



Research article

Upcrowding energy co-operatives – Evaluating the potential of crowdfunding for business model innovation of energy co-operatives



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ABSTRACT

Practice and theory have proven the relevance of energy co-operatives for civic participation in the energy turnaround. However, due to a still low awareness and changing regulation, there seems an unexploited potential of utilizing the legal form 'co-operative' in this context. The aim of this study is therefore to investigate the crowdfunding implementation in the business model of energy co-operatives in order to cope with the mentioned challenges. Based on a theoretical framework, we derive a Business Model Innovation (BMI) through crowdfunding including synergies and differences. A qualitative study design, particularly a multiple-case study of energy co-operatives, was chosen to prove the BMI and to reveal barriers. The results show that although most co-operatives are not familiar with crowdfunding, there is strong potential in opening up predominantly local structures to a broader group of members. Building on this, equity-based crowdfunding is revealed to be suitable for energy co-operatives as BMI and to accompany other challenges in the same way.

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1. Introduction

In recent years, discussions concerning climate change, environmental issues and sustainable economics have transformed the view of energy in practice as well as in research (Jäger-Waldau et al., 2011; Marques et al., 2010). Not only are the source of energy and technical solutions considered to be an important part of the energy turnaround, but so are energy consumption and energy-related businesses (Karger and Hennings, 2009; Suzuki, 2015). In connection with this, Walk (2014) emphasizes the potential of collective action to cope with climate change efficiently. However, this requires formal and reliable structures (Knieling and Weick, 2005).

The legal form "registered co-operative", with its community orientation anchored by nature and law (Bolsinger, 2011; Draheim, 1952; Ringle and Göler von Ravensburg, 2010), is seen as a powerful instrument for promoting the energy turnaround (Ott and Wieg, 2014; Volz, 2012; Warren and McFadyen, 2010). Based on the co-operative framework of values and principles, the newly-established energy co-operatives (ECs) provide an alternative

business model, focusing primarily on sustainability and value orientation instead of maximizing shareholder value, i.e. private profits (Dóci and Vasileiadou, 2015; Yildiz et al., 2015). Correspondingly, individuals organized in ECs are in general less likely to strive primarily for a return on investments (Flieger and Klemisch, 2008; Holstenkamp and Kahla, 2016). Therefore, co-operatives present the potential to establish a group identity and to raise individual commitment (Bolsinger, 2011), transforming the energy landscape on a micro level to a self-contained economy (Ott and Wieg, 2014).

However, based on the statistics for taxable energy producers in Germany, only 2%¹ of the multi-person ventures in this area have been founded in the legal form of a co-operative since 2007. Despite this, several ventures that emerged within the scope of the civil energy movement and which operate in alternative legal forms present co-operative-like characteristics (Flieger and Klemisch, 2008). Huybrechts and Merstens (2014) reveal "cognitive barriers", such as a poor knowledge and understanding of the co-operative model, as a specific issue in the comparatively low foundation of ECs in Europe. Likewise Stappel (2016) states an

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¹ As there is no differentiation in ventures active in producing with conventional energy sources or renewables, we assume a predominant existence of renewable energy producers across all legal forms due to their consistent disproportional growth rate since the introduction of the feed-in compensations for green energy.

insufficient exploitation of legal form 'co-operatives' in Germany, being neglected by founders due to a low awareness. Indeed, this view is encouraged by the foundation of ECs primarily initiated by existing co-operatives or municipalities who are familiar with the model, rather than by private persons (Holstenkamp and Ulbrich, 2010; Volz, 2012). Besides, the co-operative model is faced with an old-fashioned image in general (Doluschitz et al., 2012; Klemisch and Vogt, 2012; Theurl, 2012). While Müller et al. (2015) postulate an exhausted potential of ECs for attracting the self-driven member, there is a considerable number of favourable prospective members in cross-regional and urban co-operatives (Brinkmann and Schulz, 2011; Maron, 2012). Consequently, Masson et al. (2015) unveil a member potential exceeding nine million interested individuals that is being exploited only to the extent of 1.8% (165,000 EC members) so far (DGRV, 2016). For example, prosumer communities that represent a co-operative-like mentality (Klemisch and Boddenberg, 2016) become misaligned due to their frequent Web 2.0-based appearance. Thus, there is a need to rethink and innovate the EC business model, not only with respect to changing markets (Müller et al., 2015), but to cope with social trends, such as digitization (Stappel, 2016), to unlock the potential to its full extent.

In this context, the concept of crowdfunding, mainly attracting young individuals (Berglin and Strandberg, 2013; van Wingerden and Ryan, 2011), can represent a promising boost to ECs to expand the interlocking of social networks within the energy system. Crowdfunding is a rising phenomenon in the field of financing, emerging through the continuous growth in networking via Web 2.0. The essence of crowdfunding lies in the financing of certain projects or ventures by a group of individuals via the internet (Belleflamme et al., 2014). It is, therefore, the digital form of a co-operative, as both provide connectivity of people for a specific purpose (Brem et al., 2014).

