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Three Shades of Prosumer-to-Business Interaction in Business Networks

Abstract

Prosumerism has not yet been discussed and linked to effects on the business network. Facing different forms of prosumerism and with little attention to the embedded contexts, managers and researchers have limited guiding from the current literature on prosumerism. In this paper, we compare three case studies which represent different shades of prosumption and prosumer-to-business interaction in network-embedded contexts, and discuss implications for managers and research. The paper contributes to the business-to-business interaction approach; exploring and discussing effects and characteristics of prosumption within business networks, it provides means for understanding the connectedness of prosumer-to-business interaction in business networks.

Keywords: Business Networks, Prosumer-to-Business Interaction, Network Change, Case Study

Introduction

Although the term prosumption, first coined by Toffler (1980), is not novel, its impact is somewhat limited by the various forms of prosumption and general ambiguity of the term. The term covers variety of consumer participation on the value creation, such as home meal cooking (Xie et al, 2008), 3D printing platforms (Rayna et al, 2015), or electric power prosumerism through solar panels (Green & Staffell, 2017). Prosumerism has, however, not yet been discussed and linked to effects on the business network. Thus, facing different forms of prosumerism and with little attention to the embedded contexts, managers and researchers have limited guiding from the current literature on prosumerism. For instance, prosumption can either be initiated by customers (e.g. the rooftop solar panels) or by businesses (e.g. automatic checkouts in retail stores), and have either radical or incremental/limited effects on incumbent business network arrangements, as well as that the benefactors of prosumption and innovation types could vary. In this paper, we compare three case studies which represent different shades of prosumption and prosumer-to-business interaction in network-embedded contexts, and discuss implications for managers and research.

The aim of this paper is to explore effects that different shades of prosumerism can have on business network, using a newly postulated typology of prosumption (Kask & Klézl, 2019) as a starting point that would put this phenomenon in new perspective. To this end, we use three demonstrative case studies as a starting point to illustrate and discuss various types of prosumption with different impact on existing and new business network arrangements. The case studies are first described using rich, up-to-date cases from primary and secondary sources then discuss prosumer-to-business interactions and network effects based on initiators, benefactors, drivers and innovation type.

The Network Approach

In this paper we study business to prosumer interactions using a network approach. From empirical studies within the *Industrial Marketing and Purchasing* (IMP) group, this network approach focuses and acknowledges the essential role for all kinds of business activities played by interactions and relationships between actors situated in a business network (Anderson et al 1994; Ford, 1980; Håkansson, 1982; Håkansson & Snehota, 1989; Hallén et al, 1991). Using this approach as a starting point entails certain fundamental assumptions and obligations; emphasizing inter-dependences and interactions, it is the bonds between actors and their activity links, as well as the inter-organizational

resource interfaces that are highlighted in the analysis (Snehota & Håkansson, 1995), not the business entities or resources *per se*.

What distinguishes the network approach from, for instance, the *resource-based view* (RBV) and the *transaction cost analysis* (TCA) is the view on actors' independency (Johanson and Mattsson, 1994; Baraldi et al., 2007). While RBV and TCA have a firm-centric nature, the network approach is network-centric *per se* where firms and other entities are seen as inseparable from its network. A business in the RBV is seen as a somewhat independent entity that can interpret possibilities and threats in the surroundings, implement its own strategy, and take actions independently based on the resources and assets it controls (Amit & Schoemaker , 1993; Barney, 1991; Peteraf, 1993), whereas a business who is, according to the network approach, embedded in the network has only restricted freedom to act independently as its actions will always be interdependent upon the activities and resources of every other party in the network. According to its advocates, the fundamental pillars of the network approach can, in short, be summarized as follows (see, e.g., Gadde et al, 2010; Håkansson & Snehota, 2006; Snehota & Håkansson, 1995):

1. Actors are embedded in a context in which their conducts and activities are related to, enabled and constraint by a limited number of other actors to which they are linked through their continues exchanges;
2. each actor in the network are unique and controls a unique bundling of resources while engaged in pursuing its own goals, and they are, hence, not directly interchangeable;
3. Relationships make it possible to access and exploit the resources of other actors and to link the parties' activities together. In other words, the distinctive resources and competences of network members are seen as created and operated through the network relationships;
4. thus, since every party involved in the interactions operate under similar conditions, the businesses profit and performance is conditioned by the network and the resource exchanges, because relationships, exchange and resource interactions are essential for all meaningful economic activities to happen.

