Virtualization of Consulting Services: State of Research on Digital Transformation in Consulting and Future Research Demand

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Abstract The theme of virtual consulting services still is in its early stages considering practice but also scientific research. For this reason, we conducted a structured literature review to reveal what the main topics of research in this field currently are, which "blind spots" are noticeable and, thus, where fruitful avenues for continued research can be found. Some of the major issues have already been addressed in this volume.

1 Introduction

Despite a positive development and also positive growth forecasts (BDU 2017), consulting providers are confronted by numerous challenges. One of these challenges is the potential of technology-based consulting services and internal processes, and thus the virtualization of consulting (Christensen et al. 2013; Greff and Werth 2015; Nissen and Seifert 2015; Nissen 2017). Really innovative forms of consulting with a high degree of virtualization are, so far, only used occasionally (Nissen and Seifert 2016, 2017a). A negative trend has actually been noticed among consultants, specifically towards an automation of consulting services (Deelmann 2015). The potential of a digital transformation of consulting, rethinking the traditional business and delivery models, seems to be gradually perceived by some providers. However, virtualization is, so far, rather an option for specialists, than a generally accepted approach in consulting services. Thus, there seem to be obstacles, which impede a broad virtualization initiative in consulting.

Against this background, the current contribution focuses on presenting the status quo of research on the theme of virtualization in consulting. For this purpose, we initially describe our methodical procedure and then summarize the acquired

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results. In conclusion, we will point to some, in our opinion, fruitful avenues for further research.

2 Objective and Research Questions

The main objective of our overall research stream on the virtualization of consulting is the construction of scientifically sound and practically relevant artefacts (process model, decision guidance, methods etc.). Thereby, the consulting providers shall be supported to meaningfully alter and extend their current service portfolios. In order to achieve this, it is essential to analyze the state of research first and then start constructing the missing artefacts.

Firstly, we want to present an overview of relevant scientific concepts and approaches to the virtualization of consulting services. Secondly, this serves as a basis to identify blind spots in research and interesting future research questions. Thereby, we hope to foster further research projects and to stimulate continuing research efforts on the virtualization of consulting.

Thirdly, this contribution should help to prevent the duplication of work, and identify important previous results that can be used as inputs of current research (Fettke 2006). In particular, the following three questions, inspired by Overby et al. (2010), will guide our efforts and form the scope for our research on the virtualization of consulting processes:

(1) How should a virtual consulting process be designed?
(2) How and why do clients and consultants use virtual processes as compared to traditional face-to-face consulting processes?
(3) What are the consequences of migrating traditional consulting processes into a virtual environment?

The literature review, considering these three central questions, will form the basis to construct artefacts (Hevner et al. 2004) for the virtualization of consulting services, such as a process model, checklists, and methods to support individual steps in the design and implementation of virtual consulting services. The review can be understood as a method of explorative research in the context of the problem identification and research motivation of a design science process model (Peffers et al. 2007; Briggs and Schwabe 2011).

Balci (2014) conducted a comprehensive literature review on the Process Virtualization Theory (PVT) of Overby (2008, 2012). According to him, the following areas constitute the majority of application areas of PVT: information systems in a general sense, e-learning, e-commerce, communication and/or relationship, business processes, health care, and mobile technology. Professional services, such as business consulting, are not explicitly mentioned in his review.

Balci (2014) remarks that the virtualizability of processes is, so far, the element of PVT, which has been investigated least of all. The current contribution links to

Balci's work and investigates, to what extent virtualization, in the context of consulting services, is covered by the present research literature. In the following section, the methodology used to analyze the status of research is described before the individual results will be discussed.

3   Methodology and Data

To achieve the above mentioned objectives, a review was conducted according to the methodical guidelines, which were suggested by Webster and Watson (2002). This procedure was completed by the analysis steps according to vom Brocke et al. (2009). At the beginning of the investigation keywords, based on our objectives were defined. These keywords are suitable for the investigation of relevant contributions (see Table 1). To be able to find suitable key words, it was first analyzed which denominations for the virtualization of consulting services are being used in the present literature. This input was then used to create corresponding search strings.

