Digital Technologies in Consulting – Impact of the COVID-19 Pandemic

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Abstract. The increasing digitalization of the economy and society has triggered drastic changes in companies and confronted them with enormous challenges. The consulting industry has also been deeply affected by this digital transformation. In order to show the influence of digitalization on business consultancies and which digital technologies are currently being used in those firms, we conducted an exploratory study. To this end, we conducted an online survey with 186 consultants about their assessment of digitalization and the use of digital technologies. Further attention was also paid to the influence of the COVID-19 pandemic on the use of digital technologies and digitalization in business consultancies. Our results revealed that many business consultancies had already relied heavily on digitalization and used a variety of digital technologies in all phases of the consulting process. We were able to show that digitalization increased significantly in business consultancies during the COVID-19 pandemic and that the majority of participants understand digitalization as an opportunity for change. Nevertheless, the business consultancies are currently using digital technologies that primarily support communication and collaboration (like audio/video conferencing tools or mobile computing applications). Although consultants are aware of the growing importance of advanced technologies (such as generative AI), business consultancies are currently reluctant to use these technologies and tend to rely on well-established digital technologies.

Keywords: Digitalization · Digital technology · Consulting · Business consultancy · COVID-19 pandemic

1 Introduction

Today more than ever, society as a whole is undergoing a rapidly evolving digital transformation. Government institutions, households, enterprises, and their interactions are all changing due to the increased prevalence and rapid growth of digital technologies. Especially in enterprises, it has never been more important to be able to rely on a deep

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understanding of information technologies (IT) in general and of digital innovation in particular. The persistently high level of dynamism in everyday business today shows that continual changes and adaptations in response, including ones due to digitalization, will be the rule, not the exception, in the future economy. Worldwide digital networking, the automation of individual or even all business processes, and the restructuring of existing business models are just a few of the wide-ranging effects of digitalization. Indeed, the consequences of digitalization are omnipresent, as is the question of whether such changes should be viewed as positive or negative [17, 18, 23, 26]. In either case, nearly all companies will have to pursue increased digital transformation, at least to some extent, in order to remain competitive in the global market [4].

Digitalization has become of unprecedented importance partly owing to the COVID-19 pandemic, which delivered an unparalleled shock of uncertainty across all state borders and industries. Nationwide store closures, contact restrictions, and mandatory home offices forced companies to use contactless distribution channels and to facilitate remote work. Those developments drove a push toward digitalization, as numerous processes in companies had to be digitalized and companies themselves had to prove their resilience. It is often argued that the digitalization driven by the pandemic will continue after the pandemic [11, 19, 22].

One industry especially challenged by uncertainty during the COVID-19 pandemic was the consulting industry. As reported by the German Association of Management Consultancies, the BDU, (https://www.bdu.de/en), the revenue growth of business consultancies collapsed in 2020 for the first time since 2010. The pandemic also dramatically altered the working methods of consultants. Guided by the motto "New Work," the BDU reported massive contact restrictions and significant changes in workplace and working time models [2]. To be sure, business consultancies also had to radically reorient themselves in terms of digitalization aspects to meet the challenges of the COVID-19 pandemic.

Therefore, our main research goal was to gain insight into how relevant digitalization is now and how much more relevant it will become in the consulting industry. We sought to investigate the current and future significance of digitalization in general. We also wanted to investigate the general perception of digitalization among consultants to provide a basic picture of their opinions. Beyond that, to gain comprehensive insight into business consultancies, we aimed to examine the current and future significance of digital technologies and trends for consultants. We also included a specific viewpoint on the impact that the COVID-19 pandemic has had on these areas.

To those ends, we developed a study using an online questionnaire to evaluate the status quo of the use of digital technologies in business consultancies in Germany, which we chose to examine due to our cultural background. The basis of our current study was our own study on the status quo of digitalization in business consultancies conducted in 2019 (before the pandemic), which is hereinafter referred to as *Study 2019*. This will later be used as a comparative basis in the discussion section of this paper. However, the main focus of this research is our survey conducted in 2023 (hereinafter referred to as *Study 2023*).

Therefore, to reach our research goal and to present and discuss our results, the paper (as extended version of [20]) our paper is structured as follows. Following this section

addressing our motivation for the study, we provide a short theoretical background with a focus on business consultancies and on the impact of the COVID-19 pandemic from which we derive our research questions. Subsequently, we describe our study's foundation, design, and our method of data collection before presenting and discussing selected results in light of our research questions. The paper closes with a summary of the main results and an outlook for future research in the field.

2 Theoretical Background

2.1 Business Consultancies

Business consultancies can be characterized in light of their consulting focus. In our study, we classified consultancies with reference to the BDU's classification, which divides the market for consulting into four classic fields [2]:

- Strategy consulting,
- IT consulting,
- Organization and process consulting, and
- Human resources consulting.

To begin, **strategy consulting** is considered the most demanding field of consulting. Not only does it occur exclusively within the top management of companies, but the topics also concern the core of all corporate activities—that is, the corporate strategy [27]. The goal of a consultant in strategy consulting is to help the client to define long-term goals and develop a course of action to achieve the corporate strategy. Achieving that goal involves analyzing the current business situation, identifying opportunities and challenges, and developing a tailored strategy [21].

By comparison, **IT consulting** addresses the widest variety of consulting topics of all four of the classic fields of consulting. The topics range from the creation of business-critical individual software and the implementation of standard software and web-based applications to system integration and the optimization of IT architecture and infrastructure [21].

Next, **organization and process consulting** builds on the concepts of strategy consulting. By contrast, however, consultants work at the operational level, and contact between the client company and the consultancy usually occurs not within top management but mostly in middle and lower management [21]. Organization and process consulting deals with the optimization of organizational structures and processes within a company. Its goal is to improve the efficiency, effectiveness, and agility of the company by reviewing and, if necessary, adapting its business processes [6].

Last, **human resources consulting** focuses on both the managers and employees of a company. Among other activities, it involves the promotion of professional and social skills, usually facilitated in training courses [6].

No matter the field, a key factor of success for business consultancies is the consulting approach that they adopt. At its base, successful consulting requires an understanding of the process. In the literature, the consulting process is described in various procedure models, which differ less in their content than in the number of phases conceived as being part of the process. Barchewitz and Armbrüster [1] have described the consulting process

in a three-phase model involving planning, realization, and control. Bodenstein and Herget [7], by contrast, have presented a four-phase process model involving conception, contract design, implementation, and conclusion. In our study, we followed the procedure model developed by Seifert [28], which comprises six phases:

- Acquisition,
- Project preparation,
- Problem analysis,
- Problem-solving,
- Implementation, and
- Post-processing.

