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E-LEADERSHIP COMPETENCES – THE IMPACT OF MEDIA USE AND ORGANIZATIONAL INFLUENCE

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Abstract. E-Leadership as a new leadership paradigm is located in the field of tension between social (cohesion) and organizational (locomotion) basic orientations. The managers of the future need special skills in this field, which are significantly characterized by the use and influence of digital media. Even if there is agreement in the literature that the previous competencies of a classic leadership are not sufficient, the previous research does not yet provide a consistent competency profile. This gap is to be closed by means of a first cross-sectional study by which reference points for a first competence profile are to be given. Thereby, the special influence of Media Use and Organizational Influence is proved.

Keywords: E-Leadership, competence challenges, Organizational influence, Media Use.

JEL Classification: M2, O1, P0.

Introduction

The increasingly disruptive change, the decentralisation of work and the associated importance of digital collaboration force managers of the future to be able to lead anywhere and in any situation, regardless of time and place (Haddud & McAllen, 2018). The handling of digital media and the use of ICT (Internet and Communications Technologies) and AIT (Artificial Intelligent Technologies) in the management of employees is the decisive criterion for success and must not only be familiar in management, but also be able to be used adequately. The core task of the manager of the future is the integration of people and technical medium by influencing attitudes, feelings, behaviour and performance (Fliaster & Golly, 2014, pp. 124–126).

Consequently, today's leadership is characterised by complex interactions in cooperation, as technical and social systems now influence each other (Cascio & Montealegre, 2016, pp. 350–353). In view of increasing digitalisation and globalisation of work processes, electronic media are becoming more and more important and must be used adequately in the context of leadership and increasingly virtual cooperation (Cortellazo et al., 2019). In this context, scientific research has spoken of so-called E-Leadership (Avolio et al., 2009). However, it is often still unclear how E-Leadership exactly differs from previously supposedly established terms such as digital or virtual leadership.

The review of the scientific literature with regard to the differentiation of individual AIT-influenced leadership terms begins with the use of the term *Digital Leadership*.

Due to disruptive change and the constant adaptation of business models, global cooperation, and a faster innovation context, the terms digital leader or digital leadership represent a new leadership direction in the digital age (Westermann et al., 2014; Collin et al., 2015; Kakabadse et al., 2011). The successful response of leaders to the new challenges of companies requires concepts and tools that leaders can use to master digitization in their respective corporate environments. This is accompanied by the question of which skills exactly are needed for this. Westerman et al. (2014) showed that companies who *struggle with becoming truly digital fail to develop digital capabilities to work differently and the leadership capabilities required to set a vision and execute on it* (Westermann et al., 2014, p. 3). So, leadership skills are the abilities to plan and drive transformations and to support the company in its constant change (Frank et al., 2019; Somerville, 2013). In contrast to digital leadership, virtual leadership describes the way people are actually led (Abbasnejad & Moud, 2012). Virtuality describes characteristics of a concrete object that cannot

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be realised physically, but can be realised through the use of additional specifications (e.g., through new communication media) (Lipnack & Stamps, 2000). Against this background, virtual leadership describes the active leadership that takes place despite the physical distance of the leaders from the team members. It is therefore not about theoretical leadership but about the management of real employees with the help of modern information and communication technologies. The challenge of virtual leadership arises from the lack of personal contact between the leader and the lead. The distance itself is secondary; instead, the effectiveness of the leadership is decisive. The development of social relationships and especially trust is significantly influenced by the lack of personal contact and a supposedly lower flow of information. This can lead to passivity and a reluctance to perform on the part of those involved, especially if they are forced from face-to-face work to work in a virtual context as part of the digital transformation or through external influences (e.g. in the context of contact restrictions such as during the Corona Pandemic). However, dealing with distance, successful digital communication and maintaining trust under virtual conditions has become an indispensable success factor for any virtual team. Virtual leaders have the primary task of involving the most suitable specialists in their projects (regardless of time or geographical restrictions) and managing their teams across all boundaries in such a way that maximum performance can be achieved and the team members are developed into a cohesive unit (Bell & Kozlowski, 2002, pp. 15–18). Virtual leadership manifests itself primarily in the role of social leadership, which is kept alive through regular, digital interactions. Although digital and virtual leadership are the two largest contexts for E-Leadership, there are, as already mentioned, other terminologies in the literature that seem to have a close relationship or redundancy with E-Leadership. In isolated works (Babiel, 2021; Eichenberg, 2007) remote or distance leadership is also found as supposedly similar typologies. Distance leadership describes a kind of preliminary stage in digital leadership. This is because the team initially works together on the basis of physical distance, which usually implies social distance if the leader does not succeed in using digital media to bind the group socially and to network them with each other (Antonakis & Atwater, 2002; Gross & Hülsbusch, 2005). Since this type of leadership basically implies the use of digital media, distance leadership is often seen as redundant to E-Leadership. In contrast, the concept of remote leadership focuses on the role of communication and social cohesion. The effectiveness of communication (whether with or without digital media) is a strong predictor of leader performance and acts as a mediator of leadership behavior in relation to overall team performance. The distance between leaders and followers does not influence communication effectiveness or perceived leadership performance, as remote leadership is about how information is handled and spread within teams and workgroups. Remote leadership focuses on the role of the communicator, which is independent of social and physical distance. Related to this, the term shared leadership is often found in the literature (Pearce & Conger, 2002; Fletcher & Kaufer, 2003; Pearce et al., 2008; Avolio et al., 2009). This picks up on the communication focus and recalibrates that there is basically an agile change in the clothing of leadership activities (not positions), since the more communicative team members have a significantly higher influence on team performance and can influence the organisational leader. Shared leadership manifests itself in the effective distribution of tasks within teams, detached from individual positions, on the basis of shared knowledge, interaction and performance. Leadership tasks are distributed among different persons and groups in order to generate a high level of effectiveness. Other leadership terminologies, such as hybrid leadership (Gronn, 2009; Townsend, 2015) (at least two leaders have leadership tasks within a group), mobile leadership (Brunelle, 2013) or even super leadership (Manz & Sims, 2001; Houghton et al., 2003), combine the aforementioned aspects in different focal points (e.g. performance, effectiveness, communication, social cohesion), depending on the author's influence. However, all terminologies can be subsumed under the headline of the integration of AIT and ICT, which ultimately justifies the recurring title E-Leadership.

