

On the Importance of Digital Transformation for SME – Results from a Survey among German SME

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Abstract

Digitalization and digital transformation in small and medium-sized enterprises (SME) is a topic that has been attracting a lot of scientific research in computer science and business information systems. However, based on experience from work with German SME the conjecture emerged that the perspective of decision makers and employees in SME might put other topics equally high or even higher on the priority list as digitalization. Thus, a study was conducted aiming at exploring the importance of digitalization for SME and investigating the existence of other relevant topics from an SME perspective. As part of a study, SMEs from Mecklenburg-Vorpommern were surveyed about their support needs as well as critical topics for the future. The data comes almost exclusively (91%) from people with decision-making authority in the companies (e.g., management, executives). More than half of the enterprises belong to the micro enterprises (54%), about one third (36%) to the small and 10% to the medium-sized enterprises. Overall, 60% of SMEs belong to one of the three economic sectors: Services, Construction and Crafts, Hospitality and Tourism.

Keywords

digitalization, digital transformation, SME, supported future needs

1. Introduction

Digitalization and digital transformation in small and medium-sized enterprises is a topic that has been attracting a lot of scientific research in computer science and business information systems during the last years (see Section 2 for more details). One reason for this substantial interest might be caused by the fact that in most countries, SME account the vast majority of all businesses. Germany can be taken as typical example: 99,5% of businesses, not counting forestry, farming or fishing businesses, in Germany were SMEs in 2018 [6]. The SMEs in Germany made up 54% of the total revenue of all businesses and are an important factor for the national economy. Another reason probably is the substantial effect expected from digitalization: Digitalization influences the SMEs both in their business models as well as the market, in which the businesses operate.

However, based on our experience from work with German SME on topics related to digitalization, we developed the conjecture that the perspective of decision makers and employees in SME might put other topics equally high or even higher on the priority list as digitalization. Thus, our research question (RQ1) for this paper is: *From the perspective of SME, what topics are perceived as decisive for the future of an enterprise?* With the research question, we also seek to investigate two sub-questions: (RQ1.1) *Were the topics of digitalization and digital transformation overrated in research and should be complemented by other areas;* and (RQ1.2) *Are the other areas perceived important by SMEs of relevance for business information systems research?*

Our research method includes literature work and a survey. We start in Section 2 from the topic of digitalization and digital transformation by defining basic terminology, investigating the state-of-the-art as visible in the literature, and summarizing the situation. In the survey (Sections 3 to 5) we collected

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empirical data on the future of businesses in Mecklenburg-Vorpommern (MV). We would like to contribute to a better understanding of what actually concerns micro, small and medium-sized enterprises (SMEs) in the state when it comes to their future. The study and the experiences are based on interviews of a total of 205 surveyed SMEs in the period from September to October 2021, which took place online and anonymously. As a survey tool, we use the ZMV Monitor¹, which provides each company with an overview of the support services offered by supported actors tailored to its needs. In Section 6, we revisit our research questions and draw conclusions.

2. Digitalization and Digital Transformation in SME

2.1. Terminology

Digitization, digitalization and digital transformation are terms frequently discussed in research and industry without a clear differentiation of their meaning. Digitization basically refers to transforming analog representations into computer-readable (digital) representations. In an enterprise context, digitization often is a precondition for optimizing processes and making operations more efficient and includes, for example, replacing printed forms or documents by digital ones. Digitalization can be described as a general term for activities transforming information, processes, products or services into a form that can be handled, supported or processed by information and communication technology [38]. Examples for such activities are the optimization of work and business processes (including automation of internal workflows), electronic data exchange with customers and suppliers; introduction of electronic commerce or support websites for products, customer communication and sales channels via social media, etc. [38]. Digital transformation is concerned with the changes digitalization and digital technologies can bring about in a company's business model [11], including the transformation of existing products or services into digital variants that offer advantages over tangible products [10]. The focus here is on the disruptive potential of digital technologies and the resulting substantial change in markets and social and economic consequences [13].

Digitization and digitalization have to be considered as well researched topics. The focus in current research is more on digital transformation, i.e. when emerging changes in customer needs, competitive constellations, potentials for new service offerings or new partner structures affect both the value offering (i.e. the products or services) and the value creation processes (i.e. manufacturing or service delivery) of a company [14]. Berman and Bell [3] proposed to distinguish between transformation of the value proposition and the value creation when analyzing and planning digital transformation.

2.2. Literature review

A systematic literature analysis is carried out to review the existing work. The following section describes the exact procedure of the literature analysis and presents the results.

