articles

A Taxonomy on Influencing Factors Towards Digital Transformation in SMEs

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Journal of Small Business Strategy

Digital Transformation (DT) has become a challenge and opportunity for firms competing in dynamic and volatile markets. Especially small and medium sized enterprises (SMEs) face difficulties within the digitalization process based on their limited resources and capabilities. It is essential to understand which factors influence this process to enable the success of DT in SMEs. However, there is fragmented research on DT in SMEs. To close this gap this paper aims to identify and categorize the influencing factors of DT in SMEs by building on the Attention Based View (ABV). Therefore, a systematic literature review was conducted with a total of 75 papers published from January 2012 to January 2022. 354 factors were identified. With the help of Gioia-Method a taxonomy was created. The main finding of the research is a taxonomy, which consists of three main categories and 17 sub-categories, which organize the factors identified from the sample. The taxonomy answers the calls in research for a comprehensive and tangible picture on the influencing factors of DT in SME independent from disciplines or industries. For practitioners the taxonomy allows to understand and approach what specific factors influence their digital transformation journey and where to put attention.

1. Introduction

Digital Transformation (DT) comes up with high uncertainties, calls for change of strategy and value creation within companies triggered by technologies (Bouncken & Schmitt, 2022; Kim et al., 2021; Reis et al., 2018). Therefore, a deep understanding of the influencing factors of DT is of significant importance as DT is one of the most disruptive challenges of economic growth in the recent time (Groote et al., 2021; Vu et al., 2020). According to Bharadwaj et al. (2013) DT of organisations is defined as "activities through which a firm fundamentally transform[s] business strategies. Business processes, firm capabilities, products and services and key interfirm relationships in extended business networks" triggerd by digital" (Bharadwaj et al., 2013, p. 471).

SMEs are characterized by fewer than 250 employees and revenues of less than EUR 50 million per year (Federal Foreign Office, 2020). They are not scaled-down equivalents of large companies (Becker & Schmid, 2020; Culkin & Smith, 2000) and the definition already implies a limitation in terms of human and financial resources compared to large businesses.

Based on their limited resources especially in human and financial capital, on the one hand, CEOs of SMEs have to handle their day-to-day business. Beyond that, on the other hand, they also have to develop strategies considering how to secure the future of their business. DT is a key aspect of this (Bollweg et al., 2020; Fachrunnisa et al., 2020). As SMEs do not have dedicated positions or even departments which can be involved in DT projects, they need to balance their resources between daily business and an effective transformation, which includes to expand their focus beyond considering technologies in isolation to including organizational capabilities (North et al., 2020). In order to create value, their attention must be focused on developing, implementing and elaborating suitable ideas into a strategy towards DT (Ocasio, 1997; Ocasio & Joseph, 2018).

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Therefore, the Attention Based View is chosen as an underlying theoretical framework in order to analyze which factors influence the decisions towards DT.

DT is a raising field of interest in research (Reis et al., 2018). There are literature reviews (Kraus, Durst, et al., 2022) and frameworks (Schallmo & Tidd, 2021), available but they do not reflect the specific requirements and challenges of SMEs. The studies and literature reviews that have been conducted on DT in SMEs in recent years focus on one field of DT (Bouncken & Schmitt, 2022; Costa & Castro, 2021; Levstek et al., 2018) or branch (Mittal et al., 2018) only and aim to be practical introductions or descriptive summaries (Zhang et al., 2022). For the further theory development of DT, it is necessary to refer to management and business informatics research to have a more specific understanding of the influencing factors of DT in SMEs (Li et al., 2018; Pfister & Lehmann, 2021; Pierenkemper & Gausemeier, 2021; Soluk & Kammerlander, 2021; Verhoef et al., 2021).

Hence the study aims to addressing these calls for a deeper understanding of the influencing factors of DT in SMEs and integrating them in a taxonomy by conducting a systematic literature review which inductively analyzes influencing factors published between January 2012 and January 2022.

This results in the following two research questions:

> *RQ1: Which factors influence the DT in SMEs?*
> *RQ2: How can these factors be categorized and organized to have a comprehensive and tangible concept?*

This study is the first to combine the ABV framework with DT in SMEs. The taxonomy presents a tangible and comprehensive picture of the influencing factors of DT in SMEs by the framework of Attention Based View. Hereby the holistic approach helps to understand DT based on the constrains and strength of SMEs and can be used as a starting point for strategic decisions within SMEs. Therefore, this study aims to analyse the factors that determine DT in SMEs to better understand relevant conditions or resources to evaluate where the attention flows.

2. Theoretical Underpinnings
2.1. Digital Transformation in SMEs

The concept of DT refers to an evolutional process from first digitization, second digitalization and third DT (Kim et al., 2021). While digitization refers to the transformation from analog data and contend to digital information, digitalization encompasses processes, products and services. DT means a change triggered by digital technologies in business, but also in the entire economy and society (Kim et al., 2021; Reis et al., 2018). At the cooperate level, DT does not only change input / output or processes, but also strategies and implementation plans to create new terms of value proposition or market opportunities. This is based on the performance in digitalization of the entire product life cycle of business activities. Hence, it focuses on all sectors like, products and services, production processes, business processes, corporate strategies, organizational culture

and leadership (Kim et al., 2021; Reis et al., 2018). However, academic literature offers various definitions of DT with blurred boarders of focus on technology, stakeholders, processes or organizational aspects. Thus, Reis et al. (2018) for example suggest a categorization by three main aspects: (1) technological, where DT is affected by the use of digital technologies, (2) organizational, where DT needs to change organizational processes or create new business models, (3) social, as DT influences aspects of human life such as increasing customer requirements.

Nadeem et al. (2018) highlight that DT leads to innovative practices, improved designs, and new business models, and has influenced how companies create value. Successful DT enables companies to leverage strong customer relationships (Leipzig et al., 2017). DT is not only about acquiring and deploying fit-for-purpose technologies, but also an important approach to addressing management issues such as human resources, business efficiency, and business process redesign (Verhoef et al., 2021).