Three Shares of Prosumerism

Proceeding from a network approach while studying prosumerism in three different networks, we will briefly introduce prosumerism in the contemporary literature. A recent literature review (see, Kask & Klézl, 2019) of 68 journal articles on prosumerism published between 1986 and October 2018 addressed the following findings: First, it is obvious that prosumerism is an empirical phenomenon, as there is, so far, great variation in the theoretical starting points, but the literature review found no article that analyzed prosumption or prosumerism from a network approach. Moreover, the present literature not only deals with prosumption as a phenomenon, they seem to apply the original definition from Toffler (1980) dealing with self-supporting activities, to all sorts of consumer involvement in production processes no matter which party that introduced it to the network and for what reasons. The ambivalent use of the term makes it hard to discuss prosumption, and the aforementioned literature review drew three distinct forms, or shares, of prosumerism and suggested a typology that can help to sort things out, and for future researchers and practitioners to be aware of what kind of prosumerism we are studying (for a complete description of the typology, see, Kask & Klézl, 2019):

Prosumer-as-a-coworker. This form of prosumerism is characterized by a companies' desire and drivers to save costs and be more competitive in relation to their competitors by outsourcing tasks from its own employees to the customers; such as to put products in the basket, scan the products, as well as, in a retail setting, to take care of the checkout by self-scanning. It incrementally innovates the company's business offers without changing the existing network's structure and only marginally affect the network's function.

Prosumer-as-a-cocreator. It represents the shade of prosumption when companies and consumers elaborate innovations and business-model change together. While it seemingly is most common that a company initiates the cooperation, the characteristics of this form is that the parties co-create business and strengthening the actor bonds between businesses and consumers.

Prosumer-as-a-competitor represent consumers' initiatives to break free from the traditional buyer-seller relationships. Initiated as a bottom-up rebel and potentially disruptive to the incumbent network structure and function, this form is potentially the most radical form of prosumerism.

Methodology

In order to substantiate our conceptual claims, we use a multi-case approach focusing how the business-to-prosumerism interaction for each of the three forms affect a) the overall network structure, and the b) resources ties, c) activity links, and d) actor bonds of the business-to-prosumer relationships. To this end, we have selected three different cases where each of them represents one of the three aforementioned forms of prosumerism. The case study approach is appropriate as it enabled us to capture contextual aspects and the empirical richness required (Dubois & Gadde 2002).

First, we treat the three case studies separately adopting an in-depth qualitative approach to provide empirical and conceptual insights on the researched phenomena embedded in the contextual / network settings (Eisenhardt & Graebner, 2007). The selection of the cases is based on our shared unique access to the empirical settings through two ongoing research projects; one in the Czech Republic (the *[insert project name and University after review process]* on the adjacent of prosumerism in retailing and creative industries) and one in Sweden (the *[insert project name and University after review process]* on prosumerism and new business models for the electric utility industry). This paper reports empirical works from both these projects.

The *[project name]* in the Czech Republic, funded under the Czech Science Foundation, started in January 2019 and runs until December 2021. The main objective of the project is to examine antecedents of customer inclination to engage in prosumption behavior. Examining customer attributes and previous experiences with prosumption, as well as managerial actions that might leverage prosumption, are the research sub-goals of the project. Currently, the project is in the phase of systematic literature review examining the antecedents of prosumption in extant scientific literature. Two stages of research are to be conducted in the project: at first, qualitative research including interviews and focus groups with the managers and customers engaged in prosumption (focusing on the self-checkouts and self-scanning systems in retail stores), followed by the main quantitative survey measuring the variables identified in the first stage, with around 1,000 sample size. Structural Equation Modelling is going to be used as a main analytical tool, combining Partial Least Square and Covariance-Based approaches.

