Remote Leadership: A Scoping Review of Concepts, Evidence and Research Gaps

Liderança Remota: Uma Revisão de Escopo sobre Conceitos, Evidências e Lacunas de Pesquisa

Liderazgo Remoto: Una Revisión de Alcance de Conceptos, Evidencia y Lagunas en la Investigación

Literature Review

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Abstract: This scoping review maps the literature on remote work leadership over the last ten years, seeking to understand this phenomenon more broadly by examining methodological, theoretical and empirical aspects. The search was based on the PRISMA guidelines and conducted in the PsychINFO, Web of Science, Scopus and LILACS databases, with 25 studies included out of the 953 mapped. Methodologically, there was a prevalence of cross-sectional quantitative studies using self-report instruments. The main variables under investigation were leadership styles, e-leadership, remote management and self-leadership. Conceptually, e-leadership was the main theoretical reference, although few studies defined remote leadership. This review contributes to Work and Organizational Psychology by identifying gaps in the field, such as the need for longitudinal research in understudied regions and models that consider the influence of virtuality.
Keywords: leadership, organizations, scoping review, teleworking, work.

Resumo: Esta revisão de escopo mapeia a literatura em liderança em trabalho remoto nos últimos dez anos, buscando compreender este fenômeno de forma mais ampla ao estudar tanto aspectos metodológicos quanto teóricos e empíricos. A busca se deu pelas diretrizes PRISMA em bases de dados Psychinfo, Web of Science, Scopus e LILACS, havendo inclusão de 25 estudos entre os 953 mapeados. Metodologicamente, houve prevalência de estudos quantitativos transversais com instrumentos de auto-relato. As principais variáveis sob investigação foram estilos de liderança, *e-leadership*, gestão remota e *self-leadership*. Conceitualmente, a *e-leadership* foi a principal referência teórica embora poucos estudos tenham definido liderança remoto. Contribui-se com a Psicologia Organizacional e do Trabalho pela identificação de lacunas na área de estudo, como a necessidade de pesquisas longitudinais, em regiões subestudadas e de modelos que considerem a influência da virtualidade.
Palavras-chave: liderança, organizações, revisão de escopo, teletrabalho, trabalho.

Resumen: Esta revisión de alcance mapea la literatura en liderazgo en trabajo remoto en los últimos diez años, buscando comprender este fenómeno de manera más amplia al estudiar tanto aspectos metodológicos como teóricos y empíricos. La búsqueda se dio por las directrices PRISMA en bases de datos Psychinfo, Web of Science, Scopus y LILACS, habiendo inclusión de 25 estudios entre los 953 mapeados. Metodológicamente, hubo prevalencia de estudios cuantitativos transversales con instrumentos de autorrelato. Las principales variables investigadas fueron estilos de liderazgo, e-leadership, gestión remota y autoliderazgo. Conceptualmente, el liderazgo electrónico ha sido la principal referencia teórica aunque pocos estudios han definido el liderazgo remoto. Se contribuye con la Psicología Organizacional y del Trabajo por la identificación de lagunas en el área de estudio, como la necesidad de investigaciones longitudinales, en regiones subestudiadas y de modelos que consideren la influencia de la virtualidad.
Palabras clave: liderazgo, organizaciones, revisión de alcance, teletrabajo, trabajo.

Introduction

With the advancement of information and communication technologies (ICTs), the topic of digital leadership has gained prominence in the organizational context, with theoretical definitions being proposed (Avolio et al., 2009; Avolio et al., 2014; Van Wart et al., 2019), as well as associated competencies and practices (Ahuja et al., 2023; Krehl & Büttgen, 2022; Mourão et al., 2023; Roman et al., 2019; Van Wart et al., 2017; Yozi & Mbokota, 2024). One of the main theoretical proposals was that of Avolio and colleagues: "E-leadership is defined as a social influence process embedded in both proximal and distal contexts mediated by AITs that can produce a change in attitudes, feelings, thinking, behavior, and performance." (Avolio et al., 2014, p. 107).

Subsequently, Van Wart and colleagues updated the previous definition, seeking to operationalize the concept in practice: "E-leadership is the effective use and blending of electronic and traditional methods of communication. It implies an awareness of current ICTs, selective adoption of new ICTs for oneself and the organization, and technical competence in using those ICTs selected." (Van Wart et al., 2019, p. 4). Based on this conceptualization, six essential digital leadership competencies are proposed: e-communication, e-social, e-team, e-change management, e-technology, and e-trustworthiness (Van Wart et al., 2016). A scale of these competencies was also developed, and its testing revealed the interdependence among the competencies and supported the validation of the instrument (Roman et al., 2019).

These theoretical frameworks were developed for contexts in which technologies serve as office tools and are therefore used optionally and/or in combination with face-to-face interactions (as in Van Wart et al., 2017). In contexts that depend on and are mediated by technologies for interaction, such as telework, these models may be insufficient (Bravo-Duarte et al., 2025; Günther et al., 2022). In this regard, Bravo-Duarte et al. (2025) discuss how the ability to communicate digitally does not necessarily make remote leaders effective in telework, given that this ability is also fundamental to working in an office. Thus, it is important to consider what distinguishes effective leadership in these emerging work arrangements.

In 2020, the COVID-19 pandemic began, imposing social isolation as a public health measure and making remote work mandatory for many workers, while also making research on this work arrangement urgent and necessary (Černe et al., 2023). This work arrangement involves several aspects that may be perceived as advantages or disadvantages: physical distance between workers and their organization, reliance on ICTs for professional interactions, independence and flexibility regarding time criteria for work outputs, among others (de Sousa Figueira et al., 2022; Jansson & Kangas, 2025; ILO, 2020). In the current context, there is evidence of increased adoption of hybrid work arrangements following the pandemic (Jones Lang LaSalle, 2024), raising the question of whether the equivalence between the foundations of face-to-face and remote leadership (Van Wart et al., 2016) still holds in this new scenario or whether distinct skills are required (Avolio et al., 2009; Van Wart et al., 2017), as well as whether the theories developed thus far apply to both high and moderate levels of virtuality.

From this perspective, the term virtuality has been discussed in recent reviews by Bell et al. (2023) and Höddinghaus et al. (2023) as referring to different work arrangements ranging from fully face-to-face to fully online work. Notwithstanding this conceptualization, these studies also highlight how identifying levels of virtuality provides a better understanding when comparing empirical findings on remote work. However, despite its influential role—similar to the concepts of remote work and virtual leadership—there is no consensual definition or empirical approach among authors, with different classification parameters being used, such as spatial or temporal dispersion, technological dependence, and frequency of communication. In light of the relevance of virtuality to the validity of the analysis, the present review aims to examine digital leadership through the lens of virtuality.

In Höddinghaus et al. (2023), leadership styles are classified as task-oriented, relations-oriented, change-oriented, and passive. Task orientation encompasses leadership styles focused on monitoring activities and processes performed at work, such as transactional leadership. Relations and change orientations, in turn, describe a set of leadership styles driven, respectively, by the relationship with followers, such as participative leadership, and by organizational change, such as transformational leadership. Passive leadership addresses a leader's lack of engagement and action, approaching the absence of leadership.