The search for relevant literature was only done from the year 1990 onwards, as from a technological perspective earlier contributions would not be expected. The selection of scientific databases, which were used for this investigation, is based on the MIS Journal Ranking of the Association for Information Systems (AIS). Thus, those databases were used for this investigation, which included at least one of the top ten scientific journals according to this ranking (see Table 2).

Subsequently a backward search following Webster and Watson (2002) was conducted. The relevance of each contribution was first evaluated by means of a title analysis, and then a keywords and abstract analysis. Relevant contributions were added to the list of found contributions. In the following step of the investigation a forward search was conducted for the contributions so far found. Thus, it was analyzed which papers cited the contributions identified so far (Webster and Watson 2002). Moreover, each of the contributions found, was analyzed to find relevant references of other contributions and every new contribution was again

Table 1 Key words and search strings (English and German search) in our review

#	Search string (English)	#	Search string (German)
1	"E-consulting" OR "Electronic Consulting" OR "Internet Consulting" OR "Automatic Consulting" OR "Web based Consulting" OR "Virtual Consulting" OR "IT-enabled Consulting" OR "Distance Consulting"	4	"Internet Beratung" OR "Online Beratung" OR "Computergestützte Beratung" OR "Virtuelle Beratung"
2	"Virtualization" AND "Consulting"	5	"Virtualisierung" AND "Beratung"
3	"Digitization" AND "Consulting"	6	"Digitalisierung" AND "Beratung"

Table 2 Searched databases and hits per search string

Database	Search string 1	Search string 2	Search string 3	Search string 4	Search string 5	Search string 6
IEEE Xplore	21	3	3	0	0	0
Wiley Online	292	347	1058	10	1	37
JSTOR	14	1	21	0	0	0
Science Direct	708	507	1171	5	0	33
ACM Digital	19	505	240	0	1	0
HBR Library	0	2	1	0	0	0
Informs	2	4	60	0	0	0
Google Scholar	3600	3	1	62	0	0
EBSCOhost	146	81	90	1	0	0

tested for its relevance. For this purpose, again the title, keywords and abstracts were interpreted.

In this review, contributions were assessed as relevant, which explicitly dealt with virtualization of consulting services. Contributions, which dealt with the virtualization of other services or processes, were not considered in the scope of this review. Regardless of this limitation, the authors are aware of the fact, that in particular the research fields of Service Engineering and Management, Collaboration Engineering as well as Computer Supported Cooperative Work have relevance in the broader design process, and especially for the construction and evaluation of new artefacts for the virtualization of consulting services.

Finally, it should be noted that only contributions in English and German were considered and that our review may therefore exclude relevant research results in other languages. Furthermore, other contributions could have been published after we had completed our investigation. Altogether 41 contributions on virtual consulting services were identified.

4 Literature Analysis and Synthesis

Webster and Watson (2002) recommend doing the literature analysis—and synthesis in the form of a concept matrix. In this concept matrix, the contributions are consolidated and analyzed according to relevant criteria (see Fig. 1). In order to define the applied criteria for our analysis, we orientate ourselves towards the elements of Process Virtualization Theory, the artefacts of Design Science (DS) research approaches, and the concepts of the consulting research field.