First, **acquisition** forms the basis of the consulting process, because in that phase a business consultancy seeks to obtain an order from a client [28]. A general exchange of information also occurs, after which the business consultancy submits a bid for the project order. Once the consultancy has received the order, a contract is negotiated between the parties [21]. Second, in **project preparation**, the project team is defined, the team's members are given access to all relevant systems, and further organizational arrangements are made [28]. Third, **problem analysis** focuses on gathering, deepening, and evaluating information. During that phase, the current situation is analyzed, and a formulation to meet the project's objective is finalized [21]. Fourth, **problem-solving** is the core phase of a consulting project [21]. Therein, a strategy for realizing a solution to the problem is presented. To that purpose, different alternative solutions are designed, evaluated, and presented to the client, who subsequently selects one of them to pursue [28]. Fifth, during **implementation**, the selected solution is implemented. The process is carefully planned to ensure successful implementation, and, afterward, the results are reviewed, and, if necessary, the solution is optimized [7]. Sixth and last, **post-processing** considers both the client and the consultancy. On the client's side, the phase involves the conclusion of the project, including the achievement of the project's objectives. On the consultancy's side, it entails the preparation of documentation, assessments, and results for reuse [28].

2.2 Impact of the COVID-19 Pandemic on German Enterprises

The COVID-19 pandemic is sometimes hailed as an accelerator of digital transformation. To clarify, companies should have been, and indeed were, seizing the moment as a launchpad for not only digital transformation but also structural change. In light of this, the KfW (https://www.kfw.de/About-KfW/) conducted special surveys during the COVID-19 pandemic. The evaluation of these surveys is summarized in different digitalization reports (see [13, 14]).

The data from the special surveys show that the level of digitization activity varied during the different periods of the surveys. At the beginning of the COVID-19 pandemic, a surge in digitalization was observed, as home offices had to be set up and expanded within a very short time for many companies in various industry sectors. There was also a significant increase in the use of cashless payment systems, e-health services, virtual communication platforms, and online retail. Digitalization was used not only to react flexibly to bottlenecks in deliveries and declines in demand, but also to remain visible

to cooperation partners and customers. Even though digitalization activities increased during the second wave of the pandemic, the proportion of those who did not implement any digitalization measures remained at 33%. In the report for 2020, it was assumed that companies had invested more in digital technologies in order to continue to overcome the crisis [13]. It is possible that digitization activities flattened out as the COVID-19 pandemic progressed due to measures already completed and limited resources. In autumn 2021, there was a renewed increase in digitalization projects due to an economic recovery. It was assumed that companies wanted to better position themselves in terms of digitalization after the COVID-19 period [14]. It was also found that companies that have suffered significant sales losses during the pandemic or those that expected the crisis to last a long time have intensified their digitalization efforts. It is assumed that these were often immediately effective digitalization activities that could be implemented in the short term in order to generate sales or maintain business operations during the crisis. It is possible that long-term projects were postponed more frequently as a result [14]. It can also be assumed that companies that had not dealt with the digital transformation before the pandemic felt significantly more negative effects than those that had already started to digitalize their production and working methods.

In a survey conducted in spring 2020, Krcmar and Wintermann [16] concluded that the three biggest changes in the companies surveyed at the beginning of the pandemic were in the area of internal and external communication and the cooperation and behavior of employees. For example, virtual conferences and other digital applications made working from home immediately possible, and external communication was conducted via new channels. These features could remain in place after the pandemic; furthermore, 66% of the companies surveyed stated that the pandemic would have a long-term impact on increased digital customer contact. In addition, 71% indicated that the scope of digital services would increase, and 63% believed that the company's presence would disappear. Over 80% of respondents stated that working from home and virtual conferencing would continue as a pandemic-induced trend.

Looking at the business consultancies even before the pandemic, consulting companies faced the same challenges associated with digitalization that other companies also faced. New competitors, new demands from customers seeking to professionalize their own digitalization [12], new requirements imposed by digitalization in providing consulting services, and the need for new skills and know-how on the part of consulting companies all confronted the classic people-oriented business of consulting with the need for changes in service provision, just as in other industries [29]. In that light, "business as usual" was not a valid business strategy for many consulting companies even before the COVID-19 pandemic and became especially impractical due to the pandemic. Instead, the consulting industry has had to increasingly implement digital technologies in the various phases of the consulting process and, in turn, deal with emerging opportunities and innovations. In that context, the question thus arises as to what extent business consultancies are already using digital technologies.

Looking at scientific and practice-oriented literature on digitalization, the use of digital technologies and the impact of the COVID-19 pandemic with specific focus on business consultancies, it becomes evident that there is already some research on digitalization and the use of digital technologies in business consultancies (e.g., [8,

9, 25, 30]). However, these studies often predate the start of the pandemic. Since the beginning of the COVID-19 pandemic, many studies have been conducted on the topics of digitalization, digital transformation, and the effects of the pandemic. However, these studies primarily address those aspects from a general viewpoint and are not specifically aimed at business consultancies.

Therefore, we have set up a study addressing the specific characteristics of the current and future use of digital technologies in German business consultancies. With our study we strive to answer the following research questions (RQs):

RQ 1: *To what extent do business consultancies in Germany use digital technologies?*

RQ 2: *What impact has the COVID-19 pandemic had on the use of digital technologies in business consultancies?*

In response to these questions (as extended version of [20]), we will present and discuss selected results of our study in the following sections.

3 Research Methodology – Study 2023

Our research questions were designed to afford access to initial insights into how consulting firms view and use digital technologies. To gain such insights, we adopted an exploratory approach, which we conceive as being a starting point for more in-depth research in the future. For that reason, we make no claim regarding the representativeness of participants in the study.

3.1 Foundation of Study 2023

Our initial study (*Study 2019*) was built on the findings of Nissen and Seifert [25]. The authors look at the impact of the digital transformation on the consulting industry and provide insights into the opportunities and challenges it presents. The most relevant finding of [25] is that digitalization is having an enormous impact on the consulting industry. According to the authors, customers are increasingly looking for digital solutions. Due to this market pressure, consultancies have had to adapt. Another finding is that the use of technological innovation, such as artificial intelligence or big data analysis, is opening up new opportunities for consultancies. Overall, the authors show as early as 2015 that digital transformation is fundamentally changing the consulting industry and requires consultants to adapt.

Our *Study 2019* followed-up on the results from [25]. We examined the role of digitalization in two ways. On the one hand, we looked at the company's perspective, and on the other hand, we considered the viewpoint of the consultant. The evaluation showed that consultants perceive the role of digitalization to be more important than the company itself does. In addition, less experienced consultants perceived it as more important than more experienced consultants. Nevertheless, over 95% of study participants expected the importance of digitalization in their role as consultants and in their companies to increase over the next five years.