A scoping review of how the literature portrays remote leaders is useful for keeping pace with the recent implementation of remote work arrangements, providing insights that can help guide future research and the training of remote leaders. Thus, this literature review aims to map the scientific literature on leadership in telework over a ten-year period (2015–2025). Its distinctive contribution compared with previous reviews lies in its attempt to understand the literature more broadly by considering various aspects assessed in the studies, such as theoretical and methodological assumptions, variables under investigation, and findings, rather than emphasizing only methodology (Asfahani et al., 2024) or the effectiveness of leadership styles (Höddinghaus et al., 2024), for example. It is worth noting that previous studies by Bell et al. (2023) and Höddinghaus et al. (2024) have identified conceptual heterogeneity in this field of research. Therefore, investigating the perspectives that guide research and the ensuing discussions represents a gap

addressed by the present study, distinguishing it from previous research.

Given the breadth of the aspects assessed (theoretical and methodological) and the decision not to critically appraise the quality of the evidence, a scoping review was identified as the most appropriate methodology for understanding the phenomenon of remote leadership in this study, in accordance with the guidelines of the Joanna Briggs Institute (JBI) and PRISMA-ScR. Accordingly, following the PCC framework, the participants are leaders and subordinates engaged in remote work; the concept that delineates the study is leadership in remote work; and the context encompasses public, private, and/or third-sector organizations located anywhere in the world and operating in virtual work environments. The research questions guiding the review can be divided as follows: 1) What methodological choices (i.e., nature, design, participants) are adopted in empirical studies on digital leadership?; 2) What styles, behaviors, and knowledge are associated with remote leadership?; 3) What definitions of digital leadership and remote work are presented in the literature on telework and leadership?; and 4) What levels of virtuality and work arrangements are adopted in the studies?

Method

Article Selection Procedures

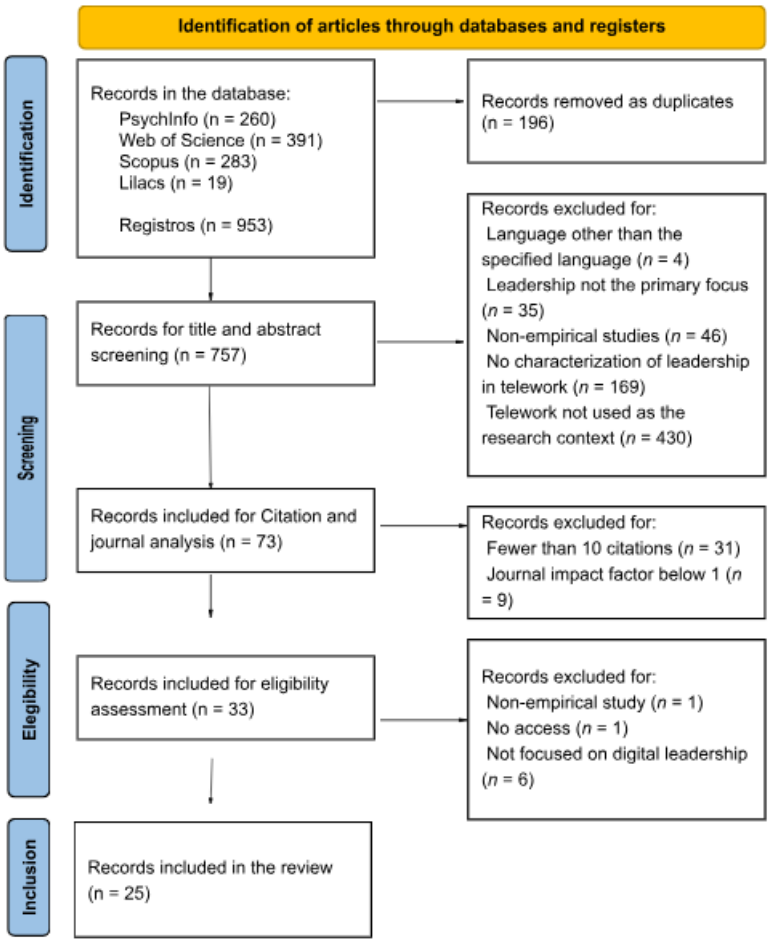
The scoping review of the literature methodologically follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2022), the Joanna Briggs Institute (JBI) methodology (Peters et al., 2020), and the previously developed research questions guiding the study. However, the recommendation to include more than one independent reviewer in the article search and selection process was not followed in this study, as the process was conducted by a single reviewer. Likewise, the protocol was not registered. Therefore, Items 5 and 10 of the PRISMA-ScR guidelines (Tricco et al., 2018) were not addressed in this review, which may compromise the validity of the findings and conclusions.

Data were collected on September 6 and 8, 2025, using the following electronic databases: PsycINFO, Web of Science, Scopus, and LILACS. PsycINFO was selected because it specifically covers the psychology literature, whereas Web of Science and Scopus are multidisciplinary databases, allowing access to publications from other fields, such as management, on the topic under investigation. Finally, LILACS was selected to facilitate the mapping and visibility of Latin American publications. The search was restricted to empirical articles that were peer-reviewed, freely available, published within the previous ten years (2015–2025), and written in Portuguese or English. The purpose of this time frame was to include publications from both before and after the onset of the pandemic, which began in 2020. The English search terms used across all databases were: (telework* OR "work from home" OR "work at distance" OR "work at home" OR "remote work" OR "home office" OR "hybrid work") AND (leader* OR "leadership" OR chief* OR "organizational management" OR boss*), while the Portuguese search terms were: (teletrabalh* OR "trabalho de casa" OR "trabalho a distância" OR "trabalho em casa" OR "trabalho remoto" OR "home office" OR "trabalho híbrido") AND (lider* OR "liderança" OR chef* OR "gestão organizacional" OR "gestão em organizações"). The search strategy was adapted to the specific indexing mechanisms of each database while preserving the groups of search terms and the Boolean operators connecting them.

In total, 953 articles were identified: 260 from PsycINFO, 391 from Web of Science, 283 from Scopus, and 19 from LILACS. Figure 1 presents the article selection procedure.

Figure 1

Flowchart of the Scoping Review of the Literature



Article Analysis Procedures

In addition to the aforementioned inclusion criteria (empirical article, peer review, publication between 2015 and 2025, written in Portuguese or English, and free access), it was established that the scientific articles should: focus on leadership in the context of remote and/or hybrid work, have at least ten citations according to Google Scholar, and be published in a journal with an impact factor of at least one. The articles were assessed by a single reviewer with the assistance of Rayyan (http://www.rayyan.ai/), a digital interface for literature reviews, solely to facilitate the screening stage involving the analysis of titles and abstracts and the organization of articles included in and excluded from the review. Using this platform, duplicate articles across the databases (196) were excluded. Titles and abstracts were then screened, followed by the selection of articles according to the inclusion criteria, resulting in the exclusion of 724 articles.

The next stage consisted of analyzing the 33 articles using Bardin's (2016) Content Analysis methodology, following the stages of pre-analysis, exploration of the material, and treatment of the results. The sources were coded using the theme as the recording unit and the full material as the context unit. Pre-analysis, as the initial contact with the material, was conducted through the reading of titles and abstracts carried out during the screening stage of the article search and selection procedures. During the exploration of the material, an *a priori* spreadsheet developed based on the research questions was used; therefore, the analysis was deductive in nature. The spreadsheet comprised the following categories: 1) country where the study was conducted; 2) methodological aspects (research objectives, sample, participant selection method, design, approach, nature, variables investigated, instruments, and data analysis method); 3) type of organization; 4) level of virtuality adopted; 5) definitions of digital leadership and remote work; 6) findings and practical recommendations; and 7) limitations and suggestions for future studies. These categories followed the criteria of exclusivity and homogeneity proposed by the methodology adopted. It should be noted that the primary enumeration rule was frequency of occurrence. During this stage, eight articles were excluded because they did not meet the review's inclusion criteria (one was a literature review, one was inaccessible, and six did not specifically investigate the role and practices of leadership in remote

work). Thus, 25 articles examining digital leadership in telework and/or hybrid work contexts were ultimately included. Finally, during the treatment of the results, the spreadsheet was analyzed as a whole and critically in light of the literature, enabling the identification of research trends and gaps.