Nevertheless, not only large sized enterprises (LSEs) are competing in global business environments, but SMEs are also crucial for sustainable economic growth, as they represent over 90% of all companies worldwide (The World Bank Group, 2022). Academic Literature lists a number of characteristics, differentiating SMEs from LSEs (Becker & Schmid, 2020; Trabert et al., 2022) Those can be summarized in three main constrains: (1) limited financial access (Rao et al., 2021), (2) limited human capital (Owalla et al., 2022) and (3) limited capabilities to manage their business model for scaling (Galli-Debicella, 2021; Westerlund, 2020). Therefore, the implementation of DT in SMEs faces difficulties and remains limited (Soluk & Kammerlander, 2021).

Li et al. (2018) explain that SMEs can benefit from the availability of digital platforms and digital investments. Furthermore, they can develop social capital, build up business teams and upskill the organization through DT. Scholars also believe that DT requires more than technical skills, but also management skills such as workflow design, business strategic training and HR investments in digital literacy skills. Furthermore, digital processes require a culture of innovation and pioneering top management, and effective governance (Zhang et al., 2022).

2.2. Attention Based View

In this research the Attention Based View is adopted as theoretical framework. Consequently, a taxonomy which supports decision makers in SMEs to understand how their decision is influenced by the limited resource of attention is developed.

The ABV of a firm was introduced by Ocasio (1997) to explain whether and how organizations adapt to changing environments, such as digitalization. Attention is understood as a limited resource in firms and is defined as the noticing, encoding, interpreting and focusing of time and effort by organizational decision makers on problems and solutions (Mäntymäki et al., 2020; Ocasio, 1997) The accurate planning and performance of strategic actions and the speed of their execution require that individual and group decision-makers concentrate their energy, effort, and mindfulness

on a limited number of issues and tasks. Successful strategic performance thereby requires "the sustained focusing of attention and effort associated with controlled attentional processing." (Ocasio, 1997, p. 203). Overall ABV is based on three principles which describe the distribution of attention within the organization:

1. Focus of attention: The focus of decision makers is divers based on certain issues and answers. It shapes the individual action and decisions. What the decision maker do depends on their personal level of attention (Cyert & March, 1963; Simon, 1957). Hence, firm level behavior can be understood as the outcome of attentional focus by the aggregation of the individual actions (Brielmaier & Friesl, 2022).

2. Situated attention: The focus of attention is influenced by the context the decision maker is located in on a certain time. The situational characteristics enable an individual focus of attention. Situations are influenced by temporal, procedural and spatial factors. Hence it is influenced on the one hand of the situation of the individuum and on the other hand on the situation shaped by the organization (Ocasio, 1997).

3. Structural distribution of attention: The focus of attention by individuals is influenced by social, economic and cultural attention structures (Perrow et al., 1977). Ocasio (1997) proposes that the distribution of attention structures consist of four interrelated factors within organizations: structural position, rules, resources and stakeholder.

The aim of the ABV as descriptive framework is to enable an understanding on whether and how firms perform in changing surroundings and on the unexpected contingencies which underlie these situations (Ocasio, 1997). Additionally, Ocasio and Joseph (2018) outline that the ability of an organization to stay focused on the development, implementation and elaboration of ideas into strategy is crucial for their success within value creation. Therefore, the understanding of the situational dynamics in order to understand the attention allocation within organizations becomes essential especially in dynamic and volatile markets (Brielmaier & Friesl, 2022). Current research on ABV by focusing on SMEs lines out specific issues like sustainable supply chain management in India (Shibin et al., 2020) or the open innovation moves (Livieratos et al., 2022), but literature on DT in SMEs using the ABV framework is not available.

3. Methodology

To structure and integrate influencing factors of DT in SMEs, which have been identified in business science, a systematic literature review according to Tranfield et al. (2003) was conducted. The goal of a systematic literature review is to bring together as much of the existing evidence-based literature as possible, to gather the literature which is relevant to the research being conducted, regardless of the region in which it was published, in order to achieve the best possible presentation (Denyer & Neely, 2004; Tranfield et al., 2003). As identified by Kraus, Breier et al. (2022, p. 2589), one of the primary contributions of literature reviews is "to provide an overview of current knowledge in the domain, method or theory." This approach has become a quasi-standard in field of business science (Breslin et al., 2020). There are several literature reviews in this field using the underlying methodology, e.g. Lee & Herrmann, 2021; Leemann & Kanbach, 2022; Pfister & Lehmann, 2021.

Based on the research questions the following search string was defined: digit* AND SME* AND factor* and their synonyms. The search was conducted on the data base of a meta data base which combines 34 different data bases including Emerald, SpringerLink, Wiley Online Library and Taylor and Francis among others, referring to title, abstract and key words. This resulted in 566 articles.

The results were filtered according to the following criteria: First, to gain an understanding of the evolution as well as to perform an in-depth analysis of the current findings, the search was limited from January 2012 to January 2022 (excluding 131 articles). Second, only English articles were selected (excluding 61 articles). Third, peer reviewed articles were considered to ensure the enhancing quality control (excluding 79 articles) (R. J. David & Han, 2004).

After applying these filters, 295 articles remained. By evaluating the titles and abstracts of these publications, the aim was to identify all papers which directly refer to SMEs and have identified influencing factors for DT. Hence, another 113 articles were excluded.

Overall, 182 articles remained as preliminary sample which was completely analyzed to influencing factors of DT in SMEs in research. Further 107 articles were excluded not referring to the research question. Therefore, the final sample consists of 75 articles. Fig 1 summarizes the screening process.

