

CBM: An Integrated Crowd-sourcing Business Model

Dr. *Alessia D'Andrea*

Institute for Research on Population and Social Policies, National Research Council

Via Palestro 32 , 00185, Rome, ITALY

Tel: +39-06-492724-206 Email: alessia.dandrea@irpps.cnr.it

Dr. *Fernando Ferri* (Correspondence author)

Institute for Research on Population and Social Policies, National Research Council

Via Palestro 32 , 00185, Rome, ITALY

Tel: +39-06-492724-216 Email: fernando.ferri@irpps.cnr.it

Dr. *Patrizia Grifoni*

Institute for Research on Population and Social Policies, National Research Council

Via Palestro 32 , 00185, Rome, ITALY

Tel: +39-06-492724-215 Email: patrizia.grifoni@irpps.cnr.it

Abstract: The paper provides a crowd-sourcing business model (CBM) that integrates the useful components of both crowd-sourcing and business models. The model includes the business strategy that a company decides to implement in accordance with the company's scope, market perspectives and competitors that are important to differentiate their own products. Another component of the crowd-sourcing business model is the workflow management that involves the resources management and the task management. The resource management involves the tools the financial resource and the human resource that are needed to achieve the business goal. The resource management influences the task management that is assigned and execute by internal staff and/or by the crowd. The final outcome of the value co-creation process is the definition of a new business strategy for products/services placement and/or new product development efforts.

Keywords: Crowd-sourcing model; Business model; Business strategies; Task management; Crowd; Resource management

JEL Classifications: L10, L21, L24

1. Introduction

Crowd-sourcing is deeply changing the perspective of business and consequently of business model, mainly for the relevance of crowd in business processes. That is, business is the process which creates, communicates, delivers the value to the consumers and maintains the relationship with consumers. It is an integrated process through which companies build strong consumers relationships and create value for their consumers and for themselves (Ferri et al., 2012). The business process involves the set of activities, institutions and processes for communicating, creating, delivering and exchanging products/services with value both for companies and consumers. Within the business process an important role is given to the business models as they define how a company will earn revenue. The term business model is defined as “the commercial relationship between a business enterprise and the products and/or services it provides in the market” (Hawkins, 2001). It is a way of structuring various cost and revenue streams such that a business becomes viable, usually in terms of capability to sustain itself on the basis of the income it generates. In the last twenty years Internet has been taking a progressively relevant role for the everyday life citizens, companies and society, changing roles and actors, also in the business sector. In fact, the wide use of Internet and, in particular, of Social Media and Social Networks is amplifying the opportunities of using the wide range of ideas directly arising from the crowd. In this context a promising strategy in developing efficient business models is represented by the crowd-sourcing (Walter and Back, 2010). The term crowd-sourcing is described in Howe (2008). as “the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers.”

According to Zhao and Qinghua (2012), crowd-sourcing is a collective intelligence approach composed by three elements: an organization which directly takes advantage of the crowd’s work; the crowd itself; and a platform which is able to connect the organization and the crowd, and to provide a host for the activity throughout its lifecycle. Crowd-sourcing models are of particular interest within the business strategies since they enable companies to receive a massive amount of information from existing and new consumers. Crowd-sourcing business models have a great potential to empower business, change how business works and improve the delivery of business products/services. Many are the studies that analysed the impacts of crowd-sourcing business models in capturing user-experience best practices and emerging social web customs (Crumlish and Malone, 2009), providing open innovation (Brabham, 2008), implementing rules, incentives and technical platform (Leimeister et al., 2009). According to Whitla (2009) there are three business areas where crowd-sourcing