2.2.1. Method and search term

For the literature review the approach of Kitchenham [17] is used. Kitchenham says that before a systematic review is undertaken it must be ensured whether it is necessary at all. In particular, already existing reviews should be identified and evaluated. This reflects an aim of this paper. For the literature analysis the following steps are taken from Kitchenham's approach: (1) Formulation of research questions, (2) Selection of resources to be searched, (3) Definition of search terms, (4) Definition of selection criteria, (5) Checking the relevance of the results, (6) Analysis of the results found to be relevant. The research questions are already defined in chapter one Introduction (1). In the next step the resources to be searched are selected (2). Besides Scopus (www.scopus.com), Web of Science (www.webofknowledge.com) and EBSCOhost (search.ebscohost.com) the database AIS eLibrary

¹ The ZMV Monitor is an online survey tool by asking companies about their needed needs and recommending tailored support services from the region. More information about the monitor can be found here: <https://zmv.psychologie.uni-greifswald.de/zmv-monitor/>

(<https://aisel.aisnet.org>) is searched. The following search strings are used (3), which refer to the title, abstract or keywords:

- digi* AND "literature review" AND (sme OR "Small and Medium Enterprise")
- Digitalisierung AND Literaturanalyse AND (KMU OR "kleine und mittlere Unternehmen")

As described by Kitchenham [17] different terms and synonyms are used for the search. Synonyms used for "literature review" are literature analysis, systematic review and structured review. Selection criteria for the results are defined (4). Since the current state of research is of particular interest, all publications before 2016 will be excluded. Furthermore, the search will be limited to German and English language contributions. Based on these criteria a first number of contributions can be identified. For a preliminary evaluation the title and the abstract are read to decide on relevance.

2.2.2. Results of the literature review

Table 1 gives an overview of the results found with the help of the search terms as well as those subsequently found to be relevant. Especially with EBSCOhost a large number of contributions must be declared as irrelevant. The reason for this is that the database also lists so-called "news" that have no scientific background. In addition, EBSCOhost and Web of Science also provide articles that are already included in the Scopus results set. The abstract is read of those articles that cannot be sorted out at first sight. With the help of the abstract it can be recognized whether the articles explicitly refer to SMEs and whether a literature analysis is carried out. If both points are not evident, the contribution is found to be irrelevant and thus sorted out. Thus, 18 out of initially 70 found contributions can be considered relevant.

Table 1. Results of the literature analysis

Database	No. of search results	Relevant papers
Scopus	15	10
Web of Science	7	2
EBSCOhost	45	4
AISeL	3	2
Total	70	18

The 18 relevant papers focus on different topics that are repeated in different contributions. Based on these recurring topics, the areas shown in Table 2 were identified. The main focus of research in connection with digitalization of SMEs is mainly on Industry 4.0 and readiness/maturity models. Due to access restrictions, 4 of the 18 papers found to be relevant cannot be read and analyzed in full. As a result, only the results of the available 14 papers are comprehensively examined.

Table 2. Topics of the articles

Topics	Articles found
Industry 4.0	[5] [9]* [25] [26] [29] [31]
Readiness/ Maturity	[25] [26] [31] [34] [37]
Servitization ²	[24] [30]
Big Data	[28]* [29]
Marketing/ Social Media	[4]* [15]*
IT-Governance	[19]
Other Topics	[27] [32] [35] [36]

² "Servitization is the innovation of an organization's capabilities and processes to shift from selling products to selling integrated products and services that deliver value in use." [20]

² Articles that were not available in full text are marked with an *.

2.3. Summary

The topic of digitalization is important for both consumers and businesses, as well as their employees [18]. Technology has been made available not only for businesses but also their customers, which affected their expectations and demands towards products and services [8, 12]. For satisfying those expectations and demands, businesses have to face the challenge of digitalization in terms of their organization itself but in addition also of their business processes [21]. New products and services and the supporting processes as well as the manufacturing processes are necessary. Every step on the industrial value chain has been affected by digitalization [33].

As the processes are changing, organizational roles are changing accordingly. Traditional roles are enhanced with digital orientation or even new roles with a digital focus are created [16]. These new roles challenge existing hierarchies inside businesses and open up space for digital natives entering the labor market. Even the individual workplace is influenced by digital technologies, resulting in increased demanded skills of the employee and more flexible work in terms of place and time [22]. In conclusion, digitalization affects every aspect of a business. This task is even harder for SMEs as they usually have limited resources [21]. Digitalization became an issue for not only the most state of art businesses but also businesses in every branch as it has become a competitive factor [2]. In a 2016 study it was found that 58% of the questioned businesses, which work in fields like IT, Health Care, manufacturing, agriculture and public administration, are expecting major disruptions in their branch caused by digitalization [16]. The topic is so crucial, that successful digitalization can decide if a business will continue to be sustainable and profitable [20].

But digitalization can be a challenge for businesses of every size, as new additional digital capabilities have to be created and associated with the existing business structure, processes, people and culture towards the common business goals [16]. Additional knowledge is needed in order to be able to participate in digitalization, less digital mature businesses often rely on external knowledge whereas more digital mature businesses have a culture, which preserves existing internal knowledge and encourages learning amongst the employees [16]. Businesses on different levels of digital maturity still face the same difficulties [16]. Digital strategies differ in between the industries and depending on the circumstances, but the culture of digital mature businesses shares similar characteristics as being experimental, prepared to take risks, investing in their own talent and they value soft skills in their leaders [16].