The most common definition of E-Leadership dated by Avolio and Dodge was therefore slightly adapted in a next step in 2014 by integrating the influencing factors of the different mentioned leadership theories: the social influence processes that take place in E-Leadership are embedded in proximal and distal contexts (van Wart et al., 2019, p. 83). Proximal is understood to be very close to the environment with direct influence on the immediate surroundings (e.g., on followers), whereas the distal is more remote and indirectly influenced.

Following Avolio et al. (2009) in combination with van Wart et al. (2019), successful E-Leaders not only decide whether to use ICT, but also combine it with traditional forms of interaction and integrates social exchange processes. Moreover, van Wart et al. (2019) point out that an operational definition must reveal its assumptions. Consequently, E-Leadership not only includes the mixture of digital and traditional communication, but the leader is also responsible for the organisational introduction of ICT (Internet and Communication technology) in his environment, i.e., in his organisation. Only by combining both aspects of E-Leadership van Wart et al. (2019) come to the definition that E-Leadership means the efficient use of traditional and electronic communication channels, as well as their appropriate blending (in the organisational context). The definition is complemented by the aspect that in E-Leadership an awareness of current ICT is created, and new ICT must be adopted selectively for oneself and the organisation. As a result, technical competence is learned and constantly expanded at both the personal and organisational level (van Wart et al., 2019, p. 83). Although the definition seems to be

"easy" on the first view, E-Leaders face the challenge, that the organisation as well as their followers demand different competences on a social, individual, emotional and organisational level. Therefore, the term E-Leadership gets an individual competence touch by transferring a general concept to a person who leads as an E-Leader. E-Leaders therefore act in a field of tension between the organisation itself and their task to lead people. As a consequence, this tension leads to some challenges of leadership, as managers on the one hand need to fulfil their tasks as a member of the organization but, on the other hand, need to lead their followers in their own individual way. This requires competencies that far exceed previous leader competencies like social or professional skills, as technological abilities now play a decisive role. Until now, however, no research work has been done concerning the question, which exact competences E-Leadership exactly contain and which skills E-Leaders as a person should have. So, the presented paper shows the results of a quantitative survey.

1. Theoretical background of the survey

1.1. Challenges in the context of E-Leadership

In every leadership theory, the so-called basic skills of a manager, such as communication, specialist knowledge, social and methodological competence, as well as media competence in the context of more recent studies, can be found (Gerth & Peppard, 2016; Schwarzmüller et al., 2018; Sousa & Rocha, 2019; Cortellazo et al., 2019). As already mentioned, however, there is a large gap in research in the sense that the influence and also the handling of media has become an essential part of modern leadership work (Roman et al., 2018). However, this results in new challenges for leadership that were not evident in the previous observations. The influence of technology on the communication behaviour within teams, on the perception of the competences of leaders by their followers, the processing of tasks, and the entire workflows are subjects to massive changes, which not only reveal challenges in handling but also contribute to so-called paradoxes of leadership (Kempner, 2021) and followership, which often conflict or even contradict the requirements of the organisation as a whole. This is due to the fact that organisations as well as leaders often have to cope with many – sometimes contradictory – demands at the same time, which not infrequently leads to friction and productivity losses. However, if organisational as well as leadership challenges are known, they can be uncovered more easily, conflicts can be solved and productivity can be increased (Pulley & Sessa, 2001, p. 225; Kempner, 2021). Due to the influence of mechanisation, companies are faced with the challenge of ambidexterity: on the one hand, traditional aspects must be preserved, but at the same time agility and openness for something new must be lived. Customer requirements and workload are at odds with creative freedom and innovative behaviour, and the standardisation of processes and operations meets the desire for flexibility. These supposed contradictions lead to a so-called organisational paradox (Smith & Lewis, 2011). A paradox is characterised by the fact that no decision has to be made for one or the other alternative, but that all contradictory requirements have to be met simultaneously. The following types of paradoxes are distinguished (Smith & Lewis, 2011):

(1) The organisational paradox

Organisational paradoxes relate to the structure of the organisation as a whole and involve aspects of leadership, culture, as well as general process management. In this sense, the desire for more flexibility often competes with established control mechanisms, authority with co-determination and discipline with self-management which directly can be swift to the first E-Leadership challenge: big picture thinking in contrast to take details of work and processes and well as about followers into account.

