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The Impact of E-Leadership Competencies on Workplace Well-Being and Job Performance: The Mediating Role of E-Work Self-Efficacy

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Abstract: Teleworking is a new business reality that entails adapting leadership styles to function effectively in a virtual environment. Technologically enabled leadership, or e-leadership, is promising for the telework norm. However, studies on e-leadership are in the early stages. Inspired by this need and drawing insight from social cognitive theory, this study explores the mediating role of e-work self-efficacy in the relationship between e-leadership competencies and workplace well-being and job performance. Data from 269 teleworkers worldwide were analyzed using partial least squares path modeling (PLS-PM). The findings show that e-worker self-efficacy partially mediates the relationship between e-leadership competencies and workplace well-being and fully mediates the relationship between e-leadership competencies and job performance. A teleworker-friendly business model can be achieved by equipping e-leaders with competencies that will enhance the employee's self-efficacy and performance. A discussion of the findings, contributions, limitations, and future directions is provided.

Keywords: e-leadership; telework; e-leadership competencies; e-work self-efficacy; workplace well-being; job performance; mediation model; social cognitive theory

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1. Introduction

The globe has witnessed new changes in the business economy characterized by a high level of globalization, digitization, competition, customization of customers, and work within networks. Radical changes in the ways of working, leading, and managing businesses nowadays have been brought about by the latest information and communication technologies, including but not limited to the internet, IoT, big data, AI, Web 3.0, 5G, Wi-Fi 6 technology, and cloud computing. These changes have created numerous opportunities and innovations in employment and work procedures and methods, which has led to the emergence of new forms of work called working from home (WFH) or telework. Telework refers to an individual's ability to work remotely from any location and at any time by utilizing ICTs to complete job tasks [1,2]. Organizations have adopted the option of WFH as part of a flexible work strategy to recruit talents, and many psychological benefits gained from such a strategy have been reported in the literature [3].

However, prior to the 2020 COVID-19 pandemic, telework was not a commonly used model [4]. The pandemic has inadvertently accelerated the adoption of teleworking models to protect individuals, maintain business continuity, and motivate organizations to function with workers able to work remotely from locations other than the typical office, and this trend is anticipated to continue after the pandemic to ensure the sustainability of businesses [5]. The number of mobile employees in the United States has climbed consistently over the past five years, from 96.2 million in 2015 to 105.4 million in 2020, as reported by International Data Corporation (Needham, MA, USA) [6]. Dingel and

Neiman [7] claimed that 37% of employment in the United States, including scientific services, financial work, and teaching, can be performed remotely, while others, particularly in hospitality, agriculture, and healthcare, require individuals to be physically present at the workplace. This widespread shift toward the telework paradigm [8,9] poses a challenge to the practice of e-leadership and piques interest in the investigation of necessary competencies for leaders and followers that can be adapted to the telework context [6]. Motivated by our desire to comprehend e-leadership competencies, the following study question is addressed: what are e-leadership competencies, and how do they impact employee well-being and performance in the context of telework?

Applying the telework model has significantly influenced how firms are run and how employees and employers interact. Thus, leadership practices must adapt to new remote or virtual conditions for effective leadership and sustainable performance [5,10]. Leading organizations virtually based on ICTs is called e-leadership, and it is not an extension of traditional leadership [11]. E-leadership is "a social influence process embedded in both proximal and distal contexts mediated by advanced information technology that can produce a change in attitudes, feelings, thinking, behavior, and performance" [12]. Specifically, it is the efficient utilization and integration of digital and traditional communication technologies for management objectives [13].

E-leadership is one of the recent significant trends that has had priority to be studied by different disciplines [5,14,15]. Although both leadership scholars and practitioners have recognized the important impact of ICTs, more advances have yet to be made, and the gap between the practice and implementation of these technologies and what is known about e-leadership effects has grown [12]. Studies on e-leadership are currently limited; knowledge of this area is in its early stages [12,16]. Drawing on Adaptive Structure Theory [17], Avolio and his colleagues have examined the development of e-leadership in theory, research, and practice for two decades [12,18]. Van Wart et al. [13,16] have focused on functional e-leadership in virtual environments and operationalized it into six competencies: e-communication, e-social skills, e-team building skills, e-change management, e-technological skills, and e-trustworthiness. Roman et al. [19] have developed a reliable and valid scale for measuring e-leadership using these six dimensions. In addition, Liu et al. [15,20] have developed an e-leadership communication adoption model for the individual and developed constructs of e-leadership adoption. Some studies have identified e-leadership as a prerequisite for high-performance virtual teams (e.g., [5,21,22]). The interaction between leaders and followers through ICTs is one of the e-leadership concerns [12], but studies integrating e-leadership and teleworkers are scarce [5].

Accordingly, scholars have called for research that examines the novel concept of e-leadership competencies in a remote work context to evaluate its validity and contributions [16,19]. Furthermore, Antonacopoulou and Georgiadou [23] propose investigating 'leading from home' and rethinking social distancing and remote work as a platform for rebuilding the fundamentals of humanity, as well as exploring motivational mechanisms that promote the well-being and performance of teleworkers. Drawing insight from social cognitive theory [24], which suggests self-efficacy, such as e-leader competencies and e-worker self-efficacy, affects individual performance and behavioral outcomes, both directly and indirectly, through its impact on motivation, perseverance, resilience, and one's ability to cope [24,25]. We answer the call for research by examining the effect of adopting new e-leadership competencies on workplace well-being and job performance in a virtual work environment under the mediation of e-work self-efficacy. Specifically, we posit that the adoption of e-leadership competencies will significantly improve e-work self-efficacy, which, in turn, will lead to improvements in workplace well-being and job performance. In other words, if an e-leader has the competency to effectively communicate feedback, employees should feel more confident in their ability to complete tasks, leading to an improvement in job performance and increased workplace well-being.

