Open up or Close down - The new Era of "Openneers" and how they lead the Way to Future Success

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ABSTRACT

In many industries, we observe a paradigm shift from traditional value creation towards value co-creation and open production approaches. The boundaries of companies dissolve and many more players (suppliers, customers, users, community members, etc.) are integrated into the value creation process. Thus, a new understanding and taxonomy of value creation has to be introduced as a reference model in order to describe new phenomena based on Bottom-up economics. In this industrial context, openness as a precondition to participation, cooperation and interaction can be seen as a critical success factor. The purpose of this paper is to make a contribution to a theory of value co-creation by integrating a case observation and conceptual insights from literature that are concerned with co-creation phenomena. A value creation taxonomy is introduced as a reference model which is used to describe an ongoing paradigm shift from traditional industrial production towards Bottom-up economics. On this basis, a conceptual framework is derived for comparing how traditional value chain elements might be rearranged by organizations relying on value co-creation. The underlying research work also aims to apply the authors' framework in order to illustrate how completely new business models arise and how traditional (manufacturing) companies could be enabled to make use of value co-creation patterns for long term success.

Keywords: Bottom-up economics, Value co-creation, Open source, Openness, collaboration, participation, Knowledge sharing, Open production

1. INTRODUCTION

In 2013, the distribution of the printed version of the German encyclopedia *Brockhaus* finally was ceased. For more than two hundred years, it was the most important reference work or at least an important status symbol in German bookshelves. The most recent, but also final 21st edition of the *Brockhaus* which was released in 2005, the year of the 200st anniversary, comprised 300,000 articles in 30 volumes and cost nearly 3,000 € as print or about 1,500 € as digital version. The targeted sales volume was 20,000. Nearly thirty professional editors were employed to gather the knowledge, to edit, but also to author articles themselves. Each editor was responsible for about 8,000 keywords [88].

Wikipedia, however, is doing things differently, which might be at least one reason why the *Brockhaus* disappeared. The online encyclopedia *Wikipedia* gathers its knowledge in a collaborative community of more than 69,000 active users who voluntarily and without monetary compensation participate in the authoring and editing process of knowledge creation. Most recently, *Wikipedia* comprised more than 33 million articles in more than 280 languages with 20,000 new entries per month. Anyone connected to the internet has free access to the encyclopedia. That leads to more than 500 million views per month, thus being one of the most popular websites [89].

Brockhaus is only one of several popular cases of traditional media industry revealing the loss of its means of existence due to the rise of *Wikipedia* and others. Fears are easily comprehensible in other areas of print, music and film industry, whose existence is perceived threatened because there are paper books being substituted by ebooks, cinema attendance and record purchases substituted by internet streams and downloads.

Of course, there are fundamental differences between the media world and the world of real physical goods whose fabrication constitutes the raison d'être of manufacturing companies. However, also in the field of the physical or material goods new patterns can be observed that represent an increasingly collaborative, decentralized and individualized type of value creation, which is significantly different from traditional industrial production. This new type of value creation can mainly be referred to as an open approach as many actors beyond the company's border are integrated throughout the value creation activities of an organization. One glaring example for the field of material goods is the case of *Quirky* [33,52].

Quirky allows its users/inventors to submit any idea of a physical consumer product. Other users of the platform can vote on the new ideas. The best ideas are then conceptually developed under assistance of *Quirky* staff, physically developed to prototypes and put into production. The products that are brought to live are then sold via online shop and/or via other sales partners. The users of the community may also participate in designing, naming and pricing of the products. The process is accompanied by both: input of individual contributors and an in-house team of engineers and designers. Contributors earn a reward share in sales revenues of the new products. *Quirky* fields about 3,000 product ideas a week from an online community of more than 1 million users [86].

These days, also in traditional industrial production new value creation patterns and business models considering aspects of openness can be found, e.g. value co-creation, collaboration, etc. One successful example for new methods within a highly competitive and more than 150 years old automobile industry can be observed with the US-based company *Local Motors*, that managed to bring a car to production with the use of open source-principles by means of a collaborative internet platform together with an internet community within 2 years.

In addition, the development costs of the street legal off-road car named *Rally Fighter* were only a fraction compared to those of other car manufacturers [87].