The use of digital technologies was also examined. We found that the use of digital consulting technologies enabled an increase in efficiency and new consulting markets could be addressed. It was found that from the consultants' perspective, technologies such as audio and video conferencing, mobile computing, and cloud computing were the most important, whereas analytical tools were only used sporadically and were increasingly used in larger consulting firms. The evaluation of *Study 2019* also revealed that trends such as self-service consulting, the virtual marketplace for clients and consultants and crowdsourced consulting were used less frequently. It was clearly evident that the importance of digital technologies would continue to increase over the next five years. After examining the use of digital technologies in the consulting process, it also emerged that the lowest number of different technologies was used in acquisition and follow-up. In contrast, most different technologies were used in the problem-solving phase and the implementation phase. Based on the data, we were able to show that from the consultants' perspective, the use of technologies would increase in all phases of consulting projects in the future. In summary, we found that digitalization played a significant role for consultants. Nevertheless, consulting companies still seemed to be in the early stages of digitalization.

Our *Study 2019* and other research (e.g., [3, 5, 8–10, 25, 30]) showed that digital transformation and the use of digital technologies were unavoidable for business consultancies. However, the impact of the COVID-19 pandemic on business consultancies and their use of digital technologies was often not assessed. This is where *Study 2023* comes in, which is presented in the following sections.

3.2 Questionnaire Design

Our questionnaire in *Study 2023* was based on the original *Study 2019* questionnaire with some additions to capture aspects of the COVID-19 pandemic. Overall, the final questionnaire included 20 questions, divided into seven blocks:

- General information about the participants,
- Importance of digitalization,
- Importance of digital technologies,
- Degree of digitalization,
- Importance of the business model,
- Use of digital technologies, and
- Perception of digitalization and future trends.

General Information About the Participants: In the first block of questions, participants were asked four fact-focused questions as a means to later categorize them in data analysis. Question 1 inquired into the number of employees in the participants' companies, the responses of which were used to classify the companies into micro, small, medium, and large companies. Question 2 asked about the area of consulting in which they were most active. Last, Questions 3 and 4 addressed the participants' professional experience by inquiring into the number of years spent in the profession and the number of clients and consulting projects undertaken.

Importance of Digitalization: The second group, containing Questions 5–8, addressed the current and future importance of digitalization, along with its importance during the COVID-19 pandemic. To that end, participants were asked to indicate

digitalization's importance for themselves as consultants in Question 5 and for their company in Question 7. In between, Question 6 asked for an assessment of digitalization's expected importance in the next five years from the participant's perspective. Last, Question 8 inquired into how the pandemic has changed the company's perspective of the importance of digitalization.

Importance of Digital Technologies: In the third block of questions, Questions 9 and 12 sought to determine the importance of digital technologies and trends in business consulting. To that purpose, a list of 14 digital technologies was created with reference to the literature. To ensure consistency in understanding, potentially unfamiliar technologies were briefly explained. Questions 10 and 11 asked participants about the importance of those technologies during the COVID-19 pandemic. Those questions allowed us to determine both the current state of digital technologies in business consultancies and the most significant technologies for consultants during the pandemic.

Degree of Digitalization: In the fourth group of questions, Question 13 asked participants to select one of four statements that best describes the current level of digitalization in their respective companies.

Importance of the Business Model: Question 14 was the only question in the fifth group, and it asked about the COVID-19 pandemic's impact on the company's business model.

Use of Digital Technologies: To gain more granular insight, the first question of the sixth block of questions, Question 15, asked the consultants to rate their current use of digital technologies during the different phases of the consulting process. Subsequently, Question 16 asked the respondents to rate their expected use of digital technologies in the next five years, and Question 17 asked them to select the technologies that they use in each phase of the consulting process.

Perception of Digitalization and Future Trends: The intention of the seventh and final block of questions was to determine how the participants perceived digitalization at present and in the future. To that end, Questions 18 and 19 asked participants to evaluate specific opportunities by responding to different statements. The questions were intended to capture their opinions on digital technologies. Last, Question 20 inquired into the participant's personal attitude toward digitalization.

3.3 Data Collection

As a result of several pretests with various researchers from the Technical University of Central Hesse and different practitioners, the questionnaire was improved. The general aim of the pretests was to assess the questionnaire's instructions as well as the individual questions for comprehensibility and errors.

Next, mostly using email, we invited consultants to participate in our study. For this purpose, we contacted all business consultancies that were members of the BDU at the time of data collection, and their responses were our primary source for contact information. The emails were sent between January 15 and February 15, 2023. We also shared the link to the online questionnaire on business platforms, such as LinkedIn (www.linkedin.com) and XING (www.xing.com), and with personal contacts in our business networks.

When the survey period ended, the online questionnaire had been completed 291 times. Of those questionnaires, 187 had been completed in full. Before data analysis, those 187 questionnaires were checked for plausibility, with special attention to whether any pattern in the answers might suggest that the participant had only clicked through the questionnaire at random. As a result, we had to exclude only one data set, meaning that 186 data sets were analyzed for the results presented in the following section.

4 Selected Results – Study 2023

4.1 Participants' General Characteristics

To differentiate responses along the lines of company size, the business consultancies were grouped according to the number of employees. Table 1 provides an overview of the respective company sizes.

Table 1. Participant Structure by Number of Employees (n = 186)

Number of employees	Absolute frequency	Relative frequency
1–10	47	25.3%
11–49	30	16.1%
50–249	19	10.2%
>250	90	48.4%

Table 1 shows that 47 consultants from micro-enterprises and 30 from small enterprises participated in the survey. The smallest group of participants, totaling 19, was represented by medium-sized companies, whereas the largest proportion of participants, totaling 90, represented large companies.

The distribution of participants across the different fields of consulting (see Sect. 2) was highly heterogeneous. Because Question 2 allowed for multiple answers, the 186 participants provided a total of 245 answers. The most represented field was organization and process consulting, with 78 responses, followed by IT consulting with 70, strategy consulting with 44, and human resources consulting with 36. Added to that, 17 participants selected the answer option "Other."

Concerning the experience of the participants in terms of years spent working as consultants, Table 2 shows that 105 participants had up to 10 years of work experience and that 81 had at least 10 years of work experience. The participants' professional experience with consulting projects was also queried. Whereas only 11 consultants had previously worked on 1–3 projects, 43 had been involved in 4–9 projects, 37 in 10–19 projects, 20 in 20–29 projects, and 17 in 30–39 projects. In the largest group, 58 participants had been involved in more than 40 projects.

Table 2. Participants by Years of Work Experience (n = 186))

Years of work experience	Absolute frequency	Relative frequency
<1	5	2.7%
1–5	66	35.5%
6–10	34	18.3%
11–15	20	10.8%
16–20	20	10.8%
21–25	18	9.7%
26–30	13	7.0%
31–35	4	2.2%
36–40	6	3.2%
>40	0	0%

4.2 Digitalization: General Aspects

The participants were also asked to assess the current role of digitalization in their day-to-day work. For a detailed look at their responses, Fig. 1 shows how participants with up to ten years of professional experience responded versus those with more than ten years of professional experience. On the one hand, those with up to ten years of professional experience attributed "medium significance" and "high significance" to digitalization in their day-to-day work in nearly equal measure, at rates of 44.8% and 48.6%, respectively. By contrast, only 6.7% participants selected "low significance." On the other hand, 63.0% of participants with more than ten years of professional experience characterized digitalization as having "high significance" in their daily work, whereas 30.9% selected "medium significance" and another 6.2% selected "low significance." Remarkably, none of the participants selected "no significance" in response to the question. It is, therefore, clear that digitalization was perceived as playing a greater role in the day-to-day work of consultants with more than ten years of professional experience than for those with up to ten years of such experience.