The current study contributes to the literature in multiple ways. First, it contributes to the e-leadership literature that reflects the emergence of leadership in the context of

the virtual environment, where work is mediated by ICTs, by measuring it with a newly developed measure and conceptualization of e-leadership competencies [19]. Therefore, the research shows the potential to study the multidimensional e-leadership concept empirically. Second, the study extends the e-leadership concept by testing its effect on the followers' e-work self-efficacy, a novel concept scale developed by [26]. Thus, the study will open the door to e-leadership development. Third, the study argues that underlying social cognitive theory allows us to predict individual outcomes related to performance and well-being. Thus, this study extends e-leadership theory-building.

2. Literature Review

In recent years, the proliferation of electronic communication technologies has led to a significant shift in the way work is conducted, giving rise to the concept of e-leadership, which pertains to leadership in the digital era. As telework becomes more prevalent, it is crucial to investigate the impact of e-leadership competencies on critical employee outcomes, including e-work self-efficacy, well-being, and job performance. This literature review aims to provide a comprehensive overview of the existing research and delve into the relationship between e-leadership and these related constructs. To achieve this goal, this section will first introduce each concept, providing a clear understanding of their meanings before exploring their critical relationships and developing hypotheses to be empirically tested. By doing so, this review seeks to contribute to a more nuanced understanding of how e-leadership competencies can impact employee well-being and job performance through e-work self-efficacy in the digital workplace.

2.1. E-Leadership Competencies

E-leadership has evolved from a mere theoretical underpinning to a practical skill in the 21st century. Drawing on the contributions of Avolio et al. [12,18], they outline the somewhat nuanced view that studying the interactions between technology and leadership requires contextual consideration as "context is a crucial characteristic of e-leadership". The authors postulate that leadership studies must focus on understanding the contextual embedment created by technology in leadership in so-called e-leadership. Accordingly, they conclude that e-leadership is a social impact construct entrenched in the intrinsic and extrinsic contexts facilitated by advanced information technology. It can elicit different performances, behaviors, thoughts, feelings, and attitudes in organizations, teams, and individuals [12].

However, Van Wart et al. [13] postulated that Avolio's definition is an abstract conceptualization of e-leadership. Therefore, they suggested an operational definition that can be applied theoretically and empirically in different settings. They define e-leadership as the effective use of hybrid traditional and virtual communication methods to achieve management objectives [13]. This entails being aware of existing ICTs, selectively adopting appropriate ICTs that create value for individuals and organizations, and having technical skills in utilizing those ICTs [16]. In addition, this employs a variety of ICTs in various contexts competently and integrates them with physical communication methods when most appropriate to achieve objectives [16].

Roman et al. [19] operationalized the concept of e-leadership to six competencies based on a comprehensive literature review. They developed the SEC (Six E-Competency) model, which highlights effective e-leadership as a product of six competencies. Accordingly, e-communication competency is the ability of leaders to communicate using ICTs effectively to enhance performance. E-social competency denotes the leadership's ability to create a conducive working environment that promotes collaboration and communication. E-team competency is the ability to develop, lead, and motivate virtual teams, while e-change is the ability to embrace and effectively manage change initiatives through ICTs. E-trust competency is the leader's ability to build trust by being viewed as honest, consistent, and fair in the virtual context. Finally, e-tech competency refers to the leader's awareness of ICT developments and cyber security issues. Liu et al. [15] validated these six competencies

in their study comparing e-leadership between South Korea and the United States and its effect on innovation capacity at the individual public manager level. To the best of our knowledge, the SEC model is the only e-leadership measurement model developed and tested in the current literature, and it calls for more empirical evidence to confirm the construct validity. Therefore, this study responds by using the SEC scale to measure the e-leadership construct.

2.2. E-Work Self-Efficacy

The e-work concept was first described by Nilles [27] as "telecommuting" or "teleworking". Many different terms have described e-work, including "remote work"; "flexible workplace"; "working from home WFH"; "telework"; "virtual work"; and, latterly, "agile working" [1,28]. These terms describe an individual's ability to work remotely from any location and time by utilizing ICTs to complete job tasks [1,2]. The literature reveals that organizations that adopt effective e-leadership perceive telework as an opportunity [5] that bestows benefits to the performance, environment, and teleworkers. Numerous studies have investigated the benefits and drawbacks of teleworking (e.g., [29,30]).

The telework literature contains contributions to conceptualizing the telework construct. Vyas and Butakhieo [28] developed an exploratory framework to investigate the factors related to WFH during the pandemic in Hong Kong; they classified the dimensions into "organizational factors" and "individual and family factors". Organizational factors include management support, e-skills training, communication, employee well-being, IT support, and organizational trust, whereas the individual and family factors comprise work–family conflict, working space, the number of family members, self-motivation, self-organization, the ability to work without supervision, tenacity, computer literacy, and time management skills. Grant et al. [1] designed the E-Work Life (EWL) scale to assess e-working experiences in four key areas: well-being, work–life balance, relationship with the organization, and job effectiveness.

Similarly, Tramontano et al. [26] developed an e-work self-efficacy scale. The scale identified five dimensions closely related to remote working: e-skills, remote social skills, trust-building skills, remote emotional skills, and self-care skills. The e-skills dimension reflects the ability of the employees to utilize ICTs in managing workloads and work tasks. The trust-building skills dimension reflects the employee's capabilities to build trustworthy relationships with leaders, which minimizes the need for supervision and increases employee flexibility. The self-care skills dimension represents the employee's ability to successfully manage the boundaries between work and life provided by digital technology, such as the ability to work remotely. The remote social skills dimension reflects the ability of the employees to build and maintain social relationships remotely. When WFH, it is critical for employees to be able to establish, promote, and maintain professional and casual social interactions and understanding so that physical or remote working translates into positive outcomes in productivity and job engagement [26]. The remote emotional skills dimension reflects the ability of employees to manage and control their emotions when working from home. Emotions can significantly impact the well-being of employees working from home [26,31,32]. The present study uses e-work self-efficacy to measure remote worker competencies because it comprehensively captures the most-related factors.

