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Performing Managerial Functions During the COVID-19 Crisis: A Systematic Literature Review**

Abstract

Managing businesses during COVID-19 was challenging, mainly due to constant changes. Managers' experiences gained from these crises should be shared so that they can be more prepared in case it happens again. The aim of this article is to research current literature to find out what changes in the performance of managerial functions were observed during the COVID-19 crisis. A systematic literature review was performed in the Web of Science (WoS) database to summarise findings on this topic. Eventually, only 18 publications were analysed (which indicated a significant research gap). Most of the identified changes were related to the function of leading (e.g., the need to motivate and communicate more clearly and support employees to adapt to remote working). In organising, managers faced problems regarding the shortage of employees, constant reorganisation, and the issues accompanying remote working. Planning in the COVID era was very challenging, but not many research papers dealt with it, same as with controlling. When writing this article, no publication (on WoS) directly studied the changes in management functions due to the COVID-19 crisis. This article bridges the identified research gap by summarising the changes identified from the existing research and suggests the necessity of the research in this area.

Keywords: COVID, COVID-19, managerial functions, management
(JEL: H12, M10, M16)

Introduction

On March 11, 2020, the World Health Organization declared a global pandemic due to COVID-19. At that time, many countries had already taken measures to mitigate the spread of this disease, for example, closing schools and universities, transitioning to distance learning (Navickienė, 2021), recommending remote working whenever it is was possible, and no visitors in hospitals and social care facilities, regulations to wear face masks in public, etc. Due to these measures, as well as due to the sickness itself, many things in many areas of life have changed.

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The COVID-19 situation negatively influenced many sectors of the global economy. In almost all sectors, supply chains and company sales were affected, which caused liquidity problems (Soluk, 2022). Many sectors temporarily lost their clients (due to the restrictions) and had to focus on their survival. The most influenced sectors were, for example, the sports sector and its entrepreneurship (Ratten, 2020), tourism (Utkarsh & Sigala, 2021), food service (Messabia et al., 2022), as well as culture or air transportation (Kraus et al., 2020). Due to this situation, many companies in these sectors (as well as others) were forced to search for new opportunities because their regular market collapsed, and they started to work on projects that previously were not part of their portfolio (Soluk, 2022).

Even in sectors that were affected less significantly, changes in many areas of business processes have occurred. Many organisations were forced to adopt virtual working (Gentilin & Madrigal, 2021), hybrid working, or working from the office under different conditions (Ayoko et al., 2021).

In the working environment, the most often identified change (e.g., Almazrouei & Zaccà, 2022; Hartmann & Lussier, 2020) was the greater use of technologies due to remote working (for example, sending emails, online meetings, etc.) Thus, this situation led to an acceleration of digitalisation (Cervinka & Novak, 2022; Soluk, 2022) or onlineization of organisations (Blagov & Anand, 2022), which helped them to remain competitive during the COVID era and could help them also in the future. On the other hand, it has led to a greater need to secure data and communication to protect against cyber-attacks (Hartmann & Lussier, 2020).

All the changes during the COVID era influenced employees, who were exposed to much stress, affecting their mental health (Koch & Schermuly, 2021). The same applied to managers or business owners (in this paper, these two groups will be called "managers"), who suddenly had to deal with a unique crisis and had to adapt to rapid changes and adopt innovative practices (Zaoui et al., 2021). Initially, they responded to the situation by strengthening centralised decision-making (Schleper et al., 2021) and shifting toward short-term survival instead of long-term planning (Soluk, 2022).

As Hartmann and Lussier (2020) stated, due to COVID-19, some knowledge, skills, and abilities had to change because some were more important and some were less. Also, many had to learn how to manage a crisis and its different phases, even those managing small, for example, family firms (Boers & Henschel, 2022 explored this issue). Thus, there is no question that the abilities and skills of managers were severely tested, and the way managers performed their managerial functions has changed.