Regarding digitalization in general, the participants were additionally asked to assess the level of digitalization in their consultancies by choosing one of the following levels:

- **Level 1:** We predominantly rely on consulting processes in which our consultants work together with the customer on-site. Technologies such as chat, video-conferencing, and other digital collaboration tools are rarely used in projects.
- **Level 2:** We carry out projects in which our consultants and customers work together at separate locations. However, most of our projects are based on on-site, face-to-face interactions.
- **Level 3:** Digital technologies are an integral part of our business model. We specifically manage the personal deployment of consultants on-site and no longer include it in every project.

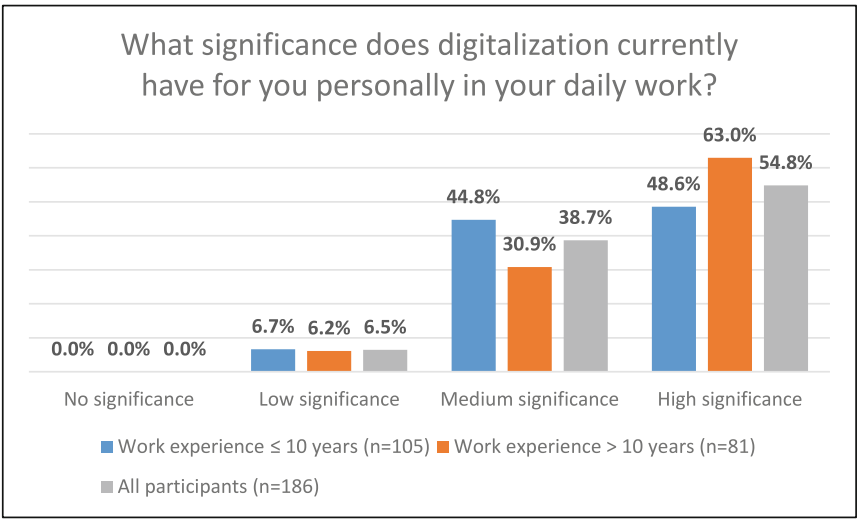

Fig. 1. Significance of Digitalization for Consultants according to Work Experience (n = 186; relative frequency)

- **Level 4:** Our business model is based predominantly on digital technologies. Consultants work on-site with clients only in particularly critical phases and in regard to particularly complex problems.

Given those four descriptive statements, only 22 of the 186 participants selected Level 4 to characterize digitalization at their companies. By contrast, 83 selected Level 3, 68 selected Level 2, and, least frequently, 13 selected Level 1.

To present the level of digitalization in greater detail, Fig. 2 depicts the level of digitalization of the business consultancies by company size. As shown, 18.9% of large companies were characterized as having Level 4 digitalization, followed by 10.5% of medium-sized companies. Micro-enterprises accounted for the largest share of Level 1 digitalization at 12.8%, while small companies had the second-largest share, at 10.0%. These results clearly show that larger companies seem to employ a higher level of digitalization than smaller companies.

Turning to the perception of digitalization, we asked participants whether they perceived digitalization primarily as a threat or an opportunity for their companies. Figure 3 provides a breakdown of their responses based on company size. The top bar of the graph shows the overall results, which indicate that 113 participants perceived digitalization in their companies "clearly as an opportunity" and 61 as "more like an opportunity." The remaining 12 participants perceived digitalization in their companies as both an opportunity and a threat (i.e., "opportunity/threat"). Notably, none of the participants selected the answer options "more like a threat" or "clearly as a threat." The other four bars in the graph show the evaluation by company size. Of the 90 participants from large companies, 56 perceived digitalization at their companies "clearly as an opportunity," 29 as "more like an opportunity," and 5 as "opportunity/threat." The picture sharpens for medium-sized companies; of those 19 consultants, 17 perceived digitalization in their companies

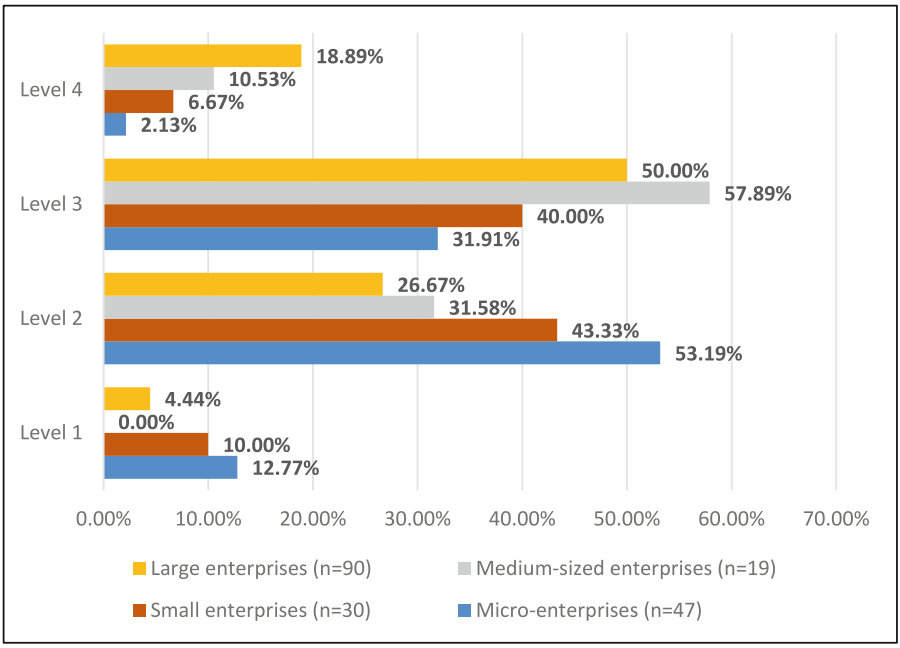

Fig. 2. Level of digitalization by company size (relative frequency)

"clearly as an opportunity" and 2 as "more like an opportunity." Thus, medium-sized companies had the highest proportion of participants who selected "clearly as an opportunity." The 30 participants from small companies also only selected only two answer options; 19 selected "clearly as an opportunity," while 11 selected "more like an opportunity." By contrast, of the 47 participants in micro-enterprises, 21 chose "clearly as an opportunity," 19 chose "more like an opportunity," and 7 chose "opportunity/threat."