2.3. Workplace Well-Being

Well-being is a multifaceted concept with several dimensions and definitions; different disciplines have identified it through divergent lenses. One of the most well-known contrasts is between "eudaimonic" and "hedonic" well-being [33], which distinguish between "feeling good" and "working well" [34] and the various ways these may be conceptualized, such as a result or process. Zheng et al. [35] employed mixed methods to explore the dimensions of employee well-being. Their study findings revealed that employee well-being had three dimensions: life well-being, workplace well-being, and psychological well-being. Life well-being encompasses life satisfaction and dispositional affect, whereas workplace

well-being comprises work satisfaction and work-related affect. Psychological well-being includes self-acceptance, autonomy, positive relations with others, personal growth, environmental mastery, and purpose in life. Therefore, workplace well-being incorporates job satisfaction with positive emotions toward the work [35].

Workplace well-being is defined by the Chartered Institute of Personnel and Development (Wimbledon, UK) as "creating an environment to promote a state of contentment which allows an employee to flourish and achieve their full potential for the benefit of themselves and their organization" [36]. The shift in workplaces to the virtual environment, where work conditions are changing, presents new challenges to employees and employers in maintaining employees' well-being and sustainable performance [4].

2.4. Job Performance

Job performance refers to "scalable actions, behaviors, and outcomes that employees engage in or bring about that is linked with and contribute to organizational goals" [37]. It is a significant variable that influences outcomes on three levels: the micro (individual), the meso (team), and the macro (organization) [38]. Fulfilling quantity and quality requirements and meeting commitments or managing duties are critical job performance criteria [39]. The literature revealed different conceptualizations of performance in various contexts. Therefore, there are different scales to measure it. Most studies have measured performance using self-reported data, but some used supervisor-rated or colleague-rated performance data [38].

3. Theoretical Background and Hypothesis Development

According to social cognitive theory, individuals seek to be agentic; they strive to make achievements through their efforts [40]. The theory asserts that self-efficacy, or confidence in one's capability to succeed in a particular area, is critical to evaluating whether an individual can effectively create reality. Work self-efficacy is the extent to which employees believe they can carry out the actions required to manage job challenges with whatever resources they can muster [41]. According to the theory, the individual plays an essential role in self-development, adaptability, and self-renewal. Those with higher self-efficacy have stronger beliefs in their potential to succeed, which motivates them to work hard and persevere in the face of disruptions. Previous studies proposed that social cognitive theory is suitable for examining remote working since its arrangements create blurred processes and practices and rely primarily on individual efficacious, self-discipline, and initiative to accomplish tasks under little supervision [26]. Therefore, self-efficacy is essential to control, cultivate, and develop [42,43].

Regarding the current study, e-leadership is transmitted by cognitions, traits, affects, and behaviors related to leaders and followers [12]. E-leader competencies include e-communication, e-social, e-team, e-change, e-tech, and e-trust [19]. According to social cognitive theory, followers' self-efficacy may be acquired and maintained through mastery, vicarious experiences, social learning, and supportive relationships in their interactions with the e-leader. Such interactions support the current assumption that e-leader competencies boost e-work self-efficacy through motivation mechanisms.

Furthermore, there are several perspectives on proper e-leadership styles in the virtual context. Prior research on transformational leadership (e.g., [44–46]) provides some evidence demonstrating that transformational leadership, characterized by inspirational motivation and individualized attention, is more suitable for virtual teams and has a more substantial effect on team performance. Recent studies reveal that transformational leadership positively affects work self-efficacy [47,48]. Ng [49] reported, in his meta-analysis, that transformational leaders, using motivation mechanisms, increase followers' work self-efficacy; they motivate followers intellectually to develop and strive for greatness. Likewise, an e-leader who follows the transformational style inspires followers to believe that they can contribute to an organization's aims. According to social cognitive theory, e-work self-efficacy beliefs increase when an e-leader motivates and inspires confidence

and when an e-follower learns vicariously from this leader. Based on the social cognitive theory and the previous arguments, we hypothesize the following:

Hypothesis 1 (H1). *E-leadership competencies will be positively related to e-work self-efficacy.*

Self-efficacy influences individual performance and behavioral outcomes directly and indirectly through its influence on motivation, resilience, perseverance, and capability to cope [24,25], as shown by meta-analyses across several domains (e.g., [50–53]). Furthermore, because it defines changeable factors, "social cognitive theory lends itself well to social applications" [41], and it provides explicit recommendations on the most successful techniques and practices to promote and increase individual self-efficacy [24]. Similar to a face-to-face context, e-work self-efficacy, in turn, should encourage higher job performance since it indicates employees' perceived task competence, their belief that they can reach work goals, and optimistic appraisals of the likelihood of task success [49,54,55]. Thus, employees' confidence in their ability to do well guides them to perform well in their primary tasks [49,56,57].

Furthermore, considering the power of ICTs in facilitating e-leader–follower interactions utilizing their competencies provides greater transparency for the employees' efforts, interactions, and performance [12]. In addition, the virtual interaction involves a real-time dataflow that can impact how the e-leader and e-followers perceive each other, trust each other, and offer consideration [58]. Therefore, the probability of improving job performance increases. Drawing on theory and the previous discussion, we hypothesize the following:

Hypothesis 2a (H2a). *E-work self-efficacy will be positively related to job performance.*

Likewise, individuals with high e-work self-efficacy cope with obstacles more successfully and persevere in the face of failure, making them more likely to accomplish desired goals and, hence, receive well-being from their work [59]. Moreover, prior studies have suggested that belief in self-efficacy relates to employees' well-being (e.g., [59–62]). Previous studies have shown that high work self-efficacy is related to better health outcomes and well-being, whereas low work self-efficacy is related to depression, job dissatisfaction, and burnout (e.g., [63,64]). Workplace well-being is one of the three dimensions of employee well-being [35]. In addition, Singh et al. [65] found a positive relationship between work self-efficacy and workplace well-being. Based on the above discussions, we hypothesize the following:

Hypothesis 2b (H2b). *E-work self-efficacy will be positively related to workplace well-being.*