Potential benefits of digitalization range from increased sales and productivity, new products or services, agility and flexibility [22, 23]. Business software like ERP-systems allow for a more holistic support and planning of business processes, increased precision in the production can be increased by the usage of CAD or CAM-software or even interconnected businesses could synchronize their supply chains and decrease both duration and logistic costs. Digitalization leads to increasing interconnection of supporting and value adding processes, resulting in a holistic value network [33]. Especially for SMEs offers digitalization the possibility for growth as new business opportunities and a demand for new products and services open up. Costs can also be decreased by digitalization, as for example potential customers can be directly addressed in social media and the efficiency of this marketing method can be measured and analyzed using specialized software resulting in the possibility of better and faster optimization [20]. Therefore, participating in digitalization is attractive for SMEs as well as larger enterprises.

3. Methodology for the Survey

Before we present the results of the survey ZMV-Monitor, we want to point out three thoughts about the context of the survey and the way we present the results.

1) We present the results in a condensed form and only differentiate them according to location, size or industry of the companies if such differences turned out to be significant in our analyses or if we assume that this approach is worth reading regardless of statistical anomalies.

2) Many of the findings relate to how frequently certain future topics or support needs occur. At some points, we change the way we look at the results: Sometimes we look at the proportion of SMEs, sometimes at the proportion of future topics. In the first case, for example, the question is how many of

our SMEs surveyed named the digitization of processes as a future topic. In the second case, it is about the question of how many of the digitization-related future topics are covered by the digitization of processes. By combining the two approaches, we consider the fact that the companies each named a different number of future topics.

3) The relative frequencies that we report in many places may suggest supposed differences in the importance of certain future topics. We would therefore like to raise awareness in advance that frequency is not an equivalent for relevance. Here is an example: In our survey, 46% of SMEs named finding skilled workers as a future topic. The figure for finding a successor is 11%. If we compare these two figures, we might conclude that company succession is less important than the issue of finding skilled workers. However, if we consider that companies are constantly looking for skilled workers, irrespective of a general shortage on the labor market, and that successors only have to be sought in isolated cases over the lifetime of a company, the values are placed in a more appropriate context and can be better interpreted.

The structure of the future areas as well as the future topics originate from a previous qualitative guideline-based interview study (see the ZMV white paper from January 2022), in which we talked to a total of 121 SMEs in 2020 and 2021. In the context of the interview results, the future topics mentioned should be additionally validated with an additional quantitative online survey. The survey period was conducted from September to October 2021 in the form of an online survey. The results are as described in more detail on the following pages.

