support for their potentially positive contributions to sustainable development. Moreover, this leads not only to the question of how to organize and manage business models *per se,* but also how (circular) economies could look like, in which this new generation of business models is likely to successfully emerge. As a consequence, this could imply that a number of existing organizations might become obsolete while others will attempt to transform themselves to offer new value propositions.

Types of contributions solicited

We welcome theoretical, conceptual and empirical papers. We also encourage the submission of findings from scholarly studies that apply a comprehensive variety of methodologies (e.g., qualitative and quantitative) from a broad variety of scholarly disciplines (e.g., management, entrepreneurship, environmental studies, organization theory, transition theory, change management) and from a broad variety of domains (e.g., energy, health, agriculture, food, finance, retail). This Call for Contributions asks scholars, students and practitioners to elaborate upon and contribute to, but not limit themselves to, the following research questions:

- What are the similarities and differences between 'conventional' business models that have the primary objective of profit generation and the so-called 'new' business models that have the main objective of value creation and are based on different normative principles?
- What are the barriers to the introduction and implementation of NBMs, both in already-established firms as well as in newly-founded businesses?
- What are the mechanisms that drive successful NBMs? What are the identifiable success factors of already-established, scaled-up NBMs that could be also transferred to other contexts or other types of organizations?
- What are potential motivations and incentives for various constituents to become part of such new ways of value creation and value sharing?
- How can already established NBMs be scaled-up? Which types of supporting mechanisms are needed in order to support scaling-up-processes that have the purpose of generating long-lasting effects and impacts?
- How can NBMs be protected in niches to provide them with time and space for their development?
- How are NBMs both solving and (potentially) creating new issues in the context of Sustainable Development?
- How should new governance forms and strategies for business models be explored and developed to reflect alternative normative and subjective values, particularly in inter-organizational, regional or even national or international contexts?

- How could interdisciplinary research further stimulate the theoretical development of NBMs by combining different points of view?
- How can empirical proofs for the success and impact but also the failure of NBMs be provided?

Conference design and session themes

The design of the conference is based upon nine **sessions**, each of which will provide a clear thematic focus. In each session, a limited number of presentations will be accommodated. This will enable participants to address a comprehensive range of issues in three parallel sessions over two days. The conference offers the opportunity for both established researchers as well as undergraduate and graduate students to present the results of academic research, but practitioners are also invited to submit contributions on the proposed themes.

In addition to the sessions dedicated to presentations and discussions, three to four **interactive workshops** will be held in which new business modelling tools will be explored through hands-on exercises. These workshops will last 60 to 90 minutes and offer participants the opportunity to apply different approaches to business modelling in an experimental manner. There is no need to submit an abstract to attend these workshops but due to the limited number of spaces, participants are asked to register with their conference registration.

Below, a preliminary overview of sessions and workshops is provided. Regular updates and the final program will be published on the conference website in early 2017.

Session 1
Organising Business Models for the Circular Economy
Chairs: Jan Jonker and Niels Faber

Unmistakably, politics and business (re)discover the notion of a circular economy fuelled by an increased urgency to address wicked ecological and societal problems. Crafting such an economy is shaped at three levels: Micro (within individual organisations), Meso (between businesses, governmental organisations and any other constituents) and Macro (at the level of the overall economic system). In this session, we would like to focus on the Meso-level to address questions of how different constituents shape and organise closed loops, which is one of the key design-principles of the CE. How do they collectively create a business model? What kind of organisational models are crafted? What is the nature of the revenue model? This session not only addresses the material aspects of organising closed-loops but also aspects around revenue sharing (e.g., cascading), transition and collaboration and governance. We welcome both conceptual and empirical contributions.

Session 2
New Business Models, Sustainable Development and Corporate Strategic Management
Chairs: Rupert J. Baumgartner and Romana Rauter

New business models are intensively discussed as a possibility to foster a transition to more sustainable societies. Two aspects are relevant to determine whether new business models will really be able to support this transition: First, they have to contribute to the goals of sustainable development and second, new business models must be successful in the long-term. Both aspects are related to (corporate) strategy, which can be defined as a vision of success prescribing ways to reach this success. Therefore, descriptive as well as explanatory contributions that specifically, but not exclusively, deal with the following topics are invited:

- Do new business models really contribute to the goals of Sustainable Development and, if so, what does the contribution look like?
- How can the sustainability impacts of new business models be measured?
- What is the relationship between new business models and competitive strategies? What is the relationship between new business models and the corporate sustainability strategies of companies?
- Which insights have been gathered from the established concepts of strategic management (i.e., the market-based, resource-based and relational views) and how can these be used for the development, implementation and improvement of new business models?

Session 3
Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases
Chairs: Florian Lüdeke-Freund and Esben Rahbek Gjerdrum Pedersen

This session shall feature case studies, new management frameworks and instruments that offer new insights into how entrepreneurs and managers can develop, implement, operate and assess their business models for sustainability (BMfS). The aim is to cover the following topics and questions (non-exclusive list):

1. ***Developing*** *BMfS:* How are new BMfS initiated? Which tools are applied in practice to develop sustainability-oriented business models? What is the experience of the users? What are best practices? Who is engaging in business model innovation? What are the barriers to ecologically- and socially-motivated business model innovation?
2. ***Implementing*** *BMfS:* How can new and sustainability-oriented business models be implemented? What are the major barriers? How can structural or cognitive resistance, internally and externally, be overcome? What roles do founders, financers, entrepreneurs and external partners play? How can planning-implementation gaps be dealt with?
3. ***Operating and controlling*** *BMfS:* Once implemented, how are sustainability-oriented business models maintained? How are mission-drift and other tensions avoided? Who is responsible for controlling business model performance? How are operating models kept on track? How do BMfS evolve over time? What changes and adaptations can be observed?
4. ***Assessing*** *BMfS:* Controlling whether business models support the firms' sustainability performance requires assessment tools and frameworks. What kind of assessment – and in a broader sense accounting – frameworks and tools are applied to manage the business models' sustainability performance? What are the impacts of BMfS from business as well as societal perspectives?

