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## **Value enhancement of strategic supply networks for value bundles through digital social networks**

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### **Abstract**

Value bundles as customer-focused combination of physical products, services and intangible assets are getting more and more strategic offerings for companies. Using value bundles as differentiation strategy leads to a significant integration of customer processes in existing business processes on the company side and to complex processes on the supplier side. The task for the offering company to find the best suppliers suitable for the offering is challenging. Regarding especially the intangible assets of value bundles there is a need for relevant information from the potential suppliers. Digital social networks like online communities, blogs or wikis might be a place to find some of these information. With this background the question arises in which way digital social networks may influence procurement processes when dealing with value bundles. To answer this question different forms of digital social network are investigated and evaluated. The evaluation leads to recommendations how to use digital social networks for the enhancement of procurement processes for value bundles in a supply network.

### **Motivation**

Value bundles are a key factor for innovation in the offer of companies. They represent a strategically important way to differentiate themselves from the competitor [1]. Value bundles are a combination of physical products and intangible services with the aim to solve a specific customer problem [2]. This innovative approach, however, requires a paradigm shift both in the relationship with customers as well as in the relationship with suppliers that are needed for service generation. By the central aspect of the customer's problem as a trigger and the high degree of integration of the customer in the service production and delivery to form network structures that enable information, communication and power flow. Central here are supply networks. Supply networks consist of multiple independent suppliers, of which one of these suppliers is called a focal supplier. The focal supplier is the supplier who prepares the offer to the customer.

Recent developments show that especially in network structures with a focus on information and communication exchange between the stakeholders, social networks are very intense discussed. In the

private environment, these networks are considered as already established. The question is whether social networking will lead to positive effects in the business environment. The central research question for this paper is: how do social networks influence the development of supplier relationships in the business environment? Is there a positive influence in order to strengthen the innovative power of enterprise in a sustainable way? Therefore existing implementation forms of digital social networks are investigated on their properties and placed in the context of operational supplier development.

The paper is structured as follows: in Chapter 2, the current state of research on the subject digital social networks, strategic sourcing and value bundles is presented on the basis of a literature study. In Chapter 3, a benefit assessment of various implementation forms of digital social networks will be discussed in the context of supplier relationship development. For this purpose of comparison framework is derived on the basis of certain characteristics from supplier-related tasks. These characteristics allow for a structured comparison of the objects [3]. Chapter 4 gives a summary and outlines future research needs.

### **State of the art**

#### **Social networks and web 2.0**

Social networks have a long tradition in the sociopolitical sense. The human need to form a community and interact in this community, forms the basis of what is observed today in terms of Web 2.0 technologies as digital social networks. The number of users of social networks in Germany stood according to a comScore study on approximately 23.5 million subscribers in January 2009, representing an increase over the January 2008 to 36% [4]. The use of social networks in the private environment can be classified as well established due to the number of users. In a business environment the usage of social networks are not well establish yet. Social networks may serve as a communication platform between the customer and the offering organizations in a business environment. This can be used as an information platform [5], increasing the transparency for the customers who use these networks to market monitoring and to enable the customer to actively participate in improvements and trends [6]. Thus, digital social networks make a

significant contribution to the innovation of future offerings.

There is a need to take a closer look at the term “digital social network”. In the current literature the meaning of “digital social networks” is not used consistently. Despite the different meanings and denotation there is one aspect common in every discussion of digital social networks: these networks can be seen as a special form of community where the interaction between the participants of the community are supported by a technical platform and the internet as communication media. Aim of the community is a common goal or interest. In this paper we follow the definition according to [7] where a digital social network is a form of web-based services for individuals to realize public or semi-public profiles together with a list of connections to other users and the possibility to parse these connections within the system. Digital social networks exist in various forms such as XING (business network), Facebook (private network), blogs (online journals) and wikis (like Wikipedia), social bookmarking (Internet bookmarks like Mr. Wong) or video portals such as YouTube. Studies show that in the business environment especially business networks, wikis and blogs have a high potential to enhance the communication between business partners [6].

### Value bundles

In general, value bundles are a combination of physical products, services and intangible assets like guarantees or accrued rights. Depending on the degree of occurrence value bundles can be subdivided in four elements: standard physical products and service as well as customer specific products and services. The cut off between these four elements is not dichotomous but the transitions between the elements are linear in the way that there are multiple options in combining different elements to value bundles.