In the area of renewable energy (RE), crowdfunding is already regarded as a potential instrument that may force measures to address climate change (von Ritter and Black-Layne, 2013) by supporting energy projects at the financial, social and political levels (Vasileiadou et al., 2015).

Hence, the present study aims to analyse the combination of crowdfunding and ECs, as well as determining a utilization framework and investigating existing barriers. Therefore, a two-step approach was chosen. Firstly, we developed a theoretically-derived business model, implementing crowdfunding as an add-on for ECs. Secondly, in an empirical approach, we conducted a multiple-case study with ECs to elaborate a common understanding of crowdfunding and to analyse the underlying preconditions for implementing the concept, as well as to develop practical guidance. The research contributes to both theory and practice. On the one hand, it offers new insights into the young research field of ECs and crowdfunding; on the other, it outlines opportunities for the future foundations of ECs in combination with crowdfunding concepts.

2. Business model theory

With regard to the purpose of our study, the business model theory perspective has been chosen as a starting point as it provides a systemic structure for planning, designing and implementing business models and generates a general comprehension and transparency to communicate these (Osterwalder, 2004). Based on their level of aggregation, business models can address different firm layers, reaching from a generic meta or industry level, over company business model types, to specific real world business models on a product level (Schallmo, 2013; Wirtz, 2010).

With the emergence of the internet and business opportunities, the term 'business model' was widely considered in practice and in academia (Chesbrough and Rosenbloom, 2002; Osterwalder, 2004;

Stewart and Zhao, 2000; Timmers, 1998). This led to a vast number of divergent definitions and concepts which are mostly determined by the different underlying perspectives (Klang et al., 2010; Schallmo, 2012; Shafer et al., 2005; Wirtz, 2010). While Stewart and Zhao (2000) present a quite financial stance, other scholars choose a more cautious approach and provide full concepts (Baden-Fuller and Morgan, 2010; Magretta, 2002; Morris et al., 2005; Ricart and Casadesus-Masanell, 2011). In recent years, value chain approaches have gained increasing acceptance in business model theory. Teece (2010, 179), for example, claims that "it's about the benefit the enterprise will deliver to customers, how it will organize to do so, and how it will capture a portion of the value that it delivers". Similarly, Osterwalder and Pigneur (2010) suggest a processual view to depict the business model through interconnecting the way of producing (value creation) a specific output (value proposition) for the market (customer) that leads to a surplus of profits over costs (value capture). To sum up, Gassmann et al. (2013) and Frankenberger et al. (2013) define and conceptualise a business model according to the identity of the customer, the output being sold, the way of producing it and the obtained revenue, aggregated to the two external dimensions of "what" and "who", and the internal dimensions of "how" and "why".

While the developed concepts provide the basis for analysing a company's way of doing business, business model innovation (BMI) is gathering momentum to cope with changing business environments, partly even outperforming product and process innovations (Chesbrough, 2007; Gassmann et al., 2013). BMI can be categorized within a continuum ranging from modifying single elements (incremental BMI) to reinventing the whole architecture of a business model (radical BMI) (Bieger and Reinhold, 2011; Schallmo, 2013). Its scope is primarily dependent on the existing business model and the prospective goals an organization strives to achieve (Teece, 2010). Osterwalder and Pigneur (2010, 136) stress the relevance of "challenging orthodoxies to design original models that meet unsatisfied, new, or hidden customer needs".

Over time, similar to traditional innovation processes focusing on products and services (Biemans, 1992; Cooper, 1994, 1996), scholars have developed several new processes for a systematic BMI. Aggregating the single steps used in concepts from 2000 to 2009, Wirtz and Thomas (2014) distinguish the BMI process as comprising "analysis of the starting point", "ideation", "feasibility analysis", "prototyping", "decision-making", "implementation" and "monitoring and controlling". In addition, recent BMI processes encompass the relevance of business model suitability. Sosna et al. (2010), for example, depict the process of BMI in four extended steps: "initial business model design and test"; "business model development"; "scale up with 'suitable' business models"; and "sustained growth through orga-wide learning". Based on a synthesis of existing BMI process phases, Gassmann et al. (2013) and Frankenberger et al. (2013) deduce a framework distinguishing BMI in the design phase and its realisation. The design phase encapsulates three steps and allows for stepwise actions alongside the above business model concept introduced by Gassmann et al. (2013). Firstly, the "initiation" represents a stakeholder analysis, revealing the influences on the business model. Continuing, the "ideation" tends to adapt the existing business model to the strived for, predefined pattern and to analyse its suitability. Therefore, the authors provide blueprints of 55 business model types, such as crowdfunding, as patterns. Thirdly, the "integration" step examines the internal and external consistency of the new business model. The realization phase contains the "implementation" step to test and adapt the designed business model before introducing it to the market. The whole process of the "4I-framework" is accompanied by an iteration process within the design process and between the design and realisation. By changing at least two of the four

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