Session 4
Business Models for Social Entrepreneurship
Chairs: Nikolay Dentchev and Philippe Eiselein

Social entrepreneurs use a for-profit minded approach to address specific social issue(s) (Austin, Howard, & Wei-Skillern, 2006; Dees, Anderson, & Wei-skillern, 2004; Defourny & Nyssens, 2010). This approach results in the development of new business models that often focus on creating more than one specific value (i.e., economic and social value) for multiple stakeholders (Jonker, 2016). Social entrepreneurs are confronted with more complex business models. Not only does this double- or multiple-bottom-line approach (Moss, Short, Payne, & Lumpkin, 2011; Pache & Andre, 2016) complicate the business model of social entrepreneurship (Certo & Miller, 2008), but its core activities involve dealing with problems that others cannot resolve (Miller, Grimes, McMullen, & Vogus, 2012). Social entrepreneurship often takes place in settings in which it is considerably difficult for any kind of business to survive (Dees, 1998; Mair & Martí, 2006). Still, social entrepreneurship has witnessed the development of various types of strategies for growth over the last decade which are often based on the principle of replicability at their core innovation. However, scaling up the social impact of these sustainable business models remains an important challenge for practitioners as well as a research avenue for academicians (Weber, Kröger, & Lambrich, 2012).

- Can social enterprises benefit from the economies of scale?
- Could social entrepreneurs also scale up the social impact of their business model by applying non-replicability principles?
- What is the 'most effective' scaling path for the business models of social entrepreneurs?
- To what extent do social impact measurements help social enterprises scale up their impact?

Session 5
Business Models in the Age of Digitalisation
Chairs: Romana Rauter, Christiana Müller, Wolfgang Vorraber

While digitalisation is definitively no longer a new trend, it (still) puts pressure on companies (and other types of organisations) to reflect on their strategies and identify new business opportunities. At the same time, digitalisation creates endless opportunities to rethink value creation processes and come up with new business models. Hence, digitalisation could also offer new solutions for existing societal and/or ecological problems by changing the ways in which actors work together. In this context, we seek contributions that address questions such as: Which role does digitalisation play for value creation, value proposition and value capturing? Which new business models have emerged as a result of increasing digitalisation? How have such business models contributed to sustainable development? How has increased digitalisation led to new forms of cooperation and transaction? Thereby, empirical as well as conceptual papers or best practice examples are welcomed.

Session 6
Circular Economy: What's Society Got to Do with It?
Chairs: Niels Faber and Jan Jonker

While society is paying an increasing amount of attention to a circular economy, some principal elements of this broad concept still need to be explored. The circular economy is principally conceptualised around material flows and closed loops. The organisational and wider economic consequences for business and government are gradually becoming clear. Implementing such an economic model will lead to transition but what has hardly been touched upon is the social aspect of the CE and, in particular, the impact it has had on society. The conventional economy has been praised for having brought general wealth to society. It is only fair to ask what society at large will gain from the circular economy. Will it create new jobs? If so, which ones? What new demands will the CE place on civilians? What part does society need to play in closing material loops? These are tantalising questions that open up a whole new field of inquiry. We seek contributions that focus on the societal perspective of circular economy. Conceptual as well as empirical contributions are welcome.

Session 7
Crafting Regional Business Models
Chairs: Moniek Kamm

On a local and regional level, we can observe the emergence of new-inter organisational, networking forms of organizing that enable multiple value-creation in a cooperative manner. Private, public and civil society constituents explore and craft cooperation in order to address difficult problems, establish common goals and develop an array of products and services. In doing so, they either intentionally or incidentally support transitions towards more sustainability on a regional scale.

This emerging movement can be observed in various countries across Europe. It deserves scrupulous and conscientious field-research in order to better understand the mechanism and principles that are fostering this phenomenon. We can identify at least two research challenges concerning the formation, organisation and effectiveness of such novel forms of organising, which lead to the development of questions such as (i) how do constituents of these collaborative forms of organising realise effective, lasting forms of organising and (ii) how do they craft strategies in practice that are beneficial to their collective actions?
We are looking for contributions related, but not limited, to the above-mentioned research questions. We especially welcome contributions that involve field research and (comparative) theoretical and empirical case studies in this area.

Session 8
Insights on Business Models from Young Academics
Chairs: Martina Zimek and Aisma Linda Kiesnere

This session focuses on scientific contributions from Bachelor's and Master's students, allowing young academicians to present their research results and voice their point of view based on their research. The research must be related to the relevant questions raised in the Call for Contributions and can also be presented as works-in-progress. The session will contribute to increasing the understanding of how particular aspects of New Business Models foster organizational performance in both profit and non-profit, organizations over the long term, and how the new models contribute to sustainable development.