Building on social cognitive theory and the argument that e-leadership competencies are more likely to increase e-work self-efficacy, e-leadership competencies are more likely to increase job performance since e-work self-efficacy is a motivational mechanism through which e-leadership competencies can improve job performance [40]. This study argues that e-leadership competencies can enhance e-work self-efficacy through the social learning processes, vicarious learning, and motivation between the e-leader and e-worker. Thus, e-workers develop their competencies and efficacy, consequently improving their job performance. Therefore, we hypothesize the following:

Hypothesis 3a (H3a). *E-work self-efficacy will mediate the relationship between e-leadership competencies and job performance.*

Furthermore, drawing on social cognitive theory and the previous discussion that e-leadership competencies are more likely to increase e-work self-efficacy, e-leadership competencies are more likely to improve workplace well-being [40]. Alternatively, this study builds on prior research that found leadership is a driver of workplace well-being in virtual work (e.g., [60]) by discussing e-work self-efficacy as a motivational mechanism

that enables e-leadership competencies to improve workplace well-being. Considering the previous discussion, e-leadership competencies can boost e-work self-efficacy via social and vicarious learning and motivation between the e-leader and e-worker. As a result, e-workers improve their skills and capabilities, subsequently improving their workplace well-being. Therefore, we hypothesize the following:

Hypothesis 3b (H3b). *E-work self-efficacy will mediate the relationship between e-leadership competencies and workplace well-being.*

Accordingly, the study proposes its hypothesized model, as shown in Figure 1.

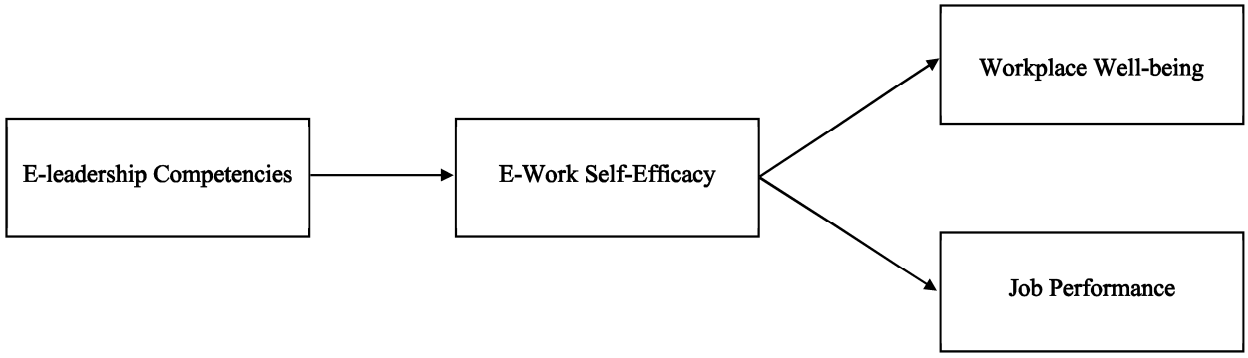

Figure 1. The hypothesized model.

4. Methods

4.1. Sample and Data Collection

The current study applied a cross-sectional survey design and data were collected from teleworkers worldwide through self-administered online questionnaires from 1 March to 24 April 2022. The teleworkers belonged to various socioeconomic backgrounds regarding gender, age, education, experience, and other sectors. Method of convenience sampling, in which participants are selected based on their availability and willingness to participate, was used. Participation in the survey was voluntary, and participants were assured that data would be handled confidentially and anonymously.

Approximately 300 teleworkers were contacted and invited to participate in the survey; 269 of them were valid responses and were used in the analysis after removing the responses with missing data [66]. The final sample was 46% male and 54% female. A total of 43% of the participants' ages ranged from 18 to 30 years old, and around 76% had higher educational degrees. Moreover, 71% belonged to the private sector, and 78% had full-time telework jobs. Table 1 includes the demographic information of the sample.

4.2. Measures

To ensure consistency in the measurement of the different constructs, the study utilized established scales from previous research, which are discussed in detail elsewhere in the article. The respondents used a seven-point Likert-type scale, anchored in (1) strongly disagree to (7) strongly agree for all scales except the job performance scale, anchored in (1) very poor to (10) excellent. Tables 2 and 3 summarize the constructs and their related item loadings. The scales' reliability was measured with the estimate of Cronbach's α. The scales' convergent validity was evaluated with composite reliability (CR) and average variance extracted (AVE). The scales' discriminant validity was evaluated with the Fornell–Larcker [67] criterion. Factor loadings were calculated to test item fit with constructs. Some items with low factor loadings were deleted, which improved model fit. Each scale needed to have a minimum reliability of 0.70 [68] and an item factor loading above 0.50 to be maintained [66].

Table 1. Sample Characteristics.

	Frequency (*N* = 269)	**Percentage (%)**
Gender		
Female	146	54.3
Male	123	45.7
Age		
18 to 30	116	43.1
31 to 40	86	32
41 to 50	9	3.3
51 to 60	55	20.4
61 and above	3	1.1
Education		
High school	16	5.9
Bachelor's degree	118	43.9
Some college credits	28	10.4
Diploma	20	7.4
Master's degree	71	26.4
Ph.D. degree	16	5.9
Work experience		
Less than 6 months	12	4.5
6 to 18 months	51	19
18 months to 3 years	76	28.3
3 to 5 years	54	20.1
5 to 10 years	37	13.8
More than 10 years	39	14.5
Sector		
Public	56	20.8
Private	192	71.4
Charity	21	7.8
Work model		
Telework	211	78.4
Hybrid work	58	21.6

Table 2. Measurement model results.