(2) The performance paradox

This paradox often results from conflicting expectations of individuals arising from the demands of managers, the organisation, or even external stakeholders. Especially when employees are involved in different projects and have several superiors, performance paradoxes manifest themselves, as the expected performance is seen as equal by all stakeholders and demanders. In this context, E-Leaders face the challenge to decide how to interact with followers and colleagues, which implies the contrast between grass-roots and top-down interactions.

(3) The learning paradox

Learning paradoxes always occur when the organisation or even individual members of the organisation (e.g. managers) are confronted with new situations that can no longer be handled with old recipes for success. This means that conventional strategies have to be unlearned in order to be able to cope with the new tasks. Often these scenarios go hand in hand with new technologies or radical, mostly digitally motivated innovations which need mainly to be established by E-Leaders.

(4) The Belonging Paradox

This paradox describes the desire of individuals to be able to act individually and independently on the one hand, but at the same time to be a member of a social group and to be recognised on the other. E-Leaders are therefore often in the field of tension between locomotion and cohesion, which demand also special skills and competencies.

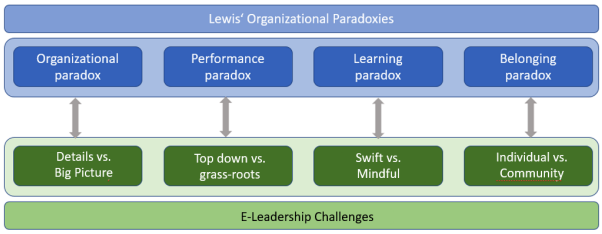


Figure 1. Paradoxes of E-Leadership (own source)

In summary and illustrated in Figure 1, these paradoxes and challenges show that E-Leadership includes a

wealth of competence contrasts that have received little attention in previous leadership theories. The decisive input factor for these theories is increasing digitalisation, which dissolves information boundaries and gives leader-follower-constellations, especially in the digital setting, a completely new character (Jawadi et al., 2013; Schwarzmüller et al., 2018). Both the content of an organisationally interpreted E-Leadership and the transfer to the individual leader should therefore take these paradoxes into account and also include them in a general competence picture. To do this, basic research concerning the field of competences for leaders needs to be analysed as a first step.

1.2. E-Leader competences

E-Leadership is a thoroughly complex construct, which on the one hand results from overlaps from previous leadership terminologies and reflects the organisational view, but on the other hand also includes many individual competences of the E-Leader as a person. However, the literature has not yet shown a uniform competence model in this respect. This is due to the fact that the concept of a competence model is not clearly defined and that – depending on the scientific orientation and also the objective – there are different approaches and different types of competence models (Mansfield & Mitchell, 1996, pp. 7–18). The single-job models, for example, describe competences for individual, job-related activities. The one-size-fits-all models describe competences for several areas and with different forms of responsibility (personnel responsibility and organisational responsibility). A third form is the combination of the two approaches into a so-called multiple-job approach. Here, general competencies of leadership are described and, depending on the situation, supplemented by further professional competencies (Mansfield & Mitchell, 1996, p. 15). The latter model is particularly suitable for those areas that have organisation-wide, overarching competencies on the one hand and define professional and area-related competencies on the other. One of the best-known competence model is the Great Eight Model according to Bartram (2005).

The model is intended to describe job-related performance. For this purpose, a number of individual case studies in different countries and industries were conducted and used as a basis. In addition, the model is intended to provide an alternative to measures of overall performance and to be highly user-friendly and practical. The structure of the model is divided into three levels. There are a total of eight competence fields with 20 competence dimensions, which in turn have twelve individual competences. The authors have also established a theoretical reference to psychologically established concepts such as the Big Five, so that this model can serve as a basis for deriving and developing a complete E-Leader-competence-compass. The study by van Wart et al. (2019) also provides initial indications in the form of six possible competence fields, which, in contrast to previous competence models, are much more focused in the direction of an E-Leader-Competence model by emphasising the digital and technology aspects. As previously mentioned, van Wart et al. (2019) describe E-Leadership as the mixture of electronic and traditional competence methods. Accordingly, emphasis is placed on the media-related share of the respective competences; in other words, van Wart et al. (2019) assume that all competences of an E-Leader always have to take place in the context of a virtual and media-driven collaboration. The work of Annunzio and Liesse (2001) also takes up the perspectives mentioned above and lists the so-called out-of-the-box competences of an E-Leader. These include, for example, *the abilities to ask unaskable questions, to speak unspeakable truth, to communicate irreverently, or to make loud statements without being afraid of consequences.* Annunzio and Liesse (2001) concludes his work by outlining, the "E" in E-Leader(ship) contains the idea of *evolution* and that the Leader as a person has a compelling need to make a difference. Common to all definitions of roles and competencies is the fact that E-Leadership refers to specific contextual actions of leadership. Taking into account the changed leadership environments, which are significantly characterised by the application and use of digital technologies (Kamalaldin et al., 2020), new and more complex demands on leadership arise, which encompass both the basic understanding of the role of a leader as well as the application and use of new media. This results in a quintessence of E-Leader competences and roles, which van Wart et al. (2019, p. 92) and Contreras et al. (2020, p. 6) have summarised as follows and sorted into six competence areas:

