THE INFLUENCE OF E-LEADERSHIP ON PRODUCTS AND SERVICES QUALITY AND ORGANIZATIONAL PERFORMANCE DURING BLACK SWAN EVENT

Małgorzata FIAŁKOWSKA-FILIPEK[1*], Anna SAŁAMACHA[2], Katarzyna TWOREK[3]

[1] Wrocław University of Science and Technology, Faculty of Management;
malgorzata.fialkowska-filipek@pwr.edu.pl, ORCID: 0000-0003-1694-0032
[2] Wrocław University of Science and Technology, Faculty of Management; anna.salamacha@pwr.edu.pl,
ORCID: 0000-0002-9601-4620
[3] Wrocław University of Science and Technology, Faculty of Management; katarzyna.tworek@pwr.edu.pl,
ORCID: 0000-0002-6276-2436
* Correspondence author

Purpose: The COVID-19 pandemic has dramatically transformed global organizational operations, necessitating a reevaluation of leadership paradigms due to the challenges to business continuity posed by this Black Swan event. With the shift to remote work, the focus on e-leadership has become crucial. The aim of this study is to examine the impact of e-leadership on organizational performance, specifically through product and service quality, and to explore how the severity of such crises might affect this relationship.

Design/methodology/approach: During the active phase of the COVID-19 pandemic in Q1 2021, a survey encompassed 1160 organizations across Poland, Italy, and the USA. Higher-level managers from each organization provided responses using the CAWI method. Variables explored included e-leadership, product and service quality (PSQ), organizational performance, and COVID-19 crisis severity. The moderated mediation model was constructed using the Macro Process for IBM SPSS. The study deployed r-Pearson correlation analysis, mediation, and moderation analyses, contextualized by COVID-19 severity.

Findings: The study revealed a statistically significant correlation among e-leadership, product and service quality and organizational performance. Specifically, a robust link was identified between PSQ and organizational performance. Mediation analysis confirmed that PSQ serves as a significant mediator in the relationship between e-leadership and organizational performance. Furthermore, COVID-19 crisis severity emerged as a significant moderator, intensifying the positive impact of e-leadership on organizational performance via PSQ.

Research limitations/implications: While the study's focus on COVID-19 presents certain limitations, it sets the stage for future research, urging exploration of e-leadership's significance across varied crisis scenarios to determine its consistent relevance in modern organizational frameworks.

Originality/value: This study underlines e-leadership's crucial role in navigating organizational challenges during Black Swan events, with a spotlight on the COVID-19 pandemic. Contributing uniquely to crisis management literature, it emphasizes the increasing importance of e-leadership in the era of digital transformation.

1. Introduction

The COVID-19 pandemic suddenly and significantly changed the way organizations operate in the modern global economy. Ensuring business continuity in the turbulent environment, caused by the Black Swan event necessitated the reevaluation of all aspects related to management (Han et al., 2022; Tworek et al., 2023). Previous scientific reports clearly indicate the importance of leadership in the operation and achievement of results in an organization, but the intensity of changes that occurred during this significant crisis require reconsideration of the phenomena that have raised hitherto (Garretsen et al., 2022). Moreover, in order to stop the spread of contamination, the geographical distribution of employees previously working together has fundamentally changed - a significant part of the activities carried out has been moved to remote mode (Bieńkowska et al., 2022).

The current research results show that scientists consider the issue of e-leadership to be particularly important during the COVID-19 pandemic, and also emphasize that there is a key need for effective leadership in any crisis caused by Black Swan event (Chamakiotis et al., 2021). According to Gilson and colleagues (2014), the role of e-leadership is crucial in times of disruptive events, not only because of the unique impact it has on how employees cope with immediate obstacles, but also because it will ultimately prepare them in the long term to respond to the turbulent changes occurring in the worldwide. Moreover, the impact of e-leadership is not only visible as the impression on employees, but also as the reaction in the environment.

Simultaneously, the emphasis on maintaining high service and product quality becomes especially crucial in today's highly competitive business landscape, where customer expectations are continuously evolving, and market dynamics are subject to rapid changes (Dahlgaard et al., 2019). While the significance of service and product quality has long been recognized as fundamental to organizational success (e.g. Khan, 2011; Sabella et al., 2014; Silva et al., 2021), the direct relationship between e-leadership and these quality aspects remains notably under-explored in empirical research. Despite its acknowledged importance in quality management, the scarcity of studies specifically investigating this relationship highlights a significant gap in the literature. This gap is particularly relevant given the rapid evolution of digitalization in leadership and its potential to significantly influence service and product quality (Sharma et al., 2023).

Therefore, the main aim of the article is to verify the mechanism of e-leadership influence on organizational performance through products and services quality and establish whether the severity of crisis caused by Black Swan event boosts such influence. Such aim will be fulfilled using critical literature analysis, which will be a basis for hypotheses development and using empirical study in order to verify the proposed hypotheses.

2. Theoretical discussion and hypothesis development

2.1. E-leadership

The traditional role of leadership has been the subject of many studies and seems to be well established in the literature (Karakitapoğlu-Aygün et al., 2023; Lin et al., 2023; Northouse, 2019; Oc et al., 2023; Wang et al., 2023). However, the changes in the environment, both the dynamic development of information and communication technologies and unexpected interruptions, such as the crisis caused by the black swan event, i.e. the COVID-19 pandemic, resulted in the emergence of the issue of managing virtual teams in addition to the classic approach to leadership. The consequence of this phenomenon was the increased interest in the issue of e-leadership both among practitioners and researchers (Avolio, Kahai, 2003; Cortellazzo et al., 2019). There is no doubt that the issues of leadership differ in relation to employees located physically and dispersed, connected only online (Chamakiotis et al., 2021). First of all, working based on technology requires a leader to ensure a completely different level of its delivery and security than in the case of teams operating traditionally. Second of all, it is necessary to properly select team members, taking into account not only substantive skills and knowledge, but also efficient use of IT tools. Finally, virtual teams require a different approach to management - for example, get better results when the leader acts as a mentor and the tasks and responsibilities associated with them are delegated (Ale Ebrahim et al., 2009; Avolio, Kahai, 2003; Kayworth, Leidner, 2015). Therefore, it seems necessary to develop new leadership practices that will allow for the sustainable development of teams working remotely, as well as ensuring the continuity of the organization's operation (Contreras et al., 2020). This is particularly important because remote work is expected to be implemented in the regular functioning of the organization (Benitez et al., 2022; Carnevale, Hatak, 2020) and, consequently, the need for managerial training in the field of leadership of virtual teams appears (Larson, DeChurch, 2020). In addition, it is believed that remote employees are more difficult to lead than face-to-face ones (Nunamaker et al., 2009). This is by cause of the problems that the studies have highlighted as characteristic of employees connected online - their interpersonal relationships disorders, lack of social contacts, lack of trust in superiors and colleagues, insufficient skills in using IT tools and data overload (Van Wart et al., 2017).