Items	**SL**	**SE**	**T-Value**	**VIF**
E-leadership Competencies				
In his/her virtual communication, the leader is clear, well organized, and allows for feedback to avoid errors and untested assumptions.	0.77	0.04	17.94	2.11
The leader is effective in using virtual communications to plan organizational changes.	0.75	0.04	17.12	2.41
The leader is effective in using virtual communications to monitor organizational change.	0.72	0.05	15.33	1.83
The leader is effective in using virtual communications to evaluate change initiatives.	0.76	0.04	21.31	2.59
Within the virtual environment, the leader is able to create a sense of trust.	0.80	0.02	31.96	2.28
The leader uses virtual communications in a manner that supports honesty, consistency, follow-through, fairness, and general integrity.	0.80	0.03	29.93	2.30
The leader ensures that support of diversity is present and well monitored in virtual settings.	0.74	0.05	16.22	1.92
The choices of virtual communication methods used by the leader improve communication and collaboration.	0.80	0.03	26.98	2.35
The leader is able to motivate teams that operate primarily in a virtual mode.	0.78	0.03	24.97	2.24
The leader is able to hold teams that work in a virtual mode accountable.	0.75	0.04	17.08	1.95

Table 2. *Cont.*

Items	SL	SE	T-Value	VIF
E-Work Self-Efficacy				
Manage your time effectively, even if you have to juggle personal and professional commitments?	0.77	0.05	17.14	2.11
Use a range of different digital communication tools to quickly build rapport with others?	0.72	0.04	16.54	1.90
Manage your working hours as you prefer, without feeling guilty for not being online when your other colleagues are?	0.74	0.05	14.65	1.94
Organize your activities, despite any distractions in your surroundings?	0.78	0.04	22.46	2.20
Plan your activities effectively, despite disruptions you might have?	0.80	0.03	31.88	2.41
Complete your tasks, even with minimal supervision?	0.75	0.05	15.97	1.91
Self-manage your time ensuring to complete your tasks on time and to a high standard?	0.80	0.03	27.85	2.53
Constantly abide by organizational rules and policies, even when a shortcut could help you to complete your tasks more quickly?	0.71	0.05	14.65	1.75
Understand when technology usage is impacting your well-being, even if you are very focused on some work task?	0.74	0.04	17.09	1.92
Use different coping strategies to deal effectively with periods of high workload?	0.75	0.04	19.08	2.07
Complete your tasks, even with minimal supervision?	0.75	0.05	15.97	1.91
Job Performance				
How would your supervisor rate your quality of work? In other words, are your work outcomes perfect, free of error, and of high accuracy?	0.88	0.02	39.63	2.81
How would your supervisor rate your work efficiency? In other words, what is your supervisor's assessment of your work speed or quantity of work?	0.92	0.01	75.24	3.53
How would you rate your own work performance? In other words, are you able to complete quality work on time?	0.92	0.02	61.54	3.57
Compared to your coworkers, how would you rate your work performance?	0.89	0.02	45.15	3.07
Workplace Well-being				
I am satisfied with my work responsibilities.	0.83	0.03	27.69	2.33
In general, I feel fairly satisfied with my present job.	0.78	0.03	22.50	1.89
I find real enjoyment in my work.	0.84	0.03	32.11	2.68
I can always find ways to enrich my work.	0.89	0.02	52.54	3.70
Work is a meaningful experience for me.	0.80	0.04	21.47	2.06
I feel basically satisfied with my work achievements in my current job.	0.84	0.03	25.97	2.55

Note. N = 269; SL = standard loadings; SE = standard error; VIF = variance inflation factor.

Table 3. Means, standard deviations, correlations, and reliabilities (N = 269).

Variables	M	SD	CA	CR	AVE	1	2	3	4	5	6	7	8
1. E-leadership Competencies	5.56	0.84	0.92	0.94	0.60	0.77	0.63 **	0.51 **	0.63 **	0.16 **	0.01	−0.08	0.07
2. E-Work Self-Efficacy	5.65	0.81	0.92	0.93	0.57	0.64 **	0.76	0.72 **	0.70 **	0.08	0.15 *	−0.06	0.14 *
3. Job Performance	7.92	1.39	0.92	0.94	0.81	0.50 **	0.72 **	0.90	0.59 **	0.10	0.07	−0.18 **	0.10
4. Workplace Well-being	5.67	0.97	0.91	0.93	0.70	0.64 **	0.70 **	0.58 **	0.83	0.10	0.07	−0.12	0.04
5. Gender	1.54	0.50	-	-	-	0.17 **	0.09	0.09	0.11	-	−0.15 *	−0.05	−0.05
6. Age	2.04	1.18	-	-	-	0.00	0.14 *	0.07	0.06	−0.15 *	-	0.36 **	0.50 **
7. Education	3.22	1.52	-	-	-	−0.07	−0.05	−0.18 **	−0.11	−0.04	0.35 **	-	0.35 **
8. Work Experience	3.63	1.43	-	-	-	0.08	0.15 *	0.10	0.06	−0.04	0.50 **	0.35 **	-

Notes. N = 269; M = mean; SD = standard deviation; CA = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted. Boldfaced diagonal elements are the square roots of the AVE statistics for discriminant validity using the Fornell–Larcker criterion. Below the diagonal elements are the correlations between the constructs. Above the diagonal elements are the controlled correlations with the marker variable. ** $p < 0.01$; * $p < 0.05$; two-tailed.

4.3. Common Method Bias

E-leadership competencies were measured using Roman et al.'s [19] 18-item scale, and e-work self-efficacy was assessed using Tramontano et al.'s [26] 15-item scale. Eight and five items were removed from these two measures, respectively, due to having low item factor loadings. Job performance was measured using a 4-item self-rating scale adopted by Cheng et al. [69]. Workplace well-being was measured using Zheng et al.'s [35] 6-item

scale. Moreover, the study used Miller and Simmering's [70] 7-item blue attitude scale as a marker variable to test for the presence of common method variance (CMV). The model incorporated control variables: gender (1 = male, 2 = female), age, education, and work experience to limit the power of alternative explanations of independent variables. A six-point scale was used to assess education: high school, some college degree, diploma, bachelor's degree, master's degree, and doctorate degree. Higher scores reflected a higher level of education.

