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E-Leadership: Lessons Learned from Teleworking in the COVID-19 Pandemic

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Abstract

During the pandemic crisis, teleworking was compulsory for many workers, without the time and conditions to organize themselves for this transition. Therefore, the leadership needs to respond quickly to changes that occur in times of crisis—such as the current pandemic—adjusting its competencies to prioritize the well-being of employees, define performance goals, follow-up on these goals, provide guidance and support teleworkers, and improve feedback processes. The present study aims to propose an e-leadership theoretical model based on lessons learned from the coronavirus pandemic. To that end, we describe and discuss a survey on the perceptions of support received from managers during the initial 3 months of the pandemic. For this purpose, we collected data with 7608 workers distributed to 95 public service organizations in Brazil. In addition, we also reviewed several empirical studies that assessed the role of leadership in the proper functioning of telework. The support of leaders is directly associated with the theory of organizational support. In moments of crisis like the current one, this focus on leadership is even more critical. Thus, we present a theoretical model for e-leadership that should expand from the telework experiences during the coronavirus pandemic.

Keywords: e-leadership model, managerial support, leadership role, teleworking, COVID-19 pandemic

1. Introduction

The COVID-19 pandemic changed the world and how people work, creating challenges for the needs, and need for adaptation for workers [1, 2]. Before the pandemic, with the advancement of technologies, telework was already being discussed and adopted as a strategy considered advantageous by some public and private organizations [1, 3]. However, with the social distancing protocols to face the pandemic, some discussions about telework gained prominence in the surveys. One of them focuses on the studies of workers' physical and mental health, with isolation and lack of social contact being factors that can affect workers' health and well-being. Leadership support in this context can improve relationship levels and increase the chances of teleworkers staying healthy [4]. Therefore, the COVID-19 pandemic, compulsory teleworking reached workers in several countries, raising concern about

managerial support. Before the pandemic, studies on teleworking already showed a need for more significant support from the leadership for this type of work.

Thus, the pandemic context instigated the discussion of electronic leadership, which promotes the adaptability of companies and workers. A set of challenges about telework and e-leadership started to be studied. Telework is often seen as an opportunity, with gains for the productivity of companies and for people who work remotely [1, 5]. However, a good part of telework results depends on leadership performance, which cannot be conventional. On the one hand, organizational structures need to be less hierarchical. On the other hand, leadership must establish a solid and trustworthy relationship with its employees, maintaining a genuine concern for their well-being [1, 3, 6].

Research indicates that in uncertain contexts, such as the pandemic, support for workers oriented toward management practices can increase employee engagement and reduce worker burnout [7]. In this pandemic context, interactions between management and the team become remote, requiring a set of coping strategies from workers [2, 8]. Leaders had to review the distribution and execution of goals and deadlines and establish shared goals. Leaders also had to monitor resource consumption and anticipate potential problems and track the progress of work by each member of their team [9].

Thus, the role of leaders in this challenging context gained even greater centrality [6] since the stressful situations experienced by workers [10] required more outstanding organizational and supervisory support. Positive results in the teleworking method require mechanisms that favor establishing a trust relationship [9]. Leadership encouragement was already considered decisive for the professional development of their subordinates [11], but in times of pandemic, the role of leadership became even more evident [6, 8–10]. However, excessive control by managers—with constant verification of employees or their performance—signals a feeling of distrust that affects the psychological safety of workers and the bond they establish with the organization [8].

Faced with mandatory work on the pandemic, leaders must be able to (i) improve communication processes in the team; (ii) ensure employee access to technology; (iii) prioritize the emotional stability of employees; (iv) maintain attention to the organization's goals and financial health; and (v) promote organizational resilience [6]. This supportive action by leaders is associated with the theory of organizational support discussed in this chapter.

So, the present study aims to propose an e-leadership theoretical model based on lessons learned from the coronavirus pandemic. To that end, we describe and discuss a survey on the perceptions of support received from managers during the initial 3 months of the pandemic. In other words, we propose to present a theoretical model of e-leadership, based on a broad study of how teleworkers perceived the support that received from their leaders during the compulsory telework carried out in the COVID-19 pandemic.

In addition to this broad empirical study, we also consider important lessons learned about leadership from the recent literature on the subject to consider e-leadership based on the lessons learned from the pandemic. Thus, after the section on the empirical study, we complement it with other studies in the literature, culminating with the proposition of the e-leadership theoretical model.

2. Role of leadership in organizational support

The perception of organizational support stems from a view that employees have the organization's support. This perception is formed from the treatment that

the employee receives in the organization. Thus, if the leader takes care of social welfare and values subordinates' contributions, they tend to perceive organizational support positively. This positive perception can affect work motivation, employees' effort to perform well, and their intention to remain in the organization [12, 13]. This is a chain process. Furthermore, the way leaders are treated also affects the organizational support perceived by subordinates since leaders who feel supported by the organization tend to treat their associates well [14].

The organizational support theory is based on the social exchange theory [15], whose central principle is that the interaction between individuals relates to attempts to maximize rewards and reduce costs. This social psychology perspective establishes that people maintain interactions because they perceive some benefit/reward in material or nonmaterial terms.

In the organizational support theory, employees' beliefs about the support that they receive from the organization are evaluated [13]. Perceived support would be positive when they present a consistent assessment that organizational actions demonstrate concern for their well-being. This theory is based on the theory of social reciprocity. The norm of reciprocity is taught as a moral obligation and describes the development of exchange mechanisms for what is seen as mutually beneficial [16]. Thus, organizational support theory indicates a social exchange and reciprocity—employees' commitment to the organization increases as they perceive the organization's commitment to them.

According to this theory, social support from coworkers and leadership is perceived as social support. Leadership plays a significant role in coaching, providing care, and feedback to subordinates regarding their work tasks [9, 17]. This leadership support plays a vital role in workers' psychological safety and commitment [18]. As discussed in organizational support theory, treating employees well makes a difference in workers' returns to the organization [13].

In teleworking, the support of managers becomes even more relevant, whether due to the moment of crisis in the pandemic scenario or due to the difficulty of self-management of performance by workers, with processes of learning new skills and renegotiating work goals [2, 10]. Managers in such a context had to be dynamic, reorganizing work routines and adapting to the unique demands of workers and the organization [6]. The exchange of resources between leaders and subordinates in the context of the COVID-19 pandemic included several elements, such as tasks, information, open communication, shared goals, flexibility, feedback, and sharing of ideas and decisions [8]. Positive interactions and exchanges based on reciprocal relationships are associated with more favorable perceptions of psychological security at work [8].