(1) E-Communication: clarity in communication, avoiding misunderstandings and managing the flow of communication

E-communication is understood as the manager's ability to communicate appropriately via ICT. It is about choosing the right tone of voice that conveys clear and unambiguous messages to employees through appropriate media. This includes that the leader is also able to choose the right medium, especially when a team is not working together in presence. In this case, it is also important that clear communication norms prevail, that the flow of information is clearly regulated (i.e. that information is distributed symmetrically) and that ambiguous messages are avoided. Positive feedback and listening to each team member are also part of the competence of E-Communication.

(2) E-Social Abilities: Supporting Leaders and group coherence

Based on a correct digital communication, digital social capabilities can also be developed which may convey group coherence. Especially with transparent information flows and through the integration of all team members – regardless of location and status – social abilities can be strengthened in the digital cosmos of team building and form group coherence.

(3) E-Teambuilding: team responsibility, recognition of team members and their abilities, team motivation

E-Teambuilding describes the ability of leaders not only to train a committed team in a virtual environment, but also to keep it alive and agile. The leader can pay attention to the efficiency and satisfaction of the team members, which leads to the competence field of E-Change-Management.

(4) E-Change-Management skills: Change management (planning, implementing and monitoring)

If changes in cooperation are necessary or if the implementation and use of new ICT changes the cohesion in the team, the manager must recognise the extent of the adjustment and make readjustments. In addition, the manager forms the bridge between organisational and team management, so that experiences and changes should be communicated and taken into account both top down and bottom up. This creates trust and leads to E-Trust.

(5) E-Trust: Ability to trust, trustworthiness, reliability, consistency, integrity, fairness, work-life-balance, diversity management

The focus of E-Trust's interest is trustworthiness. The ability to trust employees, to protect their privacy and at the same time to take care of their work-life- balance goes hand in hand with the aspect of being trustworthy as a manager. This is achieved by demonstrating the aforementioned competences and by living and implementing them in daily doing. E-Trust is ultimately the parenthesis of the aforementioned E-Competencies and is addressed separately as a framework condition for successful E-Leadership.

(6) E-Technological competence: correct use of ICT, mixture of traditional and virtual methods, technological knowledge, technological security

Finally, technological competence is the parentheses of the previously mentioned fields of competence. E-Leaders can only successfully implement the abovementioned areas if they have the corresponding digital competence. This consists of specialised knowledge about the type of media, their use, and potential fields of application, as well as the use of the media against the background of regulated communication and potential aspects of data protection.

It is obvious that the six fields of competence emerge from each other. The last mentioned technological competence automatically leads back to the field of E-Communication. Managers as well as employees find themselves in a digital micro-organism whose development can be interpreted as an agile upgrading. Experiences in the use of media, their application, and associated limits as well as recognised potentials and opportunities offer teams and managers a constant further development of their E-Competencies and, as an interaction, a constantly higher developed E-Leadership on an organisational as well as on a personal level.

Finally, research on the topic of E-Leadership is still in its infancy, despite initial literature work. On the one hand, there is a lack of an overarching and generally comprehensible as well as concrete definition of the term and, on the other hand, a clear idea of the corresponding design in the form of organisational and personal competences. The research gap also results primarily from the lack of quantitative as well as qualitative studies. While the literature based on the work of Avolio et al. (2000, 2001, 2009), Avolio and Kahai (2003), van Wart et al. (2019), Mackenzie (2010), DasGupta (2011), etc. creates initial ideas and theoretical aspects for a general understanding of E-Leadership, it is still questionable to what extent this view can be shared or implemented in practice. Above all, the area of tension between organisational and personal perspectives provides challenges that should be examined more closely in concrete studies.

2. Research methodology and survey

2.1. Sample and data collection

The empirical research was carried out in summer 2021, in which 254 medium-sized companies in Germany were contacted with a request to forward a 29-item questionnaire to their employees. The industry was not specified. All answers are therefore based on a random sample. A total of 898 replies were received. After adjusting the response rate with regard to missing information and incomplete questionnaires, there were eight incorrect questionnaires that were excluded from further statistical verification. In the next step, univariate outliers were identified by z-score values (> +/– 3.29) and multivariate outliers (Mahalanobis distance for independent variables) and excluded from the sample. The final sample size was N = 842.