Results

Study Characteristics

Country of Study and Language. Most of the studies (52%) were conducted in Europe, including the following countries: Finland, Italy, Holland, Belgium, Germany, Denmark, Norway, Sweden, the Netherlands, and France. However, this percentage may be even higher (60%), given that the researchers from the two studies that did not identify the country where the research was conducted were affiliated with European institutions. Studies conducted in Asia represented 24% of the sample and included the following countries: Hong Kong, Vietnam, India, Taiwan, Turkey, and Indonesia. In the Americas (8%), Colombia and Brazil were the study locations, while in Africa (4%), only South Africa was represented. None of the included studies were conducted in Oceania. Only one cross-cultural study was included in the sample (4%), but the countries involved were not identified. All studies were written in English.

Research Period. All articles included in this literature review were published between 2021 and 2025, after the COVID-19 pandemic period. The data collection period was identified in 22 articles, of which 21 were conducted during the pandemic and one was conducted before the pandemic (de Sousa Figueira et al., 2022).

Sample, Type of Organization, and Level of Virtuality. Most of the studies selected their participants using non-probability sampling strategies, such as the authors' personal contacts and social media. Regarding the type of organization to which the participants belonged, this information was identified in 68% of the studies as follows: private only (16%), public only (16%), public and private (20%), private and third sector (4%), public, private, and third sector (8%), and university laboratory (4%). Subordinates were the population most frequently targeted by the studies (64%), followed by leaders and subordinates (20%) and leaders only (16%). Regarding the participants' level of virtuality — identified by the number of hours spent working remotely or by self-classification — predominantly or fully remote work was most common. Only one study focused exclusively on hybrid workers (Yozi & Mbokota, 2024). However, although some studies clearly reported these data (such as Alkhayyal & Bajaba, 2023; Babapour Chafi et al., 2022; Ipsen et al., 2022; Lundqvist et al., 2022; Stoker et al., 2021; Toscano et al., 2022), others did not, making it difficult to identify the participants' profile and its influence on the results.

Design, Approach, and Nature. The following approaches were adopted: quantitative (76%), qualitative (20%), and mixed-methods (4%). All studies using quantitative approaches employed a correlational and/or survey design, with the exception of one experimental study (Klebe & Felfe, 2023). Survey methodology was prevalent among the correlational studies (68% of the study sample), while the study by Olsen et al. (2023) stood out for using a quantitative diary study. Regarding the nature of the studies, cross-sectional research predominated, although some studies used more than one measurement period (Caniëls, 2023; Daraba et al., 2021; Maden-Eyiusta & Alparslan, 2022), daily records (Krehl & Büttgen, 2022; Olsen et al., 2023), or weekly records (Costantini & Weintraub, 2022).

Variables Investigated. According to the variables investigated, the included articles were classified into the following categories: leadership styles, e-leadership, remote management, and self-leadership. Leadership styles were the most frequently studied group in the articles included in this review (56%) and can be organized according to the categories proposed by Höddinghaus et al. (2023), with the addition of the destructive leadership category, as this leadership style does not fit into any of the categories proposed by the authors.

Relations-oriented leadership was the most frequently investigated category both in the total sample of articles (40%) and in the sample of the leadership styles group (71.4%). The change-oriented leadership category was investigated in three studies, representing 21.4% of this subgroup, while the task-oriented leadership category was investigated in two studies, representing 14.3%. Passive and destructive leadership, in turn, were discussed in only one study each, thus representing 7.1% of this group. The dataset from these empirical studies is presented in Table 1.

The articles interested in investigating leadership styles drew on theoretical assumptions from traditional work settings to understand the remote context, whereas the articles grouped under the e-leadership category investigated remote leadership based on the specificities of the virtual work setting (28%). The studies focused on remote leaders' competencies (Alkhayyal & Bajaba, 2023; Maheshwari et al., 2024), practices (Günther et al., 2022; Krehl & Büttgen, 2022), challenges (Babapour Chafi et al., 2022; Law & Koh, 2023; Krehl & Büttgen, 2022), technological tools (Krehl & Büttgen, 2022), and critical factors for effectiveness (Ahuja et al., 2023). It should be noted that Günther et al. (2022) based their study more on the context of the pandemic crisis and its specificities than on virtuality; therefore, its inclusion in this category is due to the authors' argument that

traditional leadership styles are incompatible with remote work.

Table 1

Leadership Categories and Styes

Leadership Categories	Leadership Styles and References	References
Relations-oriented leadership	Authentic leadership	Daraba et al (2021); Yang & Lin (2023)
	Leader–member exchange (LMX)	Jansson & Kangas (2025); Toscano et al. (2022)
	Empowering leadership	Coun et al. (2021); Stoker et al. (2021)
	Health-oriented leadership	Klebe & Felfe (2023)
	Positive leadership	Caniëls (2023)
	Ethical leadership	Santiago-Torner et al. (2024)
	Supportive leadership	Lundqvist et al. (2022)
Change-oriented leadership	Transformational leadership	Boccoli et al. (2024); Olsen et al. (2023)
	Adaptive leadership	Yozi & Mbokota (2024)
Task-oriented leadership	Directive leadership	Coun et al. (2021); Stoker et al. (2021)
Passive leadership	Passive-avoidant leadership	Olsen et al. (2023)
Destructive leadership	Destructive leadership	Dolce et al. (2020)

Note. The categorical organization follows Höddinghaus et al. (2023).

Remote management was investigated in two studies (8%), which examined managers' perceived support and the sources of this support within the organization (Ipsen et al., 2022) and proposed a remote management model in which leadership is one of its constituent dimensions (de Sousa Figueira et al., 2022). Finally, self-leadership was also investigated as an antecedent variable in two studies (8%). In the study by Costantini and Weintraub (2022), self-leadership was identified through the dimensions of self-goal setting and self-rewards and examined in relation to job crafting, work engagement, and task significance. Maden-Eyiusta and Alparslan (2022), in turn, investigated it as an antecedent of psychological empowerment and job performance, with supervisor monitoring acting as a moderator between self-leadership and psychological empowerment, and empowerment acting as a mediator between self-leadership and performance.

Understanding virtuality as a continuum between face-to-face and remote work comprising multiple levels (Bell et al., 2023), Table 2 refers specifically to the studies that identified it as a study variable. It is worth noting that some articles included in this review justified the need to study remote work precisely because of the implications for work arising from the transition between the extremes of virtuality; however, they did not assess levels of virtuality in their empirical studies. Similarly, other studies assume the existence of different forms of remote work; however, they neither specify them nor consider them in their models as antecedent, moderator, or mediator variables. Furthermore, only one study focused exclusively on hybrid work, investigating the challenges and competencies of a leader at a moderate level of virtuality (Yozi & Mbokota, 2024).