The framework was developed with the help of Gioia-method based on the ability to close research gaps and derive new theories (Langley & Abdallah, 2015). The 354 identified influencing factors were used as first order codes, orienting close to the actual statements in the articles. With iterations first order codes were systematically structured. By using axial coding first order codes were grouped in a more theoretical manner. Hence, 17 second-order themes were developed based on the iterative process. For example "managers/owners who have a positive attitude towards DT", "top management has a fundamental role in supporting changing scenarios" and "senior management involvement" where included in the second order theme of executive management/leader. Afterwards the second-order themes were synthesized to three aggregated dimensions which refer to the *focus of attention, situated attention and structural distribution of attention* (Ocasio, 1997). The research is grounded in an understanding of a taxonomy as hierarchical structures that arrange categories from the general to the specific (Blackburn, 2006). Thus, data structure obtained by Gioia-method is transferred into the taxonomy (cf. Fig. 2). The top node result from the aggregated dimensions out of the Gioia-structure and consists of the three interrelated premises of ABV identified by Ocasio (1997). On the second level second order themes were used
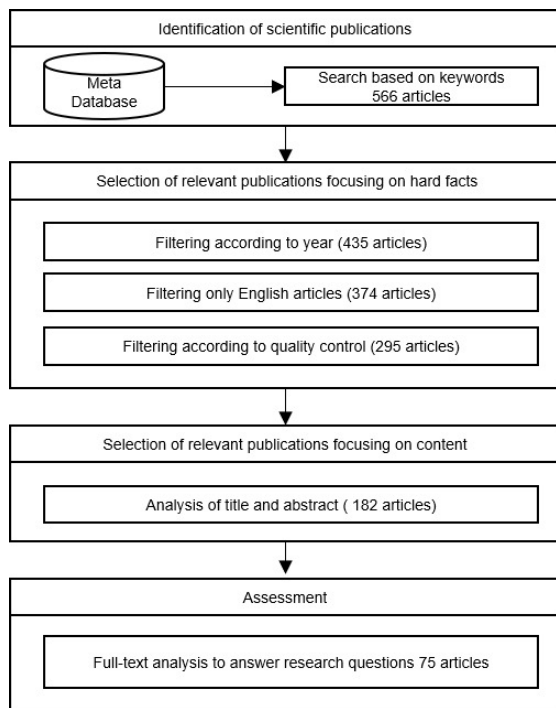
Figure 1. Screening process; own illustration based on Tranfield et al. (2003)

to construct 17 sub factors of DT in SMEs. The number on each category describes the count of mentioning within the papers. Each single paper could include different sub factors, but each factor was counted only once when mentioned in the paper. To maintain the relevancy of the taxonomy for practitioners, the sub categories were phrased using practical language. Since the purpose of the research was to classify and organize influential factors in an integrated, tangible framework, the taxonomy does not portray a third layer of Gioia-Structure.

4. Findings

As Figure 3 illustrates, the interest in DT in the field of SMEs is rising fast as the number of publications dealing with the topic is growing substantially. 61 % of the analyzed paper were published since 2020. Figure 3 presents the cumulative number of articles on DT in SME published between January 2012 and January 2022 within our sample.

In the following section the findings will be analyzed in detail to understand the commonalities among the identified idiosyncratic influencing factors. The authors used the ABV framework to cluster them. Especially SMEs have to deal with limited resources. Therefore, the ABV supports decision makers to be aware of the influencing factors. Only through the awareness executive management is able to decide where to turn their attention.

4.1. Focus of Attention

What decision makers do, depends on their focus of attention, which is limited. Thus, they need to concentrate on certain aspects. Strategic focus is important, as various alternative issues compete on the attention of organizational

decision makers (Ocasio, 1997). Therefore, the described factors below frame the focus of attention of decision makers in SMEs for DT.

4.1.1. Executive management/ leader

Executive management and leaders are the decision-makers in companies, this also applies to digitalization and DT (Chong et al., 2018; Gagliardi, 2013). The attitude of executives has a significant influence on the overall attitude in the company (Al-Weshah et al., 2013; Koe & Afiqah Sakir, 2020). If they have a positive attitude, they can be convincing. Conversely, if they have a negative attitude, they will not be able to engage and convince the employees (Grandón & Ramírez-Correa, 2018; Hassan et al., 2020). Without the commitment of executive management and management support, digitalization in accordance with change is not possible (Agostini & Nosella, 2020; Cieciora et al., 2020).

4.1.2. Strategy

Overall, strategy provides direction and thus, reflects focus of attention within any company. However, many SMEs do not have a clear strategy that focuses on DT (North et al., 2020). However, the definition of a clear strategy for DT is fundamental to provide orientation. This includes the vision, mission and goals (Haug, 2012; Nguyen & Nguyen, 2021) to ensure future success. DT strategy can be either part of the overall company strategy (Llinas & Abad, 2019) or as an individual digital strategy (Soluk & Kammerlander, 2021). Only through continuous monitoring of the aligned strategy (Aziz & Omar, 2013) a SME can further develop, grow and successfully implement DT (Makrides et al., 2020).

4.2. Situated Attention

The situated attention of decision makers is based on the circumstances they are surrounded by. These characteristics of the situation influence the individual's behavior. Additionally, the organizational and environmental context shape the decision makers focus of attention and action (Ocasio, 1997). Hence, the influencing factors, which are described hereafter, can affect the focus of attention of executive management and thus, impact the strategy.