Leaders have a relevant role in the development of their subordinates and in supporting them so that they can adequately perform their activities at work [11]. In this sense, we understand that the role of leadership needs to act on two simultaneous fronts—focus on results and focus on people. Therefore, bosses need to provide the necessary support to their subordinates in terms of return on performance and showing concern with the fulfillment of work tasks and, at the same time, act to promote the well-being of associates [19].

During the COVID-19 pandemic, a study with teleworkers showed that social support, autonomy, monitoring, and work overload are directly related to well-being at work performed in the home environment [20]. The results show that the workers' social support and autonomy acted as a work resource that contributes to telework management. However, monitoring and work overload served as demands that negatively affected the teleworker's well-being.

These results show the importance of leadership support, as leaders are directly responsible for the degree of autonomy assigned to workers and monitoring the

fulfillment of tasks and goals [9, 19]. It is also up to the leaders to define the goals that may or may not generate overload [9]. This set of studies presented here shows a need to think about a different role on the part of leaders in the telework scenario. In this sense, the term e-leadership has been used, discussed in the next section.

3. E-leadership and its elements

The digital revolution has led to an intensification of telework that has become more prominent from the experiences of millions of workers during home-based work in pandemic. This expressive expansion of telework brought about the need to discuss the role of leaders in this new work context. Thus, the discussion of e-leadership became relevant, as it is a different form of management.

E-leadership or electronic leadership involves management carried out through information and communication technologies. Given the challenges faced in teleworking during the COVID-19 pandemic crisis, some researchers have carried out studies to discuss the concepts and characteristics of this e-leadership. Although researching different contexts and countries, these authors have some points in common. One of them is the understanding that the demands and competencies to meet these demands are different in traditional and electronic leadership. Some of the points raised in this e-leadership discussion are summarized below.

Based on an exploratory case study, [21] proposed an operational definition based on six factors for e-leadership, also called e-competencies for leaders. According to these authors, these six skills are e-communication, e-social skills, e-team building skills, e-change management, e-technological skills, and e-trustworthiness.

According to [21], e-communications skills involve three specific skills—communication clarity, lack of miscommunication, and management of communication flow. E-social skills, in turn, refer to good leader support, that is, ensuring that all teleworkers are provided with customized communication from time to time, with robust interaction methods. E-team building skill comprises three specific skills of virtual team leaders—team motivation, team accountability, and team and team member recognition. E-change management skill contemplates change management techniques by preplanning transitions, monitoring implementation, and refining technology practice with experience. E-technological skills are related to four elements—currency with relevant ICTs, blending traditional and virtual methods, basic technological savvy, and technical security. Finally, e-trustworthiness contemplates three central aspects—trustworthiness in a virtual environment, work-life balance, and diversity management [21].

In a similar vein, [22] surveyed education industry leaders and highlighted three of the best leadership practices for dealing with adaptive challenges as presented by the COVID-19 pandemic. A first point would be, considering the type of servant leadership, to emphasize the empowerment, involvement, and collaboration of leaders, putting the interests of others above their own. A second point would be for leaders to distribute leadership responsibilities to a network of teams across the organization, to improve the quality of decisions and crisis resolution. Finally, the third point would be for leaders to communicate clearly and frequently with all stakeholders by using various communication channels. In summary, the study by [22] suggests a leadership style called “allostatic leader,” which would describe leaders with flexibility and adaptability to learn and evolve in crisis management, to respond more effectively and with less effort to future challenges.

Another study, of an exploratory and qualitative nature, was carried out by [23], who investigated electronic leadership in the context of the Lithuanian

public sector. The authors highlight four central roles of e-leadership—instructing employees to use electronic tools, collecting, and sharing information, monitoring and reviewing the division of roles and tasks. The authors compared e-leadership with the leadership that they had before the COVID-19 pandemic crisis, considering three criteria—(i) communication mode, channels, and tools, (ii) time management, and (iii) delivering tasks [23].

According to [23], in the first criterion, communication mode, channels, and tools, there would be a demand that e-leadership act with multilateral communication dominates, main communication channels (audio, video, written mode) and main ICT tools (phone, Zoom, Email, Facebook groups, “Hive,” teams). In the time management criterion, the main demands for e-leadership to manage would be—flexible work schedule, short-term and irregular on-demand meetings, the number of sessions sharply increases, reduced meeting time to avoid “redundant” talks, lunch break at the same time in all public sector organizations, and using ICT tools (Google calendar, Zoom, or Teams calendars). Finally, the delivering tasks criterion comprises challenges for e-leadership, such as explicit attention given to the clarity of the requestor of the tasks via email to assure the quality of their performance, and explicit norms of urgent responses, for example, establishing a maximum deadline for reply.

The study by [24] also discusses the need for an effective e-leadership to promote companies’ adaptability, so telework can be understood as an advantageous opportunity for the productivity of companies, the environment, and people who work remotely. For the authors, the prosperity of telework depends on an e-leadership model that makes the structure of companies less hierarchical and simultaneously develops skills to establish a solid and trustworthy relationship with employees. Thus, a central role of e-leadership would be to consolidate the performance of virtual teams so that they can have an effective implementation and be capable of meeting organizational goals. But [24] consider that electronic or e-leadership is not just an extension of traditional leadership; it requires a crucial change in how leaders and their virtual teams report within the organizations and with stakeholders. Moreover, e-leadership implies the development of specific skills, as discussed by [21–23].

Although e-leadership can benefit from previous models on leadership, some adaptations are necessary for the leaders to act electronically. In addition, virtual teams have different demands from face-to-face groups, requiring work redesign [25]. In this sense, authors such as [26] suggest the construction of a new theory and the conduct of more empirical research that support organizations to design, structure and manage more effectively virtual work teams. The following section presents the empirical and exploratory study on the perception of leadership support to teleworkers during the pandemic. This empirical study, together with several other studies revisited and briefly presented here, served as inspiration for the proposition of the theoretical model shown at the end of this chapter.

4. Empirical study on leadership support for telework in the COVID-19 pandemic

Assessing leadership support for teleworking in pandemic times is relevant, as this reconciliation between productivity and workers’ mental health depends on leaders. Furthermore, even after the pandemic, it is expected that many of the remote practices will be continued and expanded [2, 6].