4.3 Use of Digital Technologies

This section presents the results of our analysis of the data from questions concerning the use of digital technologies in business consultancies.

To begin, focusing on the current and future significance of digital technologies in business consultancies, participants were asked to assess the current significance of 14 specific technologies. They were next asked to assess the importance of those technologies for their consultancies in the next five years. To evaluate those data, the verbalized answers were coded and recorded as arithmetic mean values. The following coding was chosen:

- 1 = no importance,
- 2 = low importance,
- 3 = medium importance, and
- 4 = great importance.

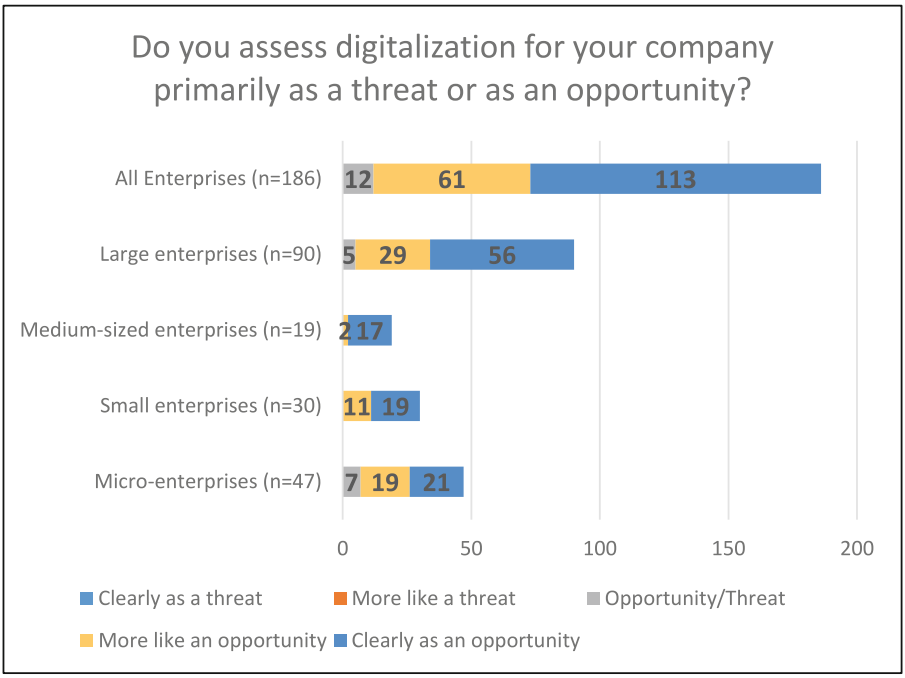

Fig. 3. Perception of Digitalization (n = 186; absolute frequency)

Table 3 provides an overview of the results. Because not every participant assessed every technology, the table also provides the number of participants who assessed the particular technology. As Table 3 shows, audio/video conferencing was viewed as being the most important digital technology, with a mean value of 3.72 out of 4.00. In second place was mobile computing, with a mean of 3.54, followed by cloud computing, with a mean of 3.29. The importance of the mean values becomes particularly clear when looking at the technologies in the lower ranks. Social media ranked in the third lowest position, with a mean value of 2.18, followed by crowdsourced consulting and self-service consulting as lowest in ranking, each with a mean of 2.05.

The difference between the arithmetic means of "current significance" and "future significance" indicates which digital technologies may become the focus of consulting firms in the next five years. The third-largest difference was 0.96 for artificial intelligence technology, closely followed by social media, with a difference of 1.01. The largest difference, 1.03, was with big data analytics.

Next, participants were asked to indicate the current and anticipated future use of digital technologies in their consulting process. Again, the arithmetic mean was used for evaluation. To that end, the verbalized answers were coded as follows:

- 1 = no use,
- 2 = very little use,
- 3 = low use,
- 4 = medium use,

Table 3. Significance of Digital Technologies (n = 186; multiple answers possible)

Digital technology	Current significance (arithmetic mean)	Future significance (arithmetic mean)
Knowledge management systems (n = 180)	2.96	3.38
Virtual marketplace for consultants and customers (n = 180)	2.96	2.99
Social media (n = 180)	2.18	3.29
Self-service consulting (n = 175)	2.05	2.98
Open community and expert platforms (n = 171)	2.32	3.01
Mobile computing (n = 171)	3.54	3.81
Artificial intelligence (n = 182)	2.66	3.62
Document management systems (n = 181)	2.99	3.34
Data/process mining (n = 171)	2.52	3.47
Crowdsourced consulting (n = 170)	2.05	2.96
Cloud computing (n = 180)	3.29	3.69
Chats (n = 183)	3.22	3.31
Big data analytics (n = 176)	2.52	3.55
Audio/video conferencing (n = 186)	3.72	3.75

- 5 = high use, and
- 6 = very high use.

Figure 4 shows the participants' evaluation of the current and anticipated future use of technologies in the consulting process undertaken by their respective business consultancies. The figure readily clarifies that the anticipated future use of digital technologies in all phases was rated higher than the current use.

To gain a comprehensive view of the current use of digital technologies in the consulting process, participants had the opportunity to assign the 14 listed technologies to the individual phases of the process and could select multiple response options. Table 4 provides an overview of the results. When the numbers of the various technologies per phase were totaled, digital technologies emerged as being used most frequently in problem analysis, followed by problem-solving and project preparation. Implementation ranked fourth, followed by acquisition. Last, post-processing was reported to involve the fewest digital technologies. Overall, the results suggest that the diversity of digital technologies used is most often greatest in the middle phases of the consulting process.

Regarding the use of digital technologies in the different fields of consulting, participants in IT consulting selected different digital technologies most frequently in all six phases of the consulting process, closely followed by participants in organization

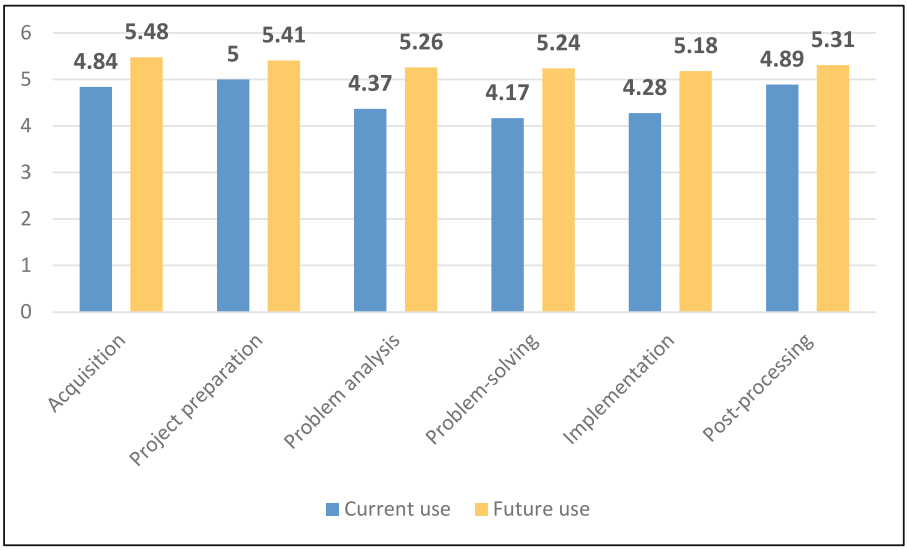

Fig. 4. Use of digital technologies (n = 182; arithmetic mean)

and process consulting. Participants in strategy consulting reported using nearly half as many different digital technologies as in IT consulting or organization and process consulting. Meanwhile, those in human resources consulting reported using the fewest different digital technologies.