#	Contribution (chronological)	PVT			Consulting field				Approach				Phase		Focus		DS artefacts			
	Legend: – = not addressed ○ = addressed, without reference to PVT ● = addressed, with reference to PVT	Requirements of the consulting process	Features of virtualization mechanism	Virtualizability of the consulting process	Strategy consulting	IT consulting	Human Resources-Consulting	Organizational and process consulting	Expert Consulting	Advisory Consulting	Systemic Consulting	Organizational development/ Coaching	Development of virtual consulting services	Usage of virtual consulting services	Consulting provider	Client	Virtualization concept	Methods of Virtualization	Reference model	Consulting tool
1	Nissen & Seifert (2017b)	●	●	●	●	●	●	●	●	●	●	●	●	–	●	–	–	●	●	–
2	Johann et al. (2016)	○	○	○	–	○	–	–	○	○	–	–	○	○	○	○	○	–	○	○
3	Werth & Greff (2016)	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	–	–	–	–
4	Werth et al. (2016b)	○	○	○	○	○	○	○	–	○	–	○	○	○	○	○	○	–	–	○
5	Nissen & Seifert (2016)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	–	●	●	●	–
6	Werth et al. (2016a)	○	–	–	○	○	○	○	○	○	○	○	○	○	○	○	○	–	–	○
7	Nissen & Seifert (2015)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8	Nissen et al. (2015)	●	●	●	●	●	●	●	●	●	●	●	●	●	–	●	●	–	–	–
9	Greff & Werth (2015)	○	○	–	○	○	○	○	○	○	○	○	○	–	○	–	–	–	–	–
10	Nowak (2015)	○	–	–	–	○	–	–	○	–	–	–	–	–	○	○	○	–	–	–
11	Burin (2014)	○	○	○	○	○	○	○	○	○	–	–	○	–	○	○	○	–	○	–
12	Martensen (2014)	–	○	–	○	○	○	○	○	–	–	–	–	○	○	○	○	–	○	–
13	Christensen et al. (2013)	–	○	–	○	○	○	○	○	○	○	○	–	○	○	○	–	–	–	–
14	Robinson (2013)	–	○	–	○	○	○	○	○	○	–	–	–	○	○	○	–	–	–	–
15	Hoven et al. (2012)	○	○	–	○	○	○	○	–	○	–	–	○	○	○	–	○	○	–	○
16	Schumann et al. (2012)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	–	–	–	–
17	Korytko (2011)	○	–	–	○	○	○	○	○	○	–	–	○	–	○	–	○	–	○	–
18	Strehlau & Sieper (2009)	–	○	–	○	–	–	–	○	–	–	–	–	○	○	–	○	–	○	○
19	Deelmann (2009)	○	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	–	–	–
20	Richter et al. (2009)	–	–	–	○	○	○	○	○	–	–	–	–	○	○	○	○	–	–	–
21	König (2009)	–	○	–	–	○	–	–	○	–	–	–	○	○	○	○	○	○	○	○
22	Steir (2007)	–	○	–	○	○	○	○	○	○	○	○	–	○	○	○	○	–	–	–
23	Schulze et al. (2006)	○	○	–	○	○	–	○	○	○	–	○	–	○	○	○	○	–	–	–
24	Schuster (2005)	–	○	–	○	○	○	○	○	–	–	–	○	○	○	–	○	○	○	–
25	Czerniawska (2005)	○	○	○	○	○	○	○	○	–	–	–	○	○	○	○	○	–	–	–
26	Türk (2004)	○	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	–	–	–
27	Lindhorst et al. (2004)	○	○	–	○	○	○	○	○	–	–	–	○	–	○	–	○	–	○	○
28	Davison et al. (2003)	○	○	–	–	○	–	–	○	–	–	–	–	○	○	–	○	–	–	–
29	Fulantelli & Allegra (2003)	–	○	–	○	○	○	○	○	–	–	–	–	○	○	○	○	–	–	○
30	Zeißler et al. (2003)	○	○	–	○	○	–	–	○	–	–	–	○	○	○	–	○	–	○	○
31	Fink (2002)	–	○	–	○	○	○	○	○	○	○	○	–	○	○	○	○	–	○	–
32	Evans & Volery (2001)	○	○	–	○	○	○	○	○	○	○	○	–	○	○	○	○	–	–	–
33	Fulantelli et al. (2001)	○	○	–	○	○	○	○	○	–	–	–	–	○	○	–	○	–	–	○
34	Wurdack (2001)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	–
35	Bätz (2001)	○	○	○	○	○	–	○	○	–	–	–	○	○	○	○	○	○	○	○
36	Najda (2001)	○	○	○	○	○	○	○	○	–	–	○	○	○	○	○	○	○	○	○
37	Allegra et al. (2000)	–	○	–	○	○	○	○	○	–	–	–	–	○	○	○	○	–	–	○
38	Baum (2000)	–	○	–	○	○	○	○	○	–	–	–	○	○	○	○	○	–	–	–
39	Katz (1998)	○	○	–	○	○	○	○	○	–	–	–	–	○	○	○	○	–	–	–
40	Kordes (1992)	○	○	○	○	○	○	○	○	–	–	–	○	–	○	–	○	–	–	–
41	Neuert (1990)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	–

Fig. 1 Concept matrix on the state of research on the virtualization of consulting services

The PVT describes the factors, which influence the virtualizability of a physical process (Overby 2008; Overby et al. 2010). These are differentiated into sensory, relational-related, synchronicity-related, as well as identification- and control-related factors. The virtualizability of a physical process is furthermore influenced by features of the virtualization mechanism (e.g. digitalization using ICT). Relevant features are the representation, reach and monitoring capabilities. In our review, we investigated, whether the contributions dealt with the virtualizability

of consulting processes, the features of the virtualization mechanism or the requirements of the physical consulting process.