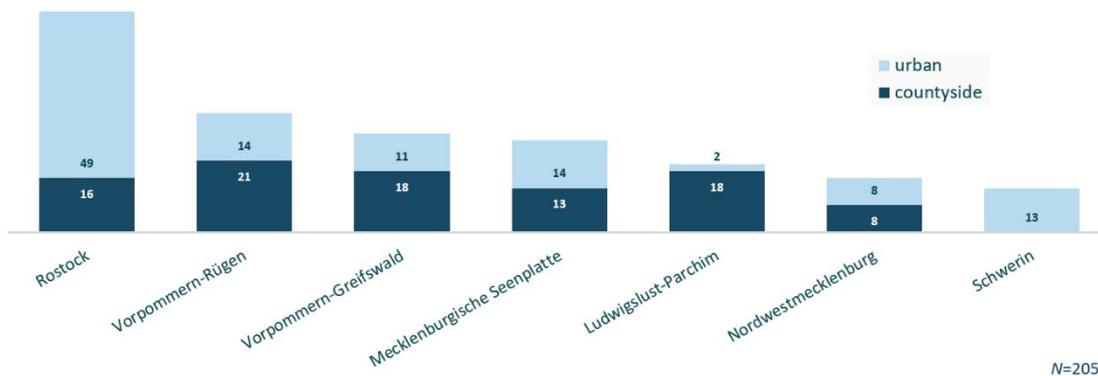


Figure 1: Locations of respondent companies in countryside or urban regions

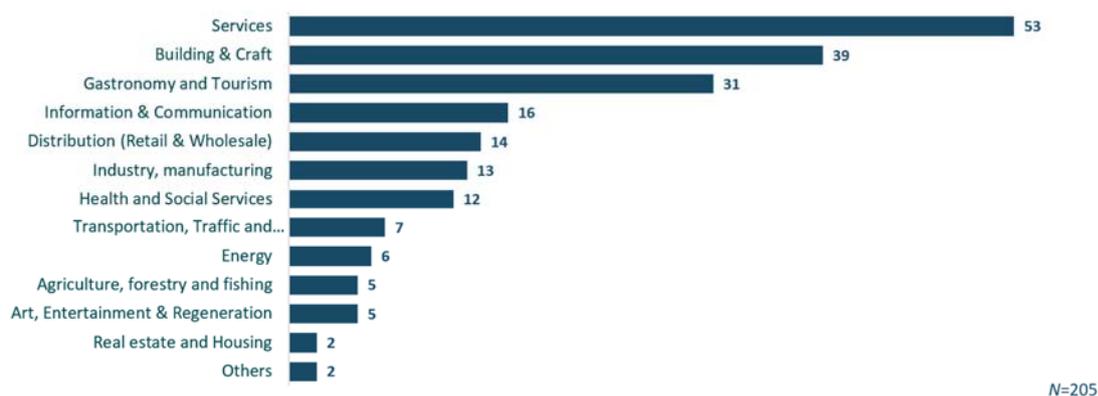


Figure 2: Number of companies interviewed per industry

Four major future areas were identified from the interviews (see Figure 3), which were to be analyzed in more detail using this quantitative study to find out whether the topics mentioned represent support needs for SMEs. The future topics are discussed in more detail in the following chapter.

4. Topics of the future for SMES

We define future topics as projects whose implementation or management is particularly relevant from the company's point of view for whether they will (still) be successful in the future. They are then considered at two levels, one general and one specific. On a general level, we

distinguish between four categories or four areas with which a future topic can be related. This rough classification is divided into digitization & technologies, people, structures & processes, and products & services. The specific level refers to differentiations within the four areas. Here, the individual future topics of the respective area are considered. An overview of the future areas and topics is shown in Figure 3.



Figure 3: Overview of the four future areas and the associated future topics

Figure 4 shows for each area how many of the SMEs have at least one future topic identified as relevant for them. At least means that it is not possible to tell from this if companies indicated several future topics within the same area. For most SMEs, the future topics are related to digitization & technologies (66%) and people (62%), followed by topics from the areas of structures & processes (55%) and products & services (41%). If these results are subdivided once again according to the size of the company, it becomes clear that future topics relating to people are distributed relatively evenly. Otherwise, the results point to two trends. The larger the company, the more likely it is to have a future topic in the areas of digitization & technologies and structures & processes. The trend is roughly the opposite for the Products & Services area, where small companies are most likely to have a future topic.

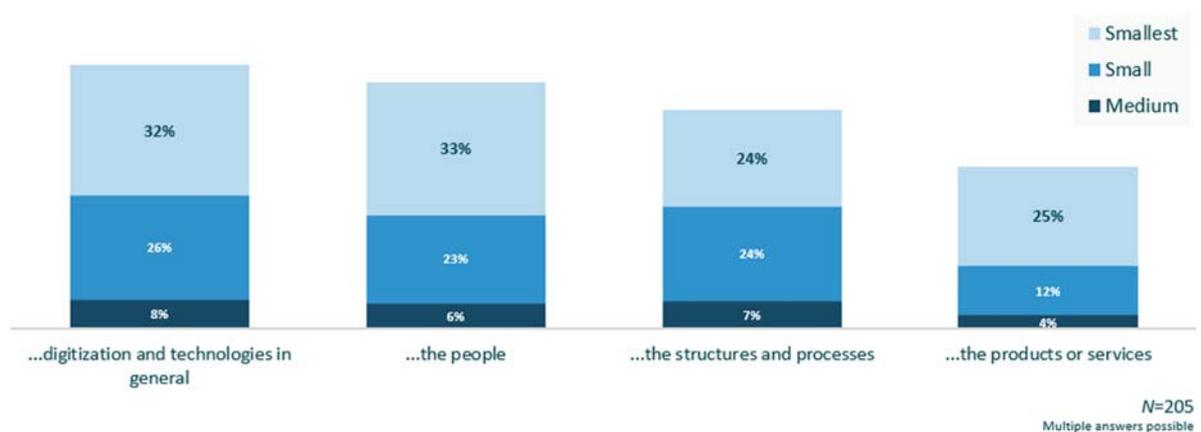


Figure 4: Number of SMEs with at least one future topic in the respective future areas

In the following paragraphs, we go into detail on the four areas and show the frequencies of the associated future topics, which should give a clear impression of what the companies are dealing with. The order is based on the descending frequency of the areas already shown. When

interpreting the frequencies, it helps to know that the SMEs were able to select several of the future topics we specified.

4.1. Digitization & Technology - and reasons against

The companies identified a total of 312 future topics in this area. The topics address various aspects and differ greatly in some cases in how frequently they occur. An overview of the distribution of future topics in the area of digitization & technologies is shown in Figure 5. For 49% of SMEs, the digitization of processes is one of their future topics in this area. In comparison, 10% of SMEs are concerned with artificial intelligence. The introduction of new hardware, software or other technologies is one of the most important.