The design of the exterior as well as the selection of most parts of the vehicle resulted of the common work of a community of interested and dedicated volunteers and potential customers of the company. Early design concepts were accessible for everyone. Everyone could also make suggestions for improvements, but also vote on submitted designs. The final assembly of the vehicle takes place in one of the "micro-factories" of *Local Motors* all over the country. Interestingly, in the spirit of "Do it yourself"-phenomena and value co-creation, the customers may assemble the car themselves under the guidance of company-employed engineer. Due to the success of this project, the U.S. military ordered a prototype for a desert vehicle. This concept car was developed and produced in less than 4 months. It will now be further developed by army engineers [2]. In the meantime, the number of users participating in the online platform climbed to more than 30,000 and the submitted projects cover a wide range of challenges, e.g. urban mobility or design concepts, but also of products such as 3D-printed cars, electric motorcycles, etc.

The latest example of such a pattern, which appeared, was Elon Musk's, CEO of *Tesla Motors*, announcement of opening up the electric car company's patents to all comers. Along the "spirit of the open source movement" [85], *Tesla Motors* would allow anyone to use their technology for free in order to commonly enhance technology and develop the market for electric vehicles. Following *Tesla's* open source approach, the big car manufacturer *Toyota Motor Corp*. also announced to make 5,600 patents free to use for further advancement of the fuel cell technology [84]. The waiver of confidentiality and patents and a changing focus on openness and collaboration within a community contradict the methods of traditional industrial corporations.

2. VALUE CREATION TAXONOMY

The representative cases described above are evidence for new patterns, which give a first hint of the ongoing paradigm shift concerning value creation towards value co-creation in value creation systems. What they have in common, is a certain level of organizational openness within structures and processes. In this context, openness can be regarded a critical precondition to the business model and the strategic approaches of those organizations.

To describe this paradigm shift towards more open approaches, the authors use a value creation taxonomy [14,26] that is constituted by structures, processes, and the subject of value creation (i.e. the value creation artifact) (see Figure 1).

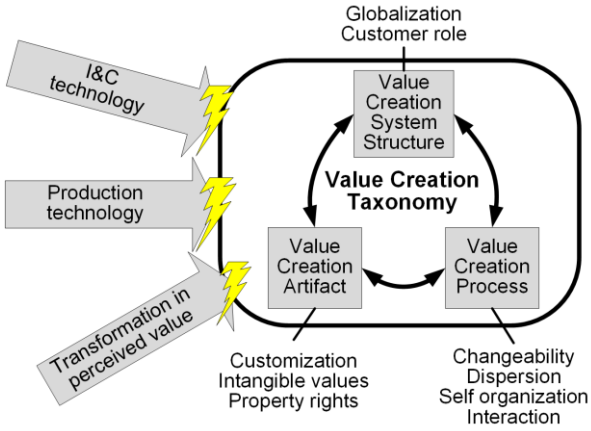

Figure 1: Value creation taxonomy and drivers of change

3. DRIVERS OF CHANGE

The drivers of change in value creation systems are technology innovations and the change in the perceived values of value creation artifacts (see Figure 1). The two key drivers concerning technology innovations are the recent developments and spread of information and communication technologies (e.g. number of people with internet access, number of devices with internet access) as well as development and spread of certain game changing production technologies (e.g. generative technologies). The aspect of transformation of the perceived value is based on the increase of informational and therefore intangible proportions in produced goods and services (e.g. increasing proportion of software in electronic devices or automobiles).

The transformation of value creation structures can firstly be attributed to globalization [15,71,76,]. The spread of I&C technologies and the accompanying fall in transaction costs means that the benefits of widely dislocated value creation activities are increasing, which is followed by permanently changing relations between the worldwide operating actors. However, as the pressure of competition increases, this is also accompanied by a potential expansion of sales opportunities. Secondly, an increase in the importance of the customer's role can be detected. Since knowledge work is gaining importance as part of value creation processes, customer's power over the producer is rising due to a better access to I&C technology and networks. Therefore, the value creation and production cannot longer be seen within the boundaries of a company. It is no longer possible to achieve a clear demarcation between the domains of customers and producers ('prosumer') and accordingly the role of traditional companies is changing.

The transformation of the value creation processes stems directly from the influence of the value creation structure. The demand for individualized products and globalization thus calls for changeable production systems and processes. In addition, the number of actors involved in the value creation process is increasing. Coordination of these actors takes place less through hierarchical organizations: With the decreasing importance of conditions of time and space, the value creation processes are increasingly based on interaction, collaboration and self-organization [57] of worldwide distributed actors to cope with increasing complexity.