Table 2

Studies Adopting Virtuality as a Variable

Variable Type (%)	Reference
Uses telework intensity as a moderating variable (8%).	Caniëls (2023); Santiago-Torner et al. (2024)
Uses time spent working remotely (measured in hours, Frequency, or days) as a control variable (16%).	Costantini & Weintraub (2022); Daraba et al. (2021); Stoker et al. (2021); Toscano et al. (2022)

Note. The percentage represents the number of articles that adopted virtuality as this type of variable relative to the total sample of articles.

Instruments

The main instruments were self-administered questionnaires (80%) and/or semi-structured interviews (16%). Two studies stood out for using instruments other than these: one used workshops, photo-elicitation, and individual interviews, while the other used daily records (Babapour Chafi et al., 2022; Krehl & Büttgen, 2022). Given the diversity of research interests, few instruments were used across multiple studies, either in the investigation of digital leadership or of associated variables. The only leadership instrument used in more than one study was that developed by Roman et al. (2019), which was administered in Alkhayyal and Bajaba (2023) and Boccoli et al. (2024).

Data Analysis

Most studies used data analysis methods to examine associations between variables (90%),

with Structural Equation Modeling (SEM) (38.9%) and Hierarchical/Multiple Regression and Moderation/Mediation Analysis (PROCESS) (33.3%) being the most frequently used methods. For instrument validation (65%), the most frequently used method was Factor Analysis and Scale Validation (CFA/EFA) (76.9%), while for comparisons between groups (50%), Descriptive and Comparative Statistical Analysis (90%) was the most frequently used method. These data are detailed in Table 3.

Table 3
Data Analysis Methods Used in Quantitative Studies

Type of data analysis method (%[a])	Data analysis method	Reference	%[b]
Instrument validation (65%)	Factor Analysis and Scale Validation (CFA/EFA)	Alkhayyal & Bajaba (2023); Caniëls (2023); Coun et al. (2021); de Sousa Figueira et al. (2022); Santiago-Torner et al. (2024); Toscano et al. (2022); Yang & Lin (2022)	76.9%
	Common Method Bias Analysis (CMB/CMV)	Alkhayyal & Bajaba (2023); Boccoli et al. (2024); Maheshwari et al. (2024)	30.8%
	Multiple-Criteria Decision-Making (MCDM)	Ahuja et al. (2023)	7.7%
Group Comparisons (50%)	Descriptive and Comparative Statistical Analysis	Alkhayyal & Bajaba (2023); Boccoli et al. (2024); Caniëls (2023); de Sousa Figueira et al. (2022); Dolce et al. (2020); Ipsen et al. (2022); Lundqvist et al. (2022); Santiago-Torner et al. (2024); Stoker et al. (2022)	90%
	Mixed Repeated-Measures ANOVA	Klebe & Felfe (2023)	10%
Association Between Variables (90%)	Structural Equation Modeling (SEM)	Boccoli et al. (2024); Daraba et al. (2021); Dolce et al. (2020); Maden-Eyiusta & Alparslan (2022); Maheshwari et al. (2024); Santiago-Torner et al. (2024); Yang & Lin (2022)	38.9%
	Partial Least Squares Structural Equation Modeling (PLS-SEM/PLS-PM)	Alkhayyal & Bajaba (2023); Coun et al. (2021); de Sousa Figueira et al. (2022); Ipsen et al. (2022); Günther et al. (2022)	27.8%
	Hierarchical/ Multiple Regression and Moderation/Mediation Analysis (PROCESS)	Caniëls (2023); Daraba et al. (2021); Lundqvist et al. (2022); Santiago-Torner et al (2024); Toscano et al. (2022)	33.3%
	Multilevel Modeling and Analysis	Costantini & Weintraub (2022); Olsen et al. (2023);	11.1%
	Regression and Temporal Correlation Analysis	Dolce et al. (2020); Olsen et al. (2023)	11.1%

[a] This percentage represents the number of different references in this category divided by the total number of quantitative studies.
[b] This percentage represents the number of different references that used the specified data analysis method divided by the number of distinct references in the category of analysis method types to which that method belongs.

Data analysis methods in qualitative studies included thematic analysis (Babapour Chafi et al., 2022; Jansson & Kangas, 2025; Krehl & Büttgen, 2022), the constant comparative method (Law & Koh, 2023), and inductive content analysis (Yozi & Mbokota, 2024). The study by de Sousa Figueira et al. (2022) does not specify its qualitative data analysis method, although it identifies itself as mixed-methods research.

Theoretical Definitions

Remote Work. Remote work was explicitly conceptualized in only eight of the 25 studies (32%). The two most frequent characteristics across the definitions were physical distance between workers (present in all eight definitions) and the use of technologies (present in seven definitions, 87.5%).

Other attributes identified were temporal independence (37.5%), flexible work arrangements (25%), and performance management (12.5%). Other articles mention some attributes, such as working from home, temporal independence, and flexibility, but do not provide a direct and explicit definition of the concept.

Leadership in Remote Work. Leadership in remote work is specifically and clearly defined in nine of the 25 studies included (36%), which attribute the following characteristics and roles to it: change management, support and management of remote teams, the use of technologies and the influence process mediated by them, the crossing of geographical and cultural boundaries, and a communicative role that promotes mental health. Most of these studies (Ahuja et al., 2023; Alkhayyal & Bajaba, 2023; Boccoli et al., 2024; Maheshwari et al., 2024; Santiago-Torner et al., 2024; Yozi & Mbokota, 2024) draw on previous theoretical contributions on *e-leadership* and its competencies (Avolio et al., 2014; Roman et al., 2019; Van Wart et al., 2019). However, two studies ground their conceptualization of remote leadership in the specific context of the pandemic (Günther et al., 2022; Law & Koh, 2023).

Among the remaining studies (64%), some adopted general definitions of leadership without establishing a clear theoretical distinction between leadership across different work arrangements, emphasizing the conceptualization of leadership as a process of interpersonal influence toward common goals and/or organizational objectives (Ahuja et al., 2023; Lundqvist et al., 2022). Some articles, in turn, defined the leadership style adopted (e.g., ethical leadership), whereas others provided no definition of leadership.

In summary, digital leadership is described as a dynamic process of influence through technological tools within a context that varies according to geographical dispersion or distance. The main roles attributed to digital leaders are: possessing and developing *e-competencies*, promoting change orientation, providing mental health support, demonstrating integrity, honesty, and trustworthiness, using technologies skillfully and intentionally, and communicating and implementing strategies and practices advocated by HR (Ahuja et al., 2023; Alkhayyal & Bajaba, 2023; Boccoli et al., 2024; Krehl & Büttgen, 2022; Law & Koh, 2023; Maheshwari et al., 2024; Santiago-Torner et al., 2024; Yozi & Mbokota, 2024). Furthermore, considering that information technologies mediate the relationship between leaders and subordinates, the definitions emphasized the role of leaders in managing the technological resources available: digital leaders should know how to use and when to select these tools in order to promote clarity and efficiency in communication (Ahuja et al., 2023; Alkhayyal & Bajaba, 2023; Maheshwari et al., 2024). However, just as the role of the leader does not amount to simply transferring traditional leadership to the digital mode, these technological skills do not reduce digital leaders to individuals who merely possess technical knowledge of the tools, since digital leadership consists of a process of interpersonal influence shaped by both social and relational orientations and technological aspects (Maheshwari et al., 2024; Yozi & Mbokota, 2024).

