

## How to establish a lasting remote work concept in organizations: A classification for the operational design of remote work

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### Abstract

*Reinforced through the pandemic and shaped by digitalization, today's professional working environment is in a state of transformation. Working remotely has become a vital component of many professions' routines. The composition of remote work environments presents challenges to organizations of all sizes. By providing a classification, this paper reveals a comprehensive understanding to establish lasting and integrated remote work concepts through organizational design. The hierarchical classification with four dimensions consisting of human, technology, organization, and culture, seven design elements and twenty design parameters indicate to organizations the fields that need to be examined. To approach both the theoretical foundation and the practical application, design elements are first derived from a systematic literature review, combining the diverse perspectives of the literature in design elements. Additionally, these are enhanced in terms of their applicability by a dedicated case study research to incorporate practice-oriented design parameters.*

**Keywords:** remote work, classification, organization

### 1. Introduction

The idea of remote work has remained an ongoing debate in companies for years. However, the environment and the circumstances in which organizations operate have fundamentally changed. The COVID-19 pandemic served as a catalyst for continued workplace adaptations, as many organizations were forced to switch the work locations of the entire workforce to remote access (Arunprasad et al., 2022). Virtual collaboration as part of associated work models, such as hybrid work combining in-office and remote

work, has thus become firmly established (Borse et al., 2021). In the “new normal”, the office is evolving into a collaborative workspace for interpersonal exchange (Torre et al., 2022). The shift in society brought about by remote work over the past few years and the proactive handling of the issues that resulted is rapidly separating progressive, forward-looking organizations from those who bemoan the past (Schramböck, 2021).

While organizations tend to prioritize technical setup when arranging remote work, the requirements for managers and corporate culture in remote work environments are becoming increasingly challenging (Lindner, 2019). Remote work must be approached in organizations systematically, allowing the benefits to be reaped and the disadvantages to be proactively countered at an early stage. For instance, balancing work and family obligations may be favorable, whereas eliminating spatial boundaries of the home workplace may cause emotional stress among employees (Arunprasad et al., 2022). To anchor remote work effectively in organizations, an integrated framework for organizational design is required that bundles all relevant influencing factors and identifies operational implementation opportunities. Therefore, this paper seeks to answer the following research question:

*What organizational design considerations do companies need to contemplate for an integrated remote work concept?*

### 2. Research objective

To address the research question, diverse literature approaches were consolidated through a systematic literature review. The areas that are outlined in the various publications, establish the focal fields of attention for remote work but jump over specifics of operational realization for organizations. Although no

comprehensive framework for organizations is yet established, current approaches in the literature present different perspectives to be considered for remote work concepts. Subsequently, practical organizational design parameters for operational realization were extracted via case study research.

The hierarchical classification evolved includes dimensions within the overall level, followed by the design elements. Among those, the design parameters form the lowest level of the classification. The resulting hierarchical classification aids organizations in recognizing crucial aspects of organizational design beyond technical arrangements, facilitating the evaluation of remote workspace suitability.

### 3. Understanding remote work

Teleworking, a term that first appeared in the field of telework in the 1980s, refers to performing work at one's place of residence (Geramanis & Hutmacher, 2018). Influenced by digitalization, the way of working has changed fundamentally since then (A. Kaiser & Tepe, 2020). In the literature, the term remote work is not used uniformly (Bruhn, 2020). According to the author, the areas of application form strong variations in terms of the meaning of remote work and high overlap of the terms teleworking, home office, mobile working, hybrid working, and decentralized working.

Zakharov (2022) defines remote work as the performance of contractually regulated activities between employers and employees outside a stationary, fixed workplace of the workplace belonging to the organization. Battisti et al. (2022) refer to working from home or another location outside an office using technology that allows employees to communicate within their employment relationship and support flexible work practices. The definition of remote work in this paper is based on the international understanding of the term, which has increasingly entered the national and international literature recently (ILO, 2020): *Remote work includes the performance of professional activities that are both location-based and location-independent, but are not performed at the workplace in the business premises, but are connected to it via information and communication technologies.*

### 4. Overarching design elements

For a comprehensive design of remote work, it is crucial to understand which fields of design a company can proactively address. In practice, an overview of the fields of design and the specific operative parameters, referred to as design parameters in the classification, enables a practical approach. A systematic literature

review was conducted to identify each of these design elements. Methodologically, the approach was based on five steps of a systematic literature review of vom Brocke et al. (2009). Subsequently, the implications for the classification are derived to define the design elements.