Since the collected data are cross-sectional and self-reported, the common method bias (CMB) effect should be assessed. Therefore, established guidelines were followed to guarantee that CMB did not influence this investigation [71]. Furthermore, according to the present study findings, the maximum VIF score is 3.70, close to the threshold of 3.3, suggesting that CMB was not significantly impactful [72]. The study utilized Harman's single-factor test [73] to confirm the presence of CMB. The scale items were subjected to principal component analysis with varimax rotation, which resulted in 7 different factors with eigenvalues higher than 1.0 that account for 65.03 percent of the total variance. Furthermore, multiple factors emerged; the first and largest factor accounted for 38.05% of the total variance, which is significantly less than 50% [74], and no general factor accounted for the majority of the total variance. These results indicate that CMB did not considerably impact the study findings' interpretations [71]. Finally, the study used the blue color marker variable technique to analyze the common method variance (CMV) [70]. In line with prior studies (e.g., [75,76]), the marker variable was embedded in the structural model as an antecedent to endogenous constructs; then, we evaluated the effect of this inclusion on the significance and magnitude of substantive paths. Table 3 shows that all substantive constructs remained significant when the marker variable was included in the analysis (values above the diagonal). Accordingly, the marker variable did not explain the e-leadership competency variance in either model. These results show that CMV is not accountable for the dependent variable's explanations. Based on the results of the previous statistical procedures, the current study concludes that CMB did not significantly impact the results.

4.4. Data Analysis

The gathered data were analyzed using the Statistical Package for Social Sciences software (SPSS; version 26) for preliminary analysis, including descriptive analysis. Furthermore, the study conducted Partial Least Squares Path Modeling (PLS-PM; version 3.3.2) to test the proposed hypotheses. PLS-PM is characterized by its capacity to test indirect relationships with multiple alternatives and provides the ability to test all relationships between constructs simultaneously, which makes this method appropriate for the proposed mediation model. The significance of the path analysis, t-scores, *p*-values, and corresponding 95% bias-corrected and accelerated (BCa) bootstrap confidence intervals were calculated using a bootstrapping procedure (with a subsample of 5000 using no sign changes) and a 5% significance level.

Hypothesis testing involved four phases of data analysis similar to Bajaba et al. [77]. First, the study evaluated the reliability and validity of the measurement model constructs [78,79]. Second, it assessed the structural model suitability with the observed data [66,80]. Third, it examined all the direct relationships among predictors and outcomes to identify the nature of the relationship [81]. Finally, it analyzed the indirect relationships of the hypothesized model when the mediator was included [82].

5. Results

Table 3 reveals the means, standard deviations, correlations, reliability, and validity estimates of the study variables. E-leadership competencies were found to be positively correlated with e-work self-efficacy, job performance, and workplace well-being (r = 0.64, 0.50, 0.49, and 0.64, respectively; $p < 0.01$), indicating initial support for Hypothesis 1. Moreover, e-work self-efficacy was also positively correlated with job performance and

workplace well-being (r = 0.72 and 0.70, respectively; $p < 0.01$), indicating initial support for Hypotheses 2a and 2b.

5.1. Measurement Model

The current study employed PLS-based SEM (SmartPLS) in data analysis. Given the capacity of this method to combine measurement and structural models and its suitability in testing the mediation model [83], it is expected to be the appropriate method to provide a comprehensive interpretation of the study. The measurement model was assessed by analyzing the item loadings in the confirmatory factor analysis (CFA), reliability, and validity reports. Table 2 shows the item loadings, which reveal that all items were heavily loaded on their respective constructs, suggesting that they converged on them [66]. Table 3 shows the reliability of the measured constructs (Cronbach's alpha and CR), which range from 0.91 to 0.94, higher than the minimum acceptable threshold [66]. Concerning convergent validity, the findings indicate that the constructs' AVEs varied from 0.57 to 0.81, higher than the minimum acceptable limit of 0.50 [66,83]. Finally, considering discriminant validity, the analysis shows that the square roots of the constructs' AVEs were greater than their correlations with the other variables, indicating discriminant validity between constructs [67]. Consequently, convergent and discriminant validity were supported.

5.2. Structural Model

The structural model was assessed by examining the β, *p*-value, R^2, f^2, and Q^2 estimates. In further detail, β evaluates the strength of the observed variables' relationships, the *p*-value indicates a hypothesis's significance, and R^2 illustrates the structural model's overall predictability [66]. Additionally, f^2 reflects the significance of each predictor's effect size. In SmartPLS, the blindfolding procedure aids in creating Q^2 values, which employs a sample reuse technique that excludes a portion of the data matrix and utilizes model estimations to anticipate the omitted portion. It is recommended in previous research that values of β above 0.20 [66]; R^2 and f^2 values above 0.13 and 0.15, respectively [66,84]; and a value of Q^2 greater than 0 indicate predictive relevance. Table 4 and Figure 2 show the β, *p*-values, R^2, f^2, and Q^2 estimates of the hypothesized structural model. The β, R^2, and f^2 values were above the minimum threshold limit, and the *p*-values showed that all the model paths were significant. Figure 2 shows the Q^2 values of the dependent constructs: $Q^2_{(\text{E-work self-efficacy})} = 0.25$, $Q^2_{(\text{job performance})} = 0.43$, and $Q^2_{(\text{workplace well-being})} = 0.38$. All the values of Q^2 were above zero, which supports the predictive relevance of the conceptual model [85]. Based on the estimates of R^2, f^2, and Q^2, the hypothesized model had strong reasonable interpretability in the study. Considering the model's goodness of fit, the standardized root mean square residual (SRMR) was measured, and its value equaled 0.05, indicating no discrepancy between the implied model and the observed one [66].

5.3. Hypothesis Testing

Table 4 documents the direct relationships between the exogenous variables and endogenous ones. The findings reveal that the direct relationship between e-leadership competencies and e-work self-efficacy was positive and significant ($\beta = 0.64$, $p < 0.01$), supporting Hypothesis 1. Similarly, the direct relationships between e-work self-efficacy and job performance and e-work self-efficacy and workplace well-being were positive and significant ($\beta = 0.66$ and 0.49, respectively, $p < 0.01$), supporting Hypotheses 2a and 2b.