Bias Analysis

Using the ROBUST methodology proposed by Nudelman and Otto (2020), the level of bias in the articles included in the review was assessed by a single reviewer. The model was adapted by excluding the item concerning whether the study was conducted in a controlled setting, as this review concerns studies that do not require control of the research environment, and by dividing the final item (*data management*) into two items: one concerning excluded and outlier data and the other concerning common method bias. The adapted version of the methodology, as well as the analysis of each publication, is provided in the appendices to this article (Appendices A and B). Given that this methodology primarily applies to quantitative studies using surveys, qualitative studies were not included in this analysis. The level of bias was assessed by assigning scores of zero, one, or two. Mean scores between 1.34 and 2.00 were considered indicative of low bias, those between 0.67 and 1.33 of moderate bias, and those between 0.00 and 0.66 of high bias.

As a result of this analysis, items related to the reporting of sample characteristics, the adequacy of sample size to the research design, and the quality of the instruments had mean scores above 1.5, indicating a low level of bias in these dimensions. In contrast, mean scores for items related to the handling of outliers, participant attrition, common method bias, and participant recruitment and selection ranged from 0.7 to 1.05, indicating a moderate level of bias. Finally, the item concerning sample representativeness was only partially met by one study—as it was the only study to state that its sample was representative of the context under investigation—resulting in a high level of bias for this item (0.05). The overall mean score across items was 1.08, which falls within the moderate-bias range.

Regarding the qualitative studies, most (80%) clearly reported the involvement of more than one coder in data analysis, and all studies provided detailed descriptions of how the research was conducted and how the findings were analyzed. These characteristics contribute to greater credibility of their results and discussions.

Results of the Included Studies

The included studies contribute to understanding remote leadership in terms of effective

practices, challenges, and competencies, particularly during the pandemic crisis. The findings are presented below following the same categorical structure used for the variables investigated: first, studies on leadership styles; followed by those on *e-leadership*; then, studies on remote management; and finally, those on self-leadership. The findings for the first category are presented in Table 4.

Studies on relations-oriented leadership found positive associations between the selected leadership styles and expected outcomes, such as worker well-being, performance, innovative behavior, and job satisfaction (Caniëls, 2023; Coun et al., 2021; Daraba et al., 2021; Klebe & Felfe, 2023; Lundqvist et al., 2022; Stoker et al., 2021; Yang & Lin, 2023). However, two studies found unexpected associations: in Toscano et al. (2022), leader–member exchange (LMX) predicted work–family conflict, while in Santiago-Torner et al. (2024), ethical leadership predicted emotional exhaustion. Nevertheless, in both studies, these relationships could be offset by available resources: in the former, the number of days spent working remotely, and in the latter, the subordinate's coping ability.

Similarly, studies on change-oriented leadership also found positive outcomes associated with these leadership practices, as the corresponding styles promoted desirable organizational outcomes, such as team cooperation and work engagement (Boccoli et al., 2024; Olsen et al., 2023), as well as an effective hybrid leadership model (Yozi & Mbokota, 2024). In contrast, studies on task-oriented leadership, passive leadership, and destructive leadership identified both a failure to achieve desirable organizational outcomes, such as innovative behavior, leader and subordinate productivity, and cooperation in virtual teams, and the occurrence of undesirable outcomes, such as exhaustion (Coun et al., 2021; Dolce et al., 2020; Stoker et al., 2021; Olsen et al., 2023), findings that were already expected in these studies.

Table 4
Main Findings of Studies on Leadership Styles

Reference	Leadership Categories	Leadership Styles	Research Variables	Main Findings on Leadership
Caniëls, 2023	Relations-oriented leadership	Positive leadership	Vigor, Remote Context, and Leader-Member work experience	Positive leadership was positively associated with subordinate vigor in a remote work context, and this moderating effect was more pronounced with a longer leader–subordinate relationship.
Daraba et al., 2021	Relations-oriented leadership	Authentic leadership	Psychological Capital, Gender and Performance	Subordinates' perceptions of authentic leadership were positively related to subordinate performance, both directly and indirectly.
Yang & Lin, 2023	Relations-oriented leadership	Authentic leadership	Trust, Identification with leaders, Self-disclosure intentions, Knowledge sharing intentions, Online voice behavior intentions and Workplace climate	Authentic leadership predicted trust and identification with leaders. Trust was significantly and positively associated with all intentions examined, whereas identification with the leader predicted only self-disclosure intentions.
Klebe & Felfe (2023)	Relations-oriented leadership	Health-oriented leadership	Staff care, Remote context, Worker Health, Work Engagement, and Job Satisfaction	Health-oriented leadership was associated with lower levels of mental exhaustion and higher levels of job satisfaction and work engagement in both work arrangements, but was less effective in promoting these outcomes in the digital work arrangement. The relationship between health-oriented leadership and mental exhaustion was effective in both face-to-face and remote work arrangements.
Santiago-Torner et al., 2024	Relations-oriented leadership	Ethical leadership	Emotional exhaustion, Job autonomy, and	Ethical leadership was positively associated with emotional exhaustion, with autonomy

Reference	Leadership Categories	Leadership Styles	Research Variables	Main Findings on Leadership
			Telework intensity	mediating this relationship.
Jansson & Kangas, 2025	Relations-oriented leadership	Leader-member Exchange	Feedback	Feedback was more accessible online, which may be attributable to better-organized communication and the greater ease of identifying leaders' availability. Leaders reported that subordinates sought feedback less frequently and noted that certain conversations, such as more sensitive feedback and initial interactions with new members, are better suited to face-to-face settings, as these settings facilitate spontaneous interactions, genuine feedback, and accurate interpretation of instructions.
Toscano et al., 2022	Relations-oriented leadership	Leader-member Exchange	Ability to cope, Work-family conflict and Job satisfaction	Leader–member exchange (LMX) was positively associated with work–family conflict, with this relationship being negatively moderated by ability to cope (AC). No relationship was found between leader–member exchange and job satisfaction.
Lundqvist et al., 2022	Relations-oriented leadership	Supportive leadership	Remote context, Well-being (Job satisfaction, stress, general well-being)	Supportive leadership was positively associated with well-being and negatively associated with stress, with no significant moderating effect of work location (face-to-face or remote) on the relationship between leadership and well-being.
Stoker et al., 2021	Relations-oriented leadership, Task-oriented leadership	Empowering leadership and Directive leadership	Hierarchical level, Perceived productivity, and Perceived leader quality	Leaders perceived their leadership in the remote work arrangement as involving less control and greater delegation, regardless of hierarchical level. Subordinates, in turn, perceived less control and no change in delegation, although perceptions of delegation varied across hierarchical levels: those in lower hierarchical positions perceived less delegation. The difference between leaders' and subordinates' perceptions was significant for delegation, but not for control. From the leaders' perspective, delegation behavior was positively associated with both leader and subordinate productivity, whereas, from the subordinates' perspective, in addition to being associated with their own productivity, it was also associated with perceived leadership quality.
Coun et al., 2021	Relations-oriented leadership, Task-oriented	Empowering leadership and Directive leadership	Work-related flow, Innovative work behavior and IT enabled awareness	Empowering leadership was positively associated with innovative behavior, whereas directive leadership was negatively associated with it,