4.2.1. Employees

Employees in general are an important resource and a crucial influencing factor in SMEs. In principle, the availability of skilled employees is a key threshold to them, regardless of whether from an internal or external source (Al-Weshah et al., 2013; Nwaiwu et al., 2020). Furthermore, the attitude of the employees towards digitalization is an essential factor (North et al., 2020). Employees have to understand and accept the necessity and crucial role of digitalization (Bollweg et al., 2020; Pollák & Markovič, 2021). This requires a change in the employees' mindset (North et al., 2020) and to overcome the resistance to change (Ryan & O'Connor, 2013), respectively resistance towards new tech-
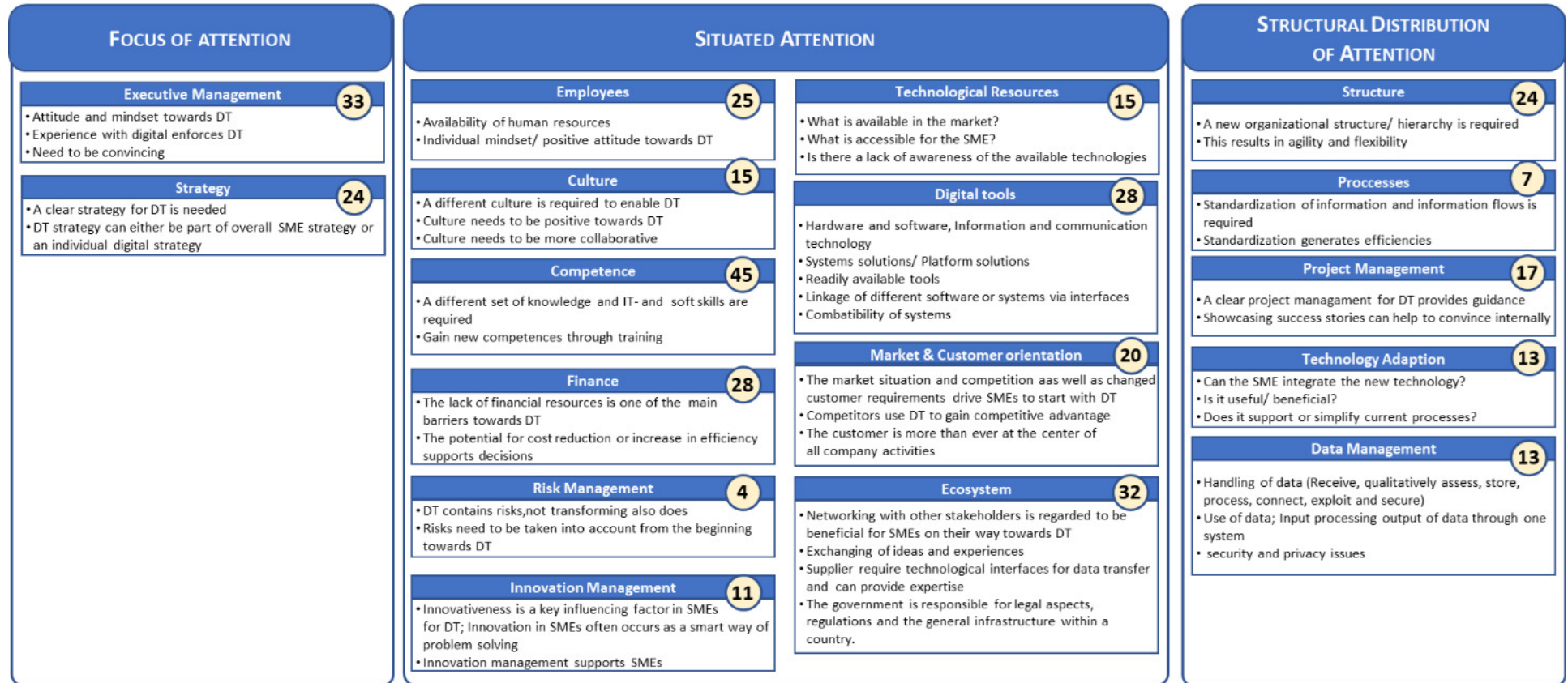
FOCUS OF ATTENTION

Executive Management — 33
- Attitude and mindset towards DT
- Experience with digital enforces DT
- Need to be convincing

Strategy — 24
- A clear strategy for DT is needed
- DT strategy can either be part of overall SME strategy or an individual digital strategy

SITUATED ATTENTION

Employees — 25
- Availability of human resources
- Individual mindset/ positive attitude towards DT

Culture — 15
- A different culture is required to enable DT
- Culture needs to be positive towards DT
- Culture needs to be more collaborative

Competence — 45
- A different set of knowledge and IT- and soft skills are required
- Gain new competences through training

Finance — 28
- The lack of financial resources is one of the main barriers towards DT
- The potential for cost reduction or increase in efficiency supports decisions

Risk Management — 4
- DT contains risks, not transforming also does
- Risks need to be taken into account from the beginning towards DT

Innovation Management — 11
- Innovativeness is a key influencing factor in SMEs for DT; Innovation in SMEs often occurs as a smart way of problem solving
- Innovation management supports SMEs

Technological Resources — 15
- What is available in the market?
- What is accessible for the SME?
- Is there a lack of awareness of the available technologies

Digital tools — 28
- Hardware and software, Information and communication technology
- Systems solutions/ Platform solutions
- Readily available tools
- Linkage of different software or systems via interfaces
- Combatibility of systems

Market & Customer orientation — 20
- The market situation and competition aas well as changed customer requirements drive SMEs to start with DT
- Competitors use DT to gain competitive advantage
- The customer is more than ever at the center of all company activities

Ecosystem — 32
- Networking with other stakeholders is regarded to be beneficial for SMEs on their way towards DT
- Exchanging of ideas and experiences
- Supplier require technological interfaces for data transfer and can provide expertise
- The government is responsible for legal aspects, regulations and the general infrastructure within a country.

STRUCTURAL DISTRIBUTION OF ATTENTION

Structure — 24
- A new organizational structure/ hierarchy is required
- This results in agility and flexibility

Proccesses — 7
- Standardization of information and information flows is required
- Standardization generates efficiencies

Project Management — 17
- A clear project managament for DT provides guidance
- Showcasing success stories can help to convince internally

Technology Adaption — 13
- Can the SME integrate the new technology?
- Is it useful/ beneficial?
- Does it support or simplify current processes?

Data Management — 13
- Handling of data (Receive, qualitatively assess, store, process, connect, exploit and secure)
- Use of data; Input processing output of data through one system
- security and privacy issues

Figure 2. Taxonomy of influencing factors towards Digital Transformation in SMEs; own illustration
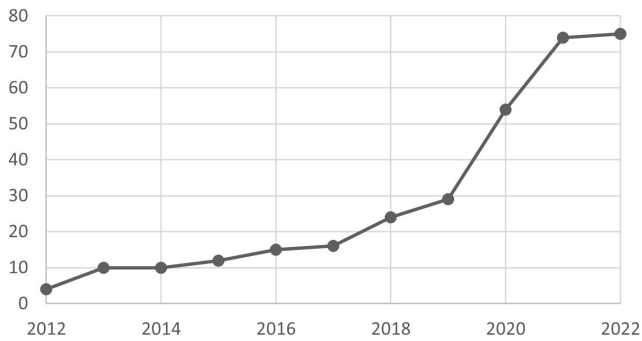
Figure 3. Cumulative number of analysed articles; own illustration

nologies (Pamuła, 2020). Digitalization and DT strongly rely on a positive perception of employees and therefore requires a reduction of negative perception (Reyes-Mercado & Barajas-Portas, 2020).

4.2.2. Culture

The culture within a business influences its way of working. To be able to digitalize it is necessary, to create a digital entrepreneurial culture (Garzoni et al., 2020) throughout the entire organization (Heins et al., 2021), which includes collaboration among all business departments (Saleh & Manjunath, 2021). However, since the positive attitude towards digitalization is not always given (Bollweg et al., 2020), yet there is even a resistance to change (Garzoni et al., 2020) a cultural change is needed (Llinas & Abad, 2019).