#### 4.1. Process of literature review

The research process is significantly shaped by existing contributions in the literature and represents an essential element of academic research (Xiao & Watson, 2017). To identify the research area in a structured way, the existing approaches must be identified, analyzed, and classified (Torres-Carrión et al., 2018). A reliable search process refers to reproducibility, whereas a valid search process can identify sources correctly. The underlying process determines the quality of systematic literature searches (vom Brocke et al., 2009). Vom Brocke et al. (2009) use a circularly structured procedure to conduct a systematic literature search, comprising five phases: (1) Defining the review Scope, (2) Conceptualization of research topic, (3) Identifying the literature systematically, (4) Analyzing and synthesizing the identified literature and (5) Development of research agenda.

These five steps were implemented as follows. (1) Using Cooper's taxonomy (1988, p.9), the scopes of research were defined by emphasis, aim, perspective, range of coverage, structure, and target group. (2) In a second step, the research topic was structured based on the delimitation. To identify the literature systematically, the region of interest and corresponding keywords were determined, resulting in *remote work*, *design*, and *framework or concept* from an organizational perspective. (3) Third, four databases were used to identify the literature in a third step. Scopus, IEEE Explore, Springer Link and Google Scholar were used. From the selected databases, the breadth of publications complemented each other. Explicit attention was paid to the broad coverage of the search field when defining the search strings. Remote work has experienced an upswing, especially during the COVID-19 pandemic. Holistic concepts that address the operational design of remote work were explicitly considered. It was striking that many publications focused on the challenges of remote work, but not on the constructive design of remote work. In the search for literature, two quality gates were established to ensure the fit of the identified publications.

Resulting from this search, a total of 4674 publications were collected that met the criteria. Using two different quality gates, the identified literature was filtered, shown in figure 1. Before the final selection, a forward and backward search according to Webster and

Watson (2002) was conducted. A total of 17 publications were identified, an appropriate quantity for the context of the research question. (4) By conducting the literature review and synthesis, several focus areas were identified, which form the basis for the design elements developed in the classification. (5) The primary objective of this process in this instance is the synthesis of the identified literature, therefore, after step four, the result is achieved here.

Figure 1 presents a summary of the search and selection process for the comprehensive design of remote work in organizations following the conceptual framework by vom Brocke et al. (2009). With the use of a methodological approach, the fundamental requirement of scientific rigor in the literature review could be ensured through reliability and validity.

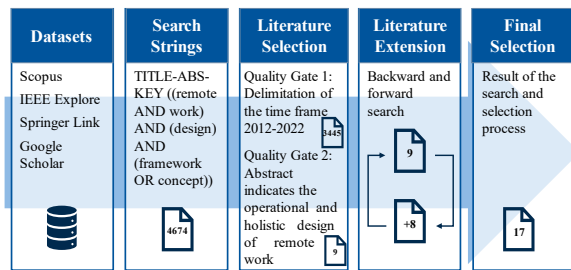


Figure 1. Systematic Literature Review.

## 4.2. Results of literature review

Following the systematic literature review, two main conclusions can be drawn. First, while the literature on remote work has increased enormously recently, the focus to date has not been on the design of remote work, but rather on preliminary issues. So far, research has mostly focused on the challenges and potentials of remote work. Second, remote work is examined from different perspectives. For instance, the design of remote work is examined from a national economic perspective, through emerging city-country disparities. Furthermore, remote work is explored from a sociological perspective in terms of its impact on life-work balance and equal rights issues within a domestic context. However, these important research approaches will not be examined here, given that this research is focused on the business economical design of remote work.