models are currently used: (i) product development: companies use crowd-sourcing to get input on their products/services development efforts from consumers (ii) promotion and advertising : crowd-sourcers is used by companies to create and develop promotional and advertising campaigns (iii) marketing research: crowd-sourcing provides companies the opportunity to acquire information from a large group of consumers in a timely manner and at a relatively low cost. Other studies suggested that companies, involving crowdsourcing in their business model implementation, can harvest innovation, expertise, information, labour and skills from the crowd (Aitamurto et al., 2011; Vukovic and Bartolini, 2010), and thus crowdsourcing may bring many advantages to companies (Afuah and Tucci, 2012; Gassenheimer et al., 2013). From these studies, it is reasonable to expect that crowdsourcing should be considered as an important element of the business process. However, currently there is a lack in formalising both, the components of business models and crowd-sourcing models in one only crowd-sourcing business model (Khazankin et al., 2012; Lopez et al., 2010). According to Andriole (2010) only 10% of companies, have currently involve crowd in their business processes as they do not know how to use crowdsourcing in their organizational business processes; moreover there is not a clear definition of crowdsourcing components (Khazankin et al., 2012; Lopez et al., 2010). In fact, the literature gives either too technical or too abstract perspective of crowdsourcing model' components, leading to the consequence that the integration of the crowdsourcing within existing business models is not adequately addressed. Starting from these considerations, this paper aims to fulfil these gaps by providing a crowd-sourcing business model (CBM) that integrates the useful components of both crowd-sourcing and business models.

This paper is organised as follow. Section two provides a literature review on business models and crowd-sourcing models. Section three introduces the crowd-sourcing business model by describing the different components. Section four concludes the paper.

2. Background

The starting point of the implementation of the CBM was the analysis of components of both existing business and crowdsourcing models in order to understand how to integrate them. In the following sections the analysis of these models are described in detail.

2.1 Business models

Business models represent the core aspect of any company; it involves “the totality of how a company selects its customers defines and differentiates its offerings, defines the tasks it will perform itself and those it will outsource, configures its resource, goes to market, creates utility for customers, and captures profits”. Slywotzky (1996) and Timmers (1998) refer to business model as architecture for the product, service and information flows, a

description of the various business actors and of their roles, as well as a description of the potential benefits of these actors and finally a description of the sources of revenue. In Hamel (2002), business model is defined as “a short statement that will capture the unique strengths with the new way of doing business”. The author also makes an all-inclusive definition of a business model that includes 1) customer interface, 2) core strategy, 3) strategic resources, and 4) value network. Sweet (2001) underlines intricate connections between value creation and business models. The author argues that “the management of fundamental strategic value configuration logics such as relationships to suppliers, access to technologies, insight into the users’ needs etc., are far more relevant than inventing new revolutionary business models”, an opinion accentuated in Stabell and Fjeldstad (1998).

It is in these connections and interrelations that value creation can be found. Value creation can, e.g., be related to “solving a problem, improving performance, or reducing risk and cost” (Sandberg, 2002), which might require specific value configurations including relationships to suppliers, access to technologies, insight in the user’s needs etc.. Chaharbaghi, et al. (2003) identify three interrelated strands, which form a business model: “characteristics of the company's way of thinking, its operational system, and capacity for value generation”. Although their generality, the three above cited elements can be concretely identified. For instance, the features of the company's way of thinking essentially pertain to a strategic dimension, while capacity for value generation can be considered in the resource-based perspective. Kaplan & Norton (2004) have provided a useful framework for analysing businesses, such as profit models. The framework is based on a long tradition of classifying firms into “internally consistent sets of firms” referred to as strategic groups or configurations. These groups are then often used to explore the determinants of performance.

A theoretical vision is given in Teece (2010) where the author underlines the importance to designed business model referring to business environment, consumers and the technology development. While an integrated vision between technological input and economic output is given by Chesbrough and Rosenbloom (2002) provided a model composed by six components: market, value proposition, value chain, cost and profit, value network and competitive strategy. Magretta (2002) simplified the previous mentioned business models components providing a model that involves the interrelation between two components, the value proposition and the market segment. An integrated vision of different business components of different business models provided in the literature is given in Shafer et al. (2005). In particular this business model involves four primary categories: strategic choices, the value network, value creation and capturing value.