Reference	Leadership Categories	Leadership Styles	Research Variables	Main Findings on Leadership
	leadership			with these associations persisting across testing occasions. The mediating effect of work-related flow on the relationship between the leadership styles and innovative work behavior differed across the time points analyzed and between leadership styles: it was positive for empowering leadership and negative for directive leadership. IT-enabled awareness was not a statistically significant moderator of the relationship between the leadership styles and work-related flow at either testing occasion.
Boccoli, et al., 2024	Change-oriented leadership	Transformational leadership	Perceived support, Work engagement, and Perceived digital communication skills	Leaders' perceived skills in using digital communication tools mediated the relationship between perceived support and work engagement.
Olsen et al., 2023	Change-oriented leadership, Passive leadership	Transformational leadership and Passive-avoidant leadership	Virtual Team Cooperation and Task interdependence	Transformational leadership showed a significant positive association with virtual team cooperation. Neither the moderating effect of task interdependence nor the association between passive-avoidant leadership and virtual team cooperation was statistically significant.
Yozi & Mbokota, 2024	Change-oriented leadership	Adaptative leadership	Adaptative leadership	Being an adaptive leader was found to initially involve self-assessment, through which leaders recognize the context, their limitations, and the adaptations required. Leaders mobilize competencies such as empathy, authenticity, and communication, as well as attributes such as transparency and humility. This model is considered to summarize the competencies of an effective leader in a hybrid team.
Dolce et al., 2020	Destructive leadership	Destructive Leadership	Support, Autonomy, Cognitive Demands, Off-work-hours technology-assisted job demand (Off-TAJD), Recovery and Exhaustion	Destructive leadership was positively associated with cognitive demands and off-TAJD and negatively associated with autonomy among both men and women. An indirect negative relationship was found between destructive leadership and recovery and exhaustion through the mediating variables considered.

Within the e-leadership category, digital leadership competencies were found to be directly associated with self-efficacy and work engagement and indirectly associated with job performance, well-being, and organizational citizenship (Alkhayyal & Bajaba, 2023; Günther et al., 2022; Maheshwari et al., 2024). However, findings regarding well-being were not consistent across these studies. Regarding the e-technology competency (Van Wart et al., 2017), leaders demonstrated knowledge of various technological tools and selected them according to their intended purpose (Krehl & Büttgen, 2022).

The practices of digital leaders included health orientation, communication and information

orientation, and the provision of direction to subordinates (Günther et al., 2022), as well as collaborative problem-solving and monitoring team progress, creating spaces for socialization and team building, providing support and encouraging feedback within the team, and communicating constructively to foster an environment of trust (Krehl & Büttgen, 2022). Another study examined the critical factors for remote leader effectiveness and identified the following categories: motivation and well-being, e-change management, and technology management, listed in order of relevance. This ordering indicates the greater importance of relational and social factors compared with technical or technological factors (Ahuja et al., 2023).

The challenges reported in the group of studies investigating e-leadership included communication difficulties, such as conveying information and being understood (Babapour Chafi, 2022; Jansson & Kangas, 2025), identifying followers' emotions and needs in the absence of nonverbal cues (Babapour Chafi, 2022), and developing strategies collaboratively (Babapour Chafi et al., 2022; Law & Koh, 2023; Krehl & Büttgen, 2022). Regarding social challenges, the following stood out: supporting new members (Babapour Chafi, 2022; Jansson & Kangas, 2025; Law & Koh, 2023), promoting informal opportunities for socialization among employees (Babapour Chafi, 2022; Krehl & Büttgen, 2022), handling sensitive interactions (Jansson & Kangas, 2025), being constantly available through digital platforms (Babapour Chafi, 2022; Jansson & Kangas, 2025), and addressing the different needs of subordinates (Babapour Chafi et al., 2022). According to some studies, there is evidence that these leader responsibilities across different domains—social, emotional, technical, and managerial—may contribute to role overload (Jansson & Kangas, 2025; Ipsen et al., 2022). In this regard, concerning productivity-related aspects, striking a balance between excessive demands and trust, as well as determining the appropriate frequency of feedback, proved particularly challenging in remote work (Jansson & Kangas, 2025; Babapour Chafi, 2022).

Within the category of studies on remote management, one study validated a telework management model comprising business management, infrastructure, leadership, self-esteem, and job satisfaction. In this model, leadership includes the following factors: leaders' trust in subordinates, leaders' promotion of social and professional integration, and leaders' positive attitudes toward remote work (de Sousa Figueira et al., 2022). Another study identified a preference for face-to-face management over remote management and found that employees received greater support from their immediate managers than from senior management and the organization (Ipsen et al., 2022).

Studies on self-leadership found that this variable predicted job crafting, psychological empowerment, work engagement, and job performance (Costantini & Weintraub, 2022; Maden-Eyiusta & Alparslan, 2022). Maden-Eyiusta and Alparslan (2022) found that high levels of managerial monitoring weakened the relationship between self-leadership and the variables of task adaptivity and task proactivity. The findings of these studies are presented in Table 5.

Table 5
Main Findings of Studies on Self-Leadership

Reference	Dimensions of *Self-Leadership*	Research Variables	Main Findings on Self-Leadership
Costantini & Weintraub (2022)	Self-goal setting and Self-rewards	Job crafting in remote work (work organization and social expansion), Work engagement and Task significance	Self-goal setting was directly and positively associated with social expansion and work organization and was also indirectly associated with work engagement through the mediating effects of social expansion at the within-person level and task significance at the between-person level. Self-reward was positively associated only with social expansion.
Maden-Eyiusta & Alparslan (2022)	Self-leadership	Psychological Empowerment and Job Performance (Task proficiency, adaptivity, and proactivity)	In Study 1, self-leadership directly predicted psychological empowerment and predicted job performance both directly and indirectly. In Study 2, high (low) supervisor monitoring weakened (strengthened) the indirect effect of self-leadership on task adaptivity and task proactivity. This relationship was not significant for task proficiency.

Regarding the sociodemographic variables investigated, such as gender, age, educational level, hierarchical level, organizational tenure, and previous experience with remote work, findings varied across studies, with most studies finding no statistically significant role for these variables, whether as control, moderating, or correlational variables. Regarding how studies addressed virtuality in their findings, some studies advocate moderate levels of virtuality as an alternative for addressing challenges associated with the extremes of virtuality, for example, as a means of meeting certain social needs that are particularly challenging at high levels of virtuality, such as those involved

in sensitive feedback (Babapour Chafi et al.; Jansson & Kangas, 2025; Klebe & Felfe, 2023; Yozi & Mbokota, 2024). Remote virtuality was found to be beneficial to workers in some studies by promoting work engagement (Costantini & Weintraub, 2022), job satisfaction (Toscano et al., 2022), the effectiveness of positive leadership (Caniëls, 2023), and a reduction in the negative effect of ethical leadership on emotional exhaustion (Santiago-Torner et al., 2024), whereas in other studies it was found to be less effective in producing desirable outcomes (Klebe & Felfe, 2023) or to have no influence (Stoker et al., 2021). Findings regarding the effects of virtuality are presented in Table 6.

Table 6
Studies Discussing Virtuality in Their Findings

Approach to Virtuality	Reference	Results and Discussion Regarding Virtuality
Hybrid work as an alternative	Babapour Chafi et al (2022)	Hybrid work was identified as an intermediate alternative between remote and face-to-face work arrangements, although it represents a trade-off between flexibility and social resources and presents specific challenges.
	Jansson & Kangas (2025)	Sensitive communications and initial interactions with subordinates were found to be better suited to face-to-face settings.
Virtuality as a research variable	Caniëls (2023)	Positive leadership was more effective among remote workers than among hybrid workers.
	Costantini & Weintraub (2022)	The number of hours spent working remotely predicted *self-goal setting*, work organization, work engagement, and social expansion.
	Toscano et al. (2022)	The number of hours spent working remotely was a direct positive predictor of satisfaction with remote work.
	Santiago-Torner et al (2024)	Telework intensity strengthened the positive relationship between ethical leadership and job autonomy and attenuated the adverse effects of job autonomy and ethical leadership on emotional exhaustion.
	Klebe & Felfe (2023)	In the remote work setting, health-oriented leadership was less effective in promoting work engagement and job satisfaction than in the face-to-face setting.
	Stoker et al (2021)	The percentage of hours spent working remotely did not significantly influence the findings.