Last, Table 5 provides an overview of the participants' opinions on five statements regarding the use of digital technologies. For each statement, the arithmetic mean was again calculated, and the verbalized scale was coded as follows:

- 1 = strongly disagree,
- 2 = somewhat disagree,
- 3 = part/part,
- 4 = somewhat agree, and
- 5 = strongly agree.

Table 5 shows that the statement, "By using digital technologies, the work–life balance in the consulting industry is improved," was only partly agreed with, with a mean value of 3.71. By contrast, the statement, "By using digital technologies, there is an increase in the efficiency of consulting," had the highest level of agreement of the five statements, with a mean of 4.3. The lowest level of agreement, with a mean of 2.82, was achieved by the statement, "By using digital technologies, the quality of the result delivered to the customer is improved." The statement, "By using digital technologies, new customers and markets can be addressed," was agreed to by significantly more participants, with a mean value of 4.25. The rating of the remaining statement, "By using digital technologies, a differentiation from competitors is made possible," had a mean value of 3.82. Based on the five mean scores, it can be concluded that the participants were more likely to agree than disagree with the statements.

Table 4. Digital Technologies per Phase of the Consulting Process (n = 186; absolute frequency, multiple answers possible)

	Acquisition	Project preparation	Problem analysis	Problem-solving	Implementation	Post-processing
Knowledge management systems	**66**	**133**	**121**	**125**	**95**	**100**
Virtual marketplace for consultants and customers	**92**	**36**	**35**	**39**	**27**	**18**
Social media	**144**	**24**	**21**	**23**	**18**	**20**
Self-service consulting	**11**	**29**	**92**	**37**	**23**	**13**
Open community and expert platforms	**68**	**37**	**41**	**62**	**29**	**16**
Mobile computing	**123**	**139**	**143**	**140**	**138**	**131**
Artificial intelligence	**19**	**28**	**77**	**78**	**56**	**18**
Document management systems	**92**	**124**	**115**	**117**	**113**	**122**
Data/process mining	**16**	**32**	**102**	**79**	**35**	**17**
Crowdsourced consulting	**17**	**31**	**42**	**62**	**30**	**29**
Cloud computing	**72**	**118**	**120**	**118**	**116**	**100**
Chats	**90**	**136**	**126**	**124**	**116**	**112**
Big data analytics	**20**	**26**	**111**	**67**	**30**	**15**
Audio/video conferencing	**106**	**166**	**143**	**135**	**128**	**143**

4.4 Impact of the COVID-19 Pandemic

In addition to the results presented thus far, participants were also asked to answer specific questions focusing on the impact of the COVID-19 pandemic.

A first question in this area was aimed at determining whether the topic of digitalization had become more important during the pandemic. Table 6 shows the results of this question. Of the 186 participants questioned, 125 stated that the topic had become significantly more important during the COVID-19 pandemic. In addition, an additional

Table 5. Opinions on the Use of Digital Technologies (n = 186; absolute frequency and arithmetic mean)

By using digital technologies…						
Statement	Strongly agree	Somewhat agree	Part/ part	Somewhat disagree	Strongly disagree	Arithmetic mean
…a differentiation from competitors is made possible. (n = 181)	**64**	**56**	**31**	**24**	**6**	**3.82**
…new customers and markets can be addressed. (n = 182)	**89**	**60**	**24**	**8**	**1**	**4.25**
…the quality of the result delivered to the customer is improved. (n = 186)	**48**	**72**	**54**	**10**	**2**	**2.82**
…there is an increase in the efficiency of consulting. (n = 186)	**85**	**77**	**19**	**4**	**1**	**4.3**
…the work–life balance in the consulting industry is improved. (n = 184)	**49**	**65**	**42**	**23**	**5**	**3.71**

48 participants selected "…has become more important." These two response options, a total of 173 out of 186 participants, i.e. 93%, indicated that the topic of digitalization had gained importance during the COVID-19 pandemic. In addition, 11 companies reported that the topic had not gained in importance, but it had already been very important prior to the pandemic within those companies. Only one participant stated that digitalization did not become more important during the pandemic and it was not very important for their company.

In order to determine the importance of the various digital technologies during the COVID-19 pandemic, the participants were asked to assess the 14 digital technologies previously presented based on their importance during the pandemic. To evaluate this

Table 6. Importance of Digitization during the COVID-19 Pandemic (n = 186)

Has the topic of digitalization become more important for your company during the COVID-19 pandemic?		
	Absolute frequency	Relative frequency
Yes, the topic has become significantly more important	125	67.2%
Yes, the topic has become more important	48	25.8%
No, but the topic was already very important in our company before the COVID-19 pandemic	11	5.9%
No, the topic has not gained in importance and is not very important for our company	1	0.5%
No answer	1	0.5%

data, the verbalized response options were recoded and presented using the arithmetic mean. The following coding was selected:

- 1 = no importance,
- 2 = low importance,
- 3 = medium importance, and
- 4 = great importance.

Figure 5 shows the top-seven rated technologies (all technologies with an arithmetic mean above 3). It shows that audio and video conferencing were rated highest with an average score of 3.9 out of a possible 4.0 points. The participants also rated mobile computing with a value of 3.62, chats with a value of 3.41, and cloud computing with a value of 3.33.

A clear difference to the values already considered becomes apparent when looking at the last four technologies. With an average score of 2.35, artificial intelligence was ranked last in fourth place. The third least important technology according to the participants was data/process mining with a value of 2.34. The second least important was crowdsourced consulting with a value of 2.18. The evaluation also shows that self-service consulting was the least important technology for participants during the pandemic with a score of 2.14.