The process of collecting data for *[project name]* in Sweden has progressed between September 2016 and February 2019, and is work in progress as the project runs until 2021. A range of different types of data collection methods have so far been employed to get a rich understanding of the photovoltaic solar prosumerism from multiple perspectives. The qualitative fieldwork consisted of a mix of face-to-face, semi structured interviews as well as internship days at the incumbent firms, round table discussions, workshops, student panels, and observations at firm meetings, solar energy prosumers' online discussion communities, user data and sales statistics from companies, as well as a Delphi-technique panel with experts. 14 interviews and five meetings, workshops and panel debates has been transcribed. Secondary data have also been collected which includes presentations and reports provided by the companies, annual reports, press releases and newspaper items. Hence, the secondary data included both company internal material as well as official material. All our data is stored in a document management system for better structure and accessibility for the researchers involved in the project.

The findings of each case are in the following sections synthesized and structured in the same way to facilitate comparison and to ensure the contribution of this paper in relation to the prosumerism typology presented in Kask and Klézl (2019).

Case 1: IKEA

The first case is the Swedish furniture giant *IKEA*, which famously makes its customers participate in the product (co-) creation by doing the final assembling. Under neoclassical economics assumptions, it could be expected that the customer would subtract the value of their labor from the cost of the product. Conversely though, empirical evidence suggests that customers evaluate the products they co-created better. This cognitive bias has been labelled as the "IKEA effect" (Norton et al, 2012). This is the case of incrementally innovative, firm-driven prosumption that mainly benefits the firm's cost structure by relocate tasks from employees to consumers. This effect has been replicated by Sarsted et al (2016) in a study on jewelry making. Walaszek et al (2017) examine the psychological mechanism of said effect, finding that customer's evaluation of the product is the most associated with the product when they assembly the product by themselves and own the product as well. In such sense, the relationship between *IKEA* and the individual prosumer is strong thanks to the shared co-creation activities connecting the two actors more tightly together.

In the case of *IKEA*, we can clearly see that the network structure doesn't change with the prosumption (although it can be argued that the cost benefit from the prosumerism enabled *IKEA* to create the current value chain/network, as the main competitors were forced to copy the self-assembly mechanisms to remain competitive). It was initiated by the company itself, which also gains the cost leadership from the prosumption by being able to reduce costs of furniture due to lower labor costs in production, transportation and retailing. The value for the customer lies in the lower purchasing costs, speeding up the purchasing process and higher evaluation of the product due to the *IKEA* effect. In recent time, *IKEA* has also introduced self-checkouts in their stores, which is a further step of replacing staff with do-it-yourself prosumerism. The innovations are in the *IKEA* case incremental and within the existing network structure as there is no/few new actors involved, and the packaging, ease of assembly, and self-checkouts are gradually improved over the years.

Interestingly, *IKEA* also attracts a wide community of "IKEA hackers," do-it-yourselfers who extensively modify, reuse and repurpose original *IKEA* products. These users sometimes modify newly purchased products, as opposed to reusing existing items (Lai & Shu, 2014). This movement has been endorsed by *IKEA*, with the furniture giant even making an exhibition about this process in its museum (IKEA, 2018). We posit that the *IKEA* hacking movement is the second type of prosumption in the typology – prosumer-as-a-cocreator, meaning that is it different in its nature compared to the original IKEA retail prosumerism initiated by the store itself. In this latter form, the prosumerism is initiated from the hacking movement, the users and do-it-yourselfers that reinvent and modify, and IKEA has limited control of the processes.

Case 2: Moodle

Our second case is the open-source learning management system *Moodle*. The basic product is provided free of charge, while customers (mostly educational institutions) are expected to adapt the software to their use. This is potentially disruptive innovation, originally led by customer (the product was created by a teacher needing e-learning tool), serves both firms and customers, and creates new entries that color and re-structure the incumbent network, for instance with new providers of e-learning tools (Dougiamas & Taylor, 2003).