4.2.3. Competence/skills/knowledge

In addition to the previously mentioned aspects, the sub-category of competencies plays a central role. The sample shows on the one hand, that there is either a lack of competencies and skills within SMEs (Benitez et al., 2020; Buer et al., 2021; Cieciora et al., 2020; Götz, 2019; Pamuła, 2020; Rakovic et al., 2020) or a different level of knowledge with regards to digitalization among the SME (Götz, 2019) and on the other hand how to overcome these hurdles. To enable the organization and build the required knowledge and competences, it is necessary to develop the relevant skills for example by providing trainings on IT and soft skills, by best practice sharing, job rotation, knowledge sharing, tutorials (Heins et al., 2021; North et al., 2020; Saleh & Manjunath, 2021; Soluk & Kammerlander, 2021) as well as the introduction of change management competencies (Ghobakhloo & Iranmanesh, 2021; Zoppelletto et al., 2020). Beyond that hiring experienced external staff or facilitators as source of knowledge is possible (C. M. Chan et al., 2019; Fleet, 2012) . Because the higher the expertise the lower the resistance and therefore the chance to implement and apply digital tools (Dincă et al., 2019).

4.2.4. Finance

SMEs often lack financial resources, and perceive this as an outstanding barrier to transforming digitally (Cieciora

et al., 2020; Khin & Hung Kee, 2022; Müller et al., 2020; Pamuła, 2020; Žufan et al., 2020). Respectively, SMEs expect high costs for DT or the setup of digital infrastructure (Jardim-Goncalves et al., 2013; Pamuła, 2020). However, if they consider cost reductions due to digital tools, a first step can be to start with a low investment to gain initial experience (Tóth et al., 2020). First when collaborating with external partners or through the standardization of IT resources, SMEs are willing to invest (Benitez et al., 2020; Wojciechowski et al., 2012). Overall, the investment in digitalization is according to Al Shery (2021) increasing revenue growth and should therefore be seen as a need to stay in the competitive landscape.

4.2.5. Risk management

SMEs need to create the awareness for digitalization to be a fundamental issue. However, due to limited resources, they can only handle a limited number of projects also in the context of digitalization. Accordingly, risks should always be taken into account (Sinha & Fukey, 2021) as the failure of one single project can already mean the end for a company. Moreover, if they fear any risks, SMEs are less willing to adopt new digital technologies (Oh et al., 2012). As a solution, Buer et al. (2021) suggest to start with projects with lower risks to ensure success of digital projects. In summary, SMEs have to take risks to be able to forge new paths (Tolstoy et al., 2021).

4.2.6. Innovation Management

Innovation or innovativeness is a key influencing factor for DT in SMEs (Pollák & Markovič, 2021). To stay relevant in highly competitive markets, SMEs need to be innovative with regards to new product development (Aziz & Omar, 2013; Chong et al., 2018) and/ or (production) processes (Müller et al., 2021). A creative and explorative way of innovating can be through e.g. open innovation (Martinelli et al., 2021). Furthermore, it should be noted that innovation often happens especially in SMEs as an intelligent way of problem solving (Gagliardi, 2013).

4.2.7. Technological resources (availability, access)

The most crucial aspect is the availability of supporting technology and IT resources. If neither systems nor tools are available, digitization and digitalization are not possible (Benitez et al., 2020; Haug, 2012). The same holds true for accessibility to services for example due to limited internet connections on the shop floor of manufacturing companies (Pamuła, 2020). The unawareness of the available opportunities also influences digitalization of SMEs which is often driven by a lack of existing IT skills (Müller et al., 2020; Stentoft et al., 2021). However, being open to the usage of innovative available technologies provides potentials to lower costs (Y. E. Chan et al., 2020) and create new business opportunities (Aziz & Omar, 2013).

4.2.8. Digital Tools

The integration of new or advanced digital tools (e.g. hardware or software) is the core of digitalization and the starting point for the DT of any company. The sample refers to a wide variety of tools that are used to digitize/ digitalize a company. These include for example digital marketing tools like the creation or the advancement of a website (Heins et al., 2021; Lányi et al., 2021) and the integration of e-commerce solutions (Heins et al., 2021) or special e-networks to interact with customers digitally (Al-Weshah et al., 2013; Makrides et al., 2020). In addition, the application of information and communication technology is described as a relevant issue (Cieciora et al., 2020; Ramírez-Durán et al., 2021). Relating especially to internet technology and tools (Yau & Tang, 2018) states that it enhances marketing effectiveness. Online marketing tools, e.g. social media platforms, are seen as cost-efficient and are therefore often a first step of SMEs towards digitalization (Tóth et al., 2020) Platforms are a specific form of a tool. They can be used to share knowledge, data, services, information, software programs etc. (Ben Arfi & Hikkerova, 2021; X. Liu et al., 2021) to optimize processes. Located in a cloud they offer the opportunity to get access to data from different places, departments, stakeholder, etc. (Wojciechowski et al., 2012). It is shaped by the interoperability of tools via defined interfaces. DT is only successful when data exchange within the tools is possible. (Y. E. Chan et al., 2020) Once SMEs started to integrate/ adopt new tools, the next step is to interconnect these different systems, or to ensure that different systems can be linked to each other via interfaces. Only through this connection, industry 4.0, smart factories (Agostini & Nosella, 2020; Ballestar et al., 2020; Park et al., 2020) or integrated customer centered companies (Dong & Yang, 2020; Shaltoni et al., 2018) can be created, hence DT can be realized and the greatest effort towards efficiency and effectiveness can be build.

4.2.9. Market & Customer orientation

According to the sample SMEs operate in a competitive market. In order to withstand the competitive pressure, digitalization is essential, especially referring to the main constrains of SMEs. Conversely, the market requires and advocates digitalization (Al-Weshah et al., 2013; Bollweg et al., 2020; Grandón & Ramírez-Correa, 2018; Saleh & Manjunath, 2021).

Along with market orientation comes customer pressure towards digitalization (Bollweg et al., 2020). Digital tools and communication enable SMEs to firstly receive and secondly integrate customer feedback and requirements into their processes and products (Ramírez-Durán et al., 2021; Soluk & Kammerlander, 2021). In addition, it can be used as a reference source for gaining new customers, even entering new markets or increase customer loyalty. Digital marketing affine papers in particular have seen this as relevant in the context of digitalization (Makrides et al., 2020; North et al., 2020; Tóth et al., 2020).