Within the 17 publications identified, a wide range of topics related to the operational design of remote work were covered. Iteratively, focus areas of the publications were identified to show the different target groups and subject areas of the publications selected. These focus areas were progressively identified by assigning new focus areas as publications addressed a new aspect. This approach enabled 18 focus areas to be

identified, reflecting the wide range of aspects covered by the publications. Illustrating the results of the analysis, Table 1 lists the focus areas of the literature identified in the publications. By distinguishing between “considered” and “not considered”, the results are subsequently analyzed. The qualitative assessment of the evaluated focus areas results from the aggregation of all focus areas considered in the identified literature.

Table 1. Summary of the literature review results.

Publication	MUNIRASAD ET AL. 2022	REINGARTEN ET AL. 2022	BOESE ET AL. 2021	CAMPBELL & MCDONALD 2009	CUL ET AL. 2022	FERRICHELLO & PANISSE 2016	GALANUSO & NAI 2021	HELMOLD 2022	HERRMANN FIRY CORDIS 2020	JOLLENBECK ET AL. 2022	LINDNER 2005	MEHALO 2022	MÜLLER 2021	PANISSE ET AL. 2022	SARAYA ET AL. 2021	WANG ET AL. 2021	ZABARON 2022
Human skills and abilities	●	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Field of activity	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Personal environment and characteristics	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Technical degree of interconnection	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Technical workplace equipment	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Collaboration within the organization	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Communication	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Social interaction and relations	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Industry specifics and industry practices	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Organizational structure and roles	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Occupational health and safety	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Working time regulation and company agreement	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Human resources and labor market structure	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Corporate culture	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Autonomy and self-determination	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Performance management and measurement	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Leadership and management	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Digital manners	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Legend: ● Considered ○ Not Considered

The identified focus areas reflect the key aspects of the different publications. Neither do they reflect a common level of consideration, nor do they reflect the prioritization of subject areas for the actual implementation in practice. It becomes evident that none of the publications present a holistic approach to establishing remote work concept in organizations. However, the focus areas provide the foundation for deriving uniform, aggregated design elements based on the existing research.

## 4.3. Design element development

The analysis of the literature shows explicitly how the holistic view of remote work encompasses different

levels. In the academic literature, more attention is paid to the superordinate structure. To provide a structure in this context, the design elements of the classification presented below are structured based on the thematic fields in the literature. Seven design elements were derived based on the focus areas identified in chapter 4.2.

- *Productivity and effort* summarize the following elements: *Human skills and abilities* and *field of activity*. Evaluation is based on various factors, which must be questioned in terms of their independent verifiability in remote work (Arunprasad et al., 2022). The effectiveness depends on the actual circumstances (Borse et al., 2021; Cuel et al., 2022).

- *Personal environment* refers to the physical and social environment in which a person works (Campbell & McDonald, 2009; Errichiello & Pianese, 2016). It therefore encompasses the focus areas of *personal environment and characteristics*. The personal environment has a significant impact on the well-being and development capabilities of an employee (S. Kaiser et al., 2021; Pianese et al., 2022).

- The design element *infrastructure* refers to the physical infrastructure, facilities, and systems that are necessary for collaboration to function (Arunprasad et al., 2022; Baumgarten et al., 2022; Saraiva et al., 2021). The focus areas *technical degree of interconnection* and *technical workplace equipment* are consolidated.

- The design element *communication, cooperation and collaboration* address the interaction and cooperation between individual employees and units of an organization (Cuel et al., 2022; Helmold, 2022; Pianese et al., 2022). Working remotely changes the way common goals are developed, partly through active and coordinated collaboration. Here, the focus areas of *collaboration within the organization* and *communication* are included. The nature of active and coordinated collaboration changes in hybrid work environments due to the lack of physical presence and the associated changes in communication channels (Arunprasad et al., 2022; Campbell & McDonald, 2009; Galanxhi & Nah, 2021; Metallo et al., 2022).

- The design element *sociocultural and organizational environment* refers to the behavior, values, and norms embodied in the working environment (Errichiello & Pianese, 2016; Müller, 2021). Organizational structures and processes, as well as control mechanisms, regulate both the direct cooperation between employees and the formal setting (Helmold, 2022; Jöllenbeck et al., 2022). Related focus areas include *social interaction and relationships, industry specifics and industry practices, organizational structure and roles, occupational health and safety, working time regulation and company agreement* and *human resources and labor market structure*.