Discussion

In summary, this review included predominantly quantitative, correlational, and cross-sectional studies conducted in Asian and European countries during the pandemic. These studies provide isolated evidence of the effectiveness of certain leadership styles, such as transformational and empowering leadership, in contrast to others, such as destructive and directive leadership, while also identifying styles for which findings are inconsistent, such as ethical leadership. However, when the literature is considered as a whole, there is convergence regarding the importance placed on social aspects and adaptability to change, both in studies on leadership styles and in those investigating the challenges and practices of remote leaders. Emerging topics that have received limited research attention include self-leadership, which has shown promising findings, and hybrid work, which appears to be a desirable work arrangement for both leaders and subordinates. Sociodemographic factors and virtuality are addressed in different ways and also yield varying effects, although, overall, sociodemographic variables played a limited role in the relationships investigated.

This scoping review mapped how remote leadership has been addressed in the recent literature, using the last ten years as the search time frame. However, despite this temporal criterion, the included articles were published between 2020 and 2025, with most studies conducted during the pandemic. This finding may be attributable either to limitations in the article search strategies or to the growth of research in the field resulting from the mandatory adoption of remote work during the pandemic. Regardless of the reason, the comparative analysis of studies over time was limited, resulting in a specific snapshot of the field under investigation.

Consistent with previous reviews (Asfahani et al., 2024; Bell et al., 2023; Höddinghaus et al.,

2023), this study identified a prevalence of cross-sectional and correlational studies using self-report instruments. The absence of longitudinal studies may be explained by the crisis context, in which research on telework was urgently needed. In this regard, the use of multiple measurement periods adopted by some studies included in this review (Caniëls, 2023; Daraba et al., 2021; Maden-Eyiusta & Alparslan, 2022) may have represented an attempt to approximate a longitudinal design within the constraints of that period. Future studies in the field should adopt a longitudinal perspective to identify the roles, challenges, and changes in and to digital leadership over the medium and long term, at the meso and macro levels of analysis, as theorized by Avolio et al. (2014).

The predominance of quantitative and correlational research contributes to the understanding of the phenomenon but limits the establishment of causal relationships between variables and the exploratory possibilities within the field. In addition, the bias analysis revealed few strategies for addressing common method bias, as well as the use of convenience samples without assessment of their representativeness. Although the studies used well-validated instruments and sample sizes sufficient to support internal validity, these characteristics contribute to limitations in the generalizability of the findings. Therefore, based on this analysis, it can be suggested that the field requires the implementation of other methodological strategies with greater external validity.

Despite these considerations, the studies should be examined within the historical and social context in which they were conducted. Thus, the methodological choices adopted may have resulted from the context of the pandemic, in which self-report instruments, for example, were more accessible and facilitated the recruitment and selection of respondents given the social distancing measures in place. However, in the post-crisis context, greater diversification in the nature of studies is recommended in order to more fully capture the experience of remote leadership, given that the predominance of scale-based studies provides access only to specific dimensions of this experience, limiting a broader understanding of what constitutes remote leadership and conclusions with greater external validity. Furthermore, consideration should be given to the composition of the study samples, as although the studies focused on leadership, subordinates were the primary participants. The predominance of this group reflects a methodological choice that privileges one perspective while giving less consideration to leaders' own perspectives and self-perceptions, thereby introducing bias into the findings in the field. Given that the perspectives of leaders and followers may differ (Stoker et al., 2021), the participation of both is essential for a better understanding of remote leadership.

Regarding leadership styles, a diversity of styles was investigated, most of which yielded the expected positive findings. However, given the number of articles included, the lack of assessment of the empirical validity of their findings, and the thematic diversity and variation in the variables investigated, these findings cannot be generalized based on this review. Nevertheless, with regard to the orientation of these styles, there appears to be a tendency to investigate leadership from change-oriented and relations-oriented perspectives, which may reflect both a trend in the field of leadership research in Work and Organizational Psychology and specific features of the pandemic and remote work. These studies suggest that leadership aligned with change and relationships may be more conducive to remote work. These findings may be revisited in post-pandemic studies considering different levels of virtuality in order to examine whether these orientations remain important dimensions of leadership practice.

In terms of theoretical trends, the adoption of leadership styles originally conceived for face-to-face settings to understand the remote context, although supported by some evidence, needs to be critically reconsidered. Since this theoretical lens did not emerge from the context under investigation, it may not be the most appropriate for understanding and training leaders. At the same time, studies grounded in *e-leadership* share this same limitation because, although this theory emerged from the intersection of virtuality and the world of work, its conceptualization and empirical testing prior to the pandemic were restricted to more limited uses of technology and therefore did not encompass the level of technological mediation experienced during the pandemic. In this regard, rather than technological competencies assuming a central role, as expected by authors in the field (Avolio et al., 2014; Van Wart et al., 2017), leaders' responsiveness to the demands, needs, and limitations of their teams stood out in the literature, indicating a predominance of the relational and social role over the technical role (Ahuja et al., 2023; Krehl & Büttgen, 2022). This may have resulted from the daily exposure to and reliance on technology for performing work activities and engaging in work interactions during the pandemic. These considerations point to the need to critically rethink what is understood by remote leadership and how certain conceptualizations may or may not support effective leadership practice in productive, psychological, and social terms.

From this perspective, regarding specific theoretical definitions of telework and digital leadership, it may be assumed that the fact that most of the references do not define remote work and/or remote leadership stems from a theoretical assumption that the remote context is defined solely by a spatial criterion (working from home) and that leadership remains the same regardless of the setting. Such an assumption disregards the specificities of virtuality and how they interact with leadership, modifying it through a reciprocal relationship (Avolio et al., 2014). Several references that argue for differentiating these work arrangements could be understood as challenging this reductionist view of digital phenomena (Abbad et al., 2019; Avolio et al., 2009; Avolio et al., 2014;

Bell et al., 2023; Bravo-Duarte, 2025; Bridi et al., 2024; Černe et al., 2023; Höddinghaus et al., 2023; Van Wart et al., 2017), reinforcing the need to develop theoretical models in their own right and/or to test new models (e.g., Ahuja et al., 2023; Bravo-Duarte, 2025; de Sousa Figueira et al., 2022; Yozi & Mbokota, 2024). In this way, it is expected that the long-standing call for dialogue between practice and theory in the field (Avolio et al., 2014) can be advanced by integrating trends in the world of work, such as different levels of virtuality, from the perspective of leaders themselves.

Regarding virtuality, the tendency not to examine this variable among the included studies may have resulted from the imposed high level of virtuality during the pandemic, which may have made this aspect less influential in the leader–subordinate relationship. However, with the end of the pandemic, different levels of virtuality are now in place and need to be investigated in order to examine their influence on empirical outcomes (Höddinghaus et al., 2023). In addition, the inconsistent findings among the studies that considered virtuality as a control or moderating variable, as well as many workers' preference for moderate levels of virtuality, further underscore the need for such investigation (Babapour Chafi et al.; Jansson & Kangas, 2025; Klebe & Felfe, 2023; Yozi & Mbokota, 2024). Finally, given the different hybrid work models (Bell et al., 2023), it is necessary to investigate the parameters of virtuality adopted in research and identify which may be the most appropriate from both empirical and theoretical perspectives.