Concerning the value creation artifact, three essential aspects of change can be identified. Firstly, customers are increasingly demanding individualized products and services. This involves an additional challenge for manufacturers. Secondly, the ratio of intangible components of the product is rising in proportion to tangible components, which among other factors can be attributed to the increasing importance of software and service components. The third aspect is closely linked to the second. Here, the issue concerns the property rights constellation of the value creation artifact. While the benefits of regulated exclusive property rights are accepted for physical goods, this acceptance requires a revaluation in the case of goods with an increasing intangible or informational character (e.g. Open Source Software (OSS) and Open Source Hardware).

4. BOTTOM-UP ECONOMICS

The transformation within the three core areas of value creation taxonomy is leading to new patterns of value creation, which can be summed up with the term "Bottom-up economics" [14,26]. Bottom-up economics differ essentially in its structure-related and process-related character from traditional industrial production, which in turn represents a manifestation of top-down economics (see Figure 2). While in industrial production mass production is the dominating concept, Bottom-up economics is connected with the concepts of participation, value co-creation and collaboration [45]. In order to describe the phenomena of change in post-industrial value creation, several new keywords and concepts entered and fed the scientific discourses. Still lacking an overall theoretical framework to explain

these patterns, Management Sciences tried to challenge the transformation by following some eclectic scholarly concepts until now. Bottom-up economics is characterized by a fusing of production and consumption [18], by distributed structures and processes and by collaboration as the most intensive form of interaction between actors. In all areas of value creation, signs of this paradigm change can be found: such as R&D (e.g. User Innovation [22], Collective Invention [1] and Open Innovation [4]), production (e.g. Crowdsourcing [5], production networks [23], mass customization [11], mass collaboration [16], collaborative engineering [9]) and marketing (e.g. social commerce [3], viral marketing [7]).

The basis for the development of these scholarly concepts generated parallel with a technological evolution starting with the development of the internet and the following rise of virtual communities and the World Wide Web. Technological innovations were always a precondition for the development of the virtual world. However, several times there has been a feedback to developments into real life and into the physical domain. For example, *Wikipedia* as the first open and free encyclopedia was the result of the work of an internet community. Within this project could be observed (once more besides OSS) that job performance has not always to be rewarded with money.

opening the innovation process in companies [10] and Prahalad showed how value co-creation with customers works [45]. Gilmore and Pine revealed that the experience in the value creation adds more value into a product than the tangible element itself [20]. Benkler developed the concept of commons based peer production [5] on the basis of Raymond [47]. The impact of the wisdom of crowds was reflected by Surowiecki [62] who fostered the vision of new concepts as mass collaboration [23,63]. A comprehensive framework for the description of the previously described concepts, however, is still lacking.

5. OPENNESS AS A CRITICAL SUCCESS FACTOR

The evolution of success factors

The ability to create and keep competitive advantages is crucial for a company to make profits and survive in the long term. Besides traditional factors like time, cost, quality, etc., in recent years secondary factors have evolved that enable companies to hold their position while market conditions or the industry environment are rapidly changing.