Contemporary literature recognises four managerial functions. These functions are planning, organising, leading, and controlling (an overview of management functions used in college textbooks can be found in McNamara (2009), where it is

visible that the “four function view” clearly prevails). Planning can be defined as setting goals and establishing strategies and plans for achieving those goals (Robbins & Coulter, 2021). Organising involves assigning tasks to individuals or groups to achieve these goals (Certo & Certo, 2019). Leading is about guiding and inspiring people toward achieving goals; it includes “motivating and communicating with employees, individually and in groups (Bateman & Konopaske, 2022, p. 12). Furthermore, controlling can be defined as evaluating how well an organisation has achieved its goals (together with implementing corrective actions if needed) (Jones & George, 2017). Correctly performing these functions is necessary to maintain a high organisational performance. Thus, the environmental change that influences their performance can severely affect organisational existence. Therefore, it is essential to identify and study the changes in performing managerial functions due to COVID and their possible consequences on organisational functioning. The COVID situation represents the period in which almost every factor of the business environment was affected (e.g., macro-environment, sector, competitors, and the organisation itself). Managers had to react and adapt to the situation. They had to perform their functions in a business environment that changed daily and do their best to achieve the organisation’s goals. The question is, what managerial function was affected the most and whether some changes have been preserved also in the post-COVID era.

This paper aims to research current literature to find out what changes in the performance of managerial functions were observed during the COVID-19 crisis. Specifically, this paper aims to answer the research questions stated in the following chapter. For this purpose, a systematic literature review (SLR) was performed in the WoS database to summarise findings on this topic (at the time of preparation, no such analysis was published). This paper aims to find out the current state of the art to know whether there is a need to study this issue further empirically.

The remainder of the paper is organised as follows: the research methodology is presented with the research question and keywords. Then, the review results are presented, and the relevant papers are described together with their findings. The discussion and conclusion follow.

Research Methodology

To answer the research questions, it was decided to perform SLR. Generally, literature reviews can be divided into two categories: the traditional literature survey (TLS) and the systematic literature review (SLR). TLS can be subjective because it does not provide criteria for selecting the papers or their quantity (Ah-mad et al., 2020). On the other hand, SRL involves selection, searching, critical appraising, synthesising, and summary of specific questions (Cook et al., 1997). It is “a review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse

data from the studies that are included in the review" (Moher et al., 2009, p. 1). According to Tranfield et al. (2003, p. 220) "the aim of systematic review is to provide collective insights through theoretical synthesis into fields and sub-fields".

In this paper, the SLR procedure is based on Baltazar et al. (2023) and Tomašević et al. (2021, p. 1005) and follows four stages:

- question formulation,
- keyword search and article sourcing,
- screening the articles for quality and relevance
- and full-text analysis.

In more detail, it was first necessary to state the research questions examining the studied changes. Then, the right keywords were determined, and the database was selected. Subsequently, the articles were screened for quality and relevance and then analysed. In the last step, the findings were synthesised, and conclusions were made.

Research Question Formulation

As the first step, the formulation of specific research questions was performed. These questions will be answered by examination of the research selected in SLR.

- RQ1: What types of managerial functions are the most often researched in the context of COVID-induced changes?
- RQ2: According to the research, was it easier or harder to perform examined managerial functions in the COVID era?
- RQ3: According to the research, will the identified change be applied in the post-COVID era?
- RQ4: In the examined research, is attention also paid to the online environment and its impacts on management?

Keywords and Article Sourcing

The WoS database was used to perform SLR. The time horizon was not limited in advance; however, logically (due to the combination of keywords, see Table 1), it turned out that no research was done before 2019. Title, abstract, keywords, and keywords plus were searched to find the selected keywords. The appropriate WoS Category was selected to examine only papers dealing with management. Only papers in English were searched. Also, there was no limitation regarding the publication type (conference proceedings were allowed) to ensure full topic coverage.