For the future research agenda, from a methodological perspective, greater emphasis should be placed on qualitative and mixed-methods approaches, as well as experimental and longitudinal designs, with an emphasis on the participation of both leaders and subordinates, the inclusion of different current remote work arrangements, and the investigation of common aspects and variables. Conducting cross-cultural research and studies in countries, continents, and organizational contexts that have not yet been examined may also enrich the field by considering the influence of cultural factors (Asfahani et al., 2024; Bell et al., 2023). Despite the lack of consensus among studies regarding the influence of sociodemographic factors, future research should continue to investigate possible relationships, given that Aledi and Mourão (2026) and Reis and Mourão (2022), for example, identified gender inequality in telework through qualitative research, which may indicate an influence that remains obscured by quantitative methodologies. These methodological directions are expected to enable a deeper understanding of remote leadership, so that it is not viewed in a fragmented manner, limited to the relationships between certain leadership styles and specific variables, but rather in its complex and dynamic nature and in dialogue with the post-pandemic reality.

From a theoretical perspective, these new methodological choices may make the development and validation of theoretical proposals more tangible as empirical reality and academic discussions become more closely aligned. In terms of the future research agenda, as previously mentioned, there is a pressing need to test new models and to consider analyses at the meso and macro levels, given the greater emphasis currently placed on micro-level variables.

Regarding future literature reviews, it is recommended that they examine the literature across the periods before, during, and after the pandemic using broader inclusion criteria. The involvement of a greater number of researchers in the article search and analysis procedures could enhance the validity of the review. In addition, as this was a scoping review, the quality of the evidence provided by the included studies was not assessed, nor was the risk of bias in the qualitative studies, making it necessary for future reviews to evaluate these aspects following specific international guidelines for conducting such assessments. In this regard, systematic reviews and meta-analyses may contribute to more critical and reliable analyses of the findings in the field under investigation.

The limitations of this literature review include the inclusion and exclusion criteria, particularly the minimum number of article citations and the journal impact factor thresholds, as these parameters may have resulted in the exclusion of potentially relevant articles. Other limitations were the selection of articles by a single reviewer and the lack of registration of the review protocol on platforms such as the Open Science Framework. These limitations affect methodological rigor by, respectively, introducing greater potential for bias than an assessment conducted by two independent reviewers and limiting the reproducibility of the study. Despite these limitations, this scoping review contributes to the field of remote leadership by mapping how digital leaders have been conceptualized in recent research on the topic, examining both methodological and conceptual variables. Based on the gaps and findings identified, it is expected that future researchers will be able to identify possible directions for the study of remote leadership.

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Contributions:

Rebeca de Oliveira Bello: conceptualization, data curation, formal analysis, methodology, project administration, visualization, writing – original draft, writing – review & editing.

Elaine Rabelo Neiva: conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, writing – review & editing.

Data Availability:

The content underlying the research text is contained in the manuscript.

Conflicts of Interest:

The authors declare that they have no conflicts of interest in the conduct or reporting of this research.

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Appendix A

ROBUST items	Research questions	2 points	1 point	0 point
Item 1	Is the sample representative?	The representativeness of the sample in relation to the organization or population group is reported and supported by data.	The representativeness of the sample in relation to the organization or population group is reported, but without evidence to support it.	The representativeness of the sample in relation to the organization or population group is not reported.
Item 2	Is the recruitment appropriate?	Random, systematic, or stratified recruitment.	Convenience recruitment, but from a specific population.	Recruitment through snowball sampling.
Item 3	Is the participant exclusion rate appropriate?	No participant attrition or exclusion, or attrition below 20%.	Unjustified exclusion or participant attrition greater than 20%.	No mention of participant exclusion or attrition.
Item 4	Is the final sample size adequate?	The study had a sufficient sample size for its research model (g*power > 0.8, considering f2 = 0.15 when no value was reported).	The study reported insufficient statistical power in g*power (g*power < 0.8) for its sample size but included more than 100 participants.	The study reported insufficient g*power for its sample size but included less than 100 participants.
Item 5	Are the sample characteristics reported?	Identification of sociodemographic characteristics (i.e., gender and age) and characteristics related to the remote work arrangement (i.e., level of virtuality).	Identification of sociodemographic characteristics (i.e., gender and age) or characteristics related to the remote work arrangement (i.e., level of virtuality).	No identification of sociodemographic characteristics (i.e., gender and age) or characteristics related to the remote work arrangement (i.e., level of virtuality).
Item 6	Do the measures have adequate reliability?	Acceptable reliability and psychometric validation indices.	Unacceptable reliability indices or lack of psychometric validation.	Unacceptable reliability indices and lack of psychometric validation.
Item 7	Is data management appropriate in terms of outliers and excluded data?	The study provides details on the handling of outliers and missing data.	The study reports the percentage of missing data and the presence of outliers but does not describe how they were handled.	The study does not mention missing data or outliers.
Item 8	Is data management appropriate in terms of mitigating common method bias?	The study describes and applies data collection methods and statistical tests to mitigate common method bias.	The study applies either data collection methods or statistical tests to mitigate common method bias, but not both.	The study does not apply any methods to mitigate common method bias.

Appendix B

Publication	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Mean Score
Ahuja et al (2023)	0	1	2	N/A	0	N/A	1	N/A	0.8
Alkhayyal, & Bajaba (2023)	0	0	2	2	2	2	1	2	1.375
Boccoli et al. (2024)	1	1	1	2	2	2	1	2	1.5
Caniëls (2023)	0	0	1	2	2	2	1	2	1.25
Costantini & Weintraub (2022).	0	1	1	2	2	2	1	1	1.25
Coun et al (2021)	0	0	1	2	2	2	2	1	1.25
Daraba et al (2021)	0	1	1	2	1	2	1	1	1.125
de Sousa Figueira et al (2022)	0	1	1	2	0	1	1	0	0.75
Dolce et al (2020)	0	0	0	2	2	2	0	0	0.75
Günther et al (2022)	0	0	1	2	2	2	1	1	1.125
Ipsen et al (2022)	0	1	0	2	2	2	0	0	0.875
Klebe & Felfe (2023).	0	1	2	2	1	2	1	N/A	1.28
Lundqvist et al (2022)	0	1	0	2	2	2	0	0	0.875
Maden-Eyiusta & Alparslan (2022).	0	0	1	2	2	2	1	2	1.25
Maheshwari et al (2024)	0	2	1	2	1	2	1	2	1.375
Olsen, O. K. et al (2023)	0	1	1	2	1	2	1	1	1.125
Santiago-Torner et al (2024)	0	2	2	1	2	2	1	0	1.25
Stoker et al (2021)	0	0	1	1	2	0	1	0	0.625
Toscano et al (2022)	0	0	0	2	2	2	0	0	0.75
Yang & Lin (2023)	0	1	2	2	2	2	0	0	1.125
Mean Item Score	0.05	0.7	1.05	1.89	1.6	1.84	0.8	0.83	1.08

*Note**.** The term "N/A" stands for "Not applicable" and refers to aspects that cannot be assessed in a given publication due to its methodological characteristics.*