Artefacts in the sense of Design Science can be, for example information systems, concepts, methods or models (Hevner et al. 2004; Gregor and Jones 2007; Frank 2007; Peffers et al. 2007; Sinz 2010). During the analysis of the contributions, the following aspects were tested: whether artefacts in the form of a reference model (process model in the sense of an action and design oriented design-theory), methods (e.g. to assess the degree of virtualizability of a consulting task), applications and information systems (consulting tools) or concepts (for consulting, sales, integration) were described in the contributions. Besides this artefact oriented analysis, it was evaluated, whether the different consulting fields (strategy-, organizational/process, IT- as well as HR-consulting) and consulting approaches (expert consulting, advisory consulting, organizational development/coaching, systemic consulting) and thus varying perspectives of consulting research were covered. Other criteria inspired by consulting research, which we included in the concept matrix, were the focus of the contribution (consulting firm versus client) and the question whether the contribution dealt with the development and/or the usage of virtual consulting services.

5   State of Research

5.1   *Design of Virtual Consulting Processes*

The question regarding the way how virtual consulting processes should be designed, includes the question how the virtualizability of consulting tasks can be evaluated, likewise which technologies and tools are suitable, as well as the roles and responsibilities for the realization of virtualization (Overby et al. 2010). Our literature review reveals that only Nissen and Seifert (2016, 2017b) developed a method to assess the virtualizability of tasks in consulting in the context of PVT. Other authors, however, implicitly deal with this issue through the investigation of relevant service attributes, such as standardization, interactivity, integrativity, as well as the consideration of automation potential. Key studies on these determining factors of virtualization were supplied by Neuert (1990), Wurdack (2001) and Deelmann (2009). The issue regarding suitable technologies and tools is dealt with by Neuert (1990), Najda (2001) and Schuster (2005) in the form of typologies and checklists for the selection of suitable virtualization technologies. The authors, though, do not refer to PVT and its elements. These authors provide a technological reference framework, which could be expanded by actual technologies and tools as well as by useful, new dimensions such as a consulting field, or consulting approach. The issue regarding the responsibility for the realization of virtualization is dealt with by Wurdack (2001), Christensen et al. (2013) and Nissen and Seifert (2015). They refer to the management of the consulting provider. A useful

expansion of this concept would be the assignment of roles and responsibilities to distinctive business processes of a consulting company, as was exemplary done by Nissen et al. (2015).

5.2 Usage of Virtual Consulting

The review shows, that so far, there are only two empirical studies addressing the usage of virtual consulting processes. One (Nissen and Seifert 2016) is described in a contribution of this volume (Nissen and Seifert 2017a). Before this study, solely Türk (2004) investigated why clients and consulting firms use virtual consulting services, which technologies they deploy and which chances and obstacles they observe. Türk limits her investigation on virtual consulting services as "project related subservices" to e-coaching services and e-intermediation (Türk 2004). Full virtualization and automated consulting services have not been part of her investigation, neither the analysis of various levels of virtualizations during the consulting. Both is addressed in Nissen and Seifert (2016) on a high level that aims for determining the status quo in the German market w.r.t. the digital transformation of consulting.

An explicit investigation on the factors, which influence the elements of the success chain (design, acceptance, usage, satisfaction—see Bruhn 2002) of virtual consulting services, has not been conducted yet. This seems to be essential, though, in order to construct effective artefacts for virtualization, and finally apply virtualization successfully. Further contributions, which also deal with the usage of virtual consulting services, are qualitatively designed. They focus on the description of the implementation of exemplary virtual consulting solutions and derive from these recommendations for action. Allegra et al. (2000), Baum (2000), Bätz (2001), Fulantelli et al. (2001), Fulantelli and Allegra (2003), Strehlau and Sieper (2009) and Werth et al. (2016b) show how a virtual consulting service can be used.