4.2.10. Ecosystem

Networking and exchanging with other stakeholders can be beneficial for SMEs on their way towards DT. Generally, it is not a single company that is affected, but rather a conglomerate of different companies or entire clusters (Benitez et al., 2020; Götz, 2019; Martinelli et al., 2021; Mukherjee, 2018). The network can provide external support, share its knowledge and collaborate (Benitez et al., 2020; Ghobakhloo & Iranmanesh, 2021; Tóth et al., 2020). In addition, it is also important to highlight that SMEs often trust peers from their network when it comes to experience with digital tools (Hau, 2018).

Suppliers are specific part of the network and can be regarded as a central starting point or hinderer towards DT. For example, they have digital communication requirements and demand digital interfaces (Benitez et al., 2020; Cieciora et al., 2020; Ghobakhloo & Iranmanesh, 2021). They foster the exchange between different business partners and can also act as experts and provide consulting services for digitalization and DT (X. Liu et al., 2021). Additionally, if a supplier, in the specific publication a provider of Cloud Computing solutions, provides insufficient service, this will lead to a negative attitude towards DT in the SME (Pamuła, 2020).

Moreover, the government is responsible for legal aspects, regulations and the general infrastructure within a country. On the one hand within the sample strict regulations and legal issues e.g. data protection regulations are mentioned as strong barriers towards digitalization (Al-Weshah et al., 2013; Bollweg et al., 2020; Y. Liu et al., 2020; Pamuła, 2020). However, on the other hand, governmental support can help to overcome hurdles for instance by organizing cooperation activities among networks (Benitez et al., 2020), by supporting with initial funding (Benitez et al., 2020; Mukherjee, 2018), encouraging the digitalization process within SMEs (Chong et al., 2018) or through specific adaption of legal requirements (Mukherjee, 2018) which would be otherwise an issue (Gagliardi, 2013).

4.3. Structural distribution of attention

The influencing factors that affect the flow of information or how decisions are taken are grouped in structural distribution of attention. Those are linked to hierarchical or organizational structures and processes. These structural components can also change the attention of the decision maker. Project management as a structured roadmap also supports the communication flows. Through technological process enhancing for instance with regard to adoption of new or interconnection of new or existing technologies the focus of attention can also be changed.

4.3.1. Structure

Existing structures within an SME need to be reconsidered to allow a company to change their way of doing business and to perform a transformation process. Because if a SME lacks certain organizational structure, it will fail the integration of new systems (Khan et al., 2016). The sample

agrees on the necessity to change organizational structures and hierarchies to ensure agility and flexibility (Ballestar et al., 2020; Y. E. Chan et al., 2020; Del Giudice et al., 2021; Martinelli et al., 2021).

4.3.2. Processes

Processes is strongly linked to structure, however included as a separate sub-category in this analysis. While structure focuses on hierarchy, processes focuses on standardization along with information flows. The need to clarify existing processes and workflows (Alkhatib et al., 2019; Khan et al., 2016; Martinelli et al., 2021) is relevant to be able to translate current business processes into standard repeatable processes. Only then technology enables SMEs to profit from efficiencies (Mukherjee, 2018). A senior manager with specialist expert knowledge can act as an integrator (Gagliardi, 2013).

4.3.3. Project management

The sample shows, that the implementation of digital technology in SMEs is challenging. A clear project management can help to guide the overall process (Y. Liu et al., 2020). Having a structured roadmap and providing individual and smaller steps will take the overall burden of the unconquerable big project. It provides direction and reachable goals (Buer et al., 2021; Cieciora et al., 2020; Haug, 2012; Ramírez-Durán et al., 2021) For example, success stories than help to encourage taking the next steps (Shaltoni et al., 2018; Soluk & Kammerlander, 2021; Zoppelletto et al., 2020).

4.3.4. Technology adoption/ readiness

If a SME is ready to introduce und use new technologies depends on different aspects. The stage of development of the technology is also decisive for the SME to decide in favor of a technology (Y. E. Chan et al., 2020) or in contrast bad usability and insufficient flexibility lead to non-adoption (Rakovic et al., 2020). In addition, the positive perception of usefulness, support and simplification of processes through the technology are stated as a reason for the adoption of new digital technology (Chatterjee & Kumar Kar, 2020; Hussain et al., 2021; Quinton et al., 2018)

4.3.5. Data management

Data is one of the key resources towards DT (Ghobakhloo & Iranmanesh, 2021). Hence the aspect of data management require attention and also shape the decision. Receive, qualitatively assess, store, process, connect, exploit and secure (big) data is challenging to large entities and even more for SMEs due to resource constraints. However, data management and data management systems provide opportunities to handle data beneficial for the company, e.g. to gain more transparency about customer needs and develop new services out of it. (Dong & Yang, 2020; Heins et al., 2021; Rakovic et al., 2020). In particular, data security and privacy issues are seen as a major challenge and influence decisions regarding digitalization e.g. there is no

common answer on the questions: Who owns the data? (Al-Weshah et al., 2013; Ghobakhloo & Iranmanesh, 2021; Pamuła, 2020; Senarathna et al., 2016; Wojciechowski et al., 2012).

As a summary Figure 4 shows a simplified overview of the influencing factors towards DT based on the ABV. Organizational moves like DT are shaped by the focus of attention through executive management and the formulated strategy. The focus of attention, in turn, is shaped and influenced by factors from situated attention and by factors from the structural distribution of attention. As the focus of attention is limited, both, situated attention and the structural distribution of attention, play a significant role. As every SMEs situation is different, executive management must analyze the specific situation based on the presented factors in order to understand how the decision, respectively organizational move, is influenced.

5. Discussion

Digitalization and DT seems to be a huge challenge especially to SMEs as it is perceived as an enormous effort and persuasion with insurmountable constraints. This applies both in the technical area but also with regard to employees, culture and organizational aspects in the company. (Kim et al., 2021)

Whether and how firms adapt to changing environments can be explained through the theory of the ABV (Ocasio, 1997; Ocasio & Joseph, 2018). The ABV is designed to provide an explanatory framework for understanding whether and how firms respond to changing internal and external contexts, as well as the contingencies that may underlie these occurrences (Ocasio, 1997). The decision makers attention influences if and how digitalization/ DT is pursued in SMEs. Ocasio (1997) argues that "firm-level behavior is the result of the situated distribution and allocation of managerial attention, embedded in the broader organizational structures." Thus, the field of attention of decision makers determines actions within a firm. Executive management need to focus their attention on digitalization because who participates in a decision-process shapes which issues and answers are attended to (Ocasio, 1997). According to the literature and the present analysis, the path towards DT in SMEs is at least influenced by 17 factors. However, due to limited resources, SMEs cannot focus on all of them at the same time. Therefore, they have to prioritize and make digitalization a major priority on their agenda. Here, attention is a very important aspect. Attention is mainly driven by the executive management. To start with digitalization or DT, executive management has to push their attention towards certain areas and define what is important and how to proceed.