Starting in the late 1990s, e-learning has been an emerging opportunity for organizations worldwide (Welsh et al, 2003). Due to the technological development and mainly to the widespread use of the internet, education institutions needed a solution for online course management and e-learning. This led to first prosumption in the *Moodle* case – former student of the Curtin University of Technology noticed

the lack of readily available e-learning platform and developed a new tool for his colleagues and the students at the institution, with development starting in 1999. From the start, the goals of the project were to help people learn how to use the technology; and to improve the technology itself (Dougiamas & Taylor, 2000). As the costs of the early e-learning and course management tools (both the initial purchase costs and the cost of maintenance), universities and other education institutions were rather cautious in their adoption. Even when funding was obtained, lack of user-friendliness and limited resources of teachers led to the stagnation of the created courses.

Interestingly, constructionism - the theoretical background of *Moodle* can be linked to prosumption phenomena as well. It posits that knowledge (and learning) "is actively constructed by the learner, not passively received from the environment" (von Glasersfeld, 1990). This could be an extension of the prosumption, where the value is co-created by both producer and consumer. Adaptation of the existing *Moodle* tool for the specific institution is then another prosumption in terms of modification of the framework based on its needs and specifics. Finally, the teacher using the tool for their courses is also able to modify the tool based on their needs based on the nature of the course, and for example add interactive materials, videos, or automated tests. From the start, *Moodle* was created as an open-source solution, meaning that anyone can study, change, and distribute the software. Ritzer (2015) claims that open source, as well as massive open online courses, are one of the prime examples of prosumption, as they always require value co-creation by multiple users.

To summarize, the case of *Moodle* shows that the emerging need for course management and e-learning tools has generated new de-facto incumbent provider. The tools existing before *Moodle* were either too expensive or lacking in function. *Moodle* is now used at more than 90,000 institutions in 230 countries and over 90 million worldwide users in total, while remaining open source, meaning any institution or individual can modify the platform and use it free of charge. This was disruptive to preexisting e-learning solutions, and while there are platforms with more users (such as Blackboard), *Moodle* still remains one of the most successful open-source (and therefore prosumption) cases.

Case 3: Jämtkraft

Thirdly, we use the case of the Swedish electric utility *Jämtkraft* with primary data from the rolling *[project name]* at *[University name]*, and study the impact on their business from households that install their own photovoltaic solar panels and in one sense becomes partly self-sufficient.

This case represents the potentially more disruptive and radically innovative case of prosumption, where the customer could be seen as a competitor to the traditional network structure of electricity producers, grid owners, grid operators, electricity retailers and passive, subscription-based energy consumers. However, prosumers in the electricity sector do not only challenge the old design of the energy sector, the prosumers' efforts can also add great amount of value to the business network, producing or storing electricity locally, balancing needs, and using electricity in a smarter way.

To be able to fully value the work of prosumers, and treat prosumers as lost customers, managers of *Jämtkraft* (and of all electric utilities in the same situation worldwide) need to adapt business models who are well aligned with a revised, updated network structure; meaning for instance that they should offer tailored services for households that prosume rather than thinking that the (partly) self-sufficient prosumer household is a threat or a competitor that belongs to a whole different and challenging network structure. Even though some prosumers produce all electricity they need for a year themselves, there are very few prosumers out there which has installed the necessary capacity to live completely off the grid year-round, neither now nor in the five years forecast. To be able to completely disconnect from the grid and hence resolve resource ties and actor bonds, which seems neither energetically nor economically reasonable, requires extreme over-investments in both production and storage capacity. According to Green and Staffell (2017), the average UK household musts over-size their photovoltaic solar panels to meet 200% of annual electricity consumption, and yet it needs to be able to store a month of electricity