- *Organizational climate* addresses the values that are embraced and the interactions that are experienced. Often these evolve organically, and the cumulative traits of the employees are passed on to others (Helmold, 2022; Müller, 2021; Wang et al., 2021). Related to this, the focus areas are *corporate culture, autonomy, and self-determination*, as well as *performance management and measurement*.

- The design element *social interaction and relations action* addresses the way people relate and interact with each other (Errichiello & Pianese, 2016). Interaction refers to different actors, to coordinate the behavior of those involved (Helmold, 2022; Herrmann & Frey Cordes, 2020; Müller, 2021). *Leadership and management*, as well as *digital manners*, are included focus areas.

A comprehensive specification of the design elements is necessary to facilitate practical business implementation. To enable further steps towards the definition of measures, the following step is implemented in a practice-oriented manner using case study research.

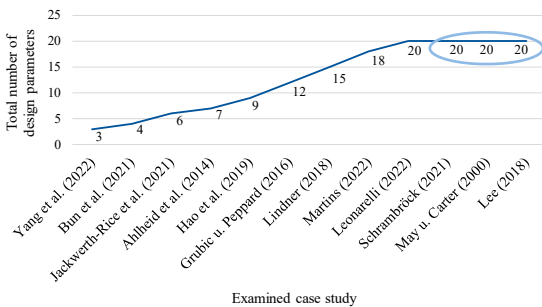
## 5. Operational design parameters

With regard to operational design in organizations, case study research according to Eisenhardt (1989) was applied to provide the necessary operational depth grounded in the actual application of remote work in organizational practice. Case study research includes the selection of relevant cases, data collection, analysis of the data, development of theoretical concepts, and the validation of the results to gain a in-depth understanding of the phenomenon in practice (Eisenhardt, 1989).

Following this depicted method, as an addition to the identified literature, the cases selected were those that apply and shape remote work in the operational application. A total of twelve representative case studies were selected according to a set of criteria to ensure a comprehensive, overarching findings. Such criteria include the companies' experience with remote work, industry diversity, company size, and geographic diversity to ensure valid and generalizable results. Accordingly, both companies that have been adopting remote work for an extended period as well as companies have only recently chosen this approach due to external factors are represented in the case studies that were chosen. Furthermore, companies from different industries such as tech companies, automotive manufacturers, manufacturing, aerospace, logistics, and service providers were included to ensure that the results are generalizable. By selecting both SMEs and corporations (five of the twelve case studies refer to SMEs), resource differences and organizational structures are indirectly included, which ensure the

comprehensiveness of the design parameters. For instance, Schramböck (2021) case study accompanies an Austrian SME that introduces new work and organizational concepts considering the challenges posed by COVID-19. Bun et al. (2021) presenting a Polish manufacturing company in the automotive sector, introducing modern IT solutions such as augmented reality training of production employees remotely. The case study by Lindner (2019) shows a German SME from the IT sector introducing new services with reference to digital transformation and its effects on management as well as the associated opportunities and risks of digital workplaces.

The operational domains described in the case studies form the practice-oriented database for the derivation of the design parameters. The termination criterion was defined as the completion of the case study research after analyzing three case studies without new design parameters. As shown in Figure 2, it was possible to derive twenty design parameters from nine case studies. After a further three case studies, the termination criterion was reached, leaving a total of twelve case studies to be analyzed. Figure 2 shows the total amount of design parameters according to the respective case study analyzed and the described termination criterion.



**Figure 2. Derivation of the case study results according to the termination criterion.**

Based on the case study research, twenty design parameters were identified, constituting the ground level based on the design elements identified in the literature. The derived design parameters are shown in Table 2. It must be emphasized that only the operational design parameters were selected, which can be shaped directly by the company. Although issues such as the personal background of an employee may be relevant for remote work, organizations cannot proactively influence them.

