

Ecopreneurial Ventures' Networked Innovation Commercialization

Abstract

Ecopreneurial ventures aim to disrupt a business sector by introducing to markets environmental innovations that challenge unsustainable technologies and products. The commercialization of environmental innovations is shaped by challenges, which need to be overcome in order to build viable sustainable business models that extend the conventional economic profit maximization perspective of a traditional business model into including environmental and social value creation. Embedded in a network of actors with their own respective business models, networks and contexts, an ecopreneurial firm must convince these actors to engage in co-creation of the multiple forms of value. This paper builds a theoretical framework for understanding how environmental innovations and networked and sustainable business models interrelate, and what are the implications of this interrelatedness for advancing ecopreneurial ventures' innovation commercialization.

Keywords: Ecopreneurship, networks, sustainable business model, networked business model, innovation commercialization, environmental innovation

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INTRODUCTION

The disciplines of marketing and entrepreneurship, with their neoclassical underpinnings, are often blamed for advancing the endless demand expansion leading to the overuse of the earth's resources. How marketing and entrepreneurship can contribute to sustainability has perplexed academia and business practitioners in recent years (e.g. Anderson, 1998; Dean & McMullen, 2007; Kotler, 2011; Menon & Menon, 1997; Parrish, 2010; Shepherd & Patzelt, 2017), and this paper is sparked by the related discussion. Escalating environmental degradation and pursuit for sustainable development have created room and a dire need for a particular form of business, ecopreneurship. With an underlying aim to disrupt a business sector towards environmental sustainability, these firms introduce innovations to the market that challenge traditional, ecologically harmful and inefficient technologies and products (e.g. Dean & McMullen, 2007; Gibbs, 2008).

All inventions, including environmental ones, have to be successfully marketed to realize their economic and sustainability potential (Schaltegger & Wagner, 2011). However, the actual way through which new ventures succeed in commercialization lacks research, and is particularly underexplored in the field of environmental innovation (Boons & Lüdeke-Freund, 2013). Commercialization means the marketing of an innovation, entailing both strategic planning and implementation (Aarikka-Stenroos & Lehtimäki, 2014). Although commercialization is generally recognized as crucial in turning an invention into a profitable market offering, it is often the least

well managed area in the innovation process (Chiesa & Frattini, 2011), and the area where technology startups most commonly lack resources and skills (Kangas et al., 2015).

The challenges of environmental innovation commercialization need to be overcome to build viable sustainable business models that extend the conventional economic profit maximization perspective of a traditional business model into including environmental and social value creation. A business model articulates how a firm strives to create value by doing business with its customers, partners, and vendors (Amit & Zott, 2012; Teece, 2010). The business model concept thus captures key elements of successful market introduction of an innovation: the value proposition, the value creating constellation with customers and the supply chain, and the financial model (Boons & Lüdeke-Freund, 2013). Although widely covered in entrepreneurship and management literatures, the business model concept has been given less attention in the B2B marketing literature and continued investigations are called for (e.g. Bankvall et al., 2017; Coombes & Nicholson, 2013). According to Mason and Palo (2012), the general business model literature has thus far failed to consider the influence of the business network, which for environmental innovations may be crucial. Moreover, Mason and Spring (2011) argue that the power of business models to generate change in business networks has not been adequately addressed. Hence, the business model concept needs to be widened to be helpful in understanding and advancing the commercialization of environmental innovations.

An ecopreneurial firm with a networked and sustainable business model adheres to providing economic, environmental and social value, while embedded in a network of actors with their own respective networks and contexts. In order to succeed, the innovator firm must convince several actors to engage in co-creation of these multiple forms of value, evoking consequences at the firm, relationship and network levels. This paper integrates streams of research on ecopreneurship, IMP, and sustainable business models. A theoretical framework is developed for understanding how environmental innovations and networked and sustainable business models interrelate, and what are the implications of this interrelatedness for advancing innovation commercialization in the context of ecopreneurship. Previously ignored areas of research are pointed out, and justifications for additional research are provided. The framework will be built next, with defining its context; ecopreneurship and environmental innovation.

THEORETICAL FRAMEWORK

Ecopreneurship

The emergence of ecopreneurship through such storming industries as cleantech, connects to the Schumpeterian (1934) notion of entrepreneurship as creative disruption through innovation. Accordingly, ecopreneurship is defined here as the discovery and exploitation of economic opportunities through the generation of market disruption that aims for transformation of a sector towards environmental sustainability (Dean & McMullen, 2007; Gibbs, 2008; Isaak, 2002). Ecopreneurship, also referred to as ‘environmental entrepreneurship’, ‘green entrepreneurship’, and ‘enviropreneurship’ is sometimes mixed with the term sustainable entrepreneurship but they are not synonymous. Rather, ecopreneurship is included in sustainable entrepreneurship, the latter covering all the three strands of the triple bottom line: economic, social and environmental (McEwen, 2013; Shepherd & Patzelt, 2011). Ecopreneurship is also distinguished from social entrepreneurship which focuses on developing the social wellbeing of the society (Zahra et al.,