One central point of the concept of value bundles is that the starting point for the service provision is not the single service but the customers need to solve a problem [2,8]. Therefore the focus of all modeling concerning value bundles is the customer point of view. In summary a value bundle is a specific combination of physical products, services and intangible assets aligned on customer needs (Fig. 1).

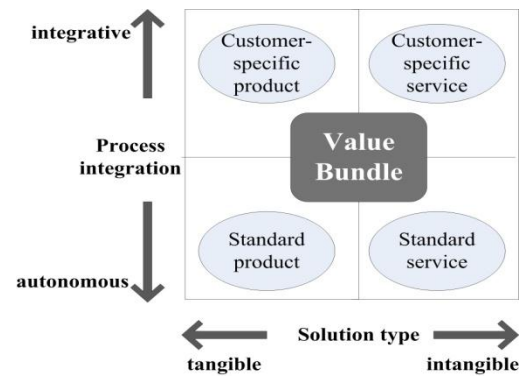


Fig. 1: Definition of value bundles

Integration is a key component of value bundles. This integration means not only the bundling of products and services under a combined solution, but also the process of integration to customer and supplier side [9]. The degree of integration in value bundles is variable [10]. For example, there are business models such as performance contracting, where the supply of the value bundle consists of a variety of service agreement to provide a particular service [11].

Value bundles may change their composition during their product life cycle. Product life cycle can be separated in three stages: product construction, product utilization and follow up use [12]. In the first section product construction focus is on identifying, evaluate and establish relationships between the relevant suppliers for the value bundle. In the section of product utilization the attention is drawn on the interaction between the suppliers and the customer, to keep up service agreements and further intangible assets. There is also a need to identify risks in order to fulfill the requirements the customer has on the value bundle. In the follow up use the main concern is on getting the value bundle out of use in an appropriate way or the manage substitution with new value bundles (Tab. I).

Product Life Cycle section	Focus area
Product construction	Supplier identification Supplier evaluation Supplier selection
Product utilization	Supplier interaction Customer interaction Risk Management
Follow up use	Decomposition Substitution

Table 1. Product life cycle section and corresponding focus area

### Strategic supply networks for value bundles

The strategic importance of the procurement function is widely recognized [13–15]. This is reflected especially in the consideration of the value volume, which shows in some cases up to 80% of the gross production [16]. Due to this high percentage, the procurement function serves to realize competitive advantage [17–19]. These

competitive advantages can be seen not only in the markets. The increased focus on core competencies and the concomitant specialization of suppliers leads to a market shift: consumer markets are getting more and more seller markets [20]. Therefore all efforts lead to the improvement of the competitive situation of the procuring company and the respective suppliers [21].

The responsibilities of the procurement function are the three areas of market, suppliers and the company itself classified [22–24]. In the course of this paper focus is on the consideration of the supplier-related tasks, which include essentially methods for identification, selection and qualification of potential suppliers. There exist several forms to establish the realization of value bundles. Possible forms for the realization of value bundles are a hierarchical form, a market form and a form of cooperation [25]. The establishment of a close cooperation between different suppliers is done in terms of network interconnection [26]. This possibility leads to the establishment of supply networks for value bundles. Supply networks consist of several independent suppliers, whereas one of these suppliers holds a special position as the focal supplier. This focal supplier is in the commercial contact with the customer (Figure 2) and organizes all aspects of the value bundle in the supply network. All other suppliers are directly or indirectly, i.e. via another supplier, connected with the focal supplier. The main focus of this organization is the coupling of business processes of the participating companies and is therefore a valuable way to organize value bundles [27].

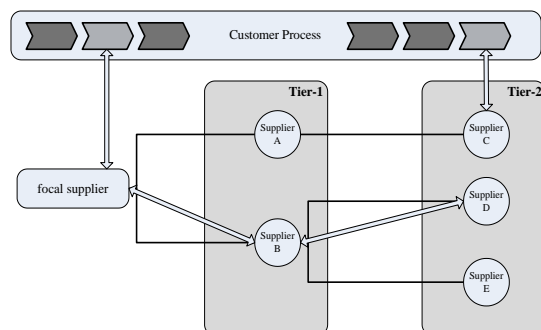


Figure 2: Delivery system for value bundles

Reiss and Präuer [28] show in an empirical study, that the cooperative organizational forms, such as strategic value-added partnerships, networks and cross-company project-orientated cooperation are the most suitable organization forms to offer value bundles. Because of the high dynamic customer orientated variations of value bundles they cannot produce as bulk goods so the network must be created by the offering company at the beginning of the manufacturing process. But this means also that a value-added network maybe cannot be used for another value bundle. The cooperating companies have to join forces in dynamic networks that can be configured according to requirements of a specific value bundle at its added-value processes (fig. 3).