**Table 2. Design parameters derived from the case study research.**

Design Parameters	Case Studies (arranged by termination criterion)												References for parameter
	1 Yang et al. 2022	2 Bun et al. 2021	3 Jackwerth et al. 2021	4 Altheid et al. 2014	5 Hao et al. 2019	6 Grubic et al. 2016	7 Lindner 2019	8 Martins 2022	9 Leonarelli 2022	10 Schramböck 2021	11 May, Carter 2000	12 Lee 2018	
Professional abilities and skills						p. 175	p.10				p. 182		3
Commitment and motivation							p.34	p.45	p.6	p.42	p. 182		5
Personal attitude towards remote work								p.34	p.8	p.62		p.14	4
Identification with work									p.10		p. 182		2
Technological and digital expertise				p.23	pp. 1-10		p.24	p.10	p.6				5
IT structure	p. 44	p. 421	p. 30						p.2	p.43	p. 172		6
Work object	p. 51	p. 422					p.24	p.29	p.3	p.44	p. 171		7
Knowledge creation, transfer and communication processes		p. 418	p.18	p. 28	pp. 1-10	p. 166		p. 20			p. 173		7
IT governance						p. 167				p. 44	p. 173		3
Skilled workforce						p. 154	p. 17			p. 52	p. 174	p.64	5
Industry specifics and customer requirements					pp. 1-10	p. 175							2
Legal requirements								p.22					1
Organizational structures and processes							p.34	pp. 9-13		pp. 41-62	p. 177		4
Operating company agreement	p.44		p.27					pp. 8-9				p.68	4
Culture lived throughout the company			p. 35	p.22		p. 175	p. 26			p. 41		p.25	6
Autonomy and personal freedom of action								p.9	p.6	p. 62	p. 173	p.46	5
Performance Management					pp. 1-10	p. 175		p. 44					3
Leadership style of top management			p. 25				p.30		p.9	p.42	p. 182	p.1	6
Leadership style of superiors									p.5	p.62	p. 182		3
Team culture and mindset							p.26	p.39	p.5				3
Total number of design parameters	3	3	5	3	4	7	8	12	10	11	12	6	

## 6. Derivation of hierarchical classification

The superordinate design elements identified in chapter 4.3 and the design parameters derived in chapter 5 are subsequently transferred into hierarchical classification, according to Sodeur (1974). Based on the biological taxonomy, several classifications are linked hierarchically into a systematic context. In relation to Figure 3, the first-level classification arranges all Remote Work design parameters into higher-level design elements. The second-level classification in turn assigns the design elements to overarching dimensions, following the Human Technology Organization approach (Strohm, 1997). This structure provides organizations with a holistic organizational perspective for understanding the design of remote work. Particularly during the COVID-19 pandemic, the technological dimension was in the focus due to the short-term implementation pressure. Therefore, the hierarchical classification with the dimensions Human, Organization and Culture provides key dimensions, their design elements and design parameters for anchoring remote work in the company in its entirety.

The HTO concept centers on the notion that humans, technology, and organizations must be understood in terms of their interconnectedness and interaction (Strohm, 1997). Each subsystem of the HTO concept connects the social and technical components as well as the human element with the organizational structures (Eigner, 2014). A backward analysis shows that culture is particularly significant and a core determinant of remote work. The case study research indicated that the design parameters focusing on culture recorded a particularly high number of references. Thus, the HTO concept is expanded to include the dimension of culture to emphasize its relevance, subsequently referred to as the HTOC concept. The hierarchical classification created below therefore consists of three levels: dimension, design element and design parameter.

Human	Productivity and effort	Professional abilities and skills
		Commitment and motivation
	Personal environment	Personal attitude towards remote work
		Identification with work
Technological and digital expertise		
Technology	Infrastructure	IT structure
		Work object
Organization	Communication, cooperation and collaboration	Knowledge creation, transfer and communication processes
		IT governance
	Sociocultural and organizational environment	Skilled workforce
		Industry specifics and customer requirements
		Legal requirements
		Organizational structures and processes
		Operating company agreement
Culture	Organizational climate	Culture lived throughout the company
		Autonomy and personal freedom of action
		Performance Management
	Social relations and interaction	Leadership style of top management
		Leadership style of superiors
		Team culture and mindset

Legend: ■ Dimension ■ Design Element ■ Design Parameter

**Figure 3. Hierarchical classification.**

As shown in Figure 3, a total of seven design elements were identified, based on the findings in the systematic literature review. Through case study research, twenty design parameters were established to ensure the effective implementation of selected design elements. The hierarchical classification for the operational design of remote work is presented in detail below. The

respective design elements and design parameters are described along each of the four dimensions.