Considering the above, there are many challenges faced by e-leaders. Due to the almost unlimited possibilities of recruiting from human resources around the world, working in a remote environment is characterized by the fact that employees can work regardless of organizational boundaries, geographic location or time zones (Lilian, 2014). Employees may also belong to different cultures, speak different languages, have special needs, have different communication practices, share different values, and interpret symbols in different ways (Asatiani et al., 2021).

The role of e-leadership in the above context seems to be very important. The e-leader's task is to prepare a psychologically safe space in which employees can feel good, and consequently will be willing to overcome the difficulties that arise in online work (Gibson et al., 2014). It is within the leader' scope of decision making process to select work tools, including IT tools, which may cause negative consequences. One of threatening results that can be observed among employees is technostress. The growing body of literature in this area has led to conclusions that technostress negatively affects people in organization, their well-being, engagement, and consequently job performance (Tuan, 2022; Wu et al., 2022). Also due to the fact that the nature of work nowadays has changed – possibility of performing duties outside the organization, flexible working hours, blurring of the boundaries between work and private time - makes it necessary to provide employees with work-life balance and well-being while working remotely (Chamakiotis et al., 2021). In addition, numerous researchers have investigated the important role of trust in managing virtual teams, which is mentioned among the features of an effective e-leader (Zander et al., 2013). All the indicated activities aimed at leading to success by organizations could not occur without the communication skills possessed by the e-leader, of course with the use of information and communication technologies (Lilian, 2014). However, it cannot be forgotten that despite the online connection of the leader and employees, certain issues traditionally related to leadership remain unchanged. Setting goals, inspiring, feedback or motivating are issues that still need to be considered when managing remote employees (Lilian, 2014).

Bearing in mind the complexity of issues related to leadership, Roman and colleagues decided that it was necessary to develop The Six E-Competency (SEC) Model. According to the authors, it is extremely important for the success of virtual team management that the leader has e-communication skills, e-social skills, e-change management skills, e-tech savvy, e-team skills, and e-trustworthiness. E-communication skills are related to the ability to communicate using information and communication technologies in such a way as to avoid errors and mistakes in the transmission of content, as well as to manage information in an orderly and clear manner. E-social skills are related to the ability to create a friendly and creative online environment that supports cooperation between employees. E-change management, in turn, is the ability to effectively manage change when implementing processes remotely. E-tech savvy is related to the leader's possessed and updated knowledge in the use of information and communication technologies. E-team skills is the ability to manage a virtual

team. They are related to the competence in creating, building and maintaining a team. Finally, e-trustworthiness is the ability to ensure employees, through information and communication technologies, that leader is trustworthy, honest and can be relied on (Roman et al., 2019).

2.2. E-leadership influence on organizational performance through service and product quality

2.2.1. E-leadership and organizational performance

It is common knowledge that management is responsible for ensuring appropriate working conditions for employees who, in a joint effort, will ensure the survival, competitiveness and performance of the organization (Kulshreshtha, Sharma, 2021). The reports of previous research clearly indicate that e-leadership is an important factor influencing the performance of virtual teams, and even a prerequisite for their success (Chamakiotis et al., 2021; Contreras et al., 2020). Larson and DeChurch (2020) assume that the change of work to one that uses information and communication technologies will increase the role of leadership in achieving results by virtual teams in various terms (Larson, DeChurch, 2020).

In research conducted by Gallenkamp et colleagues (2011), it was noted that trust in leaders of virtual groups, which is an important part of the e-leadearship construct, has a positive effect on group performance. On the other hand, reports provided by Cascio & Shurygailo (2008) prove that low levels of trust result in low team productivity. Communication as part of e-leadership is also considered in many studies in the context of performance. Duarte and Snyder (2001) in their research discuss the impact of feedback from the team leader on virtual team performance, which in turn translates into organizational performance. On the other hand, Geister et al. (2006) argues that it is necessary to secure team communication on a regular basis, especially task oriented one to ensure performance. Also Fernandez and Jawadi (2015) point to an important problem in this regard. In the conducted research, it turned out that teams working remotely have a lower performance compared to traditionally working teams, especially for knowledge-intensive tasks. Therefore, the role of an e-leader in proper knowledge management cannot be overestimated.

Other studies have also found a positive relationship between leadership in the context of virtual teams and performance. These reports specifically focused on transactional leadership (Purvanova, Bono, 2009). Therefore, considering the variety of reports in this area, both taking into account various aspects of e-leadership, as well as a comprehensive approach to the phenomenon, it can be concluded that there are dependencies between e-leadership and organizational performance.

2.2.2. E-leadership and service and product quality

In the context of quality management, leadership plays a crucial role in ensuring that quality standards for products and services are met, maintained, and continuously improved (Silva et al., 2021; Teoman, Ulengin, 2018). Leadership holds a central position among the seven

quality management principles, underscoring its pivotal role in driving the organization's commitment to quality and continuous improvement (ISO 9001:2015). Leaders are the first to apply the quality focus and their role is crucial in motivating employees in assimilating its principles (Kaminski et al., 2012). Their firm commitment to these principles serves as a guide for the entire organization, fostering a culture of excellence (Javed, 2015). By leading by example and instilling a shared vision of quality, leaders not only motivate employees but also ensure the alignment of organizational goals with quality objectives, leading to enhanced customer satisfaction, loyalty and overall organizational performance (Hoe, Mansori, 2018; Kaynak, 2003; Khan, 2011; Sabella et al., 2014).

The significance of service and product quality has been widely recognized and acknowledged for years, making it a fundamental aspect of organizational success (Agus, 2005; Gorla et al., 2010; Ramayah et al., 2011). Service quality encompasses factors such as responsiveness, reliability, and assurance in the delivery of services (Parasuraman et al., 1985), while product quality pertains to the attributes, features, and performance of goods (Garvin, 1984). In both cases, quality signifies the ability to consistently meet defined standards and meet or exceed customer needs and expectations. The goals of quality management encompass multiple dimensions, with one of them being the optimization of organizational processes and resources to ensure the production of high-quality products and services (Tari et al., 2007).