2009). By being part of sustainable entrepreneurship, ecopreneurship may include aspects of corporate social responsibility (CSR) which encompasses companies' actions to further some social good (e.g. through sponsorships and donations) (Shepherd & Pazelt, 2011). Hult (2010, p.2) however states that achieving good CSR has become the "common denominator or sometimes lowest bar" for organizations to be recognized as credible markets players. Consequently, CSR is not inherently linked to entrepreneurial action and radical forms of innovation, in contrast with ecopreneurship. Equally, philanthropic organizations and small firms' activities with no intention to reach out from niche to mainstream markets are excluded from the scope of ecopreneurship (Hockerts & Wüstenhagen, 2010).

Innovation presides at the heart of ecopreneurship. It is generally understood that an invention does not become an innovation until it has moved through ideation, development and marketing tasks, adds value to the firm, and is diffused into the marketplace (Garcia & Calantone, 2002). Without successful commercialization, the economic and sustainability potential of an innovation remain unfulfilled promises. As will be discussed later in this paper, the underlying business model is the market device that can be used to unfold this potential, given that certain challenges are overcome (Boons & Lüdeke-Freund, 2013). First, it is useful to take a look at what previous literature has found on environmental innovation.

Environmental Innovation

Environmental innovation is a multi-disciplinary subject, which has led to various definitions and use of synonymous expressions, such as green innovation, eco-innovation, and environmentally sustainable innovation (Bossle et al., 2016). In general, the definitions emphasize that the main feature distinguishing environmental innovation from other innovation is the reduction of negative environmental impacts compared with relevant alternatives (e.g. Bossle et al., 2016; Carrillo-Hermosilla et al., 2010). For example, Kemp and Pearson, (2008, p.7) define environmental innovation as "*the production, assimilation or exploitation of a product, production process, service or management or business method that is novel to the organization (developing or adopting it) and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives*". As the motivation behind ecopreneurship is to disrupt a sector by introducing innovations to the market that challenge ecologically more harmful alternatives, it is important to highlight certain factors that have been found to influence the process and outcome of innovation commercialization in general, and environmental innovation commercialization in particular.

First, the innovativeness of any offering is widely measured by the degree of its *newness* (Garcia & Calantone, 2002). Terms used by scholars and business practitioners to classify offerings based on their relative newness is abundant and inconsistent, including labels such as breakthrough, really new, evolutionary/revolutionary, major/minor, incremental/radical, discontinuous/continuous (Danneels & Kleinschmidt, 2001; Vaccaro, 2009). Generally, the degree of innovativeness is measured along a continuum from low to medium to high, where the lowest level is most commonly called incremental innovation and the highest radical innovation (Garcia & Calantone, 2002; Story et al., 2011; Walsh, 2012). The OECD (2005, p.57-78) offers three concepts for presenting the novelty of innovations: new to the firm, new to the market and new to the world. At minimum level, an innovation is new to the firm, although it has already been implemented by other firms. The concepts new to the market and new to the world denote the firm being the first one either in the market or worldwide to have implemented the innovation.

Second, and related to the previous point, the novelty of an innovation should be separated from its economic impact, which depends on the eventual market adoption and diffusion. The term *disruptive innovation*, made famous by Christensen (1997), describes an innovation with the potential for a significant impact on a market, including the market actors' activities. The impact can change the existing market structure, create new markets or render existing products obsolete (Christensen, 1997). This is what ecopreneurs strive for, even though the disruptiveness of an innovation might not become apparent until long after its introduction to the market. Disruption occurs only when mainstream customers make the switch to the new technology or product.

It is important for a firm to consider the type of its innovation because it affects the choice of commercialization strategy and the related risk (Walsh, 2012). Equally important, following Garcia and Calantone (2002), is to emphasize that determining the innovation type is relative to the market actor in question, meaning that innovation may be taken as radical by one company and incremental by another even though the end result for both companies is the same. The customers' and other market actors' perspectives should thus be distinguished from the provider company's perspective (Danneels & Kleinschmidt, 2001; Garcia & Calantone, 2002). Previous literature has found several factors that influence product innovativeness from the customer's perspective, including the innovation's attributes (e.g. relative product advantage, compatibility, complexity, trialability, and observability), risk associated with adoption, and level of behavioral change required for innovation adoption (Danneels & Kleinschmidt, 2001; McNally, 2010). All these factors carry the potential to generate adoption barriers (Aarikka-Stenroos & Lehtimäki, 2014). From the provider's perspective, innovativeness depends on factors such as the novelty of the technological domain of the innovation itself, as well as market related novelties such as emerging or unfamiliar distribution channels, customers, and competitors (McNally, 2010). As the above discussion shows, the nature of innovativeness is complex, making the innovation commercialization process challenging (Aarikka Stenroos & Lehtimäki, 2014).