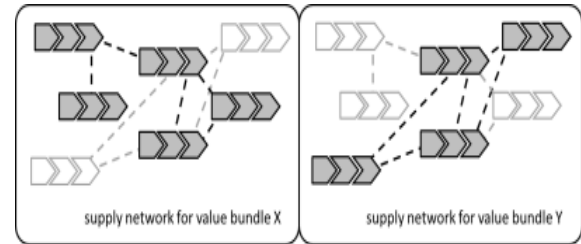


Figure 3. supply networks for value bundles

For the purposes of strategic supply networks value bundles are such bundles, which are composed of components that come from several different suppliers.

## Web 2.0 and procurement – a structured comparison

In the following section we establish a framework for a structured comparison of different realization forms of digital social networks in the context of value bundles.

### Framework identification

As we mentioned before we focus on the supplier-related tasks of the procurement function. Therefore we consider the subfunctions supplier identification, supplier selection and supplier qualification (fig. 4). To identify relevant aspects for the framework a literature review is made in the area of logistics, procurement and social networks and the corresponding synonyms. All domain-specific journals and conference proceedings were taken into account. Central question for the literature review was the identification of issues in the subfunctions of the supplier-related tasks of the procurement which are predestinated to be supported by certain information systems. We considered mainly these tasks which are in the scientific discussion from the procurement point of view and from the Web 2.0 point of view.

From the results of this literature review the following framework is extracted.



Figure 4: supplier related tasks of the procurement function

Supplier identification is used to identify vendors on a market who offer the required procurement object, i.e. a material, a service or an intangible asset for the value bundle. For this a certain market has to be defined and it must be possible to search for potential suppliers for the required object [29]. For an efficient identification of suppliers it is preferable that they can provide specific information e.g. self-information which may be accessed by the specific search possibilities [30]. A

third aspect in supplier identification is the use of standards in the search process. Standards may be used to clarify the search to comparable results. Main focus would be on the support of product and classification standards e.g. ecl@ass [31] of BMECat [32].

Supplier selection covers different activities: first the potential suppliers have to be analysed and rated. Sometimes it is necessary to add additional information to the first results of the search because the potential suppliers do not provide enough self-information to make a rating. The additional information may be collected long-term aspects of by audits and have to be integrated in the rating process [33]. Second, for rating purposes it would be beneficial to use existing ratings for the supplier to integrate them into a new ranking or to compare the existing ranking with the new ranking [34].

Supplier qualification follows as third step and leads to the long-term aspects of the supplier-buyer relationship. After the selection of relevant suppliers there is a need to maintain and develop the supplier-buyer relationship for prospective issues. In literature these activities can be found under the term supplier relationship management [35]. To realize this it must be possible to keep up the information link between supplier and buyer to exchange business information. Secondly, information update e.g. change of company information or change in the offerings should be able to communicate between buyers and suppliers in an efficient way. Third, to establish long-term relationships it is necessary to exchange more specific information which may not be seen by other partners in the supply chain. Therefore it should be possible to establish some kind of closed environment to exchange sensitive information [6].

To summarize the result eight characteristics in three areas have been identified (fig. 5).

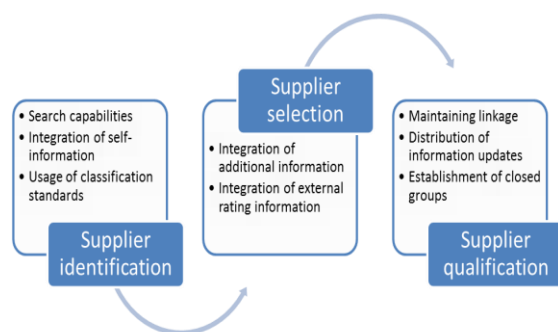


Figure 5: Characteristics of supplier-related procurement tasks

### Framework application

We used the derived framework to evaluate the influence of certain Web 2.0 implementation forms on the procurement process for value bundles. It is

assumed that the procurement takes place in a collaborative network environment. The focal supplier may reach every member on the supply market via a network connection. The summary of these network connection stays for the supply network. Every member of the supply network is connected by an appropriate connection to the supply network. It is furthermore assumed that the focal supplier offers a complex value bundles which may be divided in several modules. Every module might be a physical good, a service component or again a value bundle which might be divided in modules again. The suppliers in the supply network are able to deliver physical goods, services and value bundle to the focal supplier. These delivered modules are combined to the offering from the focal supplier. The following comparison identifies the influence of different digital social network implementation in the described scenario.