Although the importance of leadership in quality management is well recognized, there remains a notable scarcity of empirical or quantitative research investigating the direct relationship between e-leadership and service and product quality. Among the few existing studies, we emphasize several contributions. Desmaryani et al. (2022) conducted a study on e-leadership and service quality in higher education. They found that digital leadership significantly impacts the quality of the e-learning system. Universities with effective digital leadership demonstrate higher-quality e-learning systems. In another study, Nasution and Muhammad (2023) emphasized the vital significance of digital leadership within the National Police context, highlighting that digital leadership plays a critical role in driving transformation and enhancing the quality of services delivered to the community.

A considerable number of studies adopt an indirect approach to investigate the relationship between e-leadership and quality outcomes. These studies mainly focus on the aspects of the integration of information and communication technologies in decision-making processes within the domain of leadership. In their respective recent studies, Basu et al. (2023) highlights that the integration of AI technologies in human resource management enables organizations to achieve heightened efficiency, subsequently exerting a positive influence on the overall quality of products and services. Mariani et al. (2023) support this notion by emphasizing that the implementation of AI systems supporting decision-making processes enhance product quality. Furthermore, Pérez-Aróstegui et al. (2015) shed light on a crucial aspect of leadership by highlighting the role of IT competences in facilitating effective communication of quality values between top management and employees. Li et al. (2016) emphasized that the utilization

of IT in leadership confers advantages in enhancing service quality through improved responsiveness.

2.2.3. E-leadership, service and product quality and organizational performance

The literature extensively supports the well-established interplay between organizational performance and service and product quality. Numerous studies have explored and demonstrated the impact that the quality of services and products can have on an organization's overall performance (e.g. Kaynak, 2003; Khan, 2011; Silva et al., 2021; Teoman, Ulengin, 2018). Organizations that consistently offer high-quality products and services not only encourage customer satisfaction and loyalty (Chen et al., 2019; Fernandes, 2018; Hoe, Mansori, 2018; Naini et al., 2022; Ngo, Nguyen, 2016; Tan et al., 2016) but also solidify their market reputation and competitive stance (Fernandes, 2018; Hapsari et al., 2017; Ruekert, Rao, 1994; Sabella et al., 2014). As a result, these organizations are more likely to achieve higher levels of productivity (Choi et al., 2015; Rew et al., 2018) and profitability (Ali et al., 2021; Myrodia et al., 2017) in their respective industries.

The high quality of products and services can often be traced back to effective and diligent quality management initiatives (Rönnbäck, Witell, 2008). Within these practices, leaders emerge as pivotal figures, championing initiatives centered on quality and fostering a commitment to ongoing improvement (Hoe, Mansori, 2018; Kaynak, 2003; Khan, 2011; Sabella et al., 2014; Nguyen, 2023). E-leaders, with their digital-centric approach, not only steer digital endeavors but also shape an organization's broader innovative spirit (Li et al., 2016). Weill and Ross (2009) underscore the significance of digital platforms in this scenario, characterizing them as 'an integrated set of electronic business processes and the technologies applications, and data supporting those processes' (p. 4). Such platforms give e-leaders the means to enhance innovation, manage cost, and reinforce stakeholder relationships, ultimately improving the quality of products and services (p. 16). This viewpoint finds backing from Zutshi and Grilo (2019), who contend that the adoption of digital platforms in management paves the way for innovative business paradigms and refined quality assurance strategies. Zhang and Cao (2023) also expand on these views, positing that digital platforms serve as potent tools, empowering leaders and other stakeholders to engage effectively with customers and, in turn, motivating them to enhance product quality.

Given the above, it can be concluded that e-leadership, in the era of digital transformation, holds the dual responsibility of navigating the technological landscape and ensuring service and product excellence. By influencing the quality of services and products, e-leadership indirectly charts the trajectory of an organization's performance. Building on this foundation, the study introduces the following hypothesis:

H1: E-leadership is positively influencing organizational performance through the quality of services and products.

2.3. COVID-19 severity as a booster of the relation between e-leadership and service and product quality

The outbreak of the COVID-19 pandemic brought a compelling need for organizations to adapt and pivot towards digital frameworks. This shift demanded more than just transferring operations online; it necessitated a cohesive, strategic, and robust digital leadership approach to ensure that service and product quality remained uncompromised.

In the literature, several studies from different industries indicate that introducing digital leadership in times of pandemic serves as a booster for achieving high service and product quality. Hamzah et al. (2021), focusing on the education industry, highlight that the availability of digital learning opportunities and the establishment of vibrant digital learning communities stand as crucial markers of teaching excellence. For school leaders, it becomes crucial to facilitate professional development programs, empowering teachers with hands-on skills while enhancing their digital teaching practices. Such initiatives not only foster teachers' confidence but also amplify the quality and effectiveness of the educational system. Drawing parallels in the education sector, Sujaya (2022) suggests that when organizational leaders adeptly implement digital leadership tactics within their teams, educational bodies are better positioned to adapt, innovate, and remain true to their core visions and objectives. E-leadership influence improvements in school performance and student achievements, resulting in enhanced service quality.

In the healthcare industry effective leadership has one of the most important impact on the quality results i.e. patient satisfaction and reduction of adverse effects (Sfantou et al., 2017). The positive relationship between leadership and service quality is even stronger in time of crisis such as the COVID-19 pandemic (Joniaková et al., 2021). It necessities the utility of digital technologies, which are often expected to improve the quality of care and operational efficiency by facilitating clinical and administrative tasks linked to the assessment, transmission, evaluation, and precision of medical treatment (Kraus et al., 2021). Oleksa-Marewska and Tokar (2022) have identified a correlation between proficient digital leadership and improved employee well-being. Digital technology-driven healthcare organizations have reported enhanced employee satisfaction through increased flexibility and balance between work and life, which translates into higher quality of healthcare delivery and increased patient satisfaction (Wiener et al., 2021). Digital leadership's adoption, coupled with remote work paradigms, has catalyzed healthcare service quality enhancement through various means, including consistent service provision, enhanced flexibility, and streamlined administrative processes (Garavand et al., 2022; Kraus et al., 2021). Narayanamurthy and Tortorella (2021) delve deeper into this area, concluding that remote work in service organizations contributes to increasing productivity, job satisfaction and output quality.

In a broader perspective, Susilawati et al. (2021) emphasize the role of e-leadership in public services during the pandemic era. Their research illustrates how leadership has become connected with the use of information technology, especially in contexts where health protocols

and restrictions limit physical contact. The study underscores the essential role of digital tools in preserving, and even enhancing, public service performance in the absence of direct physical interactions. When organizations adeptly transition to a virtual communication framework, they are positioned to significantly enhance service quality.