2.2 Crowdsourcing models

The term crowd-sourcing defines “the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call” (Howe, 2006). Since its first appearance researchers have provided several contributions in order to clarify its meaning according to different the application domains(e.g., crowd-testing, citizen science), organizational settings (e.g., business crowd-sourcing) and technical environments (e.g. mobile crowd-sourcing) (Estellés-Arolas and González-Ladrón-de-Guevara, 2012). The citizen science analyse the impacts of crowd-sourcing in the domain of scientific research, mainly “by tapping into a crowd of amateurs and non-professional scientists” (Hand, 2010), while the mobile crowd-sourcing, focuses on the capabilities of mobile devices to harness the power of the crowd for specific use cases (Govindaraj et al., 2011; Gupta et al., 2012). Hirth, et al. (2013) note that “compared to the original concept of crowd-sourcing in which the work is completed by a large anonymous crowd, in enterprise crowd-sourcing the crowd is formed by employees of the company or by sub-contractors”. In Seltzer and Mahmoudi (2012), crowd-sourcing is defined as “an emerging technique outside of its application by firms in product development cycles”. Peng (2013) investigated the effects of online crowd-sourcing on business context by underlining that crowd-sourcing increases company’s innovation capability and it accumulates social capital. The reasons of a company for using crowd-sourcing models for their business strategies are different: quality improvement, cost reduction, time saving (Vukovic et al., 2010). Crowd-sourcing is also used for reducing personnel and equipment costs (Erickson and Trauth, 2013).

Moreover crowd-sourcing offers a way for companies to get access to a globally distributed pool of consumers with diverse experiences, skills and knowledge (O'Neill et al., 2013). Jayakanthan and Sundararajan (2011) describe the use of crowd-sourcing approaches “to tackle problems within enterprises –large business organizations...and this may involve attracting the attention of individuals outside the organization and members of the general public”. The same idea is expressed in Gassenheimer et al. (2013) where the authors draw attention to the use of crowd-sourcing to solve organizational problems or to serve business purposes instead of focusing on satisfying scientific or social demands. While in Skopik et al. (2012) the role of crowd-sourcing in supporting active coordination and collaboration between crowd members is emphasised. As said in the introduction although these studies addressed the involvement of the crowd in organizational business processes however the establishment of crowdsourcing as an organizational business process has not been fully investigated in the literature The reason is that companies do not know how to use crowdsourcing in their organizational business processes moreover there is not a clear definition of crowdsourcing components. The studies that have been developed in this domain underline heterogeneous components of a crowd-sourcing model. For instance in Pedersen et

al. (2013) a descriptive model with the following components is provided: problem, process, technology, governance, people, and outcome. Other views and crowdsourcing components can also be found in the works by other authors, such as Geiger et al. (2001) that provided a model composed by four components: preselection of contributors; accessibility of peer contributions; aggregation of contributions and remuneration for contributions. Hetmank recently starting from an analysis of 220 research papers suggested a crowdsourcing models composed four components: user management, task management, contribution management and workflow management (Hetmank, 2013).

3. The Crowd-sourcing Business Model (CBM)

In this section the CBM is described in detail. The model integrates the most useful components of both crowdsourcing and business models. In Figure 1 the structure of the model is shown. The crowd-sourcing components of the model are highlighted in gray.

The starting component of the CBM is the business vision of the company. The analysis of the business vision is strictly linked to the company's scope that involve(s) a description of (i) main products features and benefits (ii) pricing used at all distribution levels (from distributors to final users) (iii) how products are made accessible to final users (iv) promotional programs and advertising strategies (v) support offered to final users.

The business vision implementation depends on the workflow management that indicates the tasks, procedural steps, people involved (internal staff and/or crowd), required input and output information, and resources needed for each step in the business strategy implementation. In particular the resource management involves the tools, the financial resource and the human resource. The tolls indicate all the means (i.e. technological) that are needed to achieve the business goal. The financial resources normally depend upon the particular company's business performance.

The analysis of internal factors allows the company defining the financial plan that establishes if the company's scope is viable or not. Basically, the financial plan consists of three-kind of activities that a company has to carry out to look at where it financially is and where it wants to be. These activities are the following:

- collection of financial data - such as details on company' income and expenses, debt level, commitments, etc.;
- identification of the company goals and objectives;
- identification of any financial problems.