Session 9

When business models have to be explained in corporate reporting

Chairs: Stéphane Trébucq and Elisabetta Magnaghi

Financial analysts carefully read corporate reports and try to understand how companies create value. Unfortunately, financial statements do not tell the whole story. Social Responsibility Investment funds have also raised some new questions about stakeholder value creation and the outcomes of companies' activities for society. Recently, since the end of 2013, the IIRC (International Integrated Reporting Council) has also proposed the use of a new reporting framework to present the business model in a single report in a short, clear and concise way. This session will provide authors with the opportunity to discuss the quality of accounting information about business models and the way companies should communicate about their business model. In addition, the new directive on non-financial information (UE/2014/95) addresses the necessity to include a brief description of the *business model in corporate reporting for a better understanding of the corporate performance.*

Some key questions might be:

How can accounting information and information systems be modified so that investors or stakeholders can be more effectively informed about the business model?

- Are companies able to improve their explanations of their business model?
- Why are such companies interested in implementing new reporting standards of communication such as integrated reporting <IR>?
- Are business models from these companies transitioning toward a sustainable economy, and how can such companies demonstrate evidence of this transition?
- Could integrated thinking change the way companies think and communicate about their business model?

Workshop 1

Designing Sustainable Businesses with the Honeycomb Business Model Design Tool

Workshop organizer: Karen Miller

Businesses face substantial challenges to remain relevant in contemporary contexts characterised by complexity and turbulence. In these environments, factors from economic, environmental and social standpoints collide. Consequently, it is imperative to develop new sustainable business models, but these are potentially risk-laden and challenging to innovate as multiple potentially conflicting elements must be considered. To respond to this issue, the Honeycomb Business Model Design Tool, which builds upon the merits of pre-existing tools, has been advanced through an iterative 18-month process. The tool is intended to provide teams with an organic structural approach to holistically design sustainable business models that respond to complex challenges. In this workshop, participants will first be provided with a rich hands-on introduction to the Honeycomb Business Model Design Tool. Second, they will have the opportunity to help shape the tool's ongoing development.

Workshop 2

How to Model Sustainable Business – The Business Innovation Kit and Sustainability Innovation Pack

Workshop organizers: Henning Breuer and Florian Lüdeke-Freund

The workshop organizers, Henning and Florian, will demonstrate the Business Innovation Kit and Sustainability Innovation Pack in action. The toolkit facilitates modelling sustainable business and revenue models. It was developed and iteratively refined in numerous workshops with innovation managers, representatives of start-ups and students.

Workshop 3

Exploring a model for the organization of the Circular Economy

Workshop organizer: Hans Stegeman

The Circular Economy (CE) has mostly been studied at the firm-level, which has led to insights in organizational and design principles. However, it is necessary to gain a conceptual understanding of CE on meso- and macro levels, since a belief exists that these micro practices lead to sustainable development on a higher (systems) level. Still, the empirical proof for this claim is insubstantial. No structured insights into the effects of CE on a macro level have been gained with respect to feedback loops, substitution effects or labor markets. This workshop allows participants to explore and develop a System Dynamics (SD) macro model for the CE using a Group Model Building (GMB) approach. SD is a potentially suitable approach that can be used to address this conceptual problem. It is suitable for conceptualizing a closed loop system model with feedback loops. The proposed CE model

will theoretically be based on stock-flow models and industrial ecology. Methodologically, it will be in line with the modelling tradition that started with the seminal research conducted by the Club of Rome.

Participants are invited to actively apply their knowledge and help construct a model, beginning with a causal loop diagram and then refining and clarifying different elements and feedback loops.

The workshop is part of a PhD project that is being conducted at the Nijmegen School of Management (Radboud University, The Netherlands).

Workshop 4

Identifying Value Opportunities with the Sustainable Value Analysis Tool Workshop organizers: Miying Yang and Doroteya Vladimirova

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The Sustainable Value Analysis Tool was developed to help companies discover new value opportunities by identifying value that had been uncaptured by key stakeholders across the entire product life cycle. The tool has been used for sustainable business model innovation in numerous companies from various sectors. In this workshop, the organizers will demonstrate the use of the tool and lead participants through a case study during a sample session. The workshop is hands-on; all participants will use the tool to identify new value opportunities and learn how to integrate sustainability into business model innovation with the tool. The Sustainable Value Analysis tool has been integrated in a broader research programme on sustainable business models run at the Centre for Industrial Sustainability at the University of Cambridge.

Submission Procedures

Authors who would like to contribute to the conference are requested to submit an abstract of 500-700 words (with a concise number of references and contact details) for a specific session via the conference website: http://new-business-models.uni-graz.at/en/

Notification of the acceptance of the abstract will be communicated by no later than March 24, 2017.

While exemplary abstracts of last year can be found online, authors are asked include the following sections in their abstracts: (1) Title, (2) Introduction and Purpose, (3) Methodology/Methods, (4) Findings and Results, (5) Conclusions.

All authors whose abstracts have been accepted are welcome to either submit a revised abstract or a full conference paper at latest by May 5, 2017.

More information about how to submit the conference paper will be made available after the abstract has been accepted. It is possible to participate in the conference without submitting a paper but it is not permitted to submitting a paper without presenting it.

Forms of Publications

1. Accepted abstracts as well as full papers (if requested by the author(s)) will be published online as **Conference Proceedings (with ISSN)** immediately after the conference in June 2017.
2. **Special Issue** the journal of ***"Journal Accountancy & Bedrijfskunde"***, a practitioner oriented journal, based in Belgium. More information will be provided as soon as possible.
3. **Special Issue** in the ***"International Journal of Corporate Social Responsibility"***, https://jcsr.springeropen.com/about.