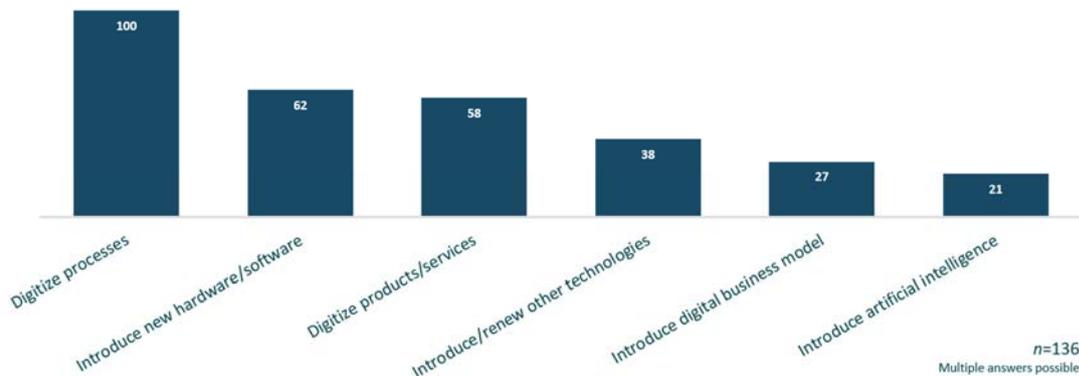


Figure 5: Number of SMEs with a future topic in the respective category in the future area of *digitization and technologies*

The digitalization of the business model and products or services - both of which are generally regarded as progressive alongside artificial intelligence - play a role for 30% and 19% respectively. Digitization of the business model and of products or services - both projects that, along with artificial intelligence, are generally regarded as progressive - are a future topic for 13% and 28% of SMEs respectively.

Looking at the companies in the three largest sectors of our study, which together represent 60% of the sample, the following picture emerges. 74% of the service companies and 67% of the companies in the construction & crafts sector have at least one digital future topic. In hospitality & tourism, this applies to 48% of the SMEs surveyed.

If a company indicated that it did not have a future topic in the area of digitalization & technologies, we asked for the reasons. 47 SMEs (23% of respondents) answered this question. While there were no differences in the explanation of already being digitized to the greatest possible extent, two reasons were given predominantly by SMEs in rural areas: The prioritization of other topics over digital or technological ones and the general insignificance of these topics for the company. A large proportion of these are companies from the hospitality & tourism sector (38% of SMEs that cited one of the two reasons). Other industries appear only sporadically.

4.2. People

This is the area in which the highest number of future topics were indicated, 430 in total. The value is not exclusively attributable to the situations in the SMEs, but also to the high number of topics that were available for selection here. An overview of the topics and the respective number of SMEs for which they are relevant is presented in Figure 6. The most frequently cited topic was finding skilled workers (46% of SMEs), and the least frequently cited topic was business succession (11% of SMEs). If the four topics of finding skilled workers (46%), retaining skilled workers (33%), finding trainees (24%) and retaining trainees (17%) are grouped together under the bracket of meeting current and future personnel needs, this bracket encompasses more than half (57%) of all human-related future topics. Our data indicate that the skilled labor topic is similarly important across all industries. It was mentioned most frequently by companies in the

health & social care sector (58% of SMEs; equivalent to 7 out of 12 SMEs in the sample). In the three largest sectors of our study - services, construction & crafts and hospitality & tourism - it affects around 50% of SMEs in each case.

The remaining future topics relate to human resources development projects such as employee training (30%), improving management skills (26%) or other soft topics (22%) such as corporate culture, making working hours and location more flexible or reconciling work and family life.

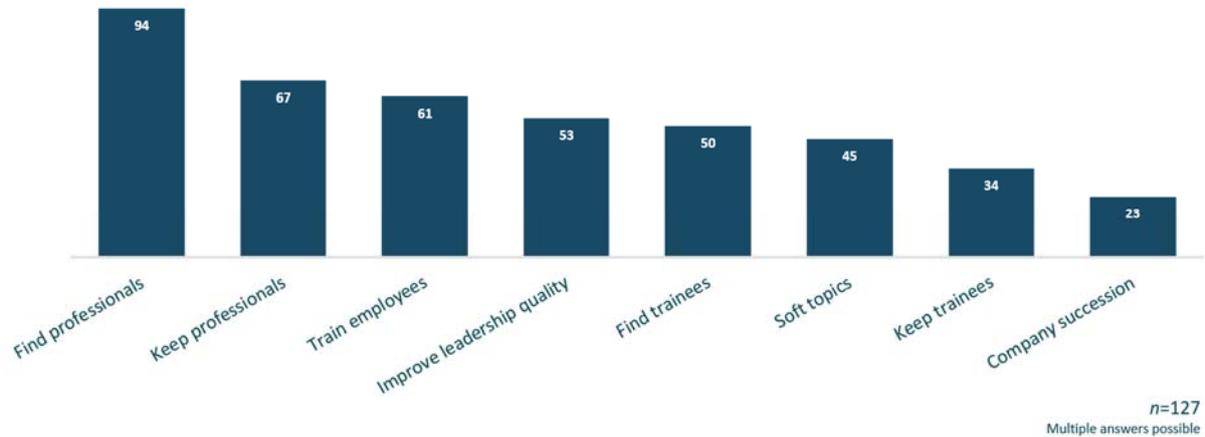


Figure 6: Number of SMEs with a future topic in the respective category in the future area *People*