Third, the actual environmental feature of an innovation is often an intangible or hidden attribute that maybe difficult to disentangle for other market actors (De Marchi, 2012), further complicating commercialization of the offering. Darby and Karny (1973, via De Marchi, 2012) call this the *credence* quality of environmental offerings, since their value may not be evaluated in normal use but may only be assessed by acquiring additional, and sometimes costly, information. This information challenge has been found to hinder end users' buying decisions (Ramirez et al., 2014). Thus providers must find a way to reassure customers about the environmental features of their offering (Rex & Baumann, 2007) and verify the sustainability of the offering's inputs from their value chain partners (De Marchi, 2012). Voluntary environmental certifications have become common tools to mitigate this information challenge (Rex & Baumann, 2007). As firms become responsible for the sustainability of all the elements in their offering, the need for close partner relationships is reinforced. Thus the implication of environmental offerings' credence characteristics is an increased importance of trust, reputation and direct communication efforts within the focal company's entire value network (De Marchi, 2012).

Finally, the role of collaboration is accentuated in the development and commercialization of environmental innovations also because they are often *systemic* in nature (De Marchi, 2012; Hellström, 2007). Teece (1996, p. 205) makes a distinction between systemic and autonomous innovations, denoting "the amount of design coordination which development and commercialization of the innovation are likely to require". Autonomous innovations can be introduced without significantly modifying the rest of the system they are a part of. In contrast, systemic innovations demand a significant readjustment of the other components in the system

(Chiesa & Frattini, 2011). Nicolai and Faucheux (2015) give e-mobility as an example of systemic environmental innovation, where innovation transcends beyond the boundaries of one company and requires the transformation, replacement, or establishment of complementary infrastructures in order to become diffused. Moreover, collaboration may help firms influence the development of regulation and infrastructure in novel markets where none previously exist (Nicolai & Faucheux, 2015). Also Partanen et al. (2011) found that for small technology-based firms, strong relationships with customers is an important factor when commercializing systemic and radical innovations.

In sum, both the ecopreneurship and the environmental innovation fields are shaped by disruption, a systemic perspective, and credence characteristics, all aspects that add to the challenge of innovation commercialization. The recent discussions on widening the concept of a business model into networked direction may offer a solution, and will be presented next. The network approach provides an apt theoretical lens for studying the sustainable business models, as the approach emphasizes that singular events or actor relationships cannot be understood without knowledge of their context and historical embeddedness in particular dyadic relationships, which are in turn embedded in a macro network (Möller, 2013).

Business Models and the Network Approach

In an innovation context, Doganova and Eyquem-Renault (2009) have conceptualized the business model (BM) as a “market device”, providing a mix of calculations and narratives that function as an intermediary between different innovation actors in networks. They argue that the business model allows entrepreneurs to explore a market, describe their ventures, and to construct markets. Markets for innovations thus emerge through interaction between these networked actors (Magretta, 2002). This perspective is relevant because marketing environmental innovations requires new kinds of collaboration with dissimilar actors in the innovation network, even competitors (Boons & Lüdeke-Freund, 2013). Consequently, the focal venture’s business model should contain a vision of interaction with relevant actors, and the key factors that may influence their acceptance and adoption of the innovation (Nicolai & Faucheux, 2015). According to Nicolai and Faucheux (2015, p.210), the business model thus becomes “a tool of creative destruction”; integrating the new elements, activities and actors of an innovation in value creation. Contrary to the majority of business model research perceiving business models as mere descriptions of what a business does, business models should instead be acknowledged as having performative power to shape and influence the interpretations and actions of other actors in the network (Magretta, 2002, Mason & Spring, 2011).

A business model is on the one hand externally oriented, where its narrative is addressed to other actors in the market about the way a firm does business (Doganova & Eyquem-Renault, 2009; Storbacka & Nenonen, 2011). On the other hand, a business model is an important tool for internal communication and motivation (Magretta, 2002). Magretta (2002 p.8) states that the narrative of a business model helps organizational members see their own role within the mission of the firm and get “aligned around the kind of value the company wants to create”. Furthermore, in their study on the role of startup firms’ business models in engaging business angels, Wallnöfer and Hacklin (2013) found that for entrepreneurial teams, the business model can be used not only for marketing the economic and environmental value of a business opportunity but also for marketing the team itself.