Deadlines

Call for Contributions: November 2016

Abstract Submission: February 28, 2017

Notification Sent to the Authors: March 24, 2017

Submission Deadline for Revised Abstracts and Full Papers: May 5, 2017

Registration Deadline: May 19, 2017

Conference:

- June 20: Welcome Reception
- June 21 and 22: Conference
- June 23: Business Trip (optional)

Conference Fee and Registration

The conference fee for this exciting international conference in Graz entitles attendees to participate at sessions and workshops both of the two days. Furthermore, the conference fee includes: two business breakfasts, two lunches with regional buffet, welcome reception and conference dinner as well as fruits, snacks, drinks, coffee and tea during the session breaks.

	Students	Delegates
Early Bird Registration (until March 31, 2017)	€ 200	€ 230
Regular Registration (as of April 1, 2017)	€ 230	€ 260

Participants need to register at the conference website http://new-business-models.uni-graz.at. Registration is already open.

Contact Details

All additional, relevant information concerning the conference can be found on the conference website which will be updated regularly. Website: http://new-business-models.uni-graz.at

Please send any other questions about the conference organisation, logistics and registration to: nbm@uni-graz.at.

All questions about the content of the program can be directly sent to Romana Rauter (chairperson), e-mail address: romana.rauter@uni-graz.at.

Members of the Team at Institute of Systems Sciences, Innovation and Sustainability Research, University of Graz

Ass.-Prof. Dr. Romana Rauter	Prof. Dr. Rupert J. Baumgartner
Martina Zimek, MSc	Aisma Linda Kiesnere, MSc

Members of the Permanent International Scientific Committee

Prof. Dr. Jan Jonker	Nijmegen School of Management, Radboud University Nijmegen, The Netherlands
Prof. Dr. Nikolay A. Dentchev	Vrije Universiteit Brussel (VUB) and KU Leuven, Belgium
Dr. Niels Faber	Nijmegen School of Management, Radboud University Nijmegen, The Netherlands
	Hanze University of Applied Sciences, Groningen
Dr. Florian Lüdeke - Freund	University of Hamburg, Hamburg, Germany
Ass.-Prof. Dr. Romana Rauter	University of Graz, Austria

A list of all the **Members of the Scientific Committee** is accessible online.

This call was written and edited by Romana Rauter (chairperson) and the members of the Permanent Scientific Committee as well as of the respective session chairs and the workshop organizers. The call itself is based on and was inspired by the Call for Contributions and the Proceedings of the First International Conference on New Business Models 2016 (Toulouse, France).

Thank you!

Graz, January 2017

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Appendix 2: Special Issues

International Journal of Corporate Social Responsibility (IJCSR)

Springer Verlag (Heidelberg, Germany)

https://jcsr.springeropen.com/

Note: This Call for Papers might be subject to modifications.

CALL FOR PAPERS

Business Models for the Circular Economy

Exploring a changing view on value creation

Guest Editors

Niels Faber (lead editor Special Issue) [1, 2], Romana Rauter [3],
Florian Lüdeke-Freund [4], Jan Jonker [1], and Rupert Baumgartner [3]

[1] Radboud University Nijmegen, the Netherlands
[2] Hanze UAS, the Netherlands
[3] University of Graz, Austria
[4] University of Hamburg, Germany

Background

This request for papers for the Special Issue of the International Journal of Corporate Social Responsibility focuses on exploring Business Models for the Circular Economy. The Special Issue will consist of approximately seven papers.

The Special Issue's primary topic is 'exploring a changing view on inter-organizational value creation'. The traditional, economic view on value creation is increasingly being determined to be too restricted and limited for facing current societal and environmental challenges. In response, the multiple value creation perspective has emerged from the realm of sustainability as a concept that is able to address these challenges in a comprehensive and coherent manner in society. It is a perspective that, in addition to financial value, it also incorporates those that are social and environmental. One of the emerging trends in society is to explore this concept of multiple value creation under the heading of the circular economy (CE). In particular, the CE focuses on the material aspects of the economy and society, aiming at creating closed material and energy loops.

The vision of a CE, although not new, poses a broad range of new and rather unexplored challenges to entrepreneurs, managers, and other economic actors who attempt to implement concepts such as nature-inspired processes, products and services, the cradle-to-cradle process and product design, or bio-mimicry, for example. This list is not exhaustive. The idea of a CE builds mainly on fields such as industrial ecology, eco-design, and engineering. It poses the challenge of connecting CE concepts and the ways that entrepreneurs and managers can organize new forms of inter-organizational and multiple value creation.

In parallel, New Business Models (NBM) have developed that intend to construct multiple value creation and new forms of organizing that enable it. NBMs fundamentally differ from our current notion of business models and thus the ways that organizations are structured and how they function. They build on a set of principles related to the values created, offer a value proposition addressing these, and build and thrive on a specific and closely connected community. Various types of organizations that have adopted NBMs have been described in literature. Among these are social enterprises, co-operatives, multi-stakeholder platforms, or public-private partnerships. Each of these NBMs operates on the premise of multiple value creation. In addition to the CE, NBMs aim to answer the call for a more sustainable way of value creation in present society that is addressed by a community-based approach.