Table 1. Article Sourcing Protocol

Database	WoS
Year of Publication	No restriction
Search Field	Topic (title, abstract, author keywords, and keywords plus)
Combination of keywords	"covid" AND "change" AND "management"
WoS Category	Management
Date of search	5. 1. 2023
Criteria for article inclusion	Written in the English language

Screening the Articles for Quality and Relevance

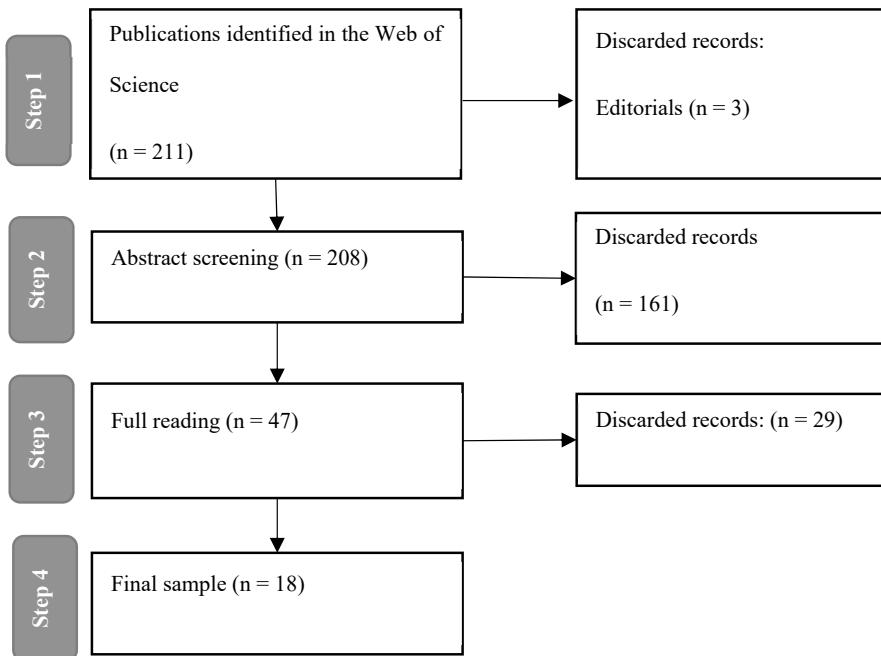
By implementing this article sourcing protocol, 211 publications were found. It included three editorial materials with no additional value to this research. Thus, they were discarded. Then, the abstracts were read to screen the articles for relevance. As relevant were considered the publications whose abstracts contained keywords. At this point, it was clear that due to the selection of the keywords, many publications that were not relevant were found. However, authors did not have any other option to find the desired articles because if the keywords were more specific, for example, "management functions", "planning", and "leading", etc. in the context of "COVID" and "change", almost no results were found. The possibility of selecting only "COVID" and the name of some functions seemed at first like a solution, but this led to an even more significant number of irrelevant articles even within the WoS category "Management" (approx. 500 papers containing topics such as organising hospital care during COVID, planning the travelling, teaching during COVID etc.). As this research aimed to identify COVID-induced changes in the performance of the functions, it was eventually decided that using the keywords in Table 1 would be the best way to achieve the paper's aim. The rule for screening the publications was established as follows: include only the publications that in the title or abstract dealt with changes in management during the COVID era in the context of its functions (planning, organising, leading, and controlling; but they did not have to be mentioned directly). For that reason, many publications that dealt solely with change management, crisis management, and knowledge management were excluded because these publications were aimed to study these specific types of management without any connection to managerial functions, also due to the selection of keywords (and the fact, that WoS searches also within Keywords Plus which are less relevant), few publications about nurses dealing with COVID on the front line or workers in hotels were found. These types of publications had to be discarded because they did not deal with managerial function even distantly. In the end, 47 publications were relevant to the topic and were analysed further.