Table 2 shows a benefit assessment of three different digital social networks on the strategic development of supply networks. According to [6] we examined business networks, wikis and blog, as these three implementation forms can already be regarded as accepted in a BTB environment.

We used a metric classification in the form: ++ (very likely), + (limited use), 0 (neutral), - (less likely), -- (inapplicable).

Area	Characteristics	Business Networks	Wikis	Blogs
Supplier identification	Search capabilities	+	+	0
	Integration of self-information	++	+	+
	Usage of classification standards	0	-	-
Supplier selection	Integration of additional information	+	+	+
	Integration of external rating information	+	-	+
Supplier qualification	Maintaining linkage	++	--	--
	Distribution of information updates	++	+	+
	Establishment of closed groups	++	--	0

Table 2. Benefit assessment of digital social networks for strategic supply networks for value bundles

In the compilation can be seen that, in particular Business Networks offer a high potential in all three areas of procurement process, with emphasis on the identification of suppliers. This can be illustrated by the following example. We regard business cards as an example for a value bundle. Business cards may be



composed in the modules services (design, consulting, shipment), physical goods (paper, color, print) and intangible assets (rights for certain pictures or a special typeface). As this study was done in Germany we have to use the german word “Visitenkarten” instead business card for the example. All the following numbers were created in July 2010. Search for “Visitenkarten” in google search engine delivers approximately 1.8 mio. results, unable to separate the relevant results. Search for “Visitenkarten” in one of the leading business catalogue for suppliers “wer-liefert-was” delivers 2.657 results, also with no option to get more information about the potential supplier. We made the same search in XING ([www.xing.com](http://www.xing.com)), a common business network, and derived approximately 300 results. But beyond that we get to every result additional information about references (who trusts this supplier) and we can see how the linkage is to the potential supplier. Therefore we can decide whether we will take this supplier into account for selection or not. We can see a similar result by trying the same search on Facebook ([www.facebook.com](http://www.facebook.com)), which is mainly a social network for personal belongings [36]. But the search for “Visitenkarten” leads to six pages and 76 groups where it would be possible to identify potential suppliers with additional information provided by Facebook. In summary we can see that business networks may enhance the identification of potential suppliers significant. Other studies also show that the proportion of partnerships that have a personal contact as a background is a substantial proportion of all business collaborations [37]. The positive effect of social networks in the identification of potential suppliers continues in subsequent phases of the selection and qualification. It is observed that these business relationships are equipped with increased confidence [38], which influence the negotiations for the conclusion of the cooperation and development in the course of a business substantially positive.

Wikis seems to have only a limited contribution to the enhancement of supply networks for value bundles. Wikis are easy to use for the creation of information and also there are some search capabilities to identify information [39]. The general concept of a wiki is an open platform with a self organization of the content. This might be used to display information to identify and select potential suppliers. But restrictions like uncertain quality of information and the risk of following different goals [39] leads to the rating that at the current stage wiki are no significant factor for supplier identification and supplier selection. But it seems that wiki may have a relevant input in the qualification of suppliers in the following sense. Despite the problems wiki have in the open context they might be useful in a closed context. Wikis are used mainly by existing partners to establish a knowledge exchange. In this context the partners have a common goal e.g. exchange of relevant product and service information. For such a purpose wikis are

easily to use because of their architecture [40]. This may lead to shortened learning curves, and wikis may be used to document information about ongoing and completed operations and to make them accessible. Especially the accumulation of this knowledge capital among stakeholders leads to a commitment of the recipient correlated to the likelihood of how the information can contribute to business success [41]. Thus, this liability can be used to optimize business relationships. In the identification as well as in the selection of suppliers is through the use of wikis to expect any significant improvement in network modeling, because there is still no business and therefore not a common use of such technology usually takes place.

Blogs offer similar to Business Networks the opportunity to take place in all areas of supplier development for a positive impact on the process, with emphasis is on the qualifications of existing relationships. Blogs are usually written by individuals or groups on specific topics and offer a great way to communicate specific information on some areas. These can be used to improve communication with existing relationships easily and efficiently [42]. Since blogs are usually accessible even for organizations that are still in any business, this place also is a way to either identify new suppliers via a search or to act as a supporting tool in the selection of suppliers. Despite these positive aspects in a practical environment blogs play no significant role in the procure process. By getting back to the search example, searching for “Visitenkarten” in the google search engine leads not to result in the first 500 results coming from blogs. This hold true also for other search examples. This leads to the rating that blog are a suitable way to display information but the information in blogs is not yet easy accessible by standard mechanism like google search. Therefore a suitable integration of blog content into relevant information systems for procurement seems to be a valuable issue to address in further steps.