2.2. Measurement scales and survey

Based on the six competence fields extracted from the literature, an online questionnaire was created which is based on a dimensional analysis. The interest of the survey was to find out how important the individual competence fields are assessed in relation to E-Leadership (scaled and closed questions), whether there is a general understanding of the terminology, and which competences are still considered important beyond the specified areas. The study is a first cross-sectional study that is intended to provide data for further research. The survey is therefore not limited to individual groups of people or characteristics. As individual fields of competence were subdivided into individual items, multiple answers were not possible. Overall, the questionnaire is divided into three sections: in the first section, in addition to short demographic questions on age, gender, position, and actual home office time, questions are asked about existing leadership experience and whether the term E-Leadership is known and how important general E-Leadership competencies are estimated and if they differ from general leadership skills. The section ends with an open question in which the participants can enter their personal definition of E-Leadership. As a transition to the second and largest part of the questionnaire, a generally valid definition

of E-Leadership is presented so that the further questions can be answered on the basis of this common understanding. The second part of the questionnaire is dedicated to assessing the relevance of the individual E-Leadership-competences. All competences are first explained briefly and concisely, so that a uniform understanding of the wording is also guaranteed here. The assessment is recorded via a five-stage verbalised rating scale ranging from very relevant (5) to not at all relevant (0). Partial least squares modeling (PLSP-PM) was also used, which is suitable for prediction-oriented goals, takes several variables into account at the same time and does not require a normal distribution (Henseler et al., 2016; Chin & Newsted, 1999). Figure 2 shows the structure of dimensions and categories.

Dimensions	Categories
E-Change-Management	Ability to innovate
	Willingness to change
	Media Design
E-Self Competence	personal willingness to learn
	Self competence
	Analytical skills
	Entrepreneurial action
E-Communication	Digital Communication
	Information sharing
	Decision making ability
E-Teambuilding	Teamwork
	Social networking
	Result oriented leadership
E-Technology	Media Knowledge
	Media Critiscm
	Media Behaviour
E-Trust	Resilience
	Validity
	Relationship Management
	Diversity Management

Figure 2. Dimensional analysis (own source)

The third part of the survey focuses on the use of new media and the estimated influence of the organisation in relation to the competence fields.

3. Results

3.1. General aspects of the survey

The results of the survey were first examined for reliability and validity (Chin, 2010). For this purpose, the Cronbach's Alpha and the composite reliability (CR) were first calculated in order to assess the reliability for the 6 constructs. Their scores were all above the 0.7 threshold (Nunnally & Bernstein, 1994). The same applies to the individual reliabilities of the individual constructs (all > 0.5) as well as in relation to AVE (Hair et al., 2012). All results are shown in Table 1. The present measuring instrument can therefore be classified as satisfactory and the results can be regarded as reliable and valid.

In total, 842 people took part in the survey. Of these, 76% have no management experience or are currently not in a management position. 68% of those questioned are male, 32% female, and the average age of those involved is 42.4 years. Only 22% of all respondents knew the term E-Leadership. In the survey, 72% filled out the

Table 1. Reliability and validity check (own source)

Dimensions	Cronbach's Alpha	Composite Reliability (CR)	Average Variability
E-Change-Management	0.728	0.767	0.557
E-Self Competence	0.851	0.885	0.682
E-Communication	0.931	0,945	0.766
E-Teambuilding	0.822	0.862	0.701
E-Technology	0.732	0,801	0.698
E-Trust	0.798	0.822	0.716

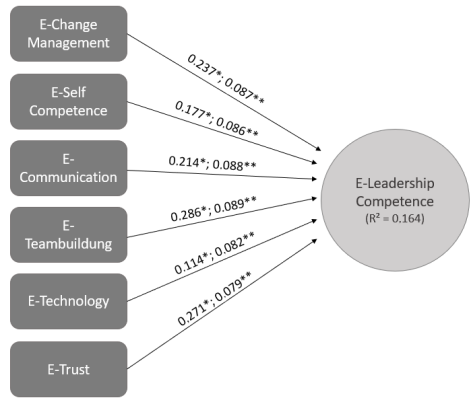
field for a free definition of E-Leadership, so that a definition could be filtered out and formed as a common extract using codes and as part of a MAXQDA evaluation. The associated codes were:

- Technological competence.
- Symmetrical information distribution.
- Reciprocal trust.
- Organizational vision.
- Employee-related mission.

As a result, the following definition of E-Leadership could be extracted: *E-leadership refers to a strategic leadership paradigm of an organization which, as process thinking, aims to network all organizational members – regardless of time and place – with the help of digital technologies, to make work processes more efficient and to develop flexible and agile characters of the organization in terms of a common vision. As an individual, the E-Leader must develop an employee-centric mission in their respective work environment by ensuring a symmetrical flow of information, promoting media communication, and strengthening mutual trust.*

3.2. Inner results of the survey

Finally, the study results were examined with regard to their explanatory power and the assessment of the predictive relevance, and the significance of the hypothetical relationships was estimated. For this purpose, the main criterion "variance", measured using the chi-square test, was first carried out (Chin, 1998). Figure 3 shows an overview of the extracted measurements.

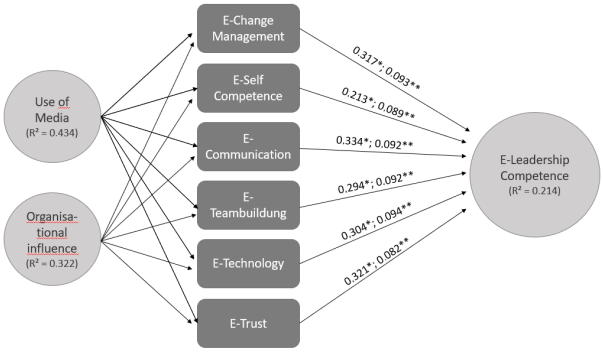


Notes: *coefficients, **SE, significant for 1% level.