A literature review revealed that the severity of the COVID-19 pandemic underscored the pivotal role of e-leadership in upholding and enhancing the commitment to quality. As the world gradually moves into the post-pandemic phase, the imprints and lessons of this era promise to influence the evolution and significance of e-leadership in the future. In light of the foregoing discussion, the following hypotheses were formulated:

H2: COVID-19 crisis severity boosts the positive influence of e-leadership on organizational performance through the quality of services and products.
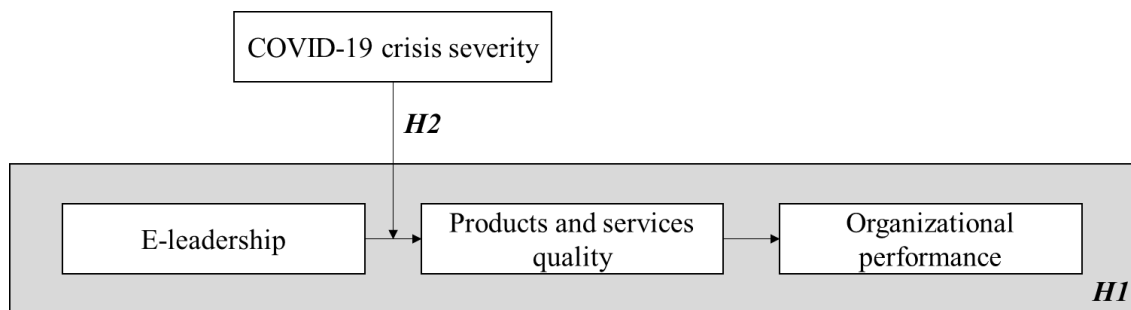
The hypotheses are presented in the Figure 1.

Figure 1. Hypotheses development.
Source: own elaboration.

3. Research methodology

The proposed theoretical model (Figure 1) was verified based on empirical research, which was funded by National Science Center in Poland by grant No. 2020/37/B/HS4/00130 titled "Development of the Job Performance model based on Employees' Dynamic Capabilities for various phases of crisis in organization". A pilot study was initially conducted to assess the quality of the research tool proposed, followed by empirical research to test the proposed hypotheses. The pilot study involved 25 managers who acted as competent judges, and their feedback was used to refine the research tool for the main stage of the study. The questions that were not well understood were rewritten, and steps were taken to prevent any common method bias. The main survey was carried out in the first quarter of 2021 amid the COVID-19 pandemic's active wave, among 1160 organizations operating in Poland, Italy, and the USA. A single survey was completed by a higher-level manager in each organization using a purchased panel of respondents, and data were collected using the CAWI method. Table 1 provides information on the sample used for the empirical research.

Table 1.

Sample description

Country	Not in crisis	In crisis	Total
Poland	83	343	426
USA	95	406	501
Italy	45	188	233
Total	223	937	1160

Source: own elaboration.

3.1. Variables

To allow verification of hypotheses the following variables were used: e-leadership, products and services quality, organizational performance and COVID-19 crisis severity.

E-leadership: variable assessed on a 5 points' Likert scale (1: I strongly disagree to 5: I strongly agree) using 6 items concerning e-communication skills, e-social skills, e-change management skills, e-tech savvy, e-team skills, and e-trustworthiness (Roman et al., 2019).

Products and services quality (PSQ): variable assessed on a 5 points' Likert scale (1: I strongly disagree to 5: I strongly agree) using 1 item (Kaplan, Norton, 1996).

Organizational performance: variable assessed on a 5 points' Likert scale (1: I strongly disagree to 5: I strongly agree) using 10 items based on Balances Scorecard concept (Kaplan, Norton, 1996).

COVID-19 crisis severity: one item questions concerning the level of severity of COVID-19 crisis.

Table 2.

Variables overview

Variable	No of items	Alpha Cronbach	AVE (CFA)
Organizational performance	10	0.886	0.494
PSQ	1	-	-
E-leadership	9	0.843	0.568

Source: own elaboration.

To determine the suitability of the scales for the study, Cronbach's α and Factor Analysis were conducted and are presented in Table 2. Given that the scales used were previously validated by their creators, this approach appeared adequate. To avoid any potential common method bias, a systematic method variance control was employed. Based on the results obtained, it can be concluded that nearly all of the measurement scales were well-suited, reliable, and internally consistent.

3.2. Mediation analysis

In order to verify the hypotheses, the moderated mediation model was developed using Macro Process for IBM SPSS (model 7). Based on that, first the mediation analysis and then – moderation analysis – were performed.

First of all, the mediation analysis was performed. Saks (2006) identifies three conditions, which must be confirmed in order to establish mediation model. To determine whether a mediator affects the relationship between two variables, there are three criteria that must be met. Firstly, there should be a correlation between the mediator and the independent variables. Secondly, there should also be a correlation between the mediator and the dependent variables. Finally, when the mediator is controlled for, any significant relationship between the independent and dependent variables should either be reduced (partial mediation) or completely disappear (full mediation).

Therefore, first of all, the r-Pearson correlation analysis was performed in order to verify the first two conditions stipulated by Saks (2006).

Table 3.
Correlation analysis between analyzed variables

		E-Leadership	**PSQ**	**OrgPerf**
E-Leadership	r-Pearson	1	,079**	,160**
	p		,007	<,001
	N	1197	1181	1148
PSQ	r-Pearson	,079**	1	,710**
	p	,007		<,001
	N	1181	1205	1171
OrgPerf	r-Pearson	,160**	,710**	1
	p	<,001	<,001	
	N	1148	1171	1171

Source: own elaboration.

The obtained results, which are presented in Table 3, clearly show that there is a statistically significant correlation between the analyzed variables. The highest correlation occurs in case of the relation between PSQ and organizational performance. It allows for the implementation of further steps on the road of verification of mediation model. To achieve this, a moderated mediation model was created using Process Macro for IBM SPSS to examine the relation between the e-leadership (independent variable) and organizational performance (dependent variable). In this model, PSQ was tested as the mediator to verify hypothesis H1. The aim was to obtain a statistically significant regression model where the moderated mediation effect occurs and is statistically significant. It was not enough to analyze the mediation separately from the moderation, as the proposed set of hypotheses concerns the moderated mediation. That is why the mediation occurring in the model should be analyzed in the context of assumed moderation (using model 7 from Process Macro in IBM SPSS). The results of the analysis of mediation can be found in Table 4.