#### a) Human

The human dimension comprises two design elements: *Productivity and effort*, as well as the *personal environment*. Regarding remote work, a major challenge is to ensure and maintain the *productivity and effort* of employees, which consist of and can be controlled via the design parameters of *professional abilities and skills* as well as *commitment and motivation*. *Professional abilities and skills* encompass all the employees' professional competencies directly related to their job, about which managers should maintain a comprehensive overview to identify and address competency gaps (Grubic & Peppard, 2016). Thus, they can redefine responsibilities and authorities as needed (May & Carter, 2000). *Commitment and motivation* describe the inner drive of employees, which is conditioned by external impulses and conditions of work. Commitment and motivation should not be forced by leaders, but with the help of appropriate measures (Martins, 2022), such as an asynchronous way of working (Leonardelli, 2022) convincingly conveyed and meaningfully integrated into the process (May & Carter, 2000).

The design element *personal environment* describes the personal conditions of employees in relation to remote work and involves both the physical and social environment (Campbell & McDonald, 2009; Errichiello & Pianese, 2016). First, it includes the design parameter *personal attitude towards remote work*, which describes the employee's attitude based on previous experience considering personal backgrounds (Martins, 2022). The recognition that many employees have the need to identify with their work and consider this as a premise for successful work represents the second design parameter *identification with work*, which is defined as the identification of employees with the company (May & Carter, 2000). The third design parameter *technological and digital expertise* includes the employee's competence and their use of digital tools. For employees who work outside the company, it is important to ensure that their work is remotely capable, e.g., whether employees have the required skills to communicate with colleagues (Ahlheid et al., 2014; Leonardelli, 2022).

#### b) Technology

The technological dimension consists of the design element *infrastructure*, which refers to the physical infrastructure, including all facilities and systems necessary for collaboration (Baumgarten et al., 2022; Saraiva et al., 2021). It consists of the design parameters *IT structure* and *work object*. The IT

structure enables collaborative knowledge creation through file hosting services and web applications and includes synchronous and asynchronous communication media. Against this backdrop, diverse networks and channels enable computer-based collaborative work that incorporates the use of information technology and telecommunications to support individual and group collaboration (Jackwerth-Rice & Horvat, 2021; May & Carter, 2000). Here, the design parameter work object enables location-independent fulfillment of tasks using digital technologies. These include digital conference systems, which form the basis for the implementation of remote work. Therefore, digital networks allow dynamic teams to work independently of time and place (Lindner, 2019).

c) Organization

The organizational dimension is composed of two design elements: *Communication, cooperation, and collaboration* as well as *sociocultural and organizational environment*. The former describes all cooperative and interactive processes between employees and department (Pianese et al., 2022). It includes the design parameters *knowledge creation, transfer, and communication processes* as well as the *IT governance*. On the one hand, the design parameter *knowledge creation, transfer, and communication processes* encompass all strategic and operational activities to systematically capture, store, and disseminate knowledge (Brizzi et al., 2013). Regarding this, employees must be informed about standardized processes to ensure a smooth and company-wide knowledge transfer (Martins, 2022). On the other hand, *IT governance* ensures that information technology supports the corporate strategy and objectives through the regulatory framework. For example, rules of engagement can be defined to specify fixed times of availability (Schramböck, 2021). IT governance can be supported by certain tools such as scheduling apps (May & Carter, 2000).

The design element *sociocultural and organizational environment* defines the overall organizational working environment in terms of values, norms, and behavior (Müller, 2021). It consists of a total of five design parameters. First, the *skilled workforce* describes the availability of capable employees and the necessary attractiveness of employers. The international shortage of skilled workers is a major challenge for many companies. Therefore, it is particularly important for SMEs to increase employer attractiveness to be able to recruit and retain suitable employees (Lee, 2018; Schramböck, 2021). At this, remote work is a key success factor in the recruitment process, particularly to attract younger generations (Lindner, 2019). Second,