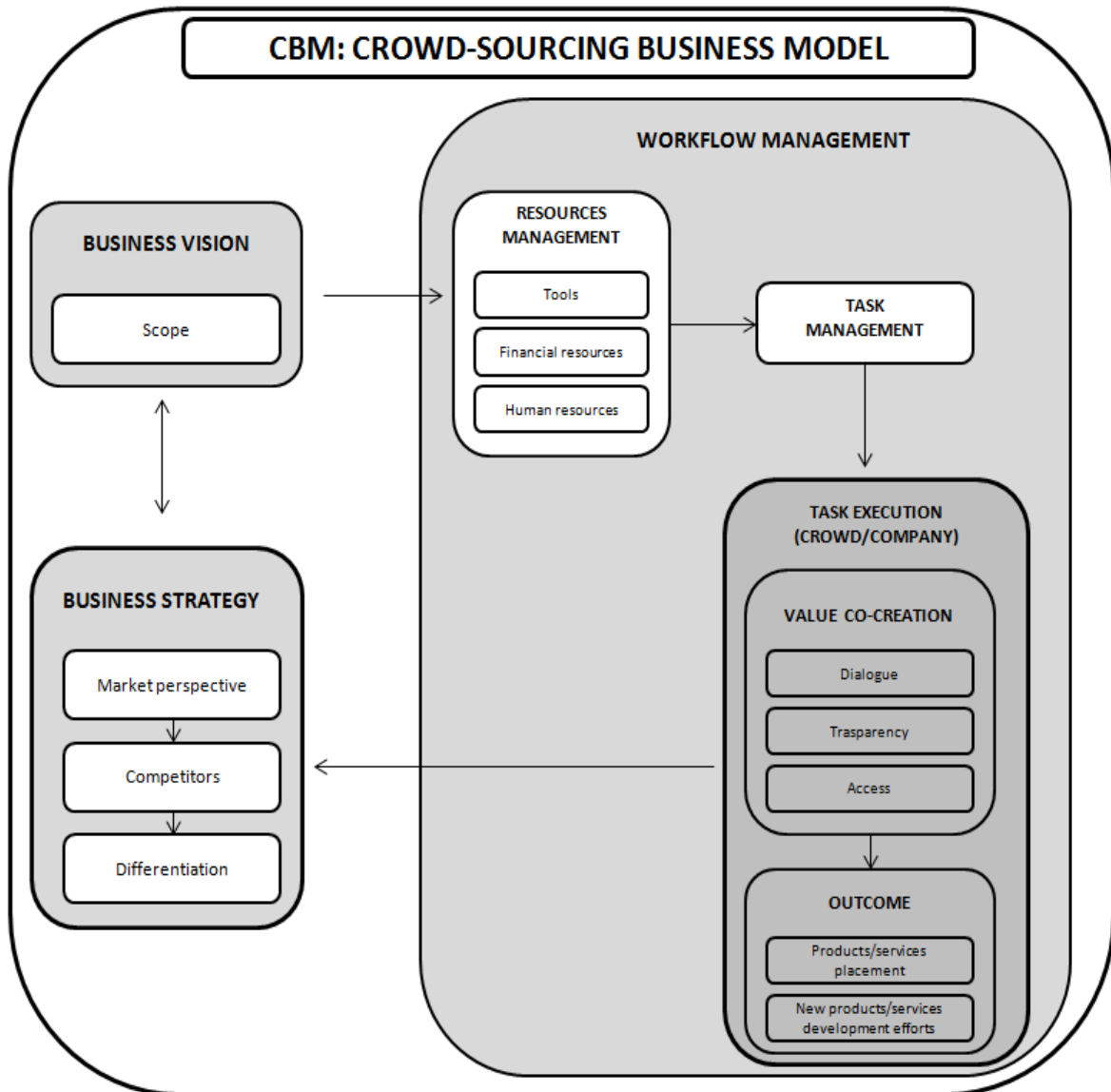


Figure 1. The structure of the CBM

Finally the human resources indicate the competencies, abilities, capabilities, proficiencies and skills both at technical and non-technical level that provide a framework to manage organizational culture, core leadership development, and drive organizational performance and competency management.

The resource management influences the task management that is the process of managing a task through its life cycle. Task management can help companies to achieve its goal. Thus, an important aspect is the formulation of the right question and the corresponding instructions and constraints. Effective task management requires managing all aspects of a

task, including its assignment and its execution. The task can be assigned and execute by company and/or by the crowd.

The execution of the tasks generates co-creating value through the dialog within the crowd and between the crowd and the company. The dialogue process implies interactivity, the ability and willingness to act and deep engagement on both sides. It is carried out around issues of interest and must have clearly defined rules of engagement. However dialog is difficult if the crowd do not has the same transparency and access to information. Companies have traditionally benefited from exploiting the information asymmetry between them and the crowd. Because of ubiquitous connectivity, it is possible for the crowd to get access to as much information as it needs from the company.