Table 4.
PSQ as the mediator of the relation between e-leadership and organizational performance

Mediator	Direct effect value	Moderated mediation effect value	Boot LLCI	Boot ULCI	R2
Products and service quality	0,1328	0,1027	0,0526	0,1522	0,510

Source: own elaboration.

The results show that the moderated mediation model is statistically significant and well-fitted ($F_{(2,1143)}$ = 595,0643 and corrected R2 = 0,510). Moreover, from the point of view of verification of the mediation occurring within the model, it should be stated that PSQ is a statistically significant mediator of the model ($p < 0,001$, coeff. = 0,478, se = 0,014). It is important to underline that the mediating effect is statistically significant. Therefore, the obtained model shows that PSQ is indeed a mediator of the relation between e-leadership and organizational performance, which allows to accept H1 hypothesis stating that **e-leadership is positively influencing organizational performance through the quality of services and products.**

3.3. Moderation analysis

Second of all, the moderation analysis was performed. The mediation model was analyzed in the context of covid-19 severity to verify the statistical significance of it as moderator of the relation between e-leadership and organizational performance, mediated by PSQ. The hypotheses H2 was tested using the moderated mediation model, testing the following relation: covid-19 severity as the moderators of the relation between e-leadership and PSQ. In order to do so, a new variable - covid-19 severity - a moderator, was added to the relation. Three regression models were then created using the Process Macro for IBM SPSS. The first model was created as a base for comparison, with only independent variable used as predictor. The second model used both the independent variable and the moderator as predictors. The objective was to examine whether the moderating influence was present in the entire sample, considering that the analyzed relation is a part of the mediation model, using model 7. To confirm it, the third model was introduced using moderator as the only predictor. The results of the analysis are presented in Table 5.

Table 5.
Regression models' statistics

Model description	R^2	Delta R^2	Moderator coeff.	Standard error	t-stat	p
E-leadership, Covid-19 severity, Moderator *dependent v.: PSQ*	0,510	0,016	0,214	0,049	4,354	>0,001

Source: own elaboration.

Therefore, the moderated mediation model was the basis for two conclusions. First, already established, that the assumed mediation is statistically significant and occurring in the model. Second, the obtained results also show that *covid-19 severity* is a statistically significant moderator in case of the relation between e-leadership and PSQ within in the model (coeff. = 0,214; p < 0,001). Therefore, as Table 5 shows, the result allow to accept the H2 hypothesis, stating that **COVID-19 crisis severity boosts the positive influence of e-leadership on organizational performance through the quality of services and products.**

4. Discussion

The cognitive scope of the article was to determine the relationship between variables potentially influencing the aspect determining business continuity, i.e. organizational performance. The considerations took into account e-leadership, which is extremely important in managing contemporary organizations, as well as product and service quality - construct crucial not only for the organization, but also for the customer's. In addition, the impact of the factor that is one of the most important characteristics of the crisis caused by Black Swan event - COVID-19 severity - was taken into account. As a result, based on the conducted research, the theoretical model was built and empirically verified. It was confirmed that the products and service quality mediates the relation between e-leadership and organizational performance, as well as the COVID-19 severity moderates in the relation between e-leadership and products and service quality within those frames. The obtained model is well-fitted and the dependencies between the variables are statistically significant.

The previous considerations seem to be consistent with the existing research results, at the same time enriching the current state of knowledge. The crisis caused by the COVID pandemic required a change to the remote working mode, and this modification resulted in the need to use leadership solutions different than before (Bieńkowska et al., 2022; Zarghami, 2021). Therefore, even though the relationship between e-leadership and performance (from different perspectives, including organizational one) seems to be undoubted (Chatterjee et al., 2023), the whole issue is much more complex and it seemed advisable to include other aspects when examining this relationship. Benitez and colleagues (2022) discovered that digital leadership capability influences innovation performance, but this is not a direct connection, but through other variables. Chamakiotis and colleagues (2021) seem to agree with this statement. The researchers have noticed that there is a connection between e-leadership and creative performance, and there may be mediators in this relationship. The authors also emphasize how important it is to take into account the context of the COVID-19 crisis in performed analysis.

The above-mentioned scientific analyzes saw a mediating potential between constructs related mainly to the characteristics of employees, but it seemed worth including in the considerations a more broad issue related to the organization, employees, but also to the market, i.e. product and service quality. This is particularly important from the point of view of the financial and non-financial success of the organization, because consumer behavior, especially in the context of purchasing decisions, implies the further operation of the entity in the economic space. Thus, product and service quality was included as a mediator between e-leadership and organizational performance. AlAjmi (2022) seems to agree with this statement, by noting the relationship between digital leadership and the quality of services among teachers. On the other hand, especially in customer focus oriented organizations, the impact of quality assurance activities on performance is visible (Mar Fuentes-Fuentes et al., 2004).

Taking all of the above into account, it should be emphasized that it must not be forgotten how severe the crisis affecting the organization is. Actions taken by individuals, including decision-making processes, but also preventive and corrective activities, depend on how the crisis is perceived (Trkman et al., 2021).

5. Conclusions

The main aim of the article was to verify the mechanism of e-leadership influence on organizational performance through products and services quality and establish whether the severity of crisis caused by Black Swan event boosts such influence. Such aim was fulfilled using critical literature analysis, which will be a basis for hypotheses development and using empirical study in order to verify the proposed hypotheses.

The literature analysis allowed to establish that e-leadership has the potential to influence organizational performance through products and services quality. However, what's more important, Black Swan events have been established as the source of positive influence on organization in this manner, boosting the positive influence of e-leadership on products and services quality and underlining the role of information technology support for organizations. The empirical research conducted among 1160 organizations operating in Poland, Italy and USA in 2021 confirmed the proposed hypotheses and allowed to verify that COVID-19 (used as the example of Black Swan event) indeed boosted the positive effect of e-leadership on organizational performance through products and services quality. Therefore, the article offers the contribution to management sciences, especially in the field of crisis management, showing the importance of e-leadership in maintaining and obtaining sufficient organizational performance during crisis caused by Black Swan event.

There are some limitations of the study. One of the biggest ones is connected to the fact of using COVID-19 as the example of Black Swan event. Due to its specific characteristic and the need for rising dependence on information technologies, it is clear that e-leadership has a rising role in organizations operating under such conditions. The verification based on such an example does not necessarily mean that the established influences will take place under condition of crisis caused by different Black Swan event. However, the obtained results allow to formulate a crucial conclusion for organizations operating under the COVID-19 crisis and after it. They also allow to indicate the future direction of research – verification of the established relations under condition of crises caused by different Black Swan events, in order to establish whether e-leadership will keep its importance for contemporary organizations regardless of the type of crisis.