In order to evaluate the potential impact of the COVID-19 pandemic on the business model of business consultancies, participants were asked to state whether their business' model had changed as a result of the pandemic. In relation to this question, 48.1% of participants stated that it had changed "slightly" and a further 28.3% stated that the business model had changed "significantly." This means that over three-quarters of the participants noticed a change in their consulting business model. Only 18.2% had not noticed any changes to their business model as a result of the COVID-19 pandemic. In addition, 5.4% of respondents did not answer this question. When this question is broken down into the four consulting fields, a balanced picture emerges (see Fig. 6). As the consultants could assign themselves to more than one consulting field, the total

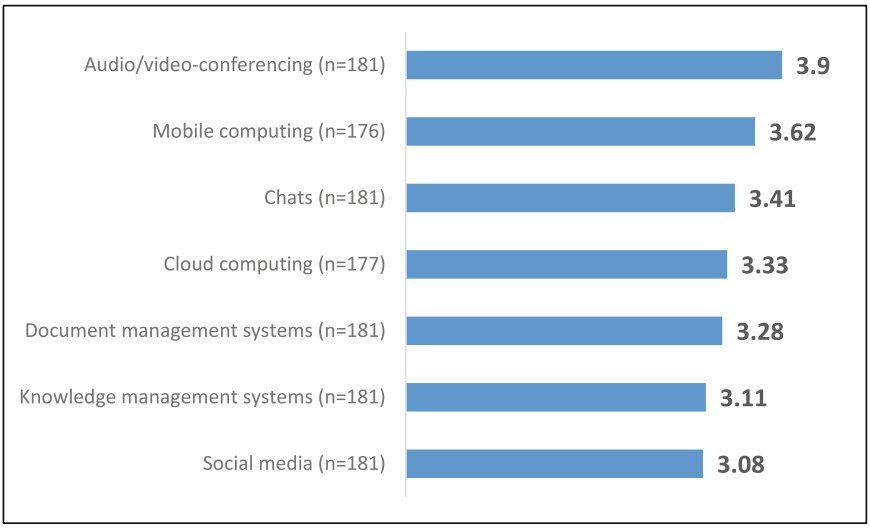

Fig. 5. Topseven of the most important digital technologies during the COVID-19 pandemic (n = 186)

number n in this evaluation is higher than 186 and, therefore, the n is given per consulting field.

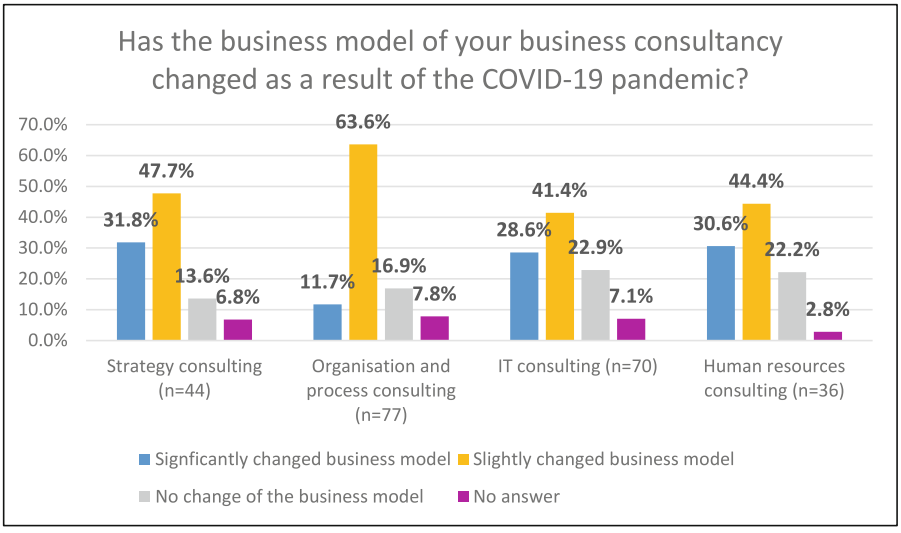

Fig. 6. Change in the business model due to the COVID-19 pandemic per consulting field

None of the four consulting fields showed a significant difference from the others. If the responses “yes, slightly” and “yes, significantly” are added together, a clear picture of the participants emerges, as on average 70% to 80% of participants in the consulting

fields selected "yes" and thus identified a change in their company's business model as a result of the COVID-19 pandemic.

5 Discussion

This section will address in greater detail the question of the extent to which the use of digital technologies in business consultancies changed after the COVID-19 pandemic compared to pre-pandemic usage behavior. Pandemic-related questions from both the *Study 2023* and selected results from the *Study 2019* have been used. As *Study 2019* was conducted among 253 consultants between April and June 2019, these results provide a good basis for comparison with a pre-pandemic situation.

As Table 6 shows, 173 out of 186 participants believe that the importance of digitalization increased during the COVID-19 pandemic. In addition, eleven participants believe that the importance in this context has not increased, as the topic of digitalization was already very important in the company prior to the pandemic. These aspects are confirmed by comparing the results from Fig. 1 with the answers to the same question from *Study 2019*. In both studies, participants were asked about the importance of digitalization in their daily work. Before the pandemic, an average of 2.12% of participants answered this question with "no significance," while no one chose this option in the current study. In addition, digitalization only had "low significance" in their daily work for 13.28% of participants on average in *Study 2019*. In contrast, only 6.5% of participants chose this option in the current study. Accordingly, the average number of participants who selected "medium significance" has also changed. While 34.95% answered this question with "medium significance" in *Study 2019*, the current figure has increased to 38.7%. This is also clear with the response option "high significance." While only 49.4% of participants chose this option in *Study 2019*, 54.8% selected it in the current study.

In summary, it can be seen that digitalization in business consultancies has gained in importance due to the COVID-19 pandemic. This is also discussed similarly in the literature. Regardless of the industry sector, the study by Krcmar and Wintermann [16] shows that the Covid-19 pandemic has pushed digitalization forward in companies. The KfW study from 2020 [13] also confirms this. Our study concurs with the KfW study from 2020, that digitalization expanded in many companies during the COVID-19 pandemic and that it has become significantly more important. One reason for this may be that digitalization can be an important tool in acute crisis management.

A further analysis will examine how the use of digital technologies has changed. To this end, the results from Fig. 4 are compared with the corresponding results from *Study 2019*. This comparison is shown in Fig. 7. The intensity with which the consultants currently use digital technologies in the various consulting phases and in *Study 2019* was compared. The graph clearly shows that, with the exception of the problem-solving phase, usage has increased on average in every phase. It is apparent that the use of technology has increased above all in the acquisition, project preparation and post-processing phases. This finding was confirmed by a further comparison of the two studies. By comparing the use of the various digital technologies overall, it becomes clear that use in terms of the number of different digital technologies in each project phase increased significantly in the *Study 2023* compared to the *Study 2019*. The fact that the use of digital

technologies in business consultancies in general, as well as in the various consulting phases, must and will increase; this has been called for in previous publications (e.g., [10, 24, 25, 30]). The changes that consulting companies are facing with regard to technological developments and the associated changes in client requirements make the use of a wide range of digital technologies increasingly necessary.