Analysing the Publications

The 47 publications were thoroughly examined in order to answer the research questions. An Excel sheet was used to note the answers to each question in each publication. It was examined whether the publication is a case study/survey, theoretical, etc., what managerial function it deals with, if it was easier/more complicated to perform the function, will the change be preserved, and whether the attention is also paid to the online environment and its impacts on management. Also, the year of the publication and its citations were subjected to analysis. Thus, qualitative and quantitative approaches to SLR were selected.

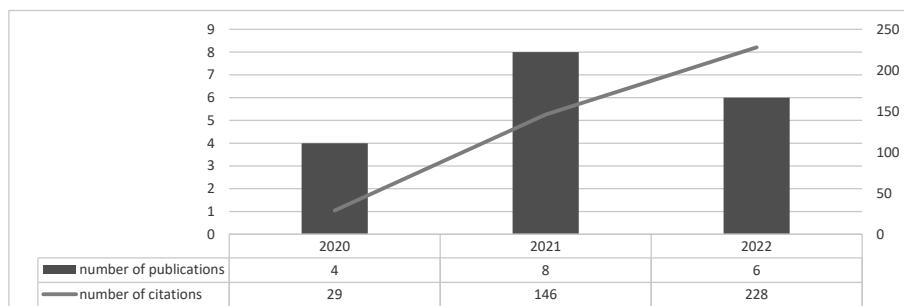
The 47 papers were thoroughly read, and it was found that no publication directly aimed to study the changes in the performance of managerial functions. Papers dealt with many management-related topics; however, they rarely dealt with expressly stated management functions (except for leading). Thus, to include the paper in this analysis, it was sufficient that there was a description of the specific activity of management and its changes due to the COVID situation, which related to at least one managerial function. Further, the papers were categorised according to the identified functions (in some cases, more than one). Identifying these functions was sometimes tricky because multiple management functions are often performed simultaneously and cannot be separated. However, the authors used their experiences and examples from college textbooks (e.g., Jones & George, 2017) to identify these functions correctly.

At this point, it was found that although abstract screening was used to categorise the papers according to the managerial function, it dealt with none in several cases. Thus, many more papers had to be discarded in this process because they did not deal with anything that was at least distantly connected to any managerial function. In the end, only 18 papers were analysed. In these 18 papers, the answers to all research questions were searched for. The whole SLR procedure is visualised in Figure 1.

Figure 1. Procedure of SLR

Characteristics of the Selected Sample

An overview of the development of the number of contributions in individual years and the number of citations of existing publications in individual years can be seen in Figure 2. As expected, no publications were found before 2020 (as the COVID-19 disease started to spread at the end of 2019). It is visible that the topic is fascinating because only 18 articles altogether had 403 citations (it should be added that half of them had solely one article).

Figure 2. Number of Publications and Their Citations Over the Years

In the final selection, there is only one proceeding paper and one review article; the rest are journal articles. Primarily, these research papers are based on surveys (in 15 cases); one is a case study, a literature review, and a theoretical paper. As to the type of managers (their focus) surveyed or studied in publications, see Table 2. Most often, the publications did not specify the type of management (only, for example, stated that they surveyed managers of businesses in some geographical area); the second largest group is business owners (for example, family business owners, restaurant owners, etc.) and then public sector managers, HR managers, and project managers. Other measures (such as publications per country) were irrelevant to this research.

Table 2. Type of Surveyed/Studied Managers

Types of managers	Number of articles
Not specified	5
Business owners	4
Public sector managers	2
HR managers	2
Project managers	2
Sales managers	1

Eventually, the analysis of the co-occurrence of keywords was made using VOSviewer. The full counting method was used, and the minimum number of keyword occurrences was selected as 2. This led to only identifying 15 keywords (out of 143 appearances). The results are shown in Figure 3. It is visible that the most often used keyword was “COVID-19” (11 times), followed by “performance” (5 times), “crisis management,” “innovation” and “change management” (4 times). The results show a diverse focus of the analysed publications, which probably resulted from the universality of management.

Figure 3. Density Visualisation of Keywords

Results of the Literature Review

This chapter presents the results of the analysis to answer the research questions. Each sub-chapter presents publications that are related to the studied topics.