The different contributions, coming from the crowd, are evaluated by the company. Evaluation plays a central role in providing feedback to the task solver in order to increase quality as well as in selecting the best input from a large set of consumer's inputs by analysing the risk, the market power, the costs and the profit and interpreting the finding. After the evaluation process the final outcome of the value co-creation process is the definition of a new business strategy for products/services placement; new products/services development efforts and so on (D'Andrea et al., 2011). In particular the outcome coming from the co-creating value will impact on the analysis of market perspectives and competitors. The market perspectives deal with the crowd and demand uncertainties. Its analysis is vital because the success of any company depends on its ability to create and maintain relationships with the crowd by offering suitable value propositions that provide an answer to their needs. In fact the crowd determines the success of any business strategies; they make the decision on whether to purchase products or not; thus they are the target of marketing strategies (Grifoni et al., 2012; D'Andrea et al., 2012). From an economic perspective, the crowd's needs control the demands for products/services; these needs may include wishes and desires, unique wants as well as emotional attachments towards products. Also the analysis of competitors is very important for the company. In particular the company must analyse how they can cope with competitors on considering:

- how often competitors improve or replace their products/services;
- what is their market share;
- how they promote their products/services;
- how widely do they advertise their products/services;
- what is their reputation among consumers.

The analysis of the competitors is very important because allows the company extracting important element for the products differentiation that help the crowd to perceive the product as different (and then better) than products provided by competitors with respect to image, price and so on. In this assumption the business strategy can has impact on business vision that can be modified according to the outcome of the crowd.

4. Conclusion

The paper provides a crowd-sourcing business model (CBM) that integrates some from both crowd-sourcing and business models components. The model includes the business strategy and the workflow management. The business strategy of a company is strictly linked to the company's scope. To define a business strategy, companies have to consider the market perspectives that deals with consumers, demand uncertainties and the competitors; these are very important for the development of products differentiation that help consumers perceive the company's products as different (and then better) from products by competitors. The quality of the business strategy depends on the workflow management that involves: the resources management and the task management. The resource management involves the tools, the financial resources, and the human resources that are needed to achieve the business goal. The resource management influences the task management. The task can be assigned and execute by internal staff and/or by the crowd that generate, co-creating value thanks to dialogue, transparency and access to information. The final outcome of the value co-creation process is the definition of a new business strategy for (i) products/services placement and (ii) new product development efforts.

Future works will address the testing of the CBM on the creative enterprises community available at www.shapes.cnr.it (Grifoni et al., 2014; Ferri et al., 2014; Ferri et al., 2013).

References

- [1] Afuah, A. and Tucci, C. L. (2012). "Crowdsourcing as a solution to distant search", *Academy of Management Review*, 37(3): 355-375.
- [2] Aitamurto, T., Leiponen, A. and Tee, R. (2011). *The Promise of Idea Crowdsourcing – Benefits, Contexts, Limitations*. White Paper for Nokia Ideas Project. June 2011.
- [3] Andriole, S. J. (2010). "Business impact of Web 2.0 technologies", *Communications of the ACM*, 53(12): 67-79.
- [4] Brabham, D. C. (2008). "Crowdsourcing as a model for problem solving: an introduction and cases", *Journal of Research into New Media Technologies*, 14(1): 75-90.
- [5] Chaharbaghi, K., Fendt, C. and Willis, R. (2003). "Meaning, legitimacy and impact of business models in fast-moving environments". *Management Decision*, 41(4): 372-382.
- [6] Chesbrough, H. and Rosenbloom, R.S. (2002). "The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies", *Industrial & Corporate Change*, 11(3): 529-555.
- [7] Crumlish, C. and Malone, E. (2009). *Designing Social Interfaces: Principles, Patterns, And Practices For Improving The User Experience* (Animal Guide) Author.
- [8] D'Andrea, A., Ferri, F. and Grifoni, P. (2011). A Business Model Framework for Second Life. *E-Novation for Competitive Advantage in Collaborative Globalization: Technologies for Emerging E-Business Strategies: Technologies for Emerging E-Business Strategies*.