To test Hypotheses 3a and 3b, the study examined the coefficient parameters and the associated 95% bias-corrected confidence intervals. In line with Blanco-Oliver, Veronesi, and Kirkpatrick [86], the study calculated the variance accounted for (VAF) for each mediated relationship to evaluate the magnitude of the indirect relationship in relation to the total relationship to justify if a mediation exists in the respective relationship. VAF calculates the amount of a dependent variable's variance explained by an independent variable via a mediator (s). According to the results, there is a mediation effect in H3a and H3b; relationships because the VAF values ranged from 0.49 to 0.86.

Table 4. Estimates of the direct and indirect relationships.

Path Relations	β	SE	LLCI	ULCI	VAF	T-Value	*p*-Value
			Control variables				
Gender → EWSE	0.00	0.05	−0.08	0.09		0.07	0.94
Gender → JP	0.02	0.04	−0.07	0.11		0.43	0.67
Gender → WWB	0.01	0.04	−0.07	0.09		0.23	0.82
Age → EWSE	0.13	0.05	0.03	0.24		2.52	0.01
Age → JP	0.01	0.05	−0.09	0.10		0.19	0.85
Age → WWB	0.03	0.06	−0.09	0.14		0.57	0.57
Education → EWSE	−0.07	0.05	−0.18	0.02		1.49	0.14
Education → JP	−0.16	0.05	−0.26	−0.07		3.29	0.00
Education → WWB	−0.06	0.05	−0.15	0.04		1.28	0.20
Work experience → EWSE	0.06	0.05	−0.05	0.16		1.02	0.31
Work experience → JP	0.05	0.05	−0.05	0.15		1.03	0.31
Work experience → WWB	−0.04	0.05	−0.13	0.05		0.79	0.43
			Direct relationships				
ELC → EWSE	0.64	0.07	0.49	0.77		8.84	0.00
ELC → JP	0.07	0.07	−0.04	0.22		1.05	0.30
ELC → WWB	0.33	0.15	0.04	0.59		2.14	0.03
EWSE → JP	0.66	0.06	0.51	0.75		10.60	0.00
EWSE → WWB	0.49	0.15	0.24	0.77		3.23	0.00
			Indirect relationships				
ELC → EWSE → JP	0.42	0.05	0.32	0.51	0.86	8.54	0.00
ELC → EWSE → WWB	0.31	0.13	0.13	0.56	0.49	2.50	0.01

Notes. N = 269; ELC = e-leadership competencies; EWSE = e-work self-efficacy; JP = job performance; WWB = workplace well-being; β = standardized path coefficient; SE = standard error; LLCI = lower limit confidence interval; ULCL = upper limit confidence limit; VAF = variance accounted for. Indirect relationships were tested using the bootstrapping procedure with 5000 bootstrap samples.

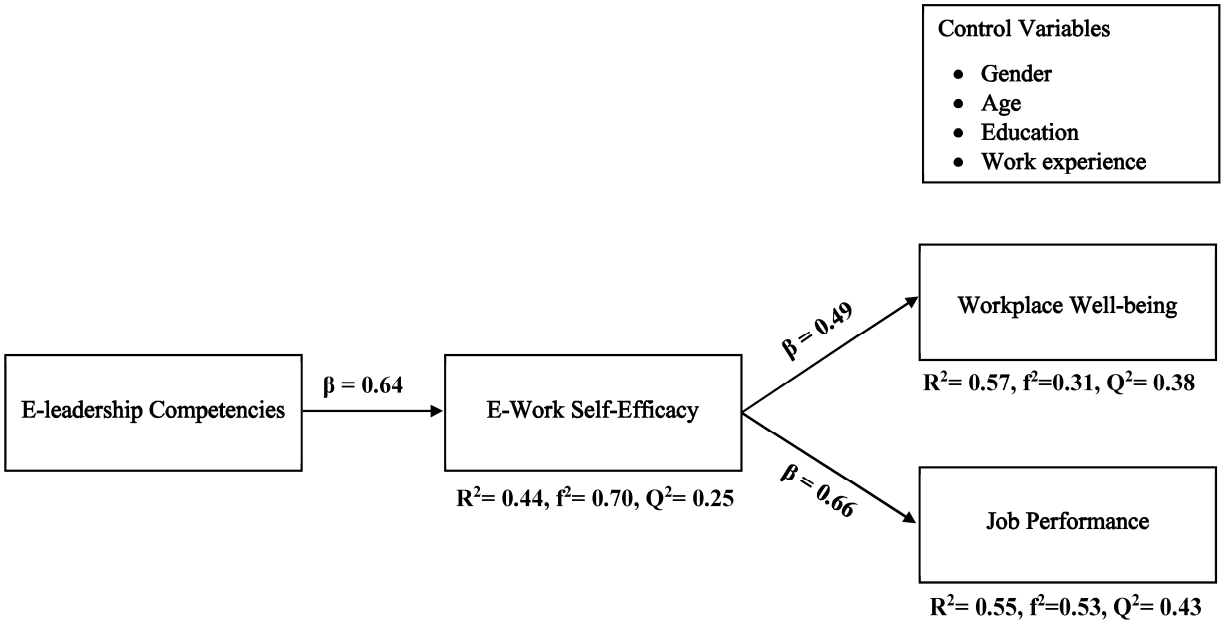

Figure 2. Results for the hypothesized model.