Changes in Performing Managerial Functions (RQ1)

To answer the RQ1, the publications in Table 3 were sorted according to the type of managerial function that they were, at least indirectly, dealing with (see the last column). In the same category, the publications were sorted according to the year and alphabetical order of the names. It is visible that except for one publication that marginally deals with change in planning and the second that deals with change in organising, leading is the most often solely researched function (in 7 cases). The rest (9) are publications that mention or directly study the change in more than one managerial function.

Table 3. Overview of Analysed Publications

Name of the publication	Citation	Managerial function
Organisations' Resources and External Shocks: Exploring Digital Innovation in Family Firms	(Soluk, 2022)	Planning
The influence of COVID-19 pandemic on digital transformation process and strategic management in SMEs in the Czech Republic	(Cervinka & Novak, 2022)	
Guiding employees through the COVID-19 pandemic: An exploration of the impact of transparent communication and change appraisals	(Yue & Walden, 2022)	
Management research contributions to the COVID-19: A bibliometric review and analysis of the contributions from the <i>Journal of Management & Organization</i>	(Ayoko et al., 2021)	
Managing the crisis: How COVID-19 demands interact with agile project management in predicting employee exhaustion	(Koch & Schermuly, 2021)	Leading
Change leadership at local self-government in the context of COVID-19: The case study of Lithuanian municipal administration	(Racaite-Samusiene et al., 2021)	
Pandemic-induced knowledge gaps in operations and supply chain management: COVID-19's impacts on retailing	(Schleper et al., 2021)	
Leading change in response to COVID-19	(Amis & Janz, 2020)	
Managing restaurants during the COVID-19 crisis: Innovating to survive and prosper	(Messabia et al., 2022)	Organising
The impact of COVID-19 on management decision-making: The case within Australian organizations	(Almazrouei & Zacca, 2022)	
COVID-19 and people management: The view of human resource managers	(Gonçalves et al., 2021)	
Entrepreneurial ecosystems during COVID-19: The survival of small businesses using dynamic capabilities	(Rashid & Ratten, 2021)	
Considerations in the use of work-from-home (WFH) for post-pandemic planning and management	(Manko, 2021)	
Challenges and priorities in talent management during the global pandemic caused by COVID-19	(Tomcikova et al., 2021)	
Consumer purchasing behaviour towards strategic innovation management practices in Morocco during COVID-19 health crisis	(Zaoui et al., 2021)	
Challenges of project management during the COVID-19 Crisis	(Dănilă & Adam, 2020)	
Managing the sales force through the unexpected exogenous COVID-19 crisis	(Hartmann & Lussier, 2020)	
The economics of COVID-19: Initial empirical evidence on how family firms in five European countries cope with the corona crisis	(Kraus et al., 2020)	
		Mixed

When the papers from the “mixed” category were considered, the most often identified function was leading (dealt with altogether in 15 papers), organising (9), planning (5), and controlling (1). The following paragraphs will introduce the identified changes in performing managerial functions and the existing research.

As defined by Jones and George (2017), leading means that managers energise and enable the organisation's members to achieve organisational goals (e.g., they try to motivate people, communicate with them, persuade them, etc.)

The newest research that dealt at least distantly with leading during COVID-19 was done by Almazrouei and Zacca (2022), Cervinka and Novak (2022), and Yue and Walden (2022). Almazrouei and Zacca (2022) investigated the influence of the COVID-19 pandemic on decision-making approaches among 55 Australian managers and identified some common approaches regarding leading: managers tried to stay strong to cope with the situation, they provided necessary training and support for their employees and tried to align with company policy. Cervinka and Novak (2022) conducted structured interviews with 8 Czech managers, leaders, and workers to assess the influence of the COVID-19 pandemic on strategic management and the digital transformation process. They identified that COVID-19 caused negative as well as positive effects on leading. It accelerated processes and communication with employees; however, it also caused a decrease in employees' motivation, loss of morale, and resignation, which had to be dealt with by managers. Yue and Walden (2022) were dealing with communication during COVID-19. They surveyed 414 full-time US employees, which revealed that transparent internal communication from management is positively related to employees' challenge appraisal of the change.