4.3. Structures & Processes

This area comprises three future topics, which differ significantly in their frequencies. The change in processes and working methods was mentioned most frequently by 49% of SMEs. Of these companies, 64% in turn also stated in the area of digitalization & technologies that they would digitalize their processes. We cannot distinguish whether SMEs in this area refer to processes other than digital processes, or whether this is a repeated indication of the same future topic. In addition to process changes, work on the company also includes changes to their organizational structure for 23% of SMEs. 15% are dedicated to their cooperative relationships with suppliers or customers.

4.4. Products & Services

The three future topics of marketing products/services, changing existing products/services and developing new products/services occur equally in about 25% of all SMEs. The companies in all three categories are disproportionately from rural areas and tend to be micro-enterprises rather than small or medium-sized ones. The difference in size is particularly evident when it comes to marketing. For 36% of the micro-enterprises this is a future topic. The figure for small and medium-sized enterprises is 20% each.

5. Future topics in which SMEs need help

For each future topic, respondents were asked to what extent support was needed or already being used. SMEs provided information for 984 of the 1166 future topics mentioned. Figure 7 shows for each of the four areas the proportion of topics for which support is desired, for which support is not needed and for which support is already being used. The picture is similar for the areas of digitization & technologies, people and products & services. In each case, around 60% of the topics are assessed as requiring support, around 25% are handled independently by the SMEs and around 15% are already receiving support. For the area of structures & processes, the ratio of desired to undesired support deviates from the values for the other areas at 45% to 39%.

If we switch the perspective to the proportion of SMEs with support needs, 78% of the companies name at least one future topic in which they would like support. For the three largest sectors in our study - services, construction & crafts and hospitality & tourism - the figures are 75%, 82% and 81% respectively. A comparison of company size shows that 89% of medium-sized companies have at least one need for support. This is the highest value, followed by

microenterprises with 79% and small enterprises with 74%.

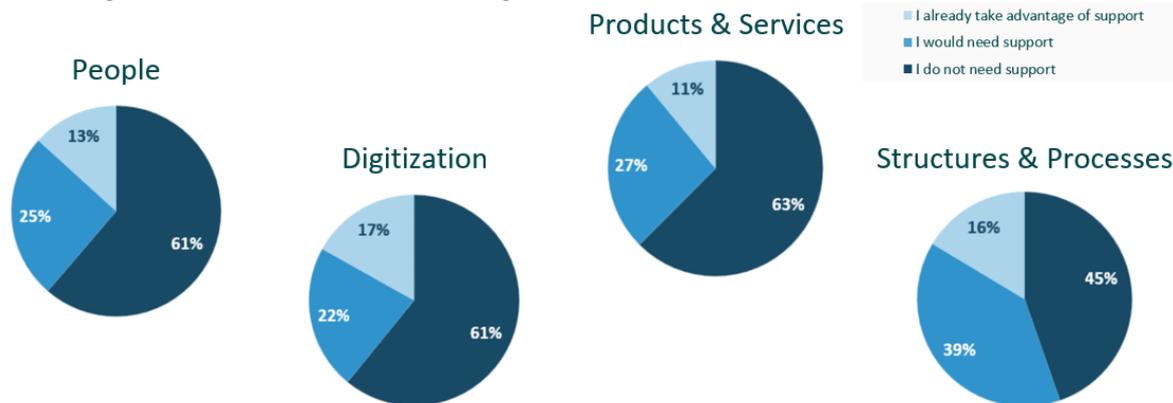


Figure 7: Proportion of future topics in the four future areas for which companies are already taking advantage of support, would need support, or do not need support.

In the following, we look at the ten future topics most frequently cited by SMEs as needing support. The ranking starts with finding skilled workers, where 31% of SMEs would like support, and ends with developing new products/services, where the figure is 12% of SMEs. Of this top 10, five come from the area of people, three from the area of digitalization & technologies, and two belong to the area of products & services.

For the ten future topics, we analysed whether size, location (rural vs. urban) or industry (only services, construction & crafts and hospitality & tourism considered) play a role in the frequency with which a company requires support. Insofar as we were able to identify differences, these are listed in bullet points for the respective topic. For the term support needs we use the abbreviation SN.