- [9] D'Andrea, A., Ferri, F., & Grifoni, P. (2012). SNeM²S: a Social Network Model for Marketing Strategies, *International Journal of e-Business Development*, 2(3): 103-110.
- [10] Erickson, L. B., and Trauth, E. M. (2013). "Getting work done: evaluating the potential of crowd-sourcing as a model for business process outsourcing service delivery", In: *Proceedings of the 2013 Annual Conference on Computers and People Research*, ACM: 135-140.
- [11] Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012). "Towards an integrated crowdsourcing definition", *Journal of Information Science*, 38(2): 189-200.
- [12] Ferri, F., D'Andrea, A., & Grifoni, P. (2012). IBF: An Integrated Business Framework for Virtual Communities. *Journal of Electronic Commerce in Organizations (JECO)*, 10(1): 1-13.
- [13] Ferri, F., Grifoni, P., Caschera, M. C., D'Andrea, A., D'Ulizia, A., & Guzzo, T. (2014). "An Ecosystemic Environment for Knowledge and Services Sharing on Creative Enterprises", In: *Proceedings of the 6th International Conference on Management of Emergent Digital EcoSystems*. ACM: 27-33.
- [14] Ferri, F., Grifoni, P., Caschera, M. C., D'Ulizia, A., & Praticò, C. (2013). "KRC: KnowInG crowdsourcing platform supporting creativity and innovation", *Advances in Information Sciences & Service Sciences*, 5(16): 1-15.
- [15] Gassenheimer, J. B., Siguaw, J. A. and Hunter, G. L. (2013). "Exploring motivations and the capacity for business crowdsourcing", *AMS Review*, 3(4): 205-216.
- [16] Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C. and Schader, M. (2011). Managing the Crowd: Towards a Taxonomy of Crowdsourcing Processes, In *AMCIS 2011 Proceedings*. [Online] Available at http://aisel.aisnet.org/amcis2011_submissions/
- [17] Govindaraj, D., KVM, N., Nandi, A., Narlikar, G. and Poosala, V. (2011). "Money Bee: Towards enabling a ubiquitous, efficient, and easy-to-use mobile crowdsourcing service in the emerging market", *Bell Labs Technical Journal*, 15(4): 79-92.
- [18] Grifoni, P., D'Andrea, A., & Ferri, F. (2012). "An integrated framework for on-line viral marketing campaign planning", *International Business Research*, 6(1): 22-30.
- [19] Grifoni, P., Ferri, F., D'Andrea, A., Guzzo, T., & Praticò, C. (2014). "SoN-KInG: a digital eco-system for innovation in professional and business domains", *Journal of Systems and Information Technology*, 16(1): 77-92.
- [20] Gupta, A., Thies, W., Cutrell, E. and Balakrishnan, R. (2012). "mClerk: enabling mobile crowdsourcing in developing regions", In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM: 1843-1852.
- [21] Hamel, G. (2002). *Leading the revolution: How to thrive in turbulent times by making innovation a way of life*. Boston: Harvard Business Review Press, 352p..
- [22] Hand, E. (2010). "People, power, change: Movements of social transformation". *Nature*, 46: 685-687.
- [23] Hawkins, R. (2001). *The business model as a research problem in electronic commerce*. STAR (Socio-economic Trends Assessment for the digital Revolution) IST Project, Issue Report, 4, July 2001. Brighton, UK: SPRU – Science and Technology Policy Research.
- [24] Hetmank, L. (2013). Components and Functions of Crowdsourcing Systems-A Systematic Literature Review, In *Wirtschaftsinformatik Proceedings*, Paper No.4.