Types of contributions solicited

For this Special Issue, we welcome theoretical, conceptual, and empirical papers focusing on business models directly related to the concept of the circular economy. Papers from a

broad variety of methodologies (e.g., literature review, qualitative and quantitative research methods), a broad variety of research fields (e.g., entrepreneurship, environmental studies, management, economics, social sciences, etc.), and a wide scope of domains (e.g., energy, health, agriculture, finance, industry, retail, etc.) are admissible as long as they are either developing theoretical and conceptual insights into the Circular Economy or are based on the extensive analysis of cases.

We encourage participants to the New Business Models Conference in Graz, Austria, occurring June 20 to June 23 2017, to submit their contributions for publication.

Themes on New Business Models for the Circular Economy

Scholars and practitioners should elaborate and contribute, but not limit themselves, to the following research questions concerning business models for the Circular Economy:

- What are the barriers to the introduction and implementation of NBMs for the Circular Economy both in already-established firms as well as in newly-founded businesses?
- What are the similarities and differences between 'conventional' business models that have the primary objective of profit generation and the so-called 'new' business models for the circular economy that have the main objective of multiple value creation and are based on different normative principles?
- What are the mechanisms that drive successful NBMs for the Circular Economy?
- What are potential motivations and incentives for various constituents to become involved in new ways of value creation and value sharing in the Circular Economy (e.g., cascading, governance, revenue models)?
- How can already established NBMs for the Circular Economy be scaled-up? Which types of supporting mechanisms either in business or in government are needed in order to support scaling-up-processes that have the purpose of generating long-lasting effects and impacts?
- How can NBMs for the Circular Economy be protected in niches to provide them with time and space for their development? Once developed, how can these NBMs be encouraged to leave their niches?
- How are NBMs for the Circular Economy both solving and (potentially) creating new issues concerning the contribution to Sustainable Development?
- How should new governance forms and strategies for business models for the Circular Economy be explored and developed to reflect alternative normative and subjective values, particularly in inter-organizational, regional, or even national or international contexts?

This list of themes and research questions is not exhaustive. The request for papers follows the theme of the conference at which the Circular Economy is addressed in an appropriate manner.

Deadlines

For this Special Issue, the following deadlines apply:

Conference NBM@Graz 2017	20-23 June 2017
Extended abstract submission	1 September 2017
Notification to authors	1 November 2017
Full paper submission	1 February 2018
Publication	estimated late fall 2018/early 2019

Notes to authors

Authors are invited to submit an extended abstract of 1,000 (maximally 1,200) words as an indication of intention to contribute. Please, in addition to a title and subtitle, add up to five keywords, a limited number of key references (max. 10), and a short biography of the authors (150-200 words).

The extended abstract should be sent to the guest editor, n.r.faber@gmail.com, no later than September 1, 2017. After providing comments to the extended abstracts, full papers must be submitted no later than February 1, 2018. Participants to the Second International Conference on New Business Models are strongly encouraged to submit their work (participation to the conference is not a requirement for submitting). Full papers are subject to blind peer-review. Selected and revised papers will be published in the Special Issue on New Business Models of the Journal of Corporate Social Responsibility (Springer Verlag).

We look forward to receiving your contribution.

Questions

If you have additional question that are not addressed in this call for papers, feel free to contact the lead-editor, Niels Faber (n.r.faber@gmail.com).

Journal Accountancy & Bedrijfskunde

CALL FOR PAPERS

Exploring a changing view on organizing value creation:

Developing New Business Models.

Guest Editors

Nikolay Dentchev [a, b], Philippe Eiselein [a], Abel Gonzalez Diaz [a], Jan Jonker[c]

[a]Vrije Universiteit Brussel, Belgium
[b]KULeuven , Belgium
[c]Radboud University Nijmegen, Netherlands

1. Background

This call for paper encourages submissions from participants to the New Business Models Conference in Graz Universität, Austria on 20-23 June 2017 (http://new-business-models.uni-graz.at/en/). Although participation to the conference is recommended, it is not a precondition for publication. The main topic of the conference is related to the "changing view on value creation." Value has often been considered in the strict economic sense, although its reach, depth, implications and meaning spans also over social and environmental contexts. These latter perspectives have received increased attention in recent years, leading to new, multi-value propositions. Multi-value propositions, in turn, deliver outcomes on current challenging socio-environmental issues. In most cases, for multi-value propositions to work, new forms of organizations see the daylight, which implies the rise of New Business Models (NBM). NBM challenge our understanding of existing business models, and drive us to dealing with multiple value creation processes, compared to their predecessors.

Examples of such NBMs are coming from social entrepreneurs' organizations and efforts. These entrepreneurs incorporate a clear social mission to alleviate a currently-left-undealt-with social problems, whilst pursuing entrepreneurial efforts in the classical sense, i.e. pursuing economic objectives. Social entrepreneurial business models are often very complex, due to not only their specific mission, but also by the fact that these deal with problems others cannot solve, in settings others cannot survive in. Whilst the rising social and environmental needs for such alternative ways is unfortunate, it creates a changing view on what value really constitutes, and does indirectly entails a more elaborate and mature generation of business models.

2. Types of contributions solicited

For this issue, we welcome papers with a strong practical insight. Papers might come from both practitioners and/or academics, and need to contain practical implications. Further, we solicit papers from a broad variety of methodologies (e.g. literature review, qualitative and quantitative research mentods), as well as a broad variety of disciplines (e.g. entrepreneurship, environmental studies, management, etc.). Both conceptual and empirical papers are welcome for this issues (case studies, interviews, opinion pieces, etc.). Papers coming from all various topics of the Graz Conference are welcome.