## Summary and outlook

Aim of this paper was to answer the question whether digital social networks can act as an innovator in the modeling of strategic supply relationships of companies with focus on value bundles. To answer the question a comparison framework was established. This framework uses eight characteristics in three areas to give the possibility for a structured comparison. Three different implementation form of digital social networks which were relevant to the business field of supplier-side procurement tasks were analyzed by the derived framework. It could be noted in particular that business networks provide a way to achieve a substantial improvement in the identification, selection and qualification of suppliers. Wikis and blogs can be used primarily to achieve a qualification in already existing relationships. Blogs also offer the possibility to

play a significant role in the improvement of the whole procurement process but there is a need for a better integration of blog content in relevant information systems like search engines or erp systems. These results can be used to by companies that offer value bundles to achieve an improvement in the supply situation, which in turn can be potential for new innovations.

About these results addition, further research is needed. On the one hand there should be an empirical work on the current situation of companies in their procurement process whether they use digital social networks for supplier selection, identification and qualification and in which way. This might be done by a broad field study covering different aspects of the investigated objects. These results would give a good insight for future modeling aspects of supply networks. On the other hand it would be beneficial to investigate the integration of digital social network technologies in information systems e.g. enterprise resource planning systems or customer relationship management systems. This would lead to a discussion about efficient design and architecture of Web 2.0-enhanced information systems.

## References

- [1] Burr, W. *Service Engineering bei technischen Dienstleistungen: eine ökonomische Analyse der Modularisierung* (DUV, Wiesbaden, 2002).
- [2] Hirschheim, R. Klein, H. K. & Lyytinen, K. *Information systems development and data modeling. Conceptual and philosophical foundations* (Cambridge Univ. Press, Cambridge, 1995).
- [3] Meier, H. Uhlmann, E. & Kortmann, D. Hybride Leistungsbündel, *Werkstattstechnik online* **95**, 528–532 (2005).
- [4] Comscore, I. Soziale Netzwerke und Multimedia-Websites unter den Kategorien mit den höchsten Zuwachsraten In Deutschland im letzten Jahr. Available at [http://www.presseportal.de/pm/62006/1366307/comscore\\_networks](http://www.presseportal.de/pm/62006/1366307/comscore_networks) (2009).
- [5] Picot, A. Reichwald, R. & Wigand, R. T. *Die grenzenlose Unternehmung. Information, Organisation und Management ; Lehrbuch zur Unternehmensführung im Informationszeitalter*. 5th ed. (Gabler, Wiesbaden, 2010).
- [6] Cyganski, P. Soziale Netzwerke im Web 2.0. Chancen, Risiken und Veränderungen für Organisationen, *Wertschöpfungsnetzwerke*, 305–324 (2008).
- [7] Boyd, D. M. & Ellison, N. B. Social Network Sites: Definition, History, and Scholarship. Available at <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html> (2007).
- [8] Sawhney, M. Wolcott, R. & Arroniz, I. The 12 Different Ways For Companies To Innovate, *MIT Sloan Management Review* **47**, 75–81 (2006).
- [9] Janiesch, C. Pfeiffer, D. Seidel, S. & Becker, J. Evolutionary Method Engineering: Towards a Method for the Analysis and Conception of Management Information Systems, *AMCIS 2006 Proceedings* (2006).
- [10] Fettke, P. & Loos, P. *Reference modeling for business systems analysis* (Idea Group Publ. Hershey, Pa. 2007).
- [11] Corsten, H. & Gössinger, R. *Einführung in das Supply Chain Management*. 2nd ed. (Oldenbourg, München, 2008).
- [12] Schild, U. *Lebenszyklusrechnung und lebenszyklusbezogenes Zielkostenmanagement* (Gabler, Wiesbaden, 2005).
- [13] Holbach, D. *Beschaffungsmarktforschung in der digitalen vernetzten Welt–Grundlagen, Analyse und Anwendungen* (Frankfurt, 2002).
- [14] Kaufmann, L. *Internationales Beschaffungsmanagement* (Dt. Univ.-Verl. Wiesbaden, 2001).
- [15] Krampf, P. *Strategisches Beschaffungsmanagement in industriellen Großunternehmen. Ein hierarchisches Konzept am Beispiel der Automobilindustrie* (Köln, 2000).
- [16] Bundesamt, S. *Statistisches Jahrbuch 2002. Für die Bundesrepublik Deutschland* (Wiesbaden, 2002).
- [17] Carr, A. S. & Smeltzer, L. R. An empirically based operational definition of strategic purchasing, *European Journal of Purchasing and Supply Management* **3**, 199–207 (1997).
- [18] Arnold, H. U. & Essig, M. Sourcing-Konzepte als Grundelemente der Beschaffungsstrategie, *Wirtschaftswissenschaftliches Studium* **29**, 122–128 (2000).
- [19] Mol, M. J. Purchasing's strategic relevance, *Journal of Purchasing and Supply Management* **9**, 43–50 (2003).
- [20] Weigand, M. Nürnberg, 1998.
- [21] Kuhl, M. *Wettbewerbsvorteile durch kundenorientiertes Supply Management* (Dt. Univ.-Verl. Wiesbaden, 1999).
- [22] Friedl, B. *Grundlagen des Beschaffungscontrolling* (Duncker & Humblot, Berlin, 1990).
- [23] Roland, F. Bergisch Gladbach, Köln, 1993.
- [24] Ernst, A. *Methoden im Beschaffungsmarketing* (Köln, 1996).
- [25] Burianek, F. Ihl, C. Bonnemeier, S. & Reichwald, R. *Typologisierung hybrider Produkte. Ein Ansatz basierend auf der Komplexität der Leistungserbringung* (TUM Lehrstuhl für Betriebswirtschaftslehre - Information Organisation u. Management, München, 2007).
- [26] Davis, G. & Olson, M. H. *Management information systems: conceptual foundations, structure, and development* (McGraw-Hill, New York, 1985).