- [25] Hirth, M., Hoffeld, T. and Tran-Gia, P. (2013). "Analyzing costs and accuracy of validation mechanisms for crowdsourcing platforms". *Mathematical and Computer Modelling*, 57(11): 2918-2932.
- [26] Howe, J. (2006). "Crowdsourcing: A definition", *Crowdsourcing: Tracking the rise of the amateur* [Online] Available at http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html
- [27] Howe, J. (2008). "Crowdsourcing: Why the power of the crowd is driving the future of Business", *Journal of Consumer Marketing*, (26)4: 305-306.
- [28] Jayakanthan, R. and Sundararajan, D. (2011). "Enterprise crowd-sourcing solutions for software development and ideation", In: *Proceedings of the 2nd international workshop on Ubiquitous Crowdsourcing*, New York, NY, USA. ACM: 25-28.
- [29] Kaplan, R. S. and Norton, D. P. (2004). *Strategy maps: Converting intangible assets in to tangible outcomes*. Boston, MA: Harvard Business School Press.
- [30] Khazankin, R., Satzger, B. and Dustdar, S. (2012). "Optimized execution of business processes on crowdsourcing platforms", In: *8th International Conference on Collaborative Computing: Networking, Applications and Worksharing (Collaborate Com'12)*, IEEE.
- [31] Leimeister, J. M., Huber, M., Bretschneider, U. and Krcmar, H. (2009). "Leveraging crowdsourcing: activation-supporting components for IT-based ideas competition", *Journal of Management Information Systems*, 26(1): 197-224.
- [32] Lopez, M., Vukovic, M. and Laredo, J. (2010). "People Cloud Service for Enterprise Crowdsourcing", In: *Services Computing (SCC), 2010 IEEE International Conference on*, Miami, FL
- [33] Magretta, J. (2002). "Why Business Models Matter", *Harvard Business Review*, 80(5): 86-92.
- [34] O'Neill, J., Roy, S., Grasso, A. and Martin, D. (2013). "Form digitization in BPO: from outsourcing to crowdsourcing?", In: *Proceedings of the SIGCHI conference on Human factors in computing systems*, ACM: 197-206.
- [35] Pedersen, J., Kocsis, D., Tripathi, A., Tarrell, A., Weerakoon, A., Tahmasbi, N. and De Vreede, G. J. (2013). "Conceptual foundations of crowdsourcing: A review of IS research", In: *System Sciences (HICSS), 2013 46th Hawaii International Conference on* IEEE: 579-588.
- [36] Peng, L. (2013). "Social Capital in Online Crowdsourcing Participation: An Empirical Study", *Advances in Information Sciences and Service Sciences*, 5(4): 222-229.
- [37] Sandberg, K. D. (2002). "Is it time to trade in your business model?". *Harvard Management Update*, 7(1): 1-4.
- [38] Seltzer, E., and Mahmoudi, D. (2012). "Citizen participation, open innovation, and crowdsourcing: Challenges and opportunities for planning", *Journal of Planning Literature*, Published online, DOI: 10.1177/0885412212469112.
- [39] Shafer, S. M., Smith, H. J. and Linder, J. C. (2005). "The power of business models", *Business Horizons*, 48(3): 199-207.

- [40] Skopik, F., Schall, D. and Dustdar, S. (2012). "Discovering and managing social compositions in collaborative enterprise crowd-sourcing systems". *International Journal of Cooperative Information Systems*, 21(4): 297-341.
- [41] Slywotzky, A. J. (1996). *Value migration: How to think several moves ahead of the competition*. Boston, MA: Harvard Business School Press.
- [42] Stabell, C.B. and Fjeldstad, D. (1998). "Configuring value for competitive advantage: On chains, shops and networks". *Strategic Management Journal*, 19(5): 413-437.
- [43] Sweet, P. (2001). "Strategic value configuration logics and the "new" economy: A service economy revolution?", *International Journal of Service Industry Management*, 12(1): 70-83.
- [44] Teece, D.J. (2010). "Business Models, Business Strategy and Innovation", *Long Range Planning*, 43(2): 172-194.
- [45] Timmers, P. (1998). "Business model for electronic markets", *Electronic Markets*, 8(2): 3-8.
- [46] Vukovic, M. and Bartolini, C. (2010). "Towards a research agenda for enterprise crowdsourcing", *Leveraging applications of formal methods, verification, and validation*. Springer Berlin Heidelberg: 425-434.
- [47] Vukovic, M., Laredo, J. and Rajagopal, S. (2010). "Challenges and experiences in deploying enterprise crowdsourcing service", In: *Web Engineering*. Springer Berlin Heidelberg: 460-467.
- [48] Walter, T. P. and Back, A. (2010). "Crowdsourcing as a Business Model: An exploration of emergent textbooks harnessing the wisdom of crowds", In: BLED 2010 Proceedings. [Online] Available at <http://aisel.aisnet.org/bled2010/3/>
- [49] Whitla, P. (2009). "Crowdsourcing and its application in marketing activities", *Contemporary Management Research*, 5(1): 15-28.
- [50] Zhao, Y. and Qinghua, Z. (2012). "Evaluation on Crowdsourcing Research: Current Status and Future Direction", In: *Information Systems Frontiers*, Springer US, Online First, [Online] Available at: <http://link.springer.com/article/10.1007%2Fs10796-012-9350-4>.