- 1) Finding skilled workers (31% of SMEs): More SMEs in rural areas (61%); 42% of SMEs in the hospitality & tourism sector with SN; 36% of service companies with SN; 33% of SMEs in the construction & crafts sector with SN.
- 2) Digitize processes (26% of SMEs): More urban SMEs (59%); 41% of SMEs in the construction & crafts sector with SN; 32% of service companies with SN; hardly any SN among SMEs in the hospitality & tourism sector (9%)
- 3) Market products/services (19% of SMEs): More likely to be SMEs in rural areas (62%); 25% of microenterprises with SN, small enterprises 12%, medium-sized enterprises 11%
- 4) Qualify/train employees (17% of SMEs): tendency the larger the company, the more likely a future topic and the more likely an MC (smallest: 13%, small: 20%, medium: 26%); 23% each of SMEs from the construction & crafts and hospitality & tourism sectors with MCs; 15% of service companies with MCs
- 5) Improve leadership quality (17% of SMEs): More likely to be SMEs in rural areas (61%); 23% of SMEs in the construction & crafts sector with an AE; 19% of SMEs in the hospitality & tourism sector with an AE; 15% of service companies with an AE; trend: the larger the company, the more likely it is to be a future topic and the more likely it is to have an AE (smallest: 13%, small: 18%, medium: 26%)
- 6) Retaining skilled workers (17% of SMEs): 9% of SMEs from the service sector with SN; 20% of SMEs from the construction & crafts sector with SN; 32% from the hospitality & tourism sector with SN
- 7) Digitize products/services (16% of SMEs): 25% of service companies with SN; 16% of SMEs from the hospitality & tourism sector with SN; 15% of SMEs from the construction & crafts sector with SN.
- 8) Introduce new hardware or software (16% of SMEs): [no differences worth reporting].
- 9) Finding trainees (14% of SMEs): 28% of SMEs in the construction & crafts sector with SN; 19% of service companies with SN; 10% of SMEs in the hospitality & tourism sector with SN.

10) Develop new products/services (12% of SMEs): 16% of microenterprises with SN (small: 6% medium: 5%).

Of the 205 SMEs, 28% use external support. There are small differences in terms of size and industry. The larger the company, the more likely it is to be among those using support (smallest: 25%, small: 29%, medium: 42%). In the three largest sectors, services, construction & trades and hospitality & tourism, this figure is 38%, 20% and 32% of SMEs, respectively. The share is lowest in health care and social services at 8%.

On average, SMEs use support for about two future topics. If we differentiate according to the four areas, as can be seen in Figure 7, the proportion of supported topics ranges between 11% for products & services and 17% for digitization & technologies. For 106 future topics, the SMEs provided information on which support they make use of and how helpful they find it.

Figure 8 shows the frequency distribution of all 151 external supporters and support services used, divided into seven categories. The value 151 results from the fact that SMEs in some cases use several offers for the same future topic. The largest share of support comes from external consultants & service providers (44%), followed by chambers (17%), associations (12%) and networks & networking (11%). Funded programs & projects, such as the the Zukunftszenrum MV is one, add up to 5%.

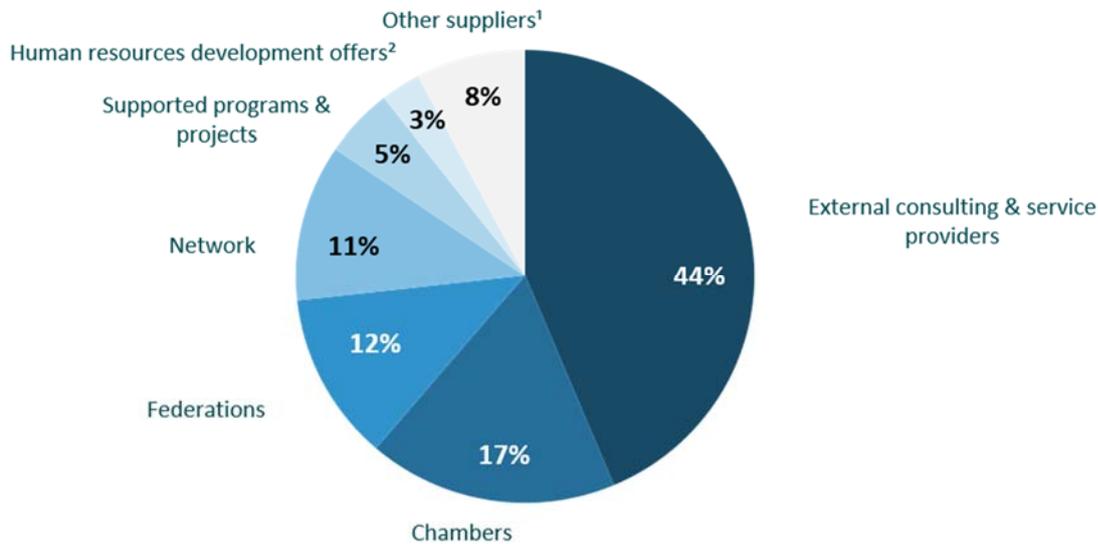


Figure 8: Proportion of external supporters or offers of support

¹ = e.g. WIFÖG, Employment agency and WelcomeCenter; ² = e.g. Mentoring and Training

6. Conclusion

Finally, we would like to address three issues. The first concerns the limits to drawing generally valid conclusions about companies in the country or about specific industries. In order to increase the significance of the results, we show connections with the results of other studies and our own previous study. The second point concerns the importance of climate protection and sustainability in this and future studies. Finally, we name two occasions to discuss the results in more detail.