Considering what was previously exposed, the present study proposes an e-leadership model based on lessons learned from the coronavirus pandemic.

To that end, we describe and discuss a survey on the perceptions of support received from managers during the initial 3 months of the pandemic. We propose to present a theoretical model of e-leadership, based on a broad study of how teleworkers perceived the support received from their leaders during the compulsory telework carried out in the COVID-19 pandemic. In addition to this comprehensive study, we also consider important lessons learned about leadership from the recent literature on the subject to consider e-leadership based on the lessons learned from the pandemic.

The research carried out had a quantitative approach, with an online questionnaire to an extensive sample of workers from Brazilian public institutions who were teleworking. One of the differentials of this work was that data collection was carried out from April to June 2020, that is, in the first months of the pandemic that began in Brazil in mid-March 2020. Therefore, this study was exploratory but allowed the construction of an overview of how teleworkers realized the support received from their leaders to carry out compulsory telework during the COVID-19 pandemic.

4.1 Participants

A total of 7608 public servants in Brazil, spread over 22 states, took part in this study, but with a greater concentration in the capital Brasília. Participation in the research was previously authorized by the 95 public organizations to which these participants are linked. Most of these organizations already worked telework before the pandemic, but they expanded this type of work due to social distancing protocols.

The sample was mainly composed of female participants (59.3%), aged between 38 and 47 years (34.2%) and between 28 and 37 years (29.8%), and married/in a stable relationship (63.5%). Almost the entire sample (93.4%) had completed higher education, and 60.5% had graduate degrees. However, only 6.6% of the sample were workers with high school education. Regarding the previous experience with telework, most participants (58.1%) had no prior experience with this type of work. Of that 41.9% who had previous experience with telework, 93.7% rated that the incidents had been positive, and 6.3% negatively evaluated their previous experience with telework.

4.2 Instruments

The items were built from the literature analysis on challenges, difficulties, demands, benefits, and barriers associated with teleworking at home and on the supportive role of leadership at that time. This work resulted in the construction of six items, and for each of them, the theoretical and empirical framework that supported it was analyzed. The central concepts considered for the construction of the items were—feedback, goal (attribution and monitoring), support, guidance, well-being, and infrastructure.

After choosing the items, an analysis of the judges was performed. Human resources professionals from two public institutions with previous experience in telework participated in this stage, as well as masters and doctors in psychology, linked to three postgraduate courses in Brazil. The judges assessed that the items adequately represented the main aspects of leadership support for telework performed from home.

The items included in the survey were—(i) I receive constructive feedback from my manager about my performance in remote activities, indicating opportunities for improvement; (ii) the remote work goals assigned to me by my manager are

compatible with the workload from my sector; (iii) I receive support from my manager when I ask for directions to perform tasks remotely; (iv) my manager monitors the achievement of my work goals; (v) my manager is concerned about the adequacy of my infrastructure to work remotely (computer, internet, and furniture); and (vi) my manager demonstrates that he cares about my health and well-being. All these items were answered on a Likert scale of agreement, ranging from 1 (I totally disagree) to 5 (I totally agree). In addition, in the instructions for answering the questionnaire, participants were asked to answer the items considering their experiences during the pandemic period, linked to telework performed from home.

4.3 Data collection and analysis procedures

Data collection took place online, from links generated by researchers and forwarded by organizations to their teleworkers. The release of the questionnaire was subject to acceptance, by the participants, of an informed consent form. This form presented the research objectives and the responsible researchers and ensured the confidentiality of individual responses and the freedom to interrupt their participation in any research phase.

For data analysis, we used the Statistical Package for Social Sciences (SPSS) software, version 25. We performed descriptive and inferential analyses to identify differences between the average scores of perceptions of leadership support. The tests used were the Student's *t* test to identify differences in means as a function of gender, Spearman's correlation to identify a possible relationship between the scores and age groups of the participants. We also performed Pearson's correlation to identify a correlation between the items that assessed the perception of support from leaders to teleworkers.

4.4 Main results of the empirical study

The survey included some fundamental concepts for e-leadership, including feedback from leaders to their subordinates. Feedback can be understood as information about the difference between the actual and desired levels of performance, which allows the implementation of corrective actions capable of eliminating this difference [27]. Feedback is even more prominent regarding telework, especially that carried out compulsorily in the pandemic period [9, 25, 28]. Leaders need to establish exchanges with subordinates in the COVID-19 pandemic—feedback, the sharing of ideas and decisions [8].

The survey results showed that most teleworkers (69.8%) received constructive feedback on their performance in remote activities, indicating opportunities for improvement. However, those who did not realize that their leaders were giving constructive feedback in the telework period in the COVID-19 pandemic totaled 11.7%. In addition, there were also 18.5% who had difficulty in giving their opinion about receiving constructive feedback from leaders about their performance in remote activities.

About goals, they gained greater relevance with the goal orientation theory, which goes beyond the content of what people are trying to achieve (goals, specific standards). The theoretical emphasis here is on why and how people try to achieve goals, thus referring to broader goals of achievement behavior [29]. This theory comprises both the process of assigning goals and monitoring them.

The lack of monitoring or improper monitoring of the subordinates' performance and goals are configured as forms of destructive leadership. In the study of [30], researchers tested 658 team members out of 149 teams to compare abusive

supervision and laissez-faire leadership effects from a Bayesian multilevel analysis. Abusive supervision lowered team trust and subsequent organizational citizenship behavior at the individual and team level, whereas laissez-faire was not related to team trust on the team level. The results indicated that laissez-faire was more harmful to organizational citizenship than abusive supervision on both groups.

In the context of telework, leaders must review the distribution and execution of goals, considering the workers' conditions to avoid overload [9] and organizational needs [6, 24]. In this sense, it is sometimes necessary to renegotiate deadlines and establish shared goals [2, 9, 10]. In addition, a careful process of monitoring tasks and goals must be carried out by leaders to monitor the progress of each member of their team, reassessing the degree of autonomy attributed to each worker [9, 19].