Acknowledgment

References

1. Agus, A. (2005). The structural linkages between TQM, product quality performance, and business performance: Preliminary empirical study in electronics companies. *Singapore Management Review, Vol. 27, No. 1*, pp. 87-106.
2. AlAjmi, M.K. (2022)."The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait. *International Journal of Educational Research, Vol. 112, 101928.*
3. Ale Ebrahim, N., Ahmed, S., Taha, Z. (2009). Virtual teams: A literature review. Australian *Journal of Basic and Applied Sciences, Vol. 3, No. 3,* pp. 2653-2669.
4. Ali, B.J., Saleh, P.F., Akoi, S., Abdulrahman, A.A., Muhamed, A.S., Noori, H.N., Anwar, G. (2021). Impact of service quality on the customer satisfaction: Case study at online meeting platforms. *International Journal of Engineering, Business and Management, Vol. 5 No. 2,* pp. 65-77.
5. Asatiani, A., Hämäläinen, J., Penttinen, E., Rossi, M. (2021). Constructing continuity across the organisational culture boundary in a highly virtual work environment. *Information Systems Journal, Vol. 31, No. 1*, pp. 62-93.

6. Avolio, B.J., Kahai, S.S. (2003). Adding the "E" to E-Leadership: How it May Impact Your Leadership. *Organizational Dynamics, Vol. 31, No. 4,* pp. 325-338.

7. Basu, S., Majumdar, B., Mukherjee, K., Munjal, S., Palaksha, C. (2023). Artificial intelligence–HRM interactions and outcomes: A systematic review and causal configurational explanation. *Human Resource Management Review, Vol. 33, No. 1, 100893*.

8. Benitez, J., Arenas, A., Castillo, A., Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. *Information & Management, Vol. 59, No. 2, 103590*.

9. Bieńkowska, A., Koszela, A., Sałamacha, A., Tworek, K. (2022). COVID-19 oriented HRM strategies influence on job and organizational performance through job-related attitudes. *PLoS ONE, Vol. 17, No. 4, e0266364*.

10. Carnevale, J.B., Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research, Vol. 116,* pp. 183-187.

11. Cascio, W.F., Shurygailo, S. (2008). E-leadership and virtual teams. *IEEE Engineering Management Review, Vol. 36, No. 1,* p. 79.

12. Chamakiotis, P., Panteli, N., Davison, R.M. (2021). Reimagining e-leadership for reconfigured virtual teams due to Covid-19. *International Journal of Information Management, Vol. 60, 102381*.

13. Chatterjee, S., Chaudhuri, R., Vrontis, D., Giovando, G. (2023). Digital workplace and organization performance: Moderating role of digital leadership capability. *Journal of Innovation & Knowledge, Vol. 8 No. 1, 100334*.

14. Chen, M.C., Hsu, C.L., Lee, L.H. (2019). Service quality and customer satisfaction in pharmaceutical logistics: An analysis based on Kano model and importance-satisfaction model. *International Journal of Environmental Research and Public Health, Vol. 16, No. 21,* 4091.

15. Choi, K., Lee, D., Olson, D.L. (2015). Service quality and productivity in the US airline industry: a service quality-adjusted DEA model. *Service Business, Vol. 9,* pp. 137-160.

16. Contreras, F., Baykal, E., Abid, G. (2020). E-Leadership and Teleworking in Times of COVID-19 and Beyond: What We Know and Where Do We Go. *Frontiers in Psychology, Vol. 11, 590271*.

17. Cortellazzo, L., Bruni, E., Zampieri, R. (2019). The role of leadership in a digitalized world: A review. *Frontiers in Psychology, Vol. 10, 1938*.

18. Dahlgaard, J.J., Reyes, L., Chen, C.K., Dahlgaard-Park, S.M. (2019). Evolution and future of total quality management: management control and organisational learning. *Total Quality Management & Business Excellence, Vol. 30, supplement 1,* pp. S1-S16.

19. Desmaryani, S., Kusrini, N., Lestari, W., Septiyarini, D., Harkeni, A., Burhansyah, R., Kilmanun, J., Dewi, D., Syafutra, M., David, J. (2022). The role of digital leadership, system of information, and service quality on e-learning satisfaction. *International Journal of Data and Network Science, Vol. 6, No. 4,* pp. 1215-1222.

20. Duarte, D.L., Snyder, N.T. (2001). *Mastering virtual teams: strategies, tools, and techniques that succeed.* John Wiley & Sons.

21. Fernandes, A.A.R. (2018). The mediation effect of customer satisfaction in the relationship between service quality, service orientation, and marketing mix strategy to customer loyalty. *Journal of Management Development, Vol. 37, No. 1,* pp. 76-87.

22. Fernandez, D.B., Jawadi, N. (2015). Virtual R&D Project Teams: From E-Leadership To Performance. *Journal of Applied Business Research, Vol. 31, No. 5*, pp. 1693-1708.

23. Fuentes-Fuentes, M.M., Albacete-Sáez, C.A., Lloréns-Montes, F.J. (2004). The impact of environmental characteristics on TQM principles and organizational performance. *Omega, Vol. 32, No. 6,* pp. 425-442.

24. Gallenkamp, J.V., Korsgaard, M.A., Assmann, J.J., Welpe, I.M., Picot, A.O. (2011). Talk, Trust, Succeed – The Impact of Communication in Virtual Groups on Trust in Leaders and on Performance. *SSRN Electronic Journal.* Available at: https://doi.org/10.2139/ SSRN.1737783, 28 September 2023.

25. Garavand, A., Jalali, S., Talebi, A.H., Sabahi, A. (2022). Advantages and disadvantages of teleworking in healthcare institutions during COVID-19: A systematic review. *Informatics in Medicine Unlocked, 101119.*

26. Garretsen, H., Stoker, J.I., Soudis, D., Wendt, H. (2022). The pandemic that shocked managers across the world: The impact of the COVID-19 crisis on leadership behavior. *The Leadership Quarterly, 101630.*

27. Garvin, D.A. (1984). What does 'product quality' really mean? *Sloan Management Review, Vol. 25,* pp. 25-43.

28. Geister, S., Konradt, U., Hertel, G. (2006). Effects of process feedback on motivation, satisfaction, and performance in virtual teams. *Small Group Research, Vol. 37, No. 5,* pp. 459-489.