*industry specifics and customer requirements* comprise specific characteristics and structures of the respective sector, as well as customer needs by which companies are characterized (Hao et al., 2019). Third, the design parameter *legal requirements* include all legal terms and agreements with respect to remote work (Martins, 2022). Fourth, the *organizational structures and processes* represent the link between the various departments and functions in the company and the associated decision-making processes. This design parameter emphasizes the importance of companies providing employees with firm structures, clear roles and associated authority and responsibilities. Particularly regarding remote work, a major challenge is to create a feeling of togetherness (Martins, 2022; May & Carter, 2000). Fifth, the design parameter *operating company agreement* is a written contractual arrangement between the employer and employees that records working conditions and relationships (Martins, 2022; Yang et al., 2022).

d) Culture

The cultural dimension comprises the design elements *organizational climate* and *social relations and interaction*. The former describes the cultural conditions of a company, including values and interaction within the company (Helmold, 2022; Müller, 2021). It consists of three underlying design parameters. The design parameter *culture lived throughout the company* is the system of shared values and social norms. The corporate culture and the associated mindset have a significant influence on employee engagement. Therefore, regarding remote work it is advisable to provide employees with greater support, especially against the backdrop of increasing digital work (Lee, 2018). The parameter *autonomy and personal freedom of action* describes the degree of freedom to decide how to work. To promote autonomy, responsibility, and reliability among employees, Amazon has given employees the freedom to choose the structure of their work (Martins, 2022). Therefore, motivation and trust are considered key drivers for managing work autonomy (Lee, 2018). The design parameter *performance management* encompasses planning and alignment of financial and human resources, including performance measurement. Martins (2022) draws attention to the fact that remote monitoring systems can minimize concentration losses in remote work. In addition, it is emphasized that a regulated work environment increases the likelihood of a successful hybrid work system, which can be managed using financial and non-financial measures.

The design element *social relations and interaction* describes socially and culturally conditioned forms of interaction between people (Errichiello &

Pianese, 2016). The design element consists of three design parameters. First, the *leadership style of top management* describes the manner and behavior of executives. Lindner (2019) emphasizes that location-independent work requires remote leadership that overcomes distance with the help of technological means. Second, the design parameter *leadership style of superiors* encompasses the way the leaders perform their role and behaves toward the team. It thus primarily refers to management techniques and skills (May & Carter, 2000). Leonardelli (2022) emphasizes that remote work leaders must act as cultural champions by not only explaining what culture means to the organization, but also making it tangible for employees to feel connected to it. Third, *team culture and mindset* encompass communication behavior within the work environment. Managers should act as cultural leaders, not only by explaining what it means to be part of the team, but also by creating opportunities to connect with each other.

## 7. Conclusion

This paper has shown an overview of the relevant dimensions, design elements and design parameters by showing the fields of design to establish a lasting remote work concept in an organization. An inventive approach was developed to systematically reveal the key operational fields of design that organizations can apply to achieve a comprehensive and lasting remote work concept. Therefore, in a first step, a systematic literature review was conducted to gradually identify focus areas. These focus areas are the focal themes of the research, which are grouped and aggregated into design elements for the hierarchical classification. To reinforce the practical application, relevant remote work design parameters were identified by case study research. This backward analysis revealed that culture is highly relevant to practice. This is illustrated, for example, by the number of mentions in the corresponding design parameters in the case study research. Therefore, the HTO concept was extended to include the dimension *culture* to be able to classify both the design elements and the design parameters comprehensively and emphasize the significance. The result is a hierarchical classification of all relevant remote work design elements and corresponding design parameters within the Human, Technology, Organization and Culture concept.

A limitation of the model lies in the varying strength of influence of the design parameters. Therefore, further research must be examined to show the weighting of the design parameters for different kinds of organizations, for example, using different categories of companies. Weighting may vary

depending on the environment, the size of the company, and the area of activity. Therefore, future research may aim to prioritize the design parameters, both generally and individually, to make practical implementation more manageable. Furthermore, by expanding on the factors that impact a company when creating remote work concepts, one can uncover additional fields of design that are crucial to remote work success but are beyond the control of the organization. In addition to further developing the classification with additional perspectives, taking actions to establish the design parameters in the organization is a subsequent further challenge. It is vital to determine, how remote work is implemented in the organization along the hierarchical classification.

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