3. Themes on New Business Models

The Conference on New Business Models covers a rather broad array of session themes, such as

- Organising Business Models for the Circular Economy
- New Business Models, Sustainable Development and Corporate Strategic Management
- Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases
- Business Models for Social Entrepreneurship
- Business Models in the Age of Digitalisation
- Circular Economy: What's Society Got to Do with It?
- Crafting Regional Business Models
- Insights on Business Models from Young Academics
- When business models have to be explained in corporate reporting

Scholars and practitioners should elaborate and contribute, but not limit themselves, to the following research questions:

- What are the barriers to the introduction and implementation of NBMs, both in already-established firms as well as in newly-founded businesses?
- What are the similarities and differences between 'conventional' business models that have the primary objective of profit generation and the so-called 'new' business models that have the main objective of value creation and are based on different normative principles?
- What are the mechanisms that drive successful NBMs? What are the identifiable success factors of already-established, scaled-up NBMs that could be also transferred to other contexts or other types of organizations?
- What are potential motivations and incentives for various constituents to become part of such new ways of value creation and value sharing?
- How can already established NBMs be scaled-up? Which types of supporting mechanisms are needed in order to support scaling-up-processes that have the purpose of generating long-lasting effects and impacts?
- How can NBMs be protected in niches to provide them with time and space for their development?
- How are NBMs both solving and (potentially) creating new issues in the context of Sustainable Development?

- How should new governance forms and strategies for business models be explored and developed to reflect alternative normative and subjective values, particularly in inter-organizational, regional or even national or international contexts?

This list of themes and research questions is not exhaustive, although the call for papers follows the theme of the conference in a fitting manner.

4. Deadlines

Please keep in mind the following timeline of this SI:

Conference	20-23 June 2017
Extended abstract	1 July 2017
Full paper	1 October 2017
Publication	August 2018

We invite authors to submit their intention for contribution by means of an extended abstract of approximatively 1200 words, no later than 1 July 2017 to the corresponding guest editor Philippe.Eiselein@vub.ac.be. After providing comments to the abstracts, we will expect full papers submission by 1 October 2017. We warmly encourage participants of the Second International Conference on New Business Models to submit their work, although participation to the conference is not required for submission. Papers submitted will be subject to review process, and after revision selected papers will be published in Accountacy & Bedrijfskunde (a practitioner oriented journal, based in Belgium).

We are looking forward to receiving your contribution!

Journal of Business Models

CALL FOR PAPERS

JOBM
Journal of Business Models

"Sustainable value creation through business models"

Guest Editors:
Florian Lüdeke-Freund, University of Hamburg, florian.luedeke-freund@wiso.uni-hamburg.de
Romana Rauter, University of Graz, romana.rauter@uni-graz.at
Esben Rahbek Gjerdrum Pedersen, Copenhagen Business School, ergp.msc@cbs.dk
Christian Nielsen, Aalborg University, chn@business.aau.dk

Aim and motivation

Value creation, associated with how organizations create, propose, and deliver products and services that are of value for customers, while they try to capture a share of the overall value created, is a core issue in business model research (Massa et al., 2017; Wirtz et al., 2016). Although business model scholars sometimes refer to value creation with and for stakeholders (e.g., Evans et al., 2017; Upward & Jones, 2016), this notion is mostly limited to value propositions for customers and contributions from and to business partners such as suppliers or investors. Such limited notions of value, value creation and the dispersion of value among stakeholders, in turn lead to correspondingly limited perspectives on business models and business model innovation, which are insufficient to deal with important and pressing issues of, for example, ecological and social value creation (see in particular the critique in Upward & Jones, 2016).

This call for papers shall therefore motivate authors from various disciplines, first, to take a closer look at theories, concepts, and cases that apply more comprehensive and stakeholdersensitive notions of value and value creation (cf., Freeman, 2010), second, to consider diverse forms of value (e.g., economic, ecological, social, cultural, relational, psychological etc.) and their underlying values (Breuer & Lüdeke-Freund, 2017), and third, to explicitly connect such comprehensive notions of value and value creation to business models and business model innovation (cf., Massa et al., 2017; Wirtz et al., 2016).

Scope and topics

The special issue will particularly deal with, but will not be limited to, forms of sustainable value creation, understood as integrated approaches to creating ecological, social, and economic value and to explicitly dealing with and overcoming the trade-offs associated with sustainable value creation (e.g., Hahn et al., 2010). Sustainable value creation takes into account the risks of negative impacts on ecological systems and human societies as well as the challenge of surviving as an organisation. But truly sustainable value creation is not only about avoiding harm. It is also about achieving netpositive effects for a prospering natural environment and human livelihoods – a perspective that is sometimes referred to as strong sustainability (e.g., Upward & Jones, 2016). While we would like to motivate authors to consider more recent concepts such as value created, missed, or destroyed for stakeholders (e.g., Yang et al., 2017), it is also worthwhile to revisit earlier concepts of sustainable value creation (e.g., Hart & Milstein, 2003; Figge & Hahn, 2004, 2005), general frameworks of corporate sustainability and triple bottomline management (e.g., Schaltegger & Burritt, 2015; Baumgartner & Rauter, 2017), and recent developments in the discourse on business models for sustainability (Schaltegger et al., 2016).