In the survey with teleworkers, we observed a positive perception of the establishment of compatible goals by the leadership. For example, we observed that 85% agreed with the statement, "The remote work goals assigned to me by my manager are compatible with the workload from my sector." In a complementary way, 90.5% agreed with the sentence "My manager monitors the achievement of my work goals." In this sense, the positive performance of e-leadership in the Brazilian public service during teleworking in the COVID-19 pandemic was evident. These results are consistent with several studies that pointed out the importance of having feasible and agreed goals in telework and monitoring the leader concerning these goals.

In addition to feedback and goals, it is also necessary to consider as an essential attribution of e-leadership the support and guidance given by leaders to their subordinates. Such support and guidance are theoretically linked to the supervisor's support, which concerns contributions and guidelines from the head and those influencing behaviors in the work context [13, 17]. But excessive guidance and monitoring by managers characterize micromanagement, which causes psychological insecurity in the worker [31].

During the COVID-19 pandemic, e-leadership needed to be aware of the workers' new demands for learning and the guidelines and guidelines they needed to receive. Compulsory telework added to pre-existing learning demands, a set of new directions, and leaders' care in observing and surveying such needs [25]. Supporting the performance of teleworkers is directly related to this survey of conditions and the availability of opportunities for new learning, in addition to the leader's ability to direct the performance of their virtual team.

In the survey conducted with teleworkers, we observed that few (3%) disagreed that they receive support from their leadership when they request directions to perform their remote tasks. On the other hand, most respondents (91.1%) rated satisfactorily the support that they received from their leaders when they asked for guidance. Several authors associate this ability to provide advice and support to subordinates as a central element of e-leadership [9, 25, 30].

Another aspect investigated in the survey with teleworkers was the infrastructure they must work remotely from their homes. These structural elements relate to the physical working conditions present in the production locus that characterize the physical environment, instruments, equipment, raw material, and institutional support. For example, for a home office to be ergonomically efficient, healthy, and safe, there must be a workspace and designated tools, including a computer, desk, chair, telephone, and internet connection [32].

With the tendency of teleworking to remain in many organizations after the end of the COVID-19 pandemic, e-leadership must actively seek to promote adequate infrastructure conditions for the work of its virtual team. In this new context of home-based work, workers need to have furniture, a computer, internet access, and easier access to the organizations' work platforms.

It is worth noting that home-based work can affect the physical health of workers for several reasons. One is the configuration of home workstations that are not ergonomically designed and can result in poor posture and musculoskeletal disorders [33]. A study by [34] showed that 41.2% of participants experienced low back pain, and 23.5% experienced neck pain and other pain while teleworking in the pandemic. These percentages increased over time and reduced levels of job satisfaction.

In this sense, [25] consider that e-leadership needs to dialog about the ergonomic and technological conditions of the home office, additionally preventing stress and injuries. The authors argue that leaders should seek to provide multi-functionality tools (synchronous and asynchronous collaborative work, video calls, and repository of documents). The use of asynchronous work tools (wikis, database shared on the cloud, messaging tools, and work management) and synchronous work tools (technology-mediated virtual meetings) are crucial to coordinate the interdependence of tasks with demands, goals, and work schedules and conditions in home-based work [25].

In the survey carried out with teleworkers, we observed that providing adequate ergonomic conditions for teleworking was the item with the worst evaluation. Only 21.3% of teleworkers fully agree that their leaders are concerned about the adequacy of the infrastructure for the remote work of virtual teams. The percentage of teleworkers who agreed or totally agreed with the statement “My manager is concerned about the adequacy of my infrastructure to work remotely (computer, internet, furniture)” was 55.4%. However, it is worrying that 44.6% of teleworkers do not realize that their leaders are concerned about their physical working conditions.

Finally, the last item in the survey referred to how much teleworkers realized, during the COVID-19 pandemic, that their leaders were concerned about their health and well-being. Well-being at work, in turn, can be understood as a multi-dimensional psychological construct, integrated by positive affective bonds with work and with the organization [4] and with a clear association with the health of the worker.

Studies on telework have investigated how remote work can be related to the worker’s well-being, which can be considered a source of stress due to possible role conflicts between work and personal life tasks. In this sense, an e-leadership can contribute to the realization of telework to be effective and reduce the risks of this modality of telework, such as social isolation and increased work–family conflict [24].

The e-leadership needs to prevent work from invading the times and spaces of family life, resulting in a breach of the psychological contract, which can be harmful to both teleworkers and organizations. The work-family and family–work conflict are among the principal risks of telework [24, 35] and, therefore, should deserve attention from the e-leadership in managing their virtual teams. Research on the JD-R theory during the pandemic found a mediating effect of job stress between the breach of psychological contract and the well-being of those who are only working at home [36].

In the empirical study carried out with teleworkers in the public sector in Brazil, we observed that 74% of respondents agreed with the statement, “My manager demonstrates that he cares about my health and well-being.” This result indicates that most e-leadership manifested behavior of attention to the health and well-being of their workers. However, it is worrisome that, amid a pandemic such as that of COVID-19, one in four workers did not realize that their leaders showed concern for taking care of the health and well-being of their team members. Therefore, it needs to be reinforced with those who will act with electronic leadership.

Taken together, the results of this empirical study show that leaders also need to develop to act in the context of telework (Figure 1). However, in the view of the surveyed teleworkers, most leaders are already able to meet central aspects of e-leadership, such as providing feedback, setting, or renegotiating goals, monitoring goals, providing support/orientation, provision of infrastructure for teleworking, and demonstrating care for the health and well-being of members of their virtual teams.

The results indicate that two of the most favorable e-leadership performances aim to provide support to their team when they request guidelines for the performance of their tasks in the remote context and monitor the achievement of members' work goals of your team. Furthermore, these items had higher means in their scores (4.4 and 4.3, respectively) and were the only ones whose most frequent value (mode) was 5.0, that is, the highest point of the scale. At the same time, these items were also the ones with the lowest coefficient of variation, signaling a greater homogeneity in the assessment that the 7608 teleworkers made of their leaders.