Ayoko et al. (2021) performed a bibliometric review of the management papers from 1995 to 2020 to make recommendations on managing organisations during the COVID-19 crisis and organisational change. Their findings were mainly related to the leading function of management (for example, for a leader, it was essential to have skills in working virtually). Gonçalves et al. (2021) based their research on a survey of 136 HR managers in Portugal to describe the changes in HR management due to

COVID-19. Main changes related to leading were identified in training, induction and onboarding, and communication. Manko (2021) based his research on a survey of 158 managers (from various types of organisations and geographical areas) focused on adopting remote work. He identified that "communication and access to information are critical areas for management to address when employees work from home (Manko, 2021, p. 131)". He also revealed that some managers had problems keeping people on task (31 %) or dealing with crises or urgencies (28 %).

Koch and Schermuly (2021) proved that project work during the COVID-19 disease era fosters feelings of emotional exhaustion because of the accumulation of unfinished tasks. They imply that agile project management could serve as "job resource buffering the impact of COVID-19 demands on unfinished tasks" (Koch & Schermuly, 2021, p. 1278). Racaite-Samusiene et al. (2021) examined the change in leadership in Lithuanian municipal administration during the COVID-19 pandemic. They found that these managers were able to inspire, influence, motivate,

and encourage the followers to learn constantly and work in a team, resolve problems, and flexibly react to current issues. Leadership was also the subject of research by Schleper et al. (2021), who stressed the importance of leaders' emotional intelligence and empathic capabilities during COVID-19. Rashid and Ratten (2021) mentioned the necessity of motivating people during the COVID-19 situation. They revealed that some managers of small businesses tried to motivate employees using online platforms (Facebook, WhatsApp) and encouraged people to share their daily lives.

Similarly, Kraus et al. (2020), in their survey, identified the changes in communication due to COVID-19. Companies had to use several types of communication (e.g., WhatsApp messaging, information blog, podcast, service hotline, or daily newsletters written by the CEO) because not all the employees had their email or access to the intranet.

Hartmann and Lussier (2020) identified specific changes in people, tasks, technology, and structure related to leading function (for example, taking care of employees' physical and mental health and allowing people immediate training to gain some necessary knowledge and skills).

The oldest research dealing with leading was done by Amis and Janz (2020), who suggest that there should be a change in response to COVID-19 to a "people-centred approach" instead of seeing people who work in organisations as being more than simply "human resources."

Organising can be defined as "structuring working relationships so organisational members interact and cooperate to achieve organisational goals" (Jones & George, 2017, p. 10). In analysed papers, some changes in the organisation were identified.

Almazrouei and Zacca (2022) pointed out that often, the work system had to be adjusted to allow work from home. Messabia et al. (2022) examined the experiences of restaurant owners during the COVID-19 crisis using semi-structured interviews. They found out that these managers had to deal with a lot of stress, financial and liquidity problems, problems with closures and re-openings, and a shortage of employees. Thus, mainly with organising aspects.

In HR management (survey based on 136 HR managers from Portugal), the main changes related to organising were identified in the organisation of work, recruitment, and selection (Gonçalves et al., 2021).

Based on 20 interviews with Pakistani entrepreneurs, Rashid and Ratten (2021) aimed to examine how small types of enterprises were affected by the COVID-19 situation. One finding was that businesses started moving towards a more agile business model to react better to the situation. Also, they revealed that businesses had to adapt to online buying and selling, which sometimes demanded the restructuring of some departments (for example, marketing).

Tomcikova et al. (2021) partially examined organising when in their survey (n=137 HR managers), “more than half of the respondents agree that the impact of the pandemic leads to changes in the way the company is managed and organized” (