In addition to considering ecological and social issues, the special issue also welcomes sociological, cultural and psychological perspectives (e.g., values shifts in society, stakeholder perceptions of value offerings) as long as they are clearly connected to business models. In terms of methods, the special issue is open to all forms of qualitative, quantitative, theoretical, and empirical research. Innovative approaches are most welcome, such as psychological analyses of business model experiments or developing and testing (material) artefacts to support business model innovation and value creation with and for stakeholders.

Taken together, this special issue aims at exploring the variety of stakeholders and their particular needs which can – and should – be considered in organizational value creation, the variety of forms of value offered to them, and how business models contribute to creating these forms of value. Besides value creation, value destruction or cases where important forms of value are neglected should also be considered (e.g., Yang et al., 2017).

Contributions to this special issue can address but are not limited to the following indicative questions and topics:

- What is value and how is it created? Which forms of value and value creation processes are missing from current business model research? Which value theories, from fields as diverse as economics, psychology, business ethics, philosophy or design, can help to broaden the current scope of business model research towards sustainable value creation? Besides sustainable and integrative forms of value and value creation, we are also interested in perspectives and theories from outside of management studies (such as cultural, psychological, or design research).
- Which instruments can be used to help organizations develop and implement new value creation processes in practice? How can these instruments and processes be tested and evaluated? Besides these practical questions, new research instruments and strategies that are rather under-represented in business model research, such as lab experiments (e.g., eye tracking) or large sample studies (using statistical means), are also of interest, as long as these further our understanding of sustainable value creation.
- Value creation is increasingly becoming an interrelational, interorganizational, and networkbased issue. How can value be created in relationships, multiorganizational and network settings? How can members of such settings define and negotiate their individual and joint interests, value definitions, and resulting synergies but also conflicts? What does true sharing of value mean in such settings, beyond rather narrow and instrumental definitions of value and creation? • Where suitable, case studies may be used to look into the above proposed research questions and topics. Single cases as well as larger samples of comparative cases are welcome, as are

longitudinal studies of organizations and the evolution and transformation of their approaches to value creation. Since this special issue addresses several gaps in current business model research, systematic practice and literature reviews may also be suitable formats.

Contributions

Full original research papers are invited – we are looking for 6-8 full papers. In addition, we also aim at publishing 2-3 short papers in this special issue, according to the new short paper format introduced by the Journal of Business Models.

All submissions must follow the editorial guidelines of the Journal of Business Models, which can be obtained from the journal website. Submitted papers should make clear their academic significance and contribution, and their relevance for business model management in practice.

Schedule

The final set of papers shall be ready 18 months after initial submission. Authors considering submitting to this JoBM special must make sure that they are able to follow the special issue schedule:

- Full paper submission: 15 January 2018
- Initial review: 15 April 2018 • Revised papers: 15 July 2018
- Second review: 15 October 2018
- Revised papers: 15 January 2019
- Handing in papers for final review by JoBM and production: 15 February 2019
- Publication of Special Issue: Summer 2019

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Appendix 3: Member of the NBM network

MEMBERS OF THE SCIENTIFIC BOARD

Prof. Dr. Nikolay Dentchev	Free University, Brussels, and KU Leuven, Belgium
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Prof. Dr. Jan Jonker	Nijmegen School of Management, Radboud University Nijmegen, The Netherlands
Dr. Florian Lüdeke – Freund	University of Hamburg, Hamburg, Germany
Ass.-Prof. Dr. Romana Rauter	Institute of Systems Sciences, Innovation and Sustainability Research, University of Graz, Austria

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Dr. Doroteya Vladimirova	Centre for Industrial Sustainability, University of Cambridge, England
Ass.-Prof. Dr. Wolfgang Vorraber	Graz University of Technology, Austria
Dr. Miying Yang	Engineering Design Centre, University of Cambridge, England
Martina Zimek, BSc, MSc	Institute of Systems Sciences, Innovation and Sustainability Research, University of Graz, Austria

Appendix 4: Overview Programme

Tuesday June 20, 2017	
18:00 - 19:30	*Welcome Drink & Get-together University's Botanical Garden* *Address: Schubertstraße 59, A-8010 Graz*

Wednesday June 21, 2017	
08:00-09:00	*Registration and Business Breakfast* *Hotel Das Weitzer, Address: Grieskai 12-16, A-8020 Graz, Austria*
09:00-10:00	*Room Riverside* **Conference Opening** **Ass.-Prof. Dr. Romana Rauter** **Chair of the conference** **Institute of Systems Sciences, Innovation and Sustainability Research, University of Graz** **Rector Univ.-Prof. Dr. Christa Neuper** **Rector of University of Graz** **Dean Univ.-Prof. Dr. Barbara Gasteiger-Klicpera** **Dean of the Faculty of Environmental, Regional and Educational Sciences, University of Graz** **Representative from Mayor's office** **Office of the Mayor Mr. Siegfried Nagl, City of Graz** **Univ.-Prof. Dr. Rupert Baumgartner** **Head of the Institute of Systems Sciences, Innovation and Sustainability Research and** **Vice-Dean of the Faculty of Environmental, Regional and Educational Sciences, University of Graz**
10:00-11:00	**Keynote Mr. Maurits Groen** **Co-Founder and CEO of WakaWaka** **Title: "Sharing the Sun through a sustainable business model** **...and why we need more of those."**
11:00-11:30	*Coffee break*
11:30-12:30	**Keynote Mr. Antony Upward** **Co-Founder of the Strongly Sustainable Business Model Community** **Title: "Embracing the normative in business modelling:** **What does a successful new business model need to describe?"**
12:30-13:30	*Lunch Hotel Das Weitzer (regional buffet)*