Executive management plays a crucial role for any kind of strategic decision-making, hence for digitalization as well. In SMEs with limited resources, this is even more important as the attention of executive management is also limited. If executive management does not take digitalization into account, it will not be on the agenda for strategic moves. Therefore, in SMEs, it can be both an advantage and a disadvantage that digitization often lies in the respon-
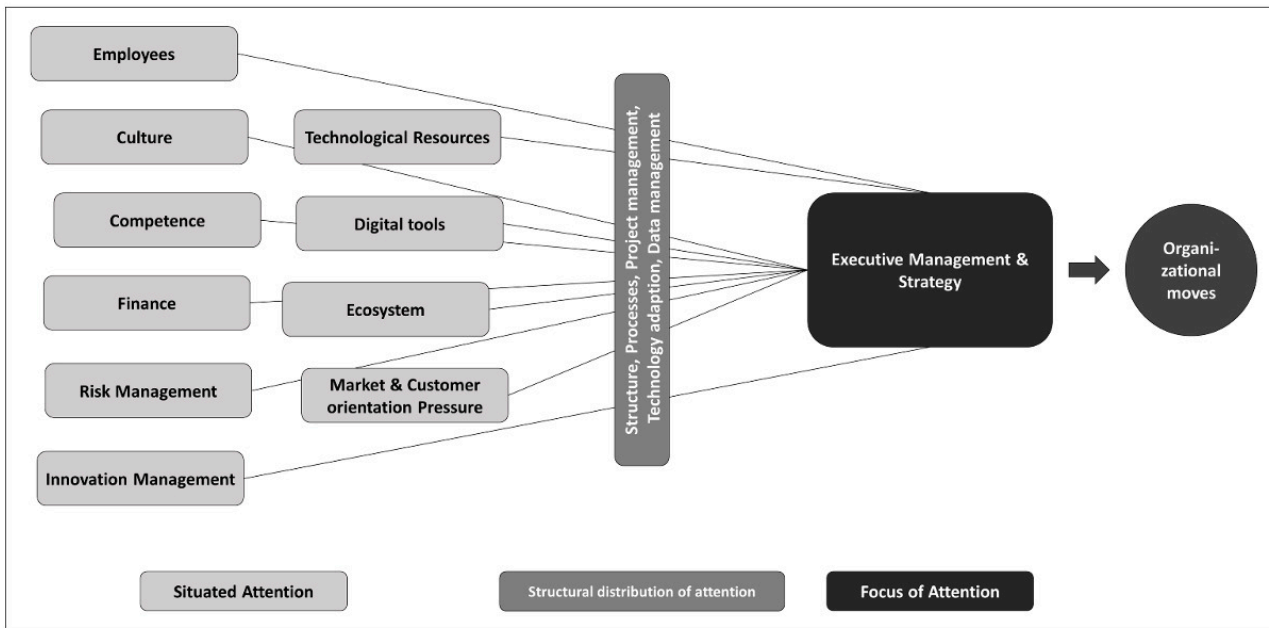
Figure 4. Simplified model of attention and firm behaviour based on the influencing factors towards DT; own illustration based on Ocasio, 1997

sibility of one single person who is both integrated in the day-to-day business and responsible for digitalization and DT. The positive aspect is a good understanding of the situation through one person, however on the negative side, this single individual has a limited focus of attention.

Many of the analyzed paper deal with digital marketing topics or e-commerce (Heins et al., 2021; Lányi et al., 2021). However, this is only a sub-aspect of digitalization. DT goes beyond online activities or the digitalization of single processes as it includes next to process and product the whole company and especially the value creation (Bharadwaj et al., 2013; Hinings et al., 2018). Nevertheless, to SMEs this seems to be a simple to introduce aspect and a potential opportunity to start with digitalization and thus create attention and positive attitude towards DT of the firm. As outlined by Wessel et al. (2021), there is a difference between digital transformation and IT enabled organizational transformation. Hence, SMEs first need to understand and clarify what is meant by DT and evaluate their specific influencing factors towards DT.

Success supports reflection and progress. Based on the present analysis project management can be a key factor towards DT. Project management facilitates keeping an eye on the goal, tracking results and thus, also highlighting successes. If the focus of attention is on very easy to achieve goals (low hanging fruits), this generates a sense of achievement. When the first, even smaller successes materialize, it is easier to take the next steps. Executive management should focus on aspect, they are familiar with, as there already is attention, and success will probably occur more promptly. In return, taking the next steps is easier.

Furthermore, SMEs cannot influence all of the mentioned factors directly. Market pressure, customers and network refer to external influencing factors which can only be shaped partly by the SME itself, but do have a lasting effect on the company. Hence based on the ABV it is important to know that these factors do have a direct influence on the decision of executive management and must be considered.

The analysis shows, that a single paper can consist of a combination of different factors that influence DT. This indicates, that there is a linkage between the different factors and relates back to the definition of DT by Bharadwaj et al. (2013) to be a combination of different entrepreneurial changes and challenges. A qualitative statement on the significance of the individual influencing factors cannot yet be derived from this. As pointed out by Črešnar et al. (2022) there is a need for non-technological to enable DT. Technologies as a trigger of DT, can only be implemented successfully, if the organization is able to use them properly (P. A. David, 1990). This requires knowledge, communication and thus, attention of the Executive Management and managers/ employees as requested in the ABV.