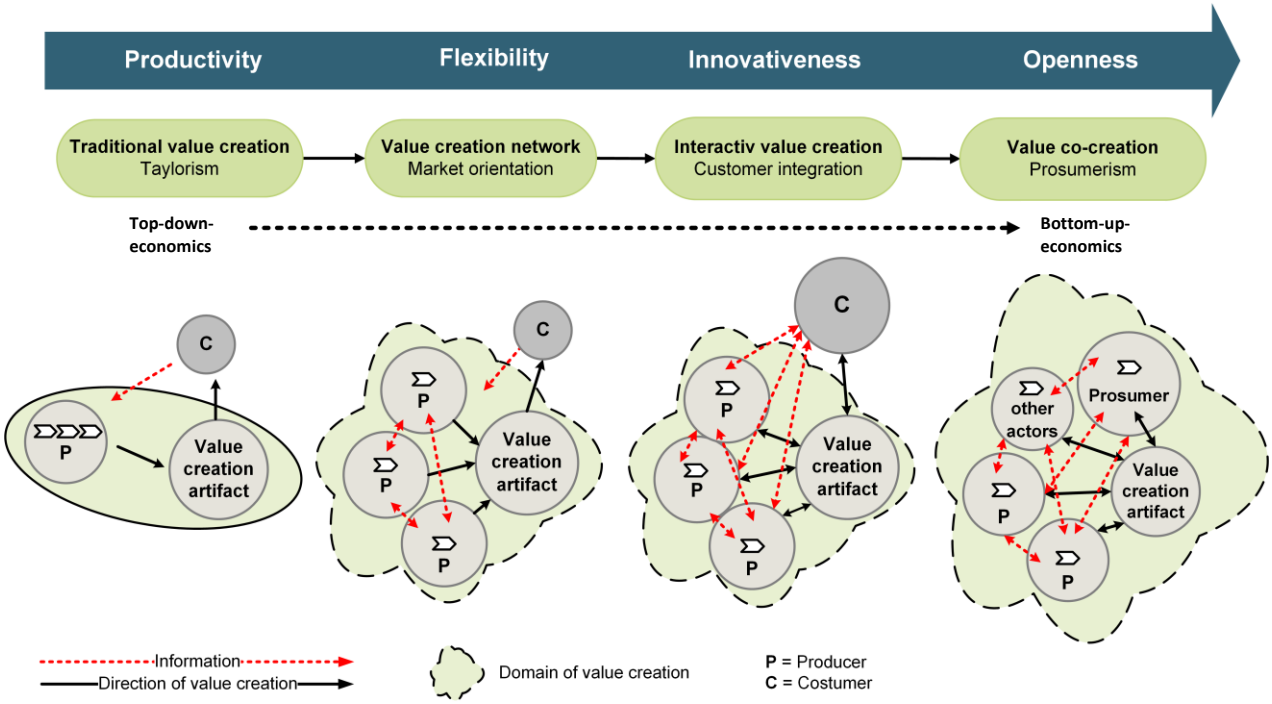

Figure 2: From traditional value creation to value co-creation [66,67]

Thus, *Wikipedia* can be reflected as an evidence for the obsolescence of the concept of a rational "homo oeconomicus", another key concept of traditional industrial production.

Additionally, the concept of open source software and community work was followed by the idea of Open Design [68], i.e. transforming the principles of dealing with open source software and creating value by communities in form of hardware. Collaborative or community developments of Open Source Hardware could be observed resulting in computers or other electronic and medical devices, mobile phones and even machine tools as Desktop 3D-printers and cars.

Further, the interconnectedness of people by ICT lead to a new balance within consumer and producer markets. Customers were considered key resources and co-creators of value in the Service-Dominant Logic [69]. Chesbrough tried to implement the idea of

Flexibility and adaptability, for example, have become as important as the primary success factors these days [48,79]. In addition to that, there are many examples of highly competitive companies whose success cannot be described with the traditional view on corporate competitiveness as they follow another paradigm of value creation. The borders of companies are more and more dissolving towards (open) production or value co-creation systems [48,28]. Beyond that, meanwhile the most companies act in a highly dynamic business environment with decreasing time-to-market and ever-shorter product lifecycles where the ability to constantly innovate is equally important [10]. Considering scarce budgets for internal R&D has put even more pressure on the companies. The search for new ideas and innovative technologies beyond the company's walls has led to the idea of open innovation where also external sources may be utilized [10].

From closeness to openness

In contrast to a closed system, an open system is distinguished by the fact that at least one of its elements interacts with elements of another system (see Figure 4). As organized social systems are always in interactive relationships with surrounding systems, they can be viewed as open systems as a matter of principle. For reasons of simplification, companies and production systems were considered as closed systems in the past. However, through changes in the environment, the requirement for openness is increasing and no longer remains negligible.

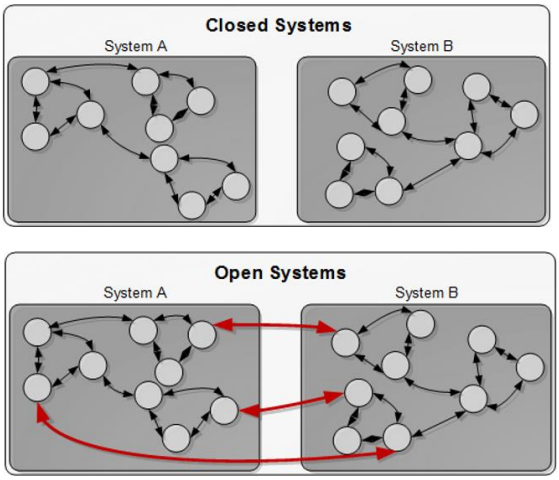

Figure 4: Closed vs. open systems

Therefore, openness is not a completely new feature, but an inherent system property that is becoming increasingly relevant. In this sense, openness describes the ability for interaction with other elements and at the same time, it is a prerequisite for the long-term viability of systems. The strategic approaches mentioned before represent two contrary perspectives on a value creation system: Closeness and openness as opposing extremes in a wide spectrum. Figure 5 shows a classification system that clusters success factors for each characteristic with regard to architecture of the value creation artifact, the value creation process as well as the value system structure [48,79].