Figure 3. Competence influence on E-Leadership (own source)

The first results show that none of the competence dimensions has an increased influence on E-Leadership competences as such, but that there is an approximately equal distribution.

It was therefore interesting for the present study to figure out if there are mediator effects (Iacobucci & Duhachek, 2003; Kannadhasan et al., 2018). In the present study, these moderating variables are the influence of the organization and the use of media on the respective development of competencies. The results (Figure 4) show that the moderating variables have a significant impact on the competencies of E-Leaders. The R^2-value has increased and the individual path coefficients have also increased.



Notes: *coefficients, **SE, significant for 1% level.

Figure 4. The impact of media and organisational influence (own source)

In the last step, individual categories (in total 20 categories) were checked for dependence on the moderating variables. Without taking into account the "use of media" and "organisational influence", the categories "willingness to change", "digital communication" and "media knowledge" were the most highly rated categories. However, after adding the two moderating variables, it became apparent that aspects such as resilience, information sharing, and social networking in particular have clearly gained in influence.

On this basis, the following conclusions can be drawn: without the moderating variables "use of media" and "organisational influence", the individual competence fields are quite evenly distributed. None of the dimensions has a significant influence on the E-Leader competencies. If the modelling variables are included, however, it becomes apparent that the dimensions E-Trust, E-Communication and E-Technology in particular gain significant influence and thus have a decisive impact on the competence portfolio of an E-Leader.

4. Discussion

The present study shows a multifaceted connection between the individual competence dimensions on the topic of e-leadership competencies. In this context, it could be proven that both media use and organisational influence shift the weighting of the individual competence fields. Even if the validity of the individual construct fields could be mathematically proven, it is not clearly clarified whether the surveyed respondents assessed the individual competence fields from the perspective of the person of an E-Leader (personal perspective) or from the perspective of the concept of E-Leadership (organisational perspective). This aspect should have been fundamentally included in the study. Another problem is that there are no comparative values for the study results. Another problem is that there are no comparative values. Although recent leadership competence studies show that, for example, technologies generally influence the performance of managers and teams and that there is a direct connection between the use of media and the output, they do not go further into the resulting changes for competence (van Outvorst et al., 2017). Hambley et al. (2007), for example, also demonstrated that communication within the organisation is not dependent on the media used. With reference to the challenges that managers are generally confronted with, Bekkhus and Hallikainen (2017) were able to demonstrate that managers themselves must exhibit ambidexterity in order to take into account both the organisational goals (big picture) and their own and their followers' goals (individual, grass roots, self-competence). In order to successfully master this area of tension, leaders must have a clear picture of both the characteristics of their organisation's digital strategy and of themselves and their team colleagues.

What all current studies have in common, however, is that they are mainly based on qualitative research approaches (Pulley & Sessa, 2001; Horner-Long & Schoenberg, 2002; Schwarzmüller et al., 2018; Sousa & Rocha, 2019). Although they all emphasise the influence of digital technologies on the expansion of competency fields, no study has yet clearly addressed the development of a concrete E-Leader competency profile (Barley, 2015; Schwarzmüller et al., 2018).

For this reason, it is difficult to find comparative values so far. The results of the study must therefore be clearly examined again for interactions in further studies and compared with existing research results.

Furthermore and as already mentioned, E-leadership basically takes place in the field of tension between cohesion (group and social oriented, i.e. more employee-oriented) and locomotion (information and organization-oriented), which in turn influence the two areas "organizational and personal perspective". The distinction between the six fields of competence in relation to the subcategories is also based on the theoretical foundations of an extensive study of the literature. It could therefore be the case that further sub-categories were not taken into account, which nonetheless play an important role for the respective field of competence. Nevertheless, the first tendencies of a competence profile can be identified.

Conclusions

The developed field of competence for E-Leader(ship) offers a first starting point to eliminate essential and future-oriented criteria of modern leadership. The fields of competence mentioned with their respective

subcategories can, together with the fields of challenges, become part of a new type of personality test, which can be used in recruiting or in personnel development. The Corona Pandemic has contributed to the fact that older managers in particular should increasingly question their previous leadership style and turn to new approaches to leadership using digital media. The younger generations also demand flexible and agile jobs that can be filled worldwide and independently of on-site or time restrictions. Due to the global shortage of skilled workers, it is therefore essential to also recruit and manage staff who are not present on site. Digital collaboration therefore not only represents a paradigm shift at the grassroots level, but also requires management skills that go well beyond the previous traditional skills. In this sense, the research results obtained can be used for further studies by being translated into a concrete E-Leader competency model or profile in a next step and tested in practice.

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References

Abbasnejad, B., & Moud, H. I. (2012). Leadership functions and challenges in virtual teams – a review paper. *International Proceedings of Economics Development & Research*, *45*, 15–18.

Antonakis, J., & Atwater, L. (2002). Leader distance: A review and a proposed theory. *The Leadership Quarterly, 13*(6), 673–704. https://doi.org/10.1016/S1048-9843(02)00155-8

Annunzio, S., & Liesse, J. (2001). *eLeadership: Proven techniques for creating an environment of speed and flexibility in the digital economy*. Free Press.