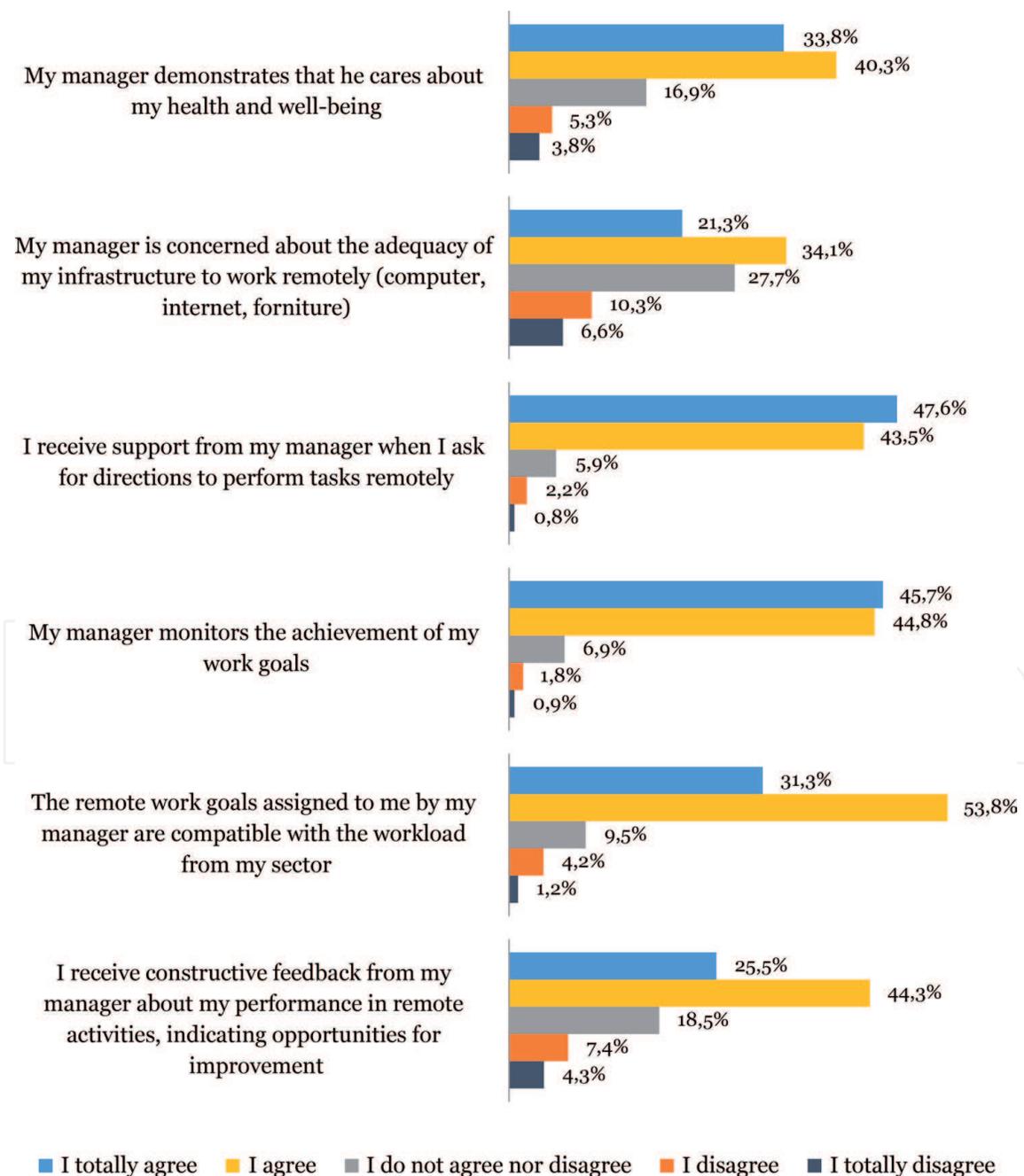


Figure 1. Perception of e-leadership support during teleworking in the COVID-19 pandemic.

At the opposite extreme, there is the item related to the demonstration of concern with the adequacy of the infrastructure for remote work and the item associated with receiving constructive feedback from leaders about performance in remote activities. In both cases, the mean scores (3.5 and 3.8, respectively) were lower than those of the other items. Furthermore, these items have the highest coefficient of variation, which indicates greater heterogeneity in the responses. Thus, while some respondents positively assess the support received from their leaders in terms of concern with providing physical conditions for remote work and constructive feedback for the virtual team, other respondents negatively assess their leaders in these two aspects. **Table 1** summarizes the perceptions of leadership support for teleworkers during the COVID-19 pandemic. It is possible to verify that the evaluation tended to be positive in all items, although the average scores varied.

Student's *t* tests to identify differences in means as a function of the gender indicated that the only item with significantly different means ($p < 0.01$) was "I receive support from my manager when I ask for directions to perform tasks remotely." However, the female average (4.38) was slightly above the male average (4.31), and the size of Cohen's $d = 0.09$ indicated an effect of shallow magnitude. In this sense, there is no need to talk about differences between genders regarding the perception of support arising from e-leadership.

As for the results of Spearman's correlation to identify a possible relationship between the age groups of the participants and the scores of items supporting leadership for teleworkers, the results did not indicate significant relationships. The only significant correlation ($p < 0.05$) was with the item "I receive support from my manager when I ask for directions to perform tasks remotely." However, the large sample size influenced the indication of significance, as the magnitude of the correlation was only 0.03, that is, relatively insignificant. In conclusion, the age group of teleworkers does not correlate with their perception of the support they receive from their leaders.

Finally, the Pearson's correlation matrix analysis showed that the items correlated significantly with each other ($p < 0.001$), with bivariate correlations generally above 0.50. On the one hand, the strongest correlations occurred between the

Leadership support items for teleworkers during the Pandemic	Mean	Mode	Standard deviation	Coef. of variation (%)
I receive support from my manager when I ask for directions to perform tasks remotely	4.4	5.0	0.76	17.4
My manager monitors the achievement of my work goals	4.3	5.0	0.75	17.4
The remote work goals assigned to me by my manager are compatible with the workload from my sector	4.1	4.0	0.82	20.1
My manager demonstrates that he cares about my health and well-being	4.0	4.0	1.03	26.0
I receive constructive feedback from my manager about my performance in remote activities, indicating opportunities for	3.8	4.0	1.04	27.4
My manager is concerned about the adequacy of my infrastructure to work remotely (computer, internet, furniture)	3.5	4.0	1.13	32.0

Note. For all items Median = 4.0.

Table 1.
 Summary of perceptions of leadership support for teleworkers during the COVID-19 pandemic ($n = 7608$).