		Indicator	Closeness ... Openness		
Architecture of the value creation artifact	Structure	Granularity	Coarse		Fine
		Modularity	Low		High
	Function	Property rights	Private goods		Public goods
		Type of service	Product or service	Product-service Systems	Co-creation experience
Value creation process	Value creation activitiy	„Width“ of Co-activity	Low (bilateral)		High (mass...)
		„Depth“ of Co-activity	Coordination (integration)	Cooperation (participation)	Collaboration (interaction)
	Value creation strategy	Competitive strategy	Comptetition	Coopetition	Cooperation
		Competitive advantage	Unique		Hybrid
		Business model	Closed source	Partial de-commercialization	Open Source
Value system structure	Intra-organi-zational	Communication culture	Low	Participatory	Reflexive
		Organizational structure	Hierarchic		Heterarchical; Adhocratic
		Configuration	Monolithic		Modular, fractal
		Changeability	Low		High
	Inter-organi-zational	Interorgan. coordination	Hierarchic	Hybrid	Market
		Networking	Bilateral cooperation		Virtual network
		Role dynamics	Static	Flexible	Dynamic

Figure 5: Morphology of value creation systems [48]

What are the consequences from the managerial perspective following the antecedently supposed arguments of companies being only one out of several elements of value creation systems and an upcoming shift from traditional industrial production to Bottom-up economics? The theory of openness [48,79] implies that openness might be an adequate strategy to cope with these developments. Hereby, openness means the ability (e.g. of companies) to interact with each other and with other elements of a value creation system to successfully create value. How openness might be adopted within structures, processes and strategies, shall be found out by a systematical analysis of cases of value co-creation that cannot be explained by traditional models.

Cooperation as a means of openness

Cooperation instead of competition represents one model of how to implement openness. Two contrary perspectives on market and competition shall explain the concept. On the one hand, there is a classical market with fixed boundaries and a near-constant size where different players act in a highly competitive environment. The companies are focused on the differentiation from their competitors and thus try to gain additional market shares up to the production-related (local) maximum (Figure 6, left part). A different approach is to consider the companies as players within value creation systems. Their aim in contrast is not to split the market, but to widen the overall market jointly (Figure 6, right part).

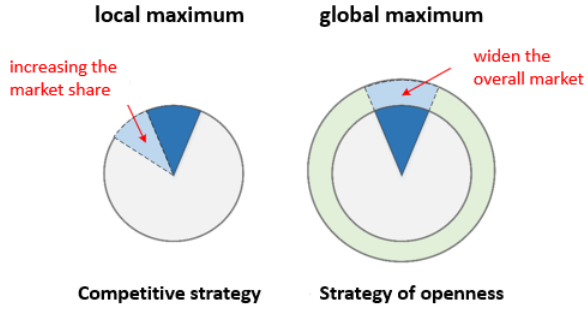

Figure 6: Two perspectives on corporate strategy

In this constellation, openness again is an essential requirement for success. Cooperation and value co-creation lead to a network of production systems that also fosters the occurrence of emergence effects. Considering changing characteristics of a market (e.g. maturity, size, industry, etc.) might cause its players to adapt their strategic approaches to one or the other direction. The authors claim that these days, more markets require a strategy of openness in order to remain innovative and thus competitive. In this case, the ability for cooperation and collaboration turns out to be a critical success factor.

6. TYPOLOGY OF BOTTOM-UP ECONOMIC CONCEPTS

In this chapter, the results of a systematic analysis of 36 cases of value co-creation are presented as a typology to obtain a comprehensive and clear understanding of concepts of Bottom-up economics. For the purpose of discovering differences and similarities of the concepts, emerging patterns are clustered (Figure 7). The horizontal dimension “Value creation tasks/functions“ presents the fundamental tasks and functions for the constitution of a viable value creation system, being noted as primary value creating activities of a firm in traditional concepts (e.g. Porter [44]).

Therefore, tasks and functions serve as classification key for clustering the observed cases in terms of traditional industrial production concepts. The vertical dimension “Concepts of Bottom-up economics” shows the clustering of the cases according to the

definitions in the following paragraphs. The concepts have in common that they define or at least enable a more open value creation from a systems perspective meaning that they tend to be more participative, collaborative and interactive. In the following, we define the seven distinct concepts: Open Innovation platforms and intermediates, Open high-tech production sites, Cloud based Design and manufacturing, Participatory commerce, Marketing crowdsourcing, Crowdfunding, Crowd- / Cloud-services.