6.1. The results in the context of other & own investigations

As with our past publications, the results reported here describe a specific section of the corporate landscape at a specific time. It is therefore one of several puzzle pieces that can be combined to create an interpretable overall picture. Other puzzle pieces can be other studies that address similar questions about SMEs in the country. They can also be preceding studies of our own, which offer opportunities for comparison and can thus point to developments. We would like to shed light on both of these aspects.

At present, the only studies that overlap with the ZMV Monitor are those conducted by the chambers of industry and commerce (IHK) in MV. The current study, the IHK digitalization survey, presents data from 368 companies from 2021 (more information at: www.rostock.ihk24.de/servicemarken/presse/medieninformationen/digitalisierungsumfrage-2021-5384640). It is dedicated to the main reasons for digitization and the challenges and needs of companies in connection with their digital transformation. Where do we see concrete points of contact with our findings?

- In the survey conducted by the IHK, 44% of companies would like access to public funding to be made easier and support services for digitization projects and the use of innovative technologies to be expanded. Our differentiated findings on the need for support provide indications that the focus is on which digitization- and technology-related topics the offerings should primarily address: The digitization of processes, products and services, and the introduction of new software and hardware.
- While our monitor results reflect the general scope of the skilled labour issue, the IHK survey refers to a sub-area of it, IT specialists, and shows that their absence has a negative impact on the digital development projects of 22% of the companies.
- With regard to the further training and qualification of employees, we show that it is a future topic for 30% of SMEs. The Chamber of Industry and Commerce survey is more specific about the digital skills that companies think about. According to the study, a digital understanding of processes, a digital mindset and a willingness to change are relevant for more than 50% of the companies.
- In both surveys, the proportion of companies using external support services is roughly the same (IHK: "a good quarter"; ZMV Monitor: 28%).

The results of the monitor can also be viewed in the light of our previous studies, in which we obtained the data from interviews. In some essential points, the ZMV Monitor is a further development of our previous methodological approach (see the white paper on the ZMV Monitor). A disadvantage of this further development is the limited comparability of the results, which results from the revised category system. This means that the names of the areas and future topics we worked with in the studies differ. However, some future topics and support needs are similar, so we use them below to establish links between the studies. It should be noted that the factors mentioned above do not allow us to explain the extent to which (non)changes are due to the new methodological implementation, the different sample or topic-related developments.

The high proportion of SMEs that consider finding personnel (skilled workers and trainees) to be one of their issues for the future appears consistently in both surveys. This also applies to the marketing of products and services. In this study, compared to the previous one, more SMEs consider retaining or retaining personnel and also training & qualification to be future topics. A largely constant value relates to the proportion of future topics for which SMEs already use external support. As in this case, it amounts to around 12%. In this study, around 60% of the future topics are assessed as requiring support, compared with 39% previously. This increase could be related to the way we promoted and introduced the ZMV Monitor. The text of our mailshot and the landing page focused on the topic of support needs and promised company-specific matching. This suggests a selection effect, according to which only SMEs with a need for support and hoping to benefit from the matching took part in the study.

Overall, the results indicate that small and medium-sized enterprises need support in the area of digital transformation or, as the survey has shown, help is being sought.

6.2. Future topics related to climate protection & sustainability

In its current form, the ZMV Monitor is not sufficiently sensitive for making possible efforts of SMEs in the area of climate protection and sustainability visible. Six SMEs, i.e. 3% of the sample, used the free text option to indicate a future topic related to climate protection & sustainability. The value seems small in view of the current social and political discourse. However, it must be considered that climate and sustainability goals can also be components of the other future topics (e.g., certain digitalization measures or structural changes) or are considered during

implementation. In future studies, we would like to be able to make more differentiated statements and use this reflection as a revision impulse for the ZMV Monitor.

6.3. Discussion of Research Questions

For the first research question (RQ1) presented in the introduction (RQ1: *From the perspective of SME, what topics are perceived as decisive for the future of an enterprise?*) the previous sections already presented our findings, whereas the two sub-questions need discussion:

RQ1.1: Were the topics of digitalization and digital transformation overrated in research and should be complemented by other areas?

In the ranking of support needs expressed by SME, digitalization of processes was on rank 2 and digitalization of products and services on rank 7, i.e., not only from research but also from an SME perspective digitalization is seen relevant. Obviously, the opinions and perception of SME are not decisive for definition of research strategies and topics, but they should be not completely irrelevant either.

RQ1.2: Are the other areas perceived important by SMEs of relevance for business information systems research?

Many support needs expressed by the SME motivate or even require use of IT in enterprises. Marketing of products and services is a clear example but even training employees and finding staff motivates specific IT. However, new research topics and directions for business information systems research did not emerge from the survey.

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