Leadership support items for teleworkers during the Pandemic	(1)	(2)	(3)	(4)	(5)	(6)
(1) I receive constructive feedback from my manager about my performance in remote activities, indicating opportunities for improvement	—	0.46	0.55	0.56	0.55	0.56
(2) The remote work goals assigned to me by my manager are compatible with the workload from my sector		—	0.50	0.47	0.40	0.42
(3) I receive support from my manager when I ask for directions to perform tasks remotely			—	0.66	0.48	0.54
(4) My manager monitors the achievement of my work goals				—	0.50	0.50
(5) My manager is concerned about the adequacy of my infrastructure to work remotely (computer, internet, furniture)					—	0.67
(6) My manager demonstrates that he cares about my health and well-being						—

Note. p < 0.01.

Table 2. Correlations of perceptions of leadership support to teleworkers during the COVID-19 Pandemic (n = 7608).

following pairs of items—leadership support for infrastructure and leaders’ concern for the health and well-being of teleworkers (0.67); and leadership support in directing a compelling performance of remote tasks monitoring the achievement of teleworkers’ goals. On the other hand, the weakest correlations involved the item of the establishment of compatible goals by the leadership, either with the perception of support from managers for the well-being of subordinates (0.42) or with the concern with adequate infrastructure for telework (0.40). **Table 2** details the correlations of perceptions of leadership support for teleworkers during the COVID-19 pandemic.

5. E-leadership: lessons from telework in the pandemic

Despite the benefits of teleworking, this modality also presents risks for workers, such as reduced interpersonal contact and increased sense of social isolation and distance from the organizational culture [21, 24]. The role of leaders is fundamental in providing social support and reducing risks related to the well-being of teleworkers. It is also up to them to think of strategies to promote the professional development of their subordinates [11]. As we have seen in the revised literature, the attributions of e-leadership are diverse, such as (i) the transfer of goals, objectives, and expectations of the organization, (ii) delegation of responsibilities, (iii) maintenance of fluid and frequent communication with team members and encouragement of communication between team members, and (iv) monitoring of appropriate work behaviors and conflict reduction [9, 21, 25].

Self-discipline is also indicated in the literature as a critical competence for working virtually, with the potential to affect work motivation, effective performance, and the well-being of teleworkers [20]. In this sense, e-leadership must encourage self-discipline and autonomy so that teleworkers can simultaneously achieve better results in their work and greater well-being at work.

It is also worth considering that studies by [20] indicate that monitoring and control had less resistance from teleworkers in the context of a pandemic, as these mechanisms helped to deal effectively with procrastination and work demands in the home environment [20]. In this sense, many workers tended to positively evaluate the actions of e-leadership in terms of monitoring and control.

Another important point highlighted in the literature is that workers without experience with telework before the pandemic expressed more negative opinions about telework than experienced workers. For those who were experiencing telework for the first time during the COVID-19 pandemic, there were reports of adverse experiences. They complain about the lack of face-to-face interaction with the leader, the difficulty of accessing work-related information, the lack of feedback, the distractions caused by others in the home environment, the inability of leaders to estimate the workload, the concern about the possibility of information loss, the delay in decision-making processes, and the expense of asynchronous communications [28]. All these points point to the importance of e-leadership having an effective action with teleworkers, especially in times of crisis.

In the discussion about the role of e-leadership, it is also necessary to consider the results of several studies that show that telework has produced benefits to personal life (decrease in time spent commuting from home to work, organization of free time, the balance between work and family, improvement in social life,) and professional life (reduction of interference from colleagues, increased flexibility of timetables, greater autonomy to organize and plan the performance of tasks, greater job satisfaction, and reduced stress). In this sense, an e-leadership can contribute to the realization of teleworking to be effective and to reduce the risks of this modality of telework, such as social isolation, increased work-family conflict, and reduced social learning with coworkers [24].

Thus, an effective e-leadership should be able to contribute to minimizing the risks for teleworkers. In addition, e-leadership would also be expected to generate positive impacts for organizations. In the study of [25], the authors present an extensive set of competencies for e-leadership and consider that telework requires a redesign of work. In this sense, electronic leadership should be able to (i) negotiate achievable goals and monitor them through indicators; (ii) dialog about the ergonomic and technological conditions of the home office, preventing additional stress and conflicts; (iii) provide multi-functionality tools (synchronous and asynchronous collaborative work, video calls, repository of documents) to coordinate the interdependence of tasks with demands, goals, and work schedules and conditions in remote work at home; (iv) schedule virtual meetings to times suitable for workers engaged in activities; (v) learn new ways to manage time, and to balance work-family; (vi) develop new skills to provide emotional support to coworkers; (vii) develop new skills of social support; and (viii) provide constructive feedback [25].

It is essential to understand that teleworking during the Covid-19 pandemic period occurred in a specific context that involved compulsory telework, amid a pandemic crisis that led to isolation and lack of social contact [9, 24, 26, 28]. Furthermore, there was a lack of experience with telework on the part of many workers and leading leaders. In addition to the specific issues of the pandemic, the telework experience occurred in a context marked by a changing and uncertain environment, advancement of digital technologies, and in a context of more congested cities [2, 24, 26, 28, 34].

The results of these experiences with telework also depend on procedures adopted by organizations, covering different types of resources (material, financial, procedural, technological, resources, and human resources) [5, 20, 21, 26, 33, 34]. In addition to organizational inputs, several studies show that much of the success of telework experiences depends on an e-leadership's supportive activities and

skills. The importance of e-leadership support was highlighted in the study reported in this chapter and is also widely explored in telework literature, before or during the pandemic [2, 3, 5–8, 20–26, 28, 36]. These e-leadership skills can turn to hard skills (more focused on technological and tool aspects) and soft skills. The soft one involves skills to provide emotional support to coworkers, in addition to other factors related to dialog, constructive feedback guidance, team confidence, and time management [25, 28, 33].