Open Innovation platforms and intermediates

Open Innovation platforms are virtual places where companies and other organizations post R&D related problems to be solved by individuals or other firms that can earn non-monetary (e.g. *OpenIDEO* [41,51]) or monetary rewards (e.g. *InnoCentive* [6,7,25,59] and *Innoget* [4,53]) for merely participation or winning contributions.

Intermediate platforms on the one hand connect specialists and experts with companies having specific challenges/problems on an ad hoc basis for a specific project duration (e.g. *Yourencore* [80]), on the other hand they allow brokerage of innovative technology and intellectual property between scientists, companies, government labs and other organizations (e.g. *Yet2* [18,24,34,36]).

Open high-tech production sites

Open high-tech production sites such as Fablabs [35,37] provide public access to industrial tools and equipment and production knowledge. The main goal of the Fablab movement was to enable participation and empowerment of individuals in order to work with industrial production technologies and get access to production knowledge. Fablabs offer production process and technology related training and assistance. They might be run by non-profit organizations (e.g. universities) and therefore the use might be free of charge. Often, they are run by companies or individuals applying a business model to the Fablab idea. For example, *Techshop* (13,55,60) offers membership based workshops with professional industrial tools and equipment. Members are enabled to develop and fabricate their own parts and products. Machinery encompasses laser and water jet cutters, welding machines, CAD software, sewing machines, 3D printers and electronic labs.

Cloud-based Design and Manufacturing

Cloud-based Design and Manufacturing enables rapid product development through a networking and negotiation platform as well as a parallel and distributed system of manufacturing resources. Such a network is a huge shared service pool of design and manufacturing resources, where users may find tools and equipment for specific products available in the manufacturing cloud that can satisfy their requirements [78].

Cloud manufacturing platforms like *eMachineShop* [12] or *Ponoko* [13,16,77] allow manufacturing companies with not enough capacity or inadequate technology or just individuals to forward manufacturing orders to a machine shop. The platforms offer free and easy to use software where custom parts can be designed. After getting expert design feedback a quote for the desired product will be automatically derived. Other examples where customers receive online access to the special manufacturing technology of high-end 3D printers are *Shapeways* [8] and *i.materialize* [38]. Users design and upload 3D printable files and get "prints" of the objects. *100kgarages* [83] is a decentralized community of small manufacturers, designers and consumers. Makers have to own a machine tool to participate on the site and, furthermore, post a profile about their manufacturing capabilities. Designers and Consumers are given the opportunity to post their design ideas in form of CAD-designs or to just post a description of the object they want to have manufactured, negotiate costs and other issues directly online as well. Being a user of *Alibaba* [39], a platform for trading, communication and made to order production, allows connecting with more than 50 million small and medium sized businesses predominantly based in China for cloud manufacturing purposes.

Participatory commerce platforms

Participatory commerce platforms are meant to be participatory due to the fact that customers are able to design, develop and sell their own products supported by means of mass customization [50] via an online platform by the use of certain web tools (e.g. product configurators) and production technologies (e.g. 2D on clothing and 3D printing). For example, *Spreadshirt* [49] offers services for private individuals and commercial organizations to design, buy and sell creative personalized apparel in a personal shop. All transactions are handled via the platform. Individual shop operators upload designs for their products. Then, *Spreadshirt* covers all operations from warehousing to production, shipping and payment processing as well as customer service. *Zazzle* [81] is an online retailer that allows users to upload images and create their own merchandise, as there is printed clothing, posters, cups etc. Customers may also buy products created by other users, or they may offer and sell their own creations to other customers worldwide, by opening their own shop on the platform, where they can determine the profit they wish to make on each item.

Marketing Crowdsourcing

Viral marketing [29], user generated advertising campaigns [72] (e.g. *YouTube* and *Zooppa* [82]), social or collaborative filtering, peer recommendations and collective buying [3] are patterns of crowdsourcing activities fulfilling marketing tasks with the potential of being more efficient and effective than methods being conducted by a marketing department within the corporate domain. Online advertising markets (e.g. *99Designs* [75]), online retail and business-to-business e-commerce (e.g. *Alibaba* [39]), online distribution channels (e.g. *Ebay*, *Etsy*, *Amazon*) also substitute traditional retail channels [30].