The amount of literature covering business model innovation by existing companies is abundant (Walnöfer & Hacklin, 2013), while less attention has been given to startup companies pursuing economic and environmental and/or social goals. Todeschini et al. (2017, p.765) describe these latter firms as having a born-sustainable business model, which means being “conceived to develop a new business model leveraging sustainability at its core”. The authors highlight the importance of a supporting network of firms that share similar values. Shared sustainability values promote co-creation and facilitate the establishment of collaborative efforts that foster innovative business models (ibid). The quest for engaging like-valued network actors is, however, also a cause of distress for ecopreneurial ventures, as adhering to sustainable values brings along compromises in dealings with other market actors (O’Neil & Ucbasaran, 2016). Ecopreneurial companies face the challenges of managing potentially conflicting economic, environmental, and/or social goals (Battilana et al., 2015) and seeking legitimacy from diverse market audiences (O’Neil & Ucbasaran, 2016). In other words, lines must be drawn to what is the adequate ambition level of sustainability for the company itself and its partners.

The BM concept has gained little attention in marketing while being widely covered in management and entrepreneurship literatures. However, as Coombes and Nicholson (2013) point out, due to its transdisciplinary nature, there is a case for theoretical development of the business model also in marketing. Significant congruence exists in respect to the creation, communication, and delivery of value as a core purpose of marketing and a central theme in the BM literature (Coombes & Nicholson, 2013). However, the BM literature has taken an inside-out perspective and depicts the BM as something developed by a company and delivered to the market, implicitly supporting a provider-centric view of value creation (Coombes & Nicholson, 2013). Meanwhile, the IMP literature perceives that value cannot be delivered by a single actor but is jointly created in processes that involve a number of diverse actors who form networks in which resources are integrated and applied (e.g. Gummesson & Mele, 2010; Håkansson et al., 2009). Network based views of value co-creation seem to underpin parallel discussion by the marketing scholars examining business models (Coombes & Nicholson, 2013; Mason & Spring, 2011; Palo & Tähtinen, 2013). In these views, other actors outside the focal firm become active players in open business models rather than passive receivers of closed ones (Coombes & Nicholson, 2013). For ecopreneurial ventures this means that in trying to influence other actors in its network, the BM of the venture itself becomes influenced.

Resonating with the insights from literatures in environmental innovation, the network approach to business models argues that business models cannot be understood based on exclusive focus on an individual company without accounting for its context, the system it is part of (Bankvall et al., 2017; Nyström & Mustonen, 2017). Following the IMP literature this includes considering the activity flows within and between companies, relationships between individuals within the company and between companies, and the resource connections within and between companies (Håkansson et al., 2009; Nyström & Mustonen, 2017). The network perspective on business models, building on extensive research on the dynamic nature of business networks, allows exploration of how business models are not only formed and practiced but also how they change and evolve (Nyström & Mustonen, 2017).

CONCLUSION AND IMPLICATIONS

The theoretical framework constructed in this paper stresses the importance of considering the commercialization of an environmental innovation from the perspective of a networked and

sustainable business model. The main reason is that the innovation's purpose is defeated unless it and the connected business model becomes first accepted and acted upon by a network of actors capable of producing, commercializing, and marketing the innovation and second, adopted by a mass of users, challenging and eventually replacing an ecologically harmful alternative. Marketing has a crucial role to play in connecting companies with their stakeholders, and the society at large, thus advancing sustainable development. Continuing inquiries in the conventional interpretation of a business model, which focuses exclusively on economic profit maximization, strengthens the business paradigm of "egocentric" value creation (Schaltegger et al., 2016, p.5). Such research swims against the current in relation to the emerging socioeconomic megatrends such as circular economy and sharing economy, which are breeding entrepreneurial ventures with sustainable collaboration-based business models.

This paper is a step to widening the marketing discussion and theory towards advancing the greater good of the society at large, and environmental sustainability in particular, while at the same time providing useful knowledge to the ecopreneurship practice aiming at market disruption. This study suggests that these goals can be enhanced at the same time, by interrelating the discussions on innovation commercialization and network approach to business models, basing the interrelations on a profound environmental value base, and expanding the focus from firm and relationship levels into the network level.

This paper establishes that empirical research on the creation, evolution, and realization of networked and sustainable business models is needed. Longitudinal case studies on the development of networked and sustainable business models could provide insight into the influence of various challenges and changes occurring throughout the process of network creation. An ecopreneurial venture's intention is to cause a ripple effect in the market, inviting and persuading other actors to join in replacing an unsustainable product or technology with an environmental innovation. How business models may generate this kind of change in business networks has not been adequately addressed (Mason & Spring, 2011). Looking more closely at the use of sustainable business models in network construction could provide relevant insights into the theoretical discussion of business models as communicative devices. Thus far research has mainly concentrated on the sustainable business model from the provider perspective and incorporating the perspectives of other network actors is clearly needed. Further empirical exploration of other network actors' responses and initiatives throughout the process of shaping a sustainable business model would deepen our understanding of how companies participate in the co-creation and co-development of a sustainable business model.

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