- [27] Aier, S. Kurpjuweit, S. Saat, J. & Winter, R. Enterprise Architecture Design as an Engineering Discipline, *AIS Transactions on Enterprise Systems*, 36–43 (2009).
- [28] Reiss, M. & Präuer, A. Solutions Providing: Was ist Vision-was Wirklichkeit?, *Absatzwirtschaft* **2001**, 48–53.
- [29] Koppelman, U. *Beschaffungsmarketing*. 4th ed. (Springer, Berlin, 2004).
- [30] Lasch, R. & Janker, C. G. Supplier selection and controlling using multivariate analysis, *International Journal of Physical Distribution & Logistics Management* **35**, 409–425 (2005).
- [31] eCl@ss e.V. [www.ecl@ss.de](http://www.ecl@ss.de).
- [32] Bundesverband Materialwirtschaft, E. u. L. e. V. BMECat. Available at <http://www.bmecat.org> (2005).
- [33] Hartmann, H. Orths, H. & Pahl, H. J. *Lieferantenbewertung - aber wie? Lösungsansätze und erprobte Verfahren* (Deutscher Betriebswirte-Verlag, 2008).
- [34] Klein, R. N. *et al.* Informationskompetenz in Zeiten des Web 2.0. Chancen und Herausforderungen im Umgang mit Social Software, *Information – Wissenschaft und Praxis* **60**, 129–142 (2009).
- [35] Large, R. *Strategisches Beschaffungsmanagement eine praxisorientierte Einführung ; mit Fallstudien* (Gabler, Wiesbaden, 2006).
- [36] Heidemann, J. Online Social Networks – Ein sozialer und technischer Überblick, *Informatik-Spektrum* **33**, 262–271 (2010).
- [37] Thomé, U. Kortzfleisch, H. F. O. von & Szyperski, N. Kooperations-Engineering - Prinzipien, Methoden und Werkzeuge, *Online-Kooperationen*, 41–58 (2003).
- [38] Teten, D. & Allen, S. The virtual handshake. Opening doors and closing deals online. Available at <http://www.netLibrary.com/urlapi.asp?action=summary&v=1&bookid=134110> (2005).
- [39] Ebersbach, A. & Glaser, M. Wiki, *Informatik-Spektrum* **28**, 131–135 (2005).
- [40] Leuf, B. & Cunningham, W. *The Wiki way. Quick collaboration on the web* (Addison-Wesley, Boston, 2008).
- [41] Schechler, J. M. *Sozialkapital und Netzwerkökonomik*. Univ. Diss.--Hohenheim, 2001. (Lang, Frankfurt am Main, 2002).
- [42] Krcmar, H. *Informationsmanagement*. 4th ed. (Springer, Berlin, 2005).