The results of telework can be very positive, including a reduction in travel time, increased work autonomy and well-being, reduced worker burnout risks, and improved workers' sense of psychological security. Other positive results from remote work are solid and trustworthy relationships with employees, higher effort

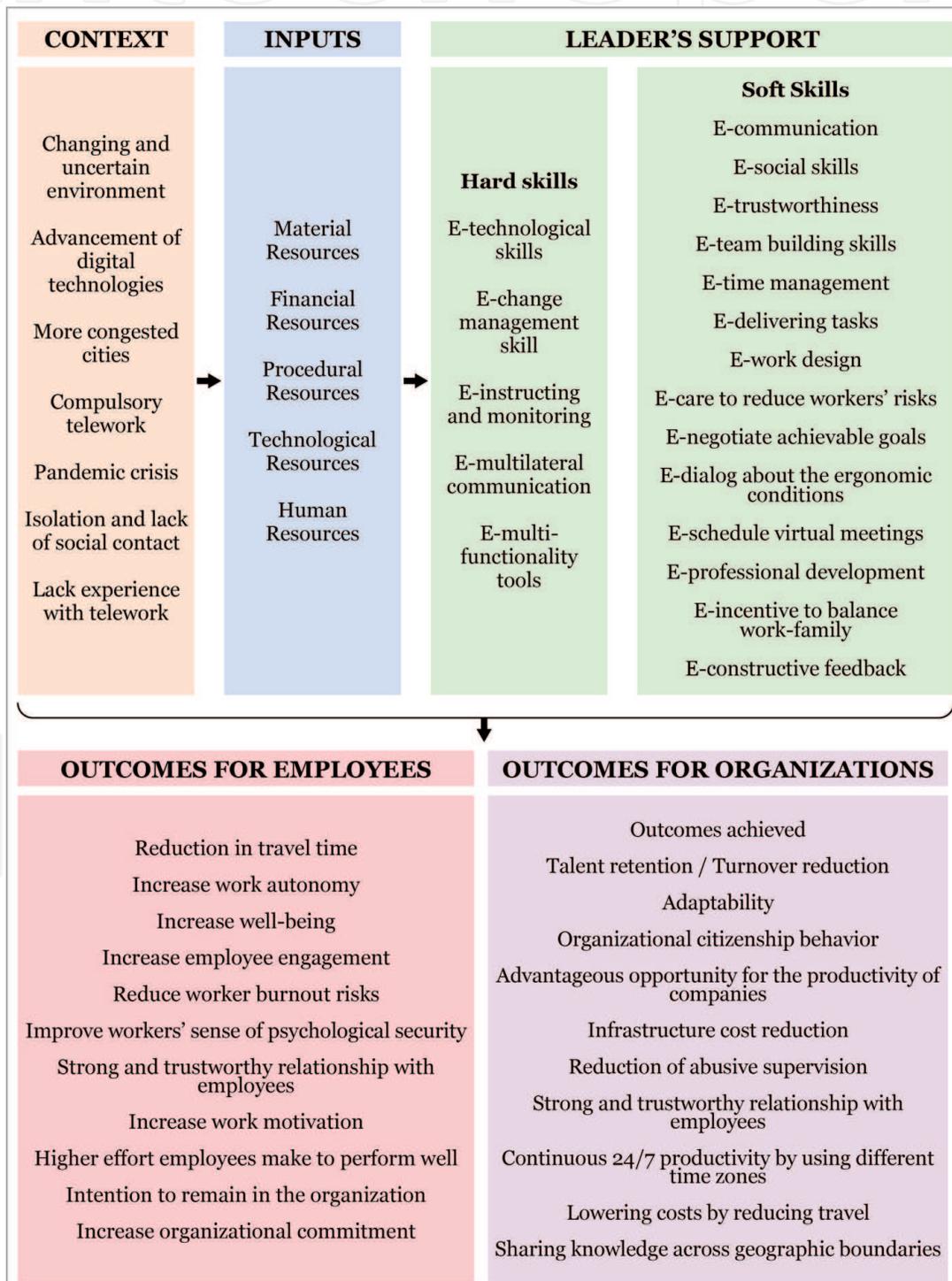


Figure 2. E-leadership theoretical model.

employees make to perform well, and intention to remain in the organization [2, 7, 20, 22–25, 28, 33, 34]. Likewise, telecommuting can also bring many positive results for organizations. These outcomes include talent retention, increased organizational citizenship behavior, higher productivity levels, infrastructure cost diminution, abusive supervision reduction, and continuous 24/7 productivity by using different time zones [6, 8, 20, 24–26].

Given so much research on e-leadership that gained greater prominence during the COVID-19 pandemic, we present below a model of e-leadership based on lessons learned during the academic period. The model shown in **Figure 2** is supported by the empirical study presented here and in the revised literature, as presented above. It does not intend to replace theoretical leadership models but to present specificities that characterize e-leadership and its performance in virtual teams.

6. Conclusions

Millions of professionals worked remotely during the pandemic, mediated by technologies, modifying traditional communication, monitoring, and managing teams. It is the e-leadership's role to identify the activities that require adjustments in telework, including surveying the resource demands of each subordinate. Thus, telework success depends on leaders mapping out which support routines need to be developed for remote work [9]. The present study aims to propose an e-leadership theoretical model based on lessons learned from the coronavirus pandemic. To that end, we describe and discuss a survey on the perceptions of support received from managers during the initial 3 months of the pandemic. For this purpose, we collected data with 7608 workers distributed to 95 public service organizations in Brazil.

Therefore, this paper presents a theoretical research and intervention model on the effectiveness of e-leadership, which assumes relationships between context variables, inputs, processes, and outcomes. The model includes context variables (changing and uncertain environment, advances of digital technologies, more congested cities, lack of experience with telework), which have led organizations to adopt telework in its most varied forms. For example, full-time or part-time telework, in fixed locations (work from home or in satellite offices) or different spaces (mobile work, work anywhere and anytime), for a fixed or indefinite period with or without flexible working hours. Furthermore, the health crisis generated by the COVID-19 pandemic added to these situations, social distancing, the lack of face-to-face social contacts, and the sudden change in the design of the work to the compulsory remote modality in a fixed location (at home). This situation highlighted the importance of leadership support to teleworkers, previously evidenced by telework literature.

In addition to these context variables, the model includes inputs or resources (material, financial, technological, and human), which need to be considered in studies on the effectiveness of e-leadership since they are antecedents of the leader's supportive behaviors for the teleworkers. The e-leadership actions comprise e-hard and e-soft skills, which characterize the effective conduct of leadership, associated with valuable outcomes for employees and organizations. In summary, the theoretical model proposed in this work can be used to plan and conduct research on relationships between antecedent variables (context, inputs), e-leadership processes, and their effects on essential criterion variables (outcomes for teleworkers and organizations).