Due to decreasing efficiency of traditional marketing methods and enabled by increasing networking effects, word of mouth concepts such as viral marketing raise in importance today [29]. Others show that the selective use of viral marketing offers a bigger lever for influencing the purchase decisions than traditional methods. Viral marketing campaigns can be conducted via social networking platforms such as *Twitter* or *Facebook* as well as video sharing platforms as *YouTube* or others. Since viral marketing in analogy to the epidemic processes is rather a passive form of marketing, user generated advertising [72], however, has the character of an activated or active mass collaboration. A user generated campaign (e.g. with *YouTube*) involves individuals to share ideas "of what the brand means to them" [72] using print media, audio or film. Results of this collaboration might be evaluated by the community. As overall result, the advertising companies achieve a deeper connection with their customers [54]. Another example is the online platform *Zooppa* [82] that allows user-generated advertising campaigns and contests in cooperation with global brands and agencies. It calls filmmakers and graphic designers, copywriters and other creative workers to submit original ideas. Bases are a client's brief and reward for winning proposals.

Other important patterns related to the umbrella term of social commerce can be found in social or collaborative (e.g. *Amazon*) filtering, in peer recommendations (e.g. *Amazon*, *Facebook*) or social navigation (e.g. Amazon) and in-group buying (e.g. *Letsbuyit* [9], *Groupon* [14]). Social navigation is the ability of users to mutually

influence their behavior through comments and reviews, while social filtering encompasses methods for similarity determination of individual interest profiles of different users. Group buying or collective buying is the internet enabled setting up of an ad hoc group of buyers of one single product in order to achieve reduced prices on the condition of critical (minimum) number of buyers.

Another form of advertising based on Crowdsourcing is the use of community co-creation (e.g. *99 Designs* [75]) where similar to Open Innovation platforms creative tasks of agencies and brand companies are sourced out to professional designers or semiprofessional individuals. Whitla has examined the particular applicability of crowdsourcing for marketing related tasks as product development, advertising and promotion as well as market research [75] (e.g. *Clickworker* [17], *Mechanical turk* [46]). He found identifiable benefits of the crowdsourcing approach in marketing and expects all firms to at least "consider their working processes and organization of labor to see whether some scope for crowdsourcing (…) exists" [75].

Crowdfunding

Most value creation activities require capital funding. In firms, we find the function of corporate finance which deals with the sources of funding and the capital structure of corporations.

Crowdfunding, in contrast, is defined as any collective effort to raise and pool money for a project that is proposed by some other people or organization, collecting investments of any range starting from micro amounts from a big number of people [42]. According to *Crowdsourcing LLC*, 452 crowdfunding platforms such as *Kickstarter* and *Indiegogo* [12] were active worldwide in 2012 [11]; the majority in North America and Europe. All together, these raised USD 1.5 bn and funded more than one million campaigns successfully in 2011.

The primary revenue model for those platforms is percentage-based commission on funds paid out to entrepreneurs. Crowdfunding models can be distinguished into two models in terms of participant's perspective [11]: Firstly, aiming on financial return (i.e. equity- or lending based), which raised the largest sum of money per campaign recently. This model is most effective for digital goods as movies, software and music. Secondly, donation- and reward based crowdfunding, which perform best for meaningful campaigns that appeal to funders' personal beliefs and passions (e.g. environment).

Cloud-/Crowd-services

Cloud- and Crowd-services represent a cross-sectional compilation of value creation tasks reflecting the scope of miscellaneous collaborative, participative and shared services which are not necessarily linked to the corporate domain in terms of primary value creating activities according to Porter.

As far as transportation is concerned, a new participative and collaborative mode is defined by means of shared transportation which is enabled, especially, by mobile internet devices that allow to interconnect passengers who need a ride and drivers who need to drive a route anyway. *Uber* [65] and *Lyfter* [32] are two platforms that build such a network of drivers with own or rented cars and potential passengers and offer peer to peer ride sharing [56]. Brokerage, negotiation and payments are done via mobile app or via website. Platforms are financed over fees of a percentage of the total fare. The much older concept of car sharing (e.g. *Zipcar* [61]), where a company owns the cars provided for sharing, is also promoted by the same development. Accommodation for travelers is another domain where one can find the pattern of sharing and peer to peer rentals. The platform *Airbnb* [19], for example, connects individual or corporate hosts with travelers and enables transactions without owning any rooms itself. Hence, the platform provides not a new source, but it provides access to an existing supply of the good of accommodation.