	Room Riverside	Room Nikolai	Room Galerie	Room Deep Purple
13:30-15:30	**SESSION 3** **Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases** **Session Chairs: Florian Lüdeke-Freund, Esben Rahbek Gjerdrum Pedersen**	**SESSION 1** **Organising Business Models for the Circular Economy** **Session Chairs: Jan Jonker, Niels Faber**	**SESSION 5** **Business Models in the Age of Digitalisation** **Session Chairs: Christiana Müller, Wolfgang Vorraber, Josef-Peter Schöggl, Romana Rauter**	**WORKSHOP #3** **Exploring a model for the organization of the Circular Economy** **Workshop by Hans Stegeman (Start: 13:30, max. 90 minutes)**
15:30-16:00	*Coffee break*			

	Room Riverside	Room Nikolai	Room Galerie	Room Deep Purple
16:00-18:00	**SESSION 3 (cont.)** **Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases** Session Chairs: Florian Lüdeke-Freund, Esben Rahbek Gjerdrum Pedersen	**SESSION 2** **New Business Models, Sustainable Development and Corporate Strategic Management** Session Chairs: Rupert J. Baumgartner, Romana Rauter, Morgane C. Fritz	**SESSION 5 (cont.)** **Business Models in the Age of Digitalisation** Session Chairs: Christiana Müller, Wolfgang Vorraber, Josef-Peter Schöggl, Romana Rauter	**WORKSHOP #1** **Designing Sustainable Businesses with the Honeycomb Business Model Design Tool: Stakeholder cells** Workshop by Karen Miller (Start: 16:00, max. 90 minutes)
19:30-21:30	*Conference Dinner Landhaus Ruckerlberg* *Address: Rudolfstrasse 59, A-8010 Graz*			

Thursday June 22, 2017					
08:00-09:00	*Registration and Business Breakfast*				
	Room Riverside	Room Nikolai	Room Galerie	Room Deep Purple	Room Atrium
09:00-11:00	**SESSION 3 (cont.)** **Managing Sustainability-Oriented Business Models: Frameworks, Tools, and Cases** Session Chairs: Florian Lüdeke-Freund, Esben Rahbek Gjerdrum Pedersen	**SESSION 2 (cont.)** **New Business Models, Sustainable Development and Corporate Strategic Management** Session Chairs: Rupert J. Baumgartner, Romana Rauter, Morgane C. Fritz	**SESSION 4** **Business Models for Social Entrepreneurship** Session Chairs: Nikolay Dentchev, Philippe Eiselein	**WORKSHOP #4** **Identifying Value Opportunities with the Sustainable Value Analysis Tool** Workshop by Doroteya Vladimirova (facilitator) and Miying Yang (Start: 09:00, max. 90 minutes)	**SESSION 7** **Insights on Business Models from Young Academics** Session Chairs: Martina Zimek, Aisma Linda Kiesnere, Ivan Bozhikin
11:00-11:30	*Coffee break*				
11:30-12:30	*Room Riverside* **Keynote Mr. Jan Jonker** **Professor of Corporate Sustainability, Nijmegen School of Management, Radboud University, The Netherlands** **Title: "Transforming Business Models Sustainable. Inclusive. Circular."**				
12:30-13:30	*Lunch Hotel Weitzer (regional buffet)*				

	Room Riverside	Room Nikolai	Room Galerie	Room Deep Purple	Room Atrium
13:30-15:30	**SESSION 1 (cont.)** **Organising Business Models for the Circular Economy** Session Chairs: Jan Jonker, Niels Faber	**SESSION 2 (cont.)** **New Business Models, Sustainable Development and Corporate Strategic Management** Session Chairs: Rupert J. Baumgartner, Romana Rauter, Morgane C. Fritz (13:30-14:30) **SESSION 8** **When business models have to be explained in corporate reporting** Session Chair: Stéphane Trébucq (14:50-15:30)	**SESSION 6** **Crafting Regional Business Models** Session Chair: Moniek Kamm	**WORKSHOP #2** **Values-Based Innovation Management – Tools and Methods to Innovate by What We Care About** Workshop by Florian Lüdeke-Freund (facilitator) and Henning Breuer (Start: 13:30, max. 90 minutes)	**SESSION 7** **Insights on Business Models from Young Academics** Session Chairs: Martina Zimek, Aisma Linda Kiesnere, Ivan Bozhikin
15:30-16:00	*Coffee break*				

	Room Riverside	Room Nikolai	Room Galerie	Room Deep Purple	Room Atrium
16:00-17:00	**SESSION 1 (cont.)** **Organising Business Models for the Circular Economy** **Session Chairs:** **Jan Jonker, Niels Faber**	**SESSION 8** **When business models have to be explained in corporate reporting** **Session Chair:** **Stéphane Trébucq**			
17:00-18:00	**Conference Closing Ms. Romana Rauter** **Chairperson NBM@Graz2017, Assistant Professor, University of Graz**				
18:30-20:30	*City tour Graz (optional but with registration; starting point: Hotel Weitzer)*				

Friday June 23, 2017	
08:00-13:00	*Tour Sappi Gratkorn (optional but with registration; starting point: Hotel Weitzer)*