5.1. Theoretical Implications

With our approach, we not only present interesting insights for strategy, but also for e.g. organizational, behavioral and leadership research. By means of taxonomy, the present research provides an integrated and tangible view on which factors are impacting the DT in the SME. It thus responds to the various calls from literature to better and more concretely understand influencing factors of DT in SMEs (Li et al., 2018; Pfister & Lehmann, 2021; Pierenkemper & Gausemeier, 2021; Soluk & Kammerlander, 2021; Verhoef et al., 2021). Influencing factors for DT can be both driver/ enabler or barrier/ hinderer at the same time. It is depending on the perspective by affirmation or denial, e.g. considering the attitude. A positive perception is seen as beneficial, whereas a negative perception is seen as a barrier (Reyes-Mercado & Barajas-Portas, 2020). However,

what is mentioned repeatedly are the resource constraints in SMEs as limiting factor. Especially the general resource constraints of SMEs are mentioned in various publications of the sample without further specification (Heins et al., 2021; Mukherjee, 2018; Stankovska et al., 2016; Stentoft et al., 2021). This lack of resources is often named as the most relevant hinderer for the implementation of new technology (Bollweg et al., 2020; Bosman et al., 2020; Gagliardi, 2013; Stankovska et al., 2016). Hence, by the means of the taxonomy the research offers a specification of the resource constrains by presenting where to turn the attention.

DT is a huge topic in scientific research today. As highlighted in this literature review it is influenced by divers' factors. The authors used the ABV framework to cluster the influencing factors and putting specific emphasize on attention. The ABV, clearly shows that the executive management plays an essential role for digitalization and that they are a significant driver. But other factors also impact the path towards DT. Those are reflected by situated attention. In addition, communication within a company also plays a role and is reflected, for example, in the technical possibilities. However, the ABV should not only be considered independently, but can be seen as a valuable addition to already existing theories (Ocasio, 1997). A fully understanding of competitive advantage of firms can only be reached by integrating the ABV framework with industry and resource perspectives (Ocasio, 1997). Another approach for structuring in the literature and one of growing importance is dynamic capabilities (Korherr & Kanbach, 2021; Mittal et al., 2018; Warner & Wäger, 2019). The approach grounds on the resource based view and was initiated by Teece and Pisano (1994): The dynamic capabilities focus on the firms ability to stay competitive in their environment by the ability to reinvest their resources (Eisenhardt & Martin, 2000; Teece, 2018; Weiss & K. Kanbach, 2021). Leemann and Kanbach (2022) for example provide a taxonomy which presents 19 dynamic capabilities. There are several similarities to the presented taxonomy in this research. Hence, this provides another angle of view which can be used to get more into detail, focusing on capabilities as suggested by Soluk and Kammerlander (2021).

5.2. Managerial Implications

The taxonomy has the aim to provide a comprehensive and tangible picture of the influencing factors of DT in SMEs. Practitioners were confronted on the one hand with research focusing on one aspect of DT, like smart manufacturing (Mittal et al., 2018), digital marketing or ecommerce (Costa & Castro, 2021). Therefore, this seems to be a starting point for SMEs to apply digital aspects in their companies. On the other hand they were confronted with abstract work which is difficult to apply in their daily work (e.g. Burggräf et al., 2020; Chester Goduscheit & Faullant, 2018).

Executive management often has to lead the processes to DT themselves and make decisions based on that. There are no dedicated positions for digitalization projects. The tasks are in addition to day-to-day business. Hence the taxonomy answers the call for a holistic approach on the in-fluencing factors to support management by well-founded decisions (Pfister & Lehmann, 2021).

Thus, a strategic manager can apply the taxonomy as a guide to understand which factors are influencing their digital transformation journey by identifying the specific factors within the taxonomy, which fit to the company's characteristics. Furthermore, the study provides a starting point for managers to gain knowledge about digital transformation and the influencing factors quickly and guided.

To summarize, the executive management should have four (a – d) guidelines in mind on the path towards DT. Executive Management should (a) Focus on certain aspects, as their attention is limited as well as resources in general. Nevertheless, they need to understand which ones are the most important ones and put digitalization and DT on their agenda. Hierarchical structures and process flows guide the focus of attention of the decision maker. The structure of the company and the employees/ managers in key positions do have a strong impact on the decisions of the SME. Hence, (b) Organizational culture, employees and competences are key elements of organizational change. Digitalization and DT are organizational change processes. Thus, executive management should keep their attention on these aspects. (c) Understanding procedural and communication channels supports on the way towards DT in SME, affect attention and thus, the approach to digitization. (d) Environmental circumstances affect attention and thus, the path towards DT, although the SMEs cannot directly influence them. However, these external influencing factors can push digitalization and the path towards DT and need to be recognized.

6. Limitations and future research

Overall, the present paper provides a new approach, combining the ABV with influencing factors for digitalization and the path towards DT in SMEs. The authors are thus contributing to research SMEs. However, as with all research papers, there are limitations and avenues for future research.

First, conducting a systematic literature review based on the method of Tranfield et al. (2003) the paper might have missed some contributions which refer to influencing factors of DT in SMEs. Especially since this study was limited to English papers in the period of January 2012 to January 2022 only. However, it is unlikely that any additional research article would have changed the result of the study. Nevertheless, all efforts were made to gather as much relevant information, particularly using meta-databases that included as many scientific databases as possible.

Second, the proposed taxonomy may be biased due to the interpretation by the authors and language choices. Especially the language used for second order codes might be subjective by the aim of practical proposals. Other researchers might name the dimensions in a different way. At the same time this limitation can be applied on the first order codes and aggregated dimensions. Third, the results are based on quantitative and qualitative publications. Therefore, it is not suitable as a guideline but the nature of taxonomy aims to presents a structured and tangible picture.

Fourth, the taxonomy suggests 17 sub influencing factors which overlap and have blurred boarders, which needs to be acknowledged.

DT is influenced by diverse idiosyncratic aspects. The relationship among them is not researched within this study: How are they linked to each other or influenced by each other?

Following the approach to better understand the factors, which determine DT in SMEs the study opens several opportunities for future research. First, executive management and the focus of attention of the leaders has a unique relevance. The personal attitude and mindset of the executive management towards the topic of DT is a critical element and has a decisive influence on the path of an SME. With regard to leadership theory what specific characteristics of executive management support the attitude towards DT and thus increase the focus of attention on digitalization? Second, the culture and employees impact the path towards DT. Thus, further research on how to create a digital mindset and culture provides a potential avenue. Third, Bosman et al. (2020) line out that the size of the SMEs has an influence on the technology selection. Further research could determine how different sizes of SMEs based on the number of employees and the revenue implement digital transformation and research for similarities and differences. Fourth, as several studies on the influencing factors of DT are available in research, which do not focus on SMEs in particular, research of the differences of digital transformation in LSEs and SMEs can be conducted based on the proposed taxonomy in this paper.

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