consumption in batteries or elsewhere locally to compensate for fluctuations in production and consumption; and the numbers for Scandinavia seems to be around the same, or even more extreme in some places. That would mean that most prosumers, even those that produce 100% or more of their annual consumption, need to nurture relationships with electricity retailers and grid companies also in the future. In other words, extremely few, not even the 100% self-sufficient, electricity prosumers are ready yet to cut off the actor bonds and isolate themselves. Because, they need complementary resources; to be able to sell over-production those days when the sun shines and the household does not need that much electricity, and to be able to buy electricity when the private panels not produces enough, is much more rationale than isolating itself, given the current as well as expected prices for 2020-2025 of storage capacity and grid connection. Simply speaking, its more efficient, energetically and economically, for the prosumer to have a sufficiently size of solar panels and to use the grid as a buffer, an energy storage, as well as a security to avoid electricity shortage. In other words, in terms of resource ties, all prosumers (except the very few off-grid extremes) have the resources they have invested in, such as the panels, interact with the resources of the wider grid and of the utilities and the retailers.

In the *Jämtkraft* prosumption case, it is the customer/household that initiate the change from a regular subscription plan to the two-way prosumption deal where the prosumer both can buy and sell electricity to/from the grid. The main beneficiary at the start is the customer, and the incumbent network has to accordingly react and adapt to the changed buyer-seller roles. *Jämtkraft* in its current role as both producer, distributor and retailer are working to adapt to more prosumerism and distributed production by inventing new services for prosumers and two-way deals (buying and selling). *Jämtkraft* can, hence, benefit from buying what the prosumer does not use, and sell it further; it covers a need and helps to balance the grid at the same time. Buying the over-production from prosumers will at time be cheaper than to invest in its own production. Hence, although prosumerism in the electricity sector seemingly at first makes the incumbent actor loose customers and threatening its sales volume, it can actually be turned into an opportunity.

In summary, even though the raise of prosumerism in the electricity industry dramatically will change business models and threatening the traditional configuration of the electricity business network, the move from per kWh-based subscriptions for passive consumers to active prosumers will not terminate the need for business-to-prosumer interactions and long-term relationships. On the contrary, it seems reasonable to assume that the need for prosumer-to-business interactions make it possible for the utility and its likes to create new vendor lock-ins, and even higher exit barriers, compared to the situation today where the electricity retailer is easy to replace if another firm offers a lower price.

Discussion and Takeaways

The business-as-a-network literature has a long tradition of exploring highly connected dyadic relationships and, for instance businesses' relative power, trust, commitment, etc. (see, e.g., Anderson et al 1994) and business-to-business interactions within business networks (Håkansson & Ford, 2002). This paper contributes to this tradition; exploring and discussing effects and characteristics of prosumption within business networks, it provides means for understanding the connectedness of prosumer-to-business interaction in business networks.

The three cases show somewhat different meanings and effects from the prosumers' actions on the preexisting network structures and relationships. While the prosumer-as-a-coworker case of *IKEA* reveals that the initiator and principal beneficiary is the company itself, in terms of lower employee costs and transportation costs, the prosumer-as-a-competitor case of *Jämtkraft* shows that households that start generating their own electricity may be both the initiator and the principal beneficiary in that case. However, we noticed in all three shades of prosumerism (with the possible exception of the extreme forms of total self-supporting), continues resource ties and activity links are both sufficient and necessary for the prosumption to operate smoothly. Hence, prosumerism at large is not about do-it-yourself in an isolated way that dissolves business ties. On the contrary, all the three shades of

prosumerism we have investigated, despite being conceptually distinct from each other, embrace a significant business network including value co-creation activities and relationships with many business actors. But its likely in a different way, while demanding a new set of offerings, compared to in when a consumer was considered as a passive end-user shielded from the value-creating process.

The work on prosumerism is generally speaking still in an emergent phase, especially theory-wise, so there is a warranted need for more conceptual work, as well as more systematic literature synthesizing and detailed accounts of the various forms and how they differently color networks and relationships. We hope that this paper has shed a new light to the phenomena of prosumerism, and that it inspires others to take on prosumer research in a network context.

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[to be included after the review process]

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