29. Gibson, C.B., Huang, L., Kirkman, B.L., Shapiro, D.L. (2014). Where global and virtual meet: The value of examining the intersection of these elements in twenty-first-century teams. *Annual Review of Organizational Psychology and Organizational Behavior, Vol. 1,* pp. 217-244.

30. Gilson, L.L., Maynard, M.T., Jones Young, N.C., Vartiainen, M., Hakonen, M. (2014). Virtual teams research: 10 years, 10 themes, and 10 opportunities. *Journal of Management, Vol. 41, No. 5,* pp. 1313-1337.

31. Gorla, N., Somers, T.M., Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *The Journal of Strategic Information Systems, Vol. 19, No. 3,* pp. 207-228.

32. Hamzah, N.H., Nasir, M.K.M., Wahab, J.A. (2021). The effects of principals' digital leadership on teachers' digital teaching during the COVID-19 pandemic in Malaysia. *Journal of Education and E-Learning Research, Vol. 8, No. 2,* pp. 216-221.

33. Han, H., Lee, K.S., Kim, S., Wong, A.K.F., Moon, H. (2022). What influences company attachment and job performance in the COVID-19 era? Airline versus hotel employees. *Tourism Management Perspectives, Vol. 44, 101001.*

34. Hapsari, R., Clemes, M.D., Dean, D. (2017). The impact of service quality, customer engagement and selected marketing constructs on airline passenger loyalty. *International Journal of Quality and Service Sciences, Vol. 9, No. 1,* pp. 21-40.

35. Hoe, L.C., Mansori, S. (2018). The effects of product quality on customer satisfaction and loyalty: Evidence from Malaysian engineering industry. *International Journal of Industrial Marketing, Vol. 3, No. 1,* pp. 20-35.

36. ISO (2015). *ISO 9001:2015 Quality management systems — Requirements.* Available at: https://www.iso.org/standard/62085.html, 28 September 2023.

37. Javed, S. (2015). Impact of top management commitment on quality management. *International Journal of Scientific and Research Publications, Vol. 5, No. 8,* pp. 1-5.

38. Joniaková, Z., Jankelová, N., Blštáková, J., Némethová, I. (2021). Cognitive diversity as the quality of leadership in crisis: Team performance in health service during the COVID-19 pandemic. *Healthcare, Vol. 9, No. 3*, 313.

39. Kaminski, G.M., Britto, M.T., Schoettker, P.J., Farber, S.L., Muething, S., Kotagal, U.R. (2012). Developing capable quality improvement leaders. *BMJ Quality & Safety, Vol. 21, No. 11,* pp. 903-911.

40. Kaplan, R.S., Norton, D.P. (1996). Strategic learning & the balanced scorecard. *Strategy & Leadership, Vol. 24, No. 5,* pp. 18-24.

41. Karakitapoğlu-Aygün, Z., Gumusluoglu, L., Erturk, A., Scandura, T.A. (2023). What if authoritarian to all or to some? A multi-level investigation of within-team differentiation in authoritarian leadership. *Journal of Business Research, Vol. 162, 113873.*

42. Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. *Journal of Operations Management, Vol. 21, No. 4,* pp. 405-435.

43. Kayworth, T.R., Leidner, D.E. (2002). Leadership effectiveness in global virtual teams. *Journal of Management Information Systems, Vol. 18, No. 3,* pp. 7-40.

44. Khan, M.A. (2011). Total quality management and organizational performance-moderating role of managerial competencies. *International Journal of Academic Research, Vol. 3, No. 5*, pp. 453-458.

45. Kraus, S., Schiavone, F., Pluzhnikova, A., Invernizzi, A.C. (2021). Digital transformation in healthcare: Analyzing the current state-of-research. *Journal of Business Research, Vol. 123,* pp. 557-567.

46. Kulshreshtha, K., Sharma, G. (2021). Understanding e-leadership: Please mind the gap. *Technological Forecasting and Social Change, Vol. 168, 120750.*

47. Larson, L., DeChurch, L.A. (2020). Leading teams in the digital age: Four perspectives on technology and what they mean for leading teams. *The Leadership Quarterly, Vol. 31, No. 1, 101377.*

48. Li, W., Liu, K., Belitski, M., Ghobadian, A., O'Regan, N. (2016). e-Leadership through strategic alignment: An empirical study of small-and medium-sized enterprises in the digital age. *Journal of Information Technology, Vol. 31,* pp. 185-206.

49. Li, X., Zhang, L., Cao, J. (2023). Research on the mechanism of sustainable business model innovation driven by the digital platform ecosystem. *Journal of Engineering and Technology Management, Vol. 68, 101738.*

50. Lilian, S.C. (2014). Virtual teams: Opportunities and challenges for e-leaders. *Procedia - Social and Behavioral Sciences, Vol. 110,* pp. 1251-1261.

51. Lin, C.S., Jin, M., Huang, P.C., Xiao, R. (2023). Does it take two to tango? The joint role of high-performance work systems and ethical leadership. *Journal of Business Research, Vol. 156, 113536.*

52. Mariani, M.M., Machado, I., Nambisan, S. (2023). Types of innovation and artificial intelligence: A systematic quantitative literature review and research agenda. *Journal of Business Research, Vol. 155, 113364.*

53. Myrodia, A., Kristjansdottir, K., Hvam, L. (2017). Impact of product configuration systems on product profitability and costing accuracy. *Computers in Industry, Vol. 88*, pp. 12-18.

54. Naini, N.F., Santoso, S., Andriani, T.S., Claudia, U.G. (2022). The effect of product quality, service quality, customer satisfaction on customer loyalty. *Journal of Consumer Sciences, Vol. 7, No. 1,* pp. 34-50.

55. Narayanamurthy, G., Tortorella, G. (2021). Impact of COVID-19 outbreak on employee performance–moderating role of industry 4.0 base technologies. *International Journal of Production Economics, Vol. 234, 108075.*

56. Nasution, R., Muhammad, A. (2023). Analysis of the application of digital leadership to improve service quality at Gresik police station. *Journal of Social Research, Vol. 2, No. 7,* pp. 2362-2370.

57. Ngo, V.M., Nguyen, H.H. (2016). The relationship between service quality, customer satisfaction, and customer loyalty: An investigation in Vietnamese retail banking sector. *Journal of Competitiveness, Vol. 8, No. 2,* pp. 103-116.