Avolio, B. J., Kahai, S., & Dodge, G. E. (2000). E-leadership: Implications for theory, research, and practice. *The Leadership Quarterly*, *11*(4), 615–668. https://doi.org/10.1016/S1048-9843(00)00062-X

Avolio, B. J., Kahai, S., Dumdum, R., & Sivasubramaniam, N. (2001). *Virtual teams: Implications for e-leadership and team development*. In M. London (Ed.), *How people evaluate others in organizations* (pp. 337–358). Lawrence Erlbaum Associates Publishers.

Avolio, B., & Kahai, S. (2003). Adding the "E" to E-Leadership: How it may impact your leadership. *Organizational Dynamics*, *31*(4), 325–338. https://doi.org/10.1016/S0090-2616(02)00133-X

Avolio, B., Walumbwa, F., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, *60*, 421–449. https://doi.org/10.1146/annurev.psych.60.110707.163621

Babiel, S. (2021). *Remote Leadership: Mitarbeitende im Homeoffice führen*. BoD – Books on Demand.

Barley, S. R. (2015). *Why the internet makes buying a car less loathsome: How technologies change role relations. Academy of Management Discoveries*, *1*(1), 5–35. https://doi.org/10.5465/amd.2013.0016

Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology*, *90*(6), 1185–1203. https://doi.org/10.1037/0021-9010.90.6.1185

Bekkhus, R., & Hallikainen, P. (2017). *A new dualistic Cio toolbox: Towards ambidexterity in the digital business transformation*. In *Proceedings of the 17th Conferência da Associação Portuguesa de Sistemas de Informação, CAPSI'* (pp. 23–41). Guimarães. https://doi.org/10.18803/capsi.v17.23-41

Bell, B. S., & Kozlowski, S. W. J. (2002). A typology of virtual teams: Implications for effective leadership. *Group & Organization Management*, *27*(1), 14–49. https://doi.org/10.1177/1059601102027001003

Brunelle, E. (2013). Leadership and mobile working: The impact of distance on the superior-subordinate relationship and the moderating effects of leadership style. *International Journal of Business and Social Science*, *4*(11), 1–14.

Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*, 349–375. https://doi.org/10.1146/annurev-orgpsych-041015-062352

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Psychology Press.

Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. In R. H. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 307–341). Sage Publications.

Chin, W. W. (2010). How to write up and report PLS analyses. In V. Esposito Vinzi, W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares* (pp. 655–690). Springer. https://doi.org/10.1007/978-3-540-32827-8_29

Collin, J., Hiekkanen, K., Korhonen, J. J., Halén, M., Itälä, T., & Helenius, M. (Eds.). (2015). *IT Leadership in transition – The impact of digitalization on Finnish organizations*. Aalto University.

Cortellazo, L., Bruni, E., & Zamoieri, R. (2019). The role of leadership in a digitalized world. A review. In *Frontiers in Psychology*, 10, 1938. https://doi.org/10.3389/fpsyg.2019.01938

DasGupta, P. (2011). Literature review: e-Leadership. *Emerging Leadership Journeys*, *4*(1), 1–36.

Eichenberg, T. (2007). Distance Leadership: Modellentwicklung – Empirische Überprüfung – Gestaltungsempfehlungen. *German Journal of Human Resource Management*, *21*(4), 454–456. https://doi.org/10.1177/239700220702100434

Fletcher, J. K., & Kaufer, K. (2003). Shared leadership. In C. L. Pearce & J. A. Conger (Eds.), *Shared leadership: Reframing the Hows and Whys of leadership* (pp. 21–47). SAGE Publications, Inc. https://doi.org/10.4135/9781452229539.n2

Fliaster, A., & Golly, T. (2014). Innovation in small and medium-sized companies: Knowledge integration mechanisms and the role of top managers' networks. *Management Revue*, *25*(2), 125–147. https://doi.org/10.5771/0935-9915-2014-2-125

Frank, A. G., Mendes, G. H. S., Ayala, N. F., & Ghezzi, A. (2019). Servitization and Industry 4.0 convergence in the digital transformation of product firms: A business model innovation perspective. *Technological Forecasting and Social Change*, *141*, 341–351. https://doi.org/10.1016/j.techfore.2019.01.014

Gerth, A. B., & Peppard, J. (2016). The dynamics of CIO derailment: how CIOs come undone and how to avoid it. *Business Horizons*, *59*(1), 61–70. https://doi.org/10.1016/j.bushor.2015.09.001

Gronn, P. (2009). Hybrid leadership. In K. Leithwood, B. Mascall, & T. Strauss (Eds.), *Distributed leadership according to the evidence* (pp. 17–40). Routledge.

Gross, M., & Hülsbusch, W. (2005). Weblogs und Wikis (Teil 2): Potenziale für betriebliche Anwendungen und E-Learning. *Wissensmanagement*, *7*(1), 50–53.