The leadership theoretical model also contributes to the improvement of telework management, indicating variables that need to be considered by organizations to enable leadership support actions for teleworkers. These actions increase the

chances of achieving positive results for teleworkers and organizations. Before implementing telework, the organization, according to the proposed model, should analyze the following resources—technological support (management and monitoring systems for deliveries, digital information, and communication technologies); material and financial support for the acquisition and maintenance of equipment, internet access necessary for teleworking; characteristics of work processes eligible for telework (description of activities, measurement of work volume and flow, the interdependence of tasks between members of the same team and between different groups and organizational units, optimization of work processes) and the characteristics of human resources with motivation and good profile for telework (professional experience, autonomy, and self-discipline).

It is essential to point out that despite the many positive results presented in the e-leadership model, telework also poses many risks for workers and organizations [4, 5, 21, 24–26]. Without the proper performance of e-leadership, especially in terms of support for teleworkers, the demands (overload, difficulty in reconciling work and nonwork, feelings of loneliness, and social isolation) are likely to increase the risk of exhaustion, stress, and burnout. Likewise, without a compelling performance of e-leadership, telework can also be harmful to organizational results. From these preliminary analyses, organizations need to provide the resources necessary to exercise effective leadership and provide training and e-leadership skills development programs. In addition, we recommended defining in advance the expected results (outcomes) for teleworkers and the organization, aiming to choose teleworking arrangements compatible with the organization's work, people, and culture. After the implementation of teleworking, we suggested monitoring and evaluating resources, e-leadership processes (considering hard and soft skills), and their effects on the behavior (outcomes) of teleworkers and the organization to achieve adjustments and improvements in each component of the model.

An important warning—the e-leadership theoretical model does not intend to replace all leadership models but to present specificities that characterize e-leadership and its performance in virtual teams. Thus, even though it is based on empirical studies found in the literature and on reviews about telework, the e-leadership model presented in this chapter lacks further testing. But it can be helpful for organizations that intend to maintain telecommuting or a hybrid system with face-to-face workers and remote workers. We also hope that the model can contribute to those already involved in e-leadership or who intend to move to this new management format.

It is worth considering the generalization of the results to the Brazilian context and other countries. Despite the convenience sample, its breadth and the heterogeneity of respondents encourage more extensive use of the findings. However, although comprising 95 organizations, the sample was aimed at public servants, and there may be differences for workers from private organizations. As for the model's generalization to other countries, we consider it possible and indicate empirical tests since it is a theoretical model. What leads us to believe in more global use of this model is that it was based not only on the extensive research carried out in Brazil but also on an expressive set of studies carried out in different countries during the pandemic.

Regarding this generalization to other countries, it is worth mentioning that the e-leadership theoretical model is in tune with the practical guide prepared by the International Labor Organization [37]. This guide indicates that teleworking policies can be planned as part of a continuity plan to keep operational organizations and people safe in their homes in contexts of unforeseen events, such as extreme weather conditions, natural disasters, terrorist actions, and pandemics. The analysis presented is that the experience arising from the measures of social distancing

necessary to contain the COVID-19 pandemic marked the beginning of a new era of telework, which tends to be a labor modality adopted by some organizations even in “normal time.”

But to ensure the well-being and maintenance of productivity in telecommuting, whether in “new normal” or contingency periods (such as pandemics and other unexpected events), attention is needed in some aspects. Thus, with illustrations of situations or legislation from different countries, eight focuses are listed to ensure well-being and productivity in telework, these are—focus on time and work organization, focus on performance management, focus on digitization, focus on communication, focus on safety and health at work, focus on legal and contractual implications, focus on training, and focus on reconciling professional and personal life. In addition to these eight focal points, the ILO’s practical guide also presents reflections in two other directions—gender equity and trust and organizational culture. Thus, it is considered that teleworking should not become a setback to previous achievements in terms of equality between men and women, nor should it hinder the efforts of diversity and inclusion by companies. Finally, there are also recommendations to strengthen trust as a value and a practice in the organizational culture. Therefore, we recommend avoiding, for example, the use of tools and software for control and surveillance of employees, which in addition to ethical issues can impact the relationship between the worker and the employing organization, leading to negative attitudes and counterproductive behavior [37].

Considering the set of these recommendations for the future of teleworking after the pandemic, we observe that the e-leadership theoretical model can be applied in contingency periods and in new normal or “normal time.” Moreover, the scope of this theoretical model shows that the lessons learned from the coronavirus pandemic made it possible to advance on reflections on telework and propose strategies that simultaneously ensure organizational productivity and workers’ well-being. About expectations for the future of teleworking after the pandemic, one of the basic premises is that teleworking should result from a voluntary agreement between employers and workers, establishing working hours or hours worked, communication tools, tasks to be performed, supervision procedures, systematic recording of tasks performed, and workplace which can be at the workers’ homes or elsewhere [37].

The expectation is that after the pandemic we have a new era of telework, with many lessons learned during this period [2, 20, 24, 25, 37]. Unlike the pandemic phase, there are predictions that hybrid models of telework will be adopted, with variability in terms of full-time or part-time, fixed or flexible hours, workplaces [at home, satellite offices or mobile, and ubiquitous work (anytime and from anywhere)]. A study that projected the potential of telecommuting in Brazil and worldwide confirms a growing relationship between the proportion of jobs that can be performed at home. The level of economic development among 86 countries, Brazil occupied the 45th position, with 25.7% of teleworking. Considering the 12 Latin American countries that made up the study, Brazil occupies the third position, approaching Chile (25.8%) and Uruguay (27.3%). Directors, managers, and professionals in science and intellectuals had a high percentage of occupations subject to telework (between 61% and 65%) [38].

The large sample of the research reported in this study, made up of professionals with a high level of education, suggests that the results are generalizable to developing countries and may be helpful for organizations and workers in developed countries. Moreover, the usefulness of this survey and others carried out during the pandemic period is even greater if we consider that the potential for telecommuting was little explored globally, as only 2.9% of workers worked from home before the COVID-19 pandemic [39].

Additional evidence is reported by the International Labor Organization, signaling those workers from developed countries are more likely to work from home. They also add that many workers from developing countries carry out activities that do not allow for adopting the modality, such as civil construction, or work informally. Suppose the structure of labor occupations and available technologies are considered. In that case, the estimated difference between developed and developing countries reaches 15%, and there may be regional differences in each country [38]. Depending on the level of social inequality, it is possible to find realities similar to those in Brazil, even in developed countries, which increases the generalization of the results.

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