5.3 Consequences of Migrating Classical Consulting to the Virtual Space

So far, there are no empirical studies about the consequences of consulting virtualization. Contributions, which deal with this topic so far had a conceptual character. Wurdack (2001), Deelmann (2009), Christensen et al. (2013), Greff and Werth (2015) and Werth et al. (2016a) all describe which consequences can be expected regarding business strategy, organization and processes of a consulting provider in the case of virtualization. Likewise it was not, so far, empirically investigated whether the expected impact on the interaction and relation with the client really takes place. In the key contributions of Wurdack (2001), Deelmann

(2009) as well as Nissen and Seifert (2015), these aspects were conceptually described.

The review revealed that on the theme of virtual consulting services there is a considerable need for continued research. This demand will be made more specific in the next section.

6   Future Research Avenues

6.1   Process Model for the Virtualization of Consulting Services

After it was determined which phases and finally which activities of a consulting service can be virtualized and whether virtualization provides an advantage to conventional consulting, consulting companies should actually develop these virtual consulting services. To reduce the complexity of this digital transformation, a process model should be constructed, which considers the features of virtualization of consulting services and the results of preliminary research, for example the client's quality requirements (Nissen et al. 2015). The conception of the process model should especially include the critical analysis of existing reference models of Service and Software Engineering and evaluate these in a consulting context. This research question is addressed in the contribution of Nissen et al. in this volume (2017b). Moreover, individual steps in the process of designing and implementing a virtual consulting service require supporting methods and tools. The paper by Nissen, Seifert and Blumenstein (2017c) in this volume takes up this issue for the selection of adequate technologies in order to virtualize a given consulting task. However, other steps of the process model of virtualization thereafter remain unsupported up to now.

6.2   Virtual Consulting Services in Practice

So far, research is insufficient when it comes to questions of practical usage of virtual consulting. It remains unclear which kind of virtual service could usefully be implemented in which consulting field, consulting type, consulting companies and client industries. At this point, it is therefore necessary to investigate to which extent virtualization has already penetrated the consulting practice. This would be generally helpful in terms of transparency for research and practice. Moreover, a state-of-practice overview could also provide valuable insights concerning the virtualizability of consulting services.

It would also be interesting to characterize the different forms of virtual consulting services and tools already used in practice. Which technologies and tools are

used to support which phase of a consulting process (or internal process)? What is their practical impact? How do incumbent consulting providers react when technology-driven competitors invade their markets? And finally, there is, of course, a practical as well as scientific interest in designing purposeful virtual consulting products that can be applied in practice. At this point, a fruitful cooperation between consulting researchers and practitioners is called for. The contribution by Nissen et al. (2017a) as well as the paper by Füßl et al. (2017) in this volume are examples of such design efforts.

6.3 Influence of Virtualization on the Client's Behavior and the Consultant-Client-Relationship

After virtual consulting services have been implemented, future investigations should more closely investigate their consequences in practice. Especially the influence of virtualization on the client's behavior, as well as the consultant-client-relationship should be researched, as these aspects are decisive for the success of consulting services (Nissen and Seifert 2015). Here an explorative empirical research approach seems adequate, where primarily the application and impact of IT and technology-based services is investigated (Österle et al. 2010). The research results should subsequently be evaluated, to optimize existing artefacts, such as the process model of virtualization.

6.4 Influence of Virtualization on the Business Processes, Business Model and the Organization of Consulting Providers

The consequences of virtual consulting services on other processes of consulting companies should likewise be part of future research efforts. Such research could be based on the consulting reference model proposed by Nissen and Seifert (2008). Of particular interest is the influence on sales, knowledge management, partner management, recruiting, and staff development. Following the conceptual work on changing business models in consulting, e.g. by Christensen et al. (2013), it is now the time for empirical investigations to practically understand the actual influence of digital transformation on the organization and business model of consulting. Johann et al. (2016) as well as Werth and Greff (2016) indicate that there could occur fundamental changes to the business models—depending on the technologies and virtual services that will be created.

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