Haddud, A., & McAllen, D. (2018). *Digital workplace management: Exploring aspects related to culture, innovation, and leadership*. In *Proceedings of the Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1–6). Honolulu: HI. IEEE. https://doi.org/10.23919/PICMET.2018.8481807

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial least squares: The better approach to structural equation modeling? *Long Range Plan*, *45*(5–6), 312–319. https://doi.org/10.1016/j.lrp.2012.09.011

Hambley, L. A., O'Neill, T. A., & Kline, T. J. B. (2007). Virtual team leadership: the effects of leadership style and communication medium on team interaction styles and outcomes. *Organizational Behavior and Human Decision Processes*, *103*(1), 1–20. https://doi.org/10.1016/j.obhdp.2006.09.004

Henseler, J., Hubona, G., & Ray, P. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, *116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Horner-Long, P., & Schoenberg, R. (2002). Does e-business require different leadership characteristics? An empirical investigation. *European Management Journal*, *20*(6), 611–619. https://doi.org/10.1016/S0263-2373(02)00112-3

Houghton, J. D., Neck, C. P., & Manz, C. C. (2003). Self-leadership and superleadership. In C. L. Pearce & J. A. Conger (Eds.), *Shared leadership: Reframing the Hows and Whys of leadership* (pp 123–140). SAGE Publications, Inc. https://doi.org/10.4135/9781452229539.n6

Iacobucci, D., & Duhachek, A. (2003). Advancing alpha: Measuring reliability with confidence. *Journal of Consumer Psychology*, *13*(4), 478–487. https://doi.org/10.1207/S15327663JCP1304_14

Jawadi, N., Daassi, M., Favier, M., & Kalika, M. (2013). Relationship building in virtual teams: A leadership behavioral complexity perspective. *Human Systems Management*, *32*(3), 199–211.

Kakabadse, A., Abdulla, M. O., Abouchakra, R., & Jawad, A. (2011). *Leading smart transformation: A roadmap for world class government*. Palgrave Macmillan. https://doi.org/10.1057/9780230306493

Kamalaldin, A., Linde, L., Sjödin, D., & Parida, V. (2020). Transforming provider-customer relationships in digital servitization: A relational view on digitalization. *Industrial Marketing Management*, *89*, 306–325. https://doi.org/10.1016/j.indmarman.2020.02.004

Kannadhasan, M., Thakur, B. P. S., Gupta, C. P., & Charan, P. (2018). Testing capital structure theories using error correction models: Evidence from China, India, and South Africa. *Cogent Economics & Finance*, *6*(1), 1443369. https://doi.org/10.1080/23322039.2018.1443369

Kempner, F. (2021, November). E-Leadership competencies between cohesion and locomotion. In D. Hampel & H. Vránová (Eds.), *25th European Scientific Conference of Doctoral Students, PEFnet 2021* (pp. 43–44). Mendel University Press.

Lipnack, J., & Stamps, J. (2000). *Virtual teams: People working across boundaries with technology* (2nd ed.). John Wiley & Sons.

Mackenzie, M. L. (2010). Manager communication and workplace trust: Understanding manager and employee perceptions in the e-world. *International Journal of Information Management*, *30*(6), 529–541. https://doi.org/10.1016/j.ijinfomgt.2010.04.001

Mansfield, B., & Mitchell, L. (1996). *Towards a competent workforce*. Gower Publishing, Ltd.

Manz, C. C., & Sims, H. P. (2001). *The new superleadership: Leading others to lead themselves*. Berrett-Koehler Publishers.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Pearce, C. L., & Conger, J. A. (2002). *Shared leadership: Reframing the Hows and Whys of leadership*. Sage Publications. https://doi.org/10.4135/9781452229539

Pearce, C. L., Conger, J. A., & Locke, E. A. (2008). Shared leadership theory. *The Leadership Quarterly*, *19*(5), 622–628. https://doi.org/10.1016/j.leaqua.2008.07.005

Pulley, M. L., & Sessa, V. I. (2001). E-leadership: Tackling complex challenges. *Industrial and Commercial Training*, *33*(6), 225–230.

Roman, A. V., van Wart, M., Wang, X., Liu, C., Kim, S., & McCarthy, A. (2018). Defining e-leadership as competence in ICT-mediated communications: An exploratory assessment. *Public Administration Review*, *79*(6), 853–866. https://doi.org/10.1111/puar.12980

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *Management Revue*, *29*(2), 114–138. https://doi.org/10.5771/0935-9915-2018-2-114

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of Paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, *36*(2), 381–403.

Sousa, M. J., & Rocha, Á. (2019). Skills for disruptive digital business. *Journal of Business Research*, *94*, 257–263. https://doi.org/10.1016/j.jbusres.2017.12.051

Somerville, M. M. (2013). Digital age discoverability: A collaborative organizational approach. *Serials Review*, *39*(4), 234–239. https://doi.org/10.1080/00987913.2013.10766404

Townsend, A. (2015). Leading school networks: Hybrid leadership in action? *Educational Management Administration & Leadership*, *43*(5), 719–737. https://doi.org/10.1177/1741143214543205

van Outvorst, F., Visker, C., & de Waal, B. (2017). *Digital leadership: The consequences of organizing and working in a digital society.* In *Proceedings of the 5th International Conference on Management, Leadership & Governance (ICMLG)* (pp. 443–471). Johannesburg.

van Wart, M., Roman, A., Wang, X., & Liu, C. (2019). Operationalizing the definition of e-leadership: Identifying the elements of e-leadership. *International Review of Administrative Sciences*, *85*(1), 80–97. https://doi.org/10.1177/0020852316681446

Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Press.