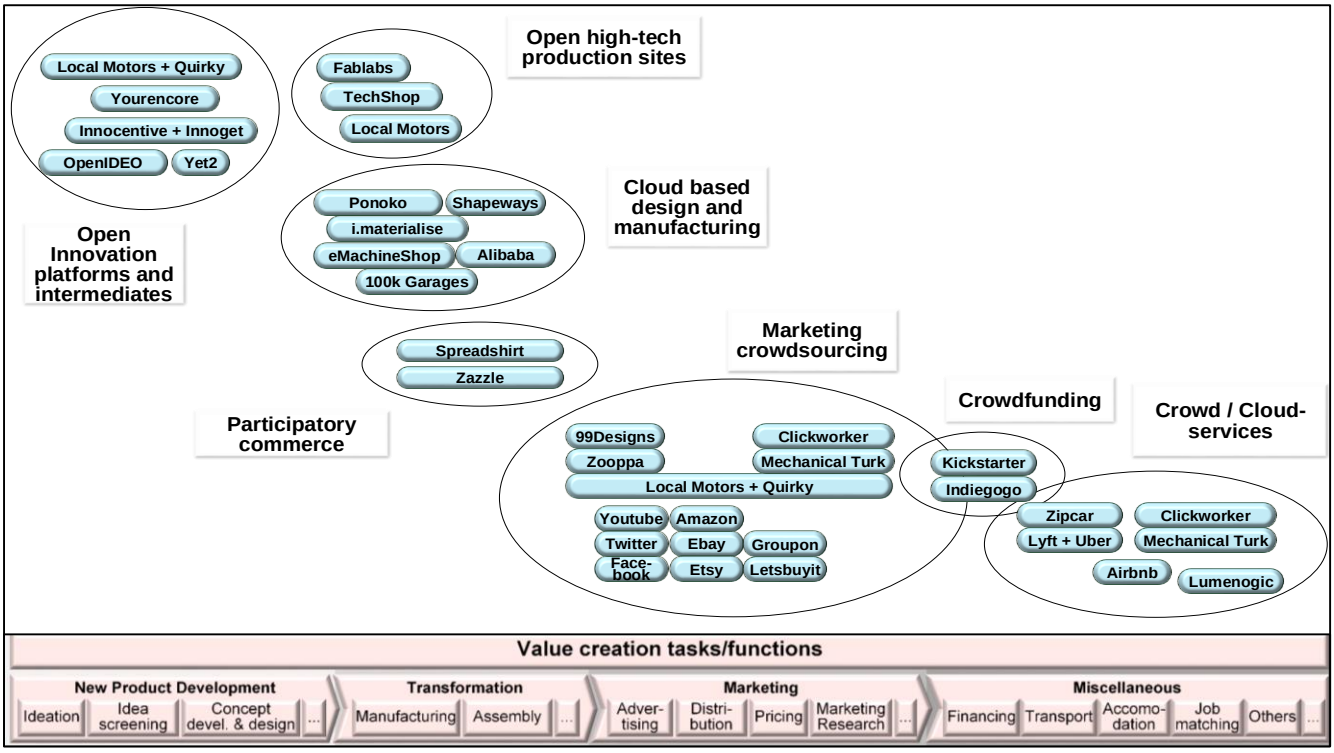

Figure 7: Typology of concepts of Bottom-up economics

Examples for Crowdsourcing of several kinds are job matching or freelancing platforms like *Mechanical turk* [46] and *Clickworker* [17]. These platforms allow job posting by companies or individuals (on a contract for work basis) mostly for tasks of text creation, design and marketing research tasks as well as information verification. The purpose of platforms like *Lumenogic* [58] is the utilization of aggregated collective intelligence to offer prediction services to general public and private companies.

7. CONCLUSION AND OUTLOOK

The presented cases have shown that new value creation patterns can be observed that are based on collaboration and value co-creation. Those patterns reach far beyond a company's wall as well as its sphere of influence. An ever-increasing influence and spread of information and communication technologies and, thus, growing opportunities for value co-creation indicate a growing importance and need for a better understanding of Bottom-up economics. Organizations are part of value creation systems. Therefore, those companies will be successful in the future that besides traditional competitive factors are capable of effectively and efficiently managing interaction, communication and cooperation among the many actors of the value creation system. To harness the advantages and opportunities of openness, companies should share as much knowledge as possible, foster participation throughout the value chain (internally and externally) as well as develop new business models and concepts. However, further research is necessary, to fully describe and understand those new phenomena and to develop adequate scholarly new models and managerial concepts based on the framework of Bottom-up economics.

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