In Hypotheses 3a and 3b, the study hypothesized that e-work self-efficacy mediates the relationships between e-leadership competencies and job performance and workplace well-being. Table 4 indicates that the indirect relationship between e-leadership competencies and job performance through e-work self-efficacy was significant (β = 0.42, $p < 0.01$), supporting Hypothesis 3a. In addition, the indirect relationship between e-leadership competencies and workplace well-being through e-work self-efficacy was significant (β = 0.31, $p < 0.01$), supporting Hypothesis 3b. Following the VAF value classification

of Hair et al. [83], a VAF value of less than 20% shows no mediation, while 20% to ≤80% indicates partial mediation, and 80% and above indicates full or complete mediation. The VAF values revealed the mediation effect of e-work self-efficacy for both relationships, equaling 0.86, indicating full mediation with job performance, equaling 0.49, indicating partial mediation with workplace well-being. Therefore, Hypotheses 3a and 3b were supported.

6. Discussion

Drawing on social cognitive theory, this study examined e-leadership competencies as a motivational mechanism that inspires and motivates the followers' e-work self-efficacy to feel confident about their abilities and willing to perform tasks effectively, which contributes to greater job performance and workplace well-being in turn. Specifically, this study aimed to test the indirect relationship between e-leadership competencies and job performance and between e-leadership competencies and workplace well-being through e-work self-efficacy. The current findings indicate that e-leadership competencies directly affect e-work self-efficacy and indirectly affect job performance and workplace well-being through e-work self-efficacy. These results shed light on the importance of developing e-leader competencies to promote followers' self-efficacy and, therefore, enhance their job performance and workplace well-being. Subsequently, the key finding of this study validates the hypothesized mediation model and emphasizes the potential of the e-leader's competencies in improving their follower's job performance and workplace well-being in the virtual context by motivating their e-work self-efficacy.

6.1. Theoretical and Practical Contributions

The current study has multiple theoretical and practical contributions. From a theoretical perspective, the study contributes to emerging e-leadership literature by adding empirical evidence that e-leadership can be measured by assessing its digital competencies [19]. It validates the scale of e-leadership competencies and demonstrates the possibility of empirically investigating the multidimensional e-leadership concept in future scholarly. Thus, it narrows the gap in empirical studies in the field [15,16] and contributes to the development of the e-leadership theory. Further, the study contributes to social cognitive theory [24] by extending it to analyze the interaction between e-leaders and e-work self-efficacy in a virtual context. In line with studies of the organizational setting (e.g., [87,88]), it emphasizes the importance of extending the domain approach when operationalizing e-leadership and e-work self-efficacy by incorporating a variety of facets that may have an impact on individuals' behaviors, performance, and well-being within the domain under study. For example, the domain of e-leadership could incorporate facets such as communication, motivation, trust, and knowledge sharing, while the domain of e-work self-efficacy could include facets such as task complexity, technology use, knowledge, and trust.

From a practical perspective, organizations are encouraged to invest in digital transformation and adopt appropriate ICTs that facilitate the telework model for their workforce, empowering the workers with the resources they need to work effectively in a virtual context. However, this transmission requires parallel efforts to enable the e-leaders and e-followers to develop specific competencies (e.g., e-communication, e-social skills, e-team building skills, e-change management, e-technological skills, and e-trustworthiness) that increase their self-efficacy and ability to engage and foster performance [19,26]. Accordingly, organizations may need to implement training programs to ensure that employees are aware of the health, safety, and welfare consequences of remote work and the development of optimal new knowledge, skills, and behaviors. In addition, the e-leadership competencies and e-work self-efficiency scales might be used as practical tools to measure the leader's and followers' remote working skills and address training needs. These developments necessitate redefining the organization's culture, policy, and procedures to adapt smoothly to the telework model [5]. Overall, this study supports previous findings showing that leadership affects individual motivation, well-being, behavior, and performance [89–91].

6.2. Limitations and Recommendations for Future Research

As with all studies, there are limitations related to this paper. First, it is a cross-sectional design, as data were collected at a given point in time, ignoring the chronological precedence of the suggested relationships [92]. Consequently, using a longitudinal design or time waves in future research might provide a better understanding and more insights into the causal relationship examined in the study [93]. Second, the gathered data were from self-reported surveys, which might raise issues about CMV [70]. However, the empirical data from the VIFs and Harman single-factor test [72,73] imply that CMV was not influential in this study. Third, the study collected data from teleworkers only. Thus, future research might adopt a dyadic perspective and include the e-leaders in the sample to analyze both e-leader and e-follower views.

Another area for further research includes investigating the potential antecedents (e.g., technology readiness, virtuality), consequences (e.g., digital well-being, team creativity, telework effectiveness), mediators (e.g., leader–member exchange), and moderators (e.g., cultural diversity, perceived organizational support) of e-leadership competencies. Furthermore, future research could investigate e-leadership by considering different leadership styles [12], such as digital transformational leadership [87]. In addition, the data revealed some interesting demographics related to e-work self-efficacy and job performance, such as age and education. Future research could explore how different generations react to e-leadership in order to understand the complexities of the relationship between leadership styles, e-work self-efficacy, and job performance. Additionally, it could be useful to examine how demographic factors, such as gender, family status, and cultural background, interact with e-leadership styles and job performance.

7. Conclusions

Digital transformation is now an inevitable option for any organization. This reality entails reintroducing the concept of e-leadership and teleworking. Despite the importance of these two concepts, the research is in its early phases. While there are numerous valuable contributions, they are fragmented and scarce. The emergent opportunities from adopting the e-leadership and telework model, such as higher efficiency, better productivity, decreased costs, and efficient issue resolution, may produce significant value, just as the lack of usage, destructive utilization, or improper use of e-leadership competencies can adversely affect the situation. This motivates scholars and leaders to pay more attention to these concepts.

The current study sheds some light on the significant effect of e-leadership competencies on workplace well-being and job performance by influencing e-work self-efficacy. In addition, it increased the probability of measuring them and producing empirical evidence about their impact. The findings of the current study contribute to supporting the exploration of the black box that existed in e-leadership and telework. Although some recent scholarly contributions have focused on these concepts in terms of effectively utilizing technology through traits, competencies, and behavior, that is only half of the equation. There is more to explore regarding e-leadership styles, antecedents, and outcomes. Thus, the current study provides an influential contribution that supports the development of the e-leadership theory and calls for more research to enrich this critical area of leadership literature.

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