58. Nguyen, M. (2023). I see myself in my leader: transformational leadership and its impact on employees' technology-mediated knowledge sharing in professional service firms. *Journal of Service Theory and Practice, Vol. 33, No. 2,* pp. 257-279.

59. Northouse, P.G. (2019). *Leadership: theory and practice.* SAGE Publications.

60. Nunamaker, J.F., Reinig, B.A., Briggs, R.O. (2009). Principles for effective virtual teamwork. *Communications of the ACM, Vol. 52, No. 4,* pp. 113-117.

61. Oc, B., Chintakananda, K., Bashshur, M.R., Day, D.V. (2023). The study of followers in leadership research: A systematic and critical review. *The Leadership Quarterly, Vol. 34, No. 1, 101674.*

62. Oleksa-Marewska, K., Tokar, J. (2022). Facing the post-pandemic challenges: The role of leadership effectiveness in shaping the affective well-being of healthcare providers working

in a hybrid work mode. *International Journal of Environmental Research and Public Health, Vol. 19, No. 21, 14388.*

63. Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing, Vol. 49, No. 4,* pp. 41-50.

64. Pérez-Aróstegui, M.N., Bustinza-Sánchez, F., Barrales-Molina, V. (2015). Exploring the relationship between information technology competence and quality management. *BRQ Business Research Quarterly, Vol. 18, No. 1,* pp. 4-17.

65. Purvanova, R.K., Bono, J.E. (2009). Transformational leadership in context: Face-to-face and virtual teams. *Leadership Quarterly, Vol. 20, No. 3,* pp. 343-357.

66. Ramayah, T., Samat, N., Lo, M.C. (2011). Market orientation, service quality, and organizational performance in service organizations in Malaysia. *Asia-Pacific Journal of Business Administration, Vol. 3, No. 1,* pp. 8-27.

67. Rew, D., Jung, J., Cha, W. (2018). Service productivity vs service quality: a zero-sum game? *International Journal of Quality & Reliability Management, Vol. 35, No. 9,* pp. 1899-1917.

68. Risanto, A., Sunaryo, I. (2023). Service Quality, Customer Satisfaction, and Customer Loyalty on Public Services: The Role of Corporate Image. *Journal of Public Policy, Vol. 6, No. 1, 100895.*

69. Roman, A.V., Van Wart, M., Wang, X.H., Liu, C., Kim, S., McCarthy, A. (2019). Defining E-leadership as Competence in ICT-Mediated Communications: An Exploratory Assessment. *Public Administration Review, Vol. 79, No. 6,* pp. 853-866.

70. Rönnbäck, Å., Witell, L. (2008). A review of empirical investigations comparing quality initiatives in manufacturing and service organizations. Managing Service Quality: *An International Journal, Vol. 18, No. 6,* pp. 577-593.

71. Sabella, A., Kashou, R., Omran, O. (2014). Quality management practices and their relationship to organizational performance. *International Journal of Operations & Production Management, Vol. 34, No. 12,* pp. 1487-1505.

72. Saks, A.M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology, Vol. 21, No. 7,* pp. 600-619.

73. Santoso, T.J., Herusetyawan, H. (2020). The Influence of Product Quality, Price, Promotion, and Place on Purchase Decisions and Their Impact on Customer Loyalty at PT. XYZ. *Management Science Letters, Vol. 10, No. 2,* pp. 319-326.

74. Sharma, P., Chan, W.K., Kingshott, R. (2023). Guest editorial: Emerging digital technologies and professional services: current and future research agenda. *Journal of Service Theory and Practice, Vol. 33, No. 2,* pp. 141-148.

75. Silva, C.S., Magano, J., Matos, A., Nogueira, T. (2021). Sustainable quality management systems in the current paradigm: The role of leadership. *Sustainability, Vol. 13, No. 4,* 2056.

76. Tari, J.J., Molina, J.F., Castejón, J.L. (2007). The relationship between quality management practices and their effects on quality outcomes. *European Journal of Operational Research, Vol. 183, No. 2,* pp. 483-501.

77. Tariq, A., Abrar, M. (2018). The impact of transformational leadership on employee retention: Mediation by employee engagement. *Global Management Journal for Academic & Corporate Studies, Vol. 8, No. 1,* pp. 51-67.

78. Teoman, S., Ulengin, F. (2018). The impact of management leadership on quality performance throughout a supply chain: an empirical study. *Total Quality Management & Business Excellence, Vol. 29, No. 11-12,* pp. 1427-1451.

79. Trkman, M., Popovič, A., Trkman, P. (2021). The impact of perceived crisis severity on intention to use voluntary proximity tracing applications. *International Journal of Information Management, Vol. 61, 102395.*

80. Tuan, L.T. (2022). How and when does hospitality employees' core beliefs challenge foster their proactive coping for technostress?: Examining the roles of promotion focus, job insecurity, and technostress. *Journal of Hospitality and Tourism Management, Vol. 52*, pp. 86-99.

81. Tworek, K., Luo, G., Paska, M., Sałamacha, A. (2023). The influence of e-trust on a job performance model based on employees' dynamic capabilities during a crisis caused by a Black Swan event. *Journal of Entrepreneurship, Management and Innovation, Vol. 19, No. 2,* pp. 159-187.

82. Van Wart, M., Roman, A., Wang, X.H., Liu, C. (2017). Operationalizing the definition of e-leadership: identifying the elements of e-leadership. *International Review of Administrative Sciences, Vol. 85, No. 1,* pp. 80-97.

83. Wang, J., van Woerkom, M., Breevaart, K., Bakker, A.B., Xu, S. (2023). Strengths-based leadership and employee work engagement: A multi-source study. *Journal of Vocational Behavior, Vol. 142, 103859.*

84. Wu, W., Chin, W., Liu, Y. (2022). Technostress and the smart hospitality employee. *Journal of Hospitality and Tourism Technology, Vol. 13, No. 3,* pp. 404-426.

85. Zainol, Z., Shaari, R., Ali, M.M. (2020). Organizational transformation for a sustainable tomorrow: The role of digital leadership in driving digital transformation. *Sustainability, Vol. 12, No. 14, 5686.*

86. Zander, L., Zettinig, P., Mäkelä, K. (2013). Leading global virtual teams to success. *Organizational Dynamics, Vol. 42, No. 3,* pp. 228-237.

87. Zarghami, S.A. (2021). A reflection on the impact of the COVID-19 pandemic on Australian businesses: Toward a taxonomy of vulnerabilities. *International Journal of Disaster Risk Reduction, Vol. 64, 102496.*