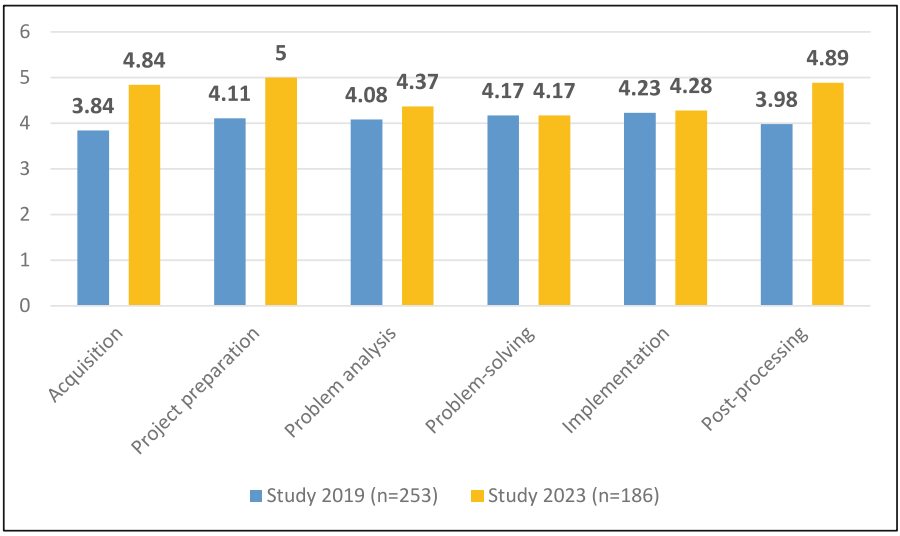

Fig. 7. Comparison of Technology Usage

In terms of specific digital technologies that have gained in importance or were perceived as important during the COVID-19 pandemic, Fig. 5 clearly shows that technologies such as audio/video conferencing, mobile computing, chats, and cloud computing were considered to be particularly important during the pandemic. However, artificial intelligence, data/process mining, crowdsourced consulting, and self-service consulting were found to be less importance. This indicates that digital technologies that enable participants to work more independently from the physical workplace were rated as the most important. Accordingly, digital technologies that are necessary for day-to-day operations were of particularly high importance during the pandemic and technologies that were not necessary for day-to-day operations tended to be classified as less important during the pandemic. However, this classification in the everyday working life of consultants is not so surprising when you consider the impact that the COVID-19 pandemic had on everyday working life in general (with physical contact restrictions, etc.). Therefore, technologies that enable greater flexibility in working, distance communication, and collaboration had to gain importance, and companies were almost forced to implement and use such technologies as quickly as possible.

This is also confirmed by the three KfW studies for 2020, 2021 and 2022 [13–15]. In these cross-industry surveys, it became apparent that digital technologies that enable communication and collaboration with customers, suppliers, and other stakeholders became significantly more important during the COVID-19 pandemic. However, to

the best of our knowledge, no publication to date has taken a detailed look at a number of specific digital technologies in the way it has been done in our studies, and therefore, a comparative discussion can only be conducted at a more abstract level and not per technology itself.

To conclude the discussion of the results, we will now turn our attention to the impact of the COVID-19 pandemic on the business model. In this context, the participants were asked whether the pandemic had an impact on the business model of their business consultancy. The results indicate that more than three quarters of the consultants (76.4%) responded "yes." The general discussion that business consultancies need to adapt their business model and can achieve this through the use of digital technologies is also discussed in various publications (e.g., [3, 8, 30]). These suggest that both the consultants and employees as well as the customers of the consulting companies are placing new demands on the consulting companies, and this has been driven by the experiences of the COVID-19 pandemic.

Thus, consulting firms must ask themselves how they want to provide their services in the future so that they can meet the requirements of their customers, while simultaneously enabling their employees to work in a modern and flexible way. Consulting companies must determine how these factors can be achieved through the use of digital technologies.

6 Conclusion

As a result of our study, both research questions could be answered initially. We were able to show that the consultants have attributed a significantly higher importance to digitalization in recent years and also see this development in the future. Digitalization will continue to gain in importance for business consultancies and their respective consultants. It was also seen that the COVID-19 pandemic had an impact on the way consultants do their work and that changes in the use of certain digital technologies were necessary for this and that these changes will continue or even accelerate in the future (depending on further technological innovations).

The results of our analysis suggest that consultants currently consider digitalization to be of medium to high importance in their business consultancies. Considering their work experience, digitalization seems slightly more important for more experienced consultants than for those with less experience. In terms of the four classic fields of consulting that we considered in our study, digitalization currently seems to be most important in strategy consulting and human resources consulting. No matter the field—indeed, overall—digitalization is not perceived as being exclusively a threat (vs. an opportunity). In fact, for 60.1% of consultants, digitalization is clearly perceived as an opportunity, and for 32.8% is perceived as being at least somewhat of an opportunity. Therefore, digitalization is seen in an almost entirely positive light by consultants. In addition, consultants perceive an opportunity to increase efficiency in the consulting process by using digital technologies and believe that the technologies will allow new markets and customers to be reached.

From the consultants' perspective, traditional technologies such as audio/video conferencing, mobile computing, and cloud computing, are currently the most important for their business needs. By contrast, analytical tools are used only sporadically but increasingly more often in larger companies. Beyond that, technologies such as self-service

consulting, virtual marketplaces for customers and consultants, and crowdsourced consulting are rarely used. According to the participants, established technologies will continue to play the most important role in their business consultancies in the next five years. Nevertheless, they also expect the use of analytical tools and social media to increase in importance. From their perspective, digital technologies in general will play an important part in developing future business consultancies, and their use stands to have a major impact on the efficient delivery of effective consulting services in the future.

To summarize, business consultancies clearly see the benefits of digitalization and of using digital technologies. Nevertheless, they continue to rely on more established technologies. However, in order to evolve and meet future requirements in an active and non-reactive manner, business consultancies should also turn to other digital technologies that go beyond audio and video conferencing, mobile computing, and cloud computing. This is especially evident considering the potential impact of widely discussed generative AI tools such as ChatGPT.

This is where future research ties in. Future research needs to produce a more detailed, diversified view of the use of different digital technologies. On that count, qualitative studies should be conducted in individual fields of consulting and with more specific consideration of company size, especially the size of the companies using the consulting service, to further pinpoint the importance of digital technologies for the consulting process in general and for its respective phases. Future research should also analyze the use of digital technologies with reference to the different types of consulting projects, including logistics projects, IT/digitalization projects, and human resources projects, in order to identify and highlight differences. Finally, we recommend investigating barriers to and challenges in using digital technologies in business consultancies and how these can be minimized.

As most empirical studies, ours was limited in multiple ways. Due to our approach, our results possess limited statistical generalizability. However, the method applied allowed us to identify important details and obtain initial insights into the experience of business consultants, which was the chief focus of our study. Another limitation was that the participants' origins were limited to German business consultancies. Since German-specific trends could have influenced the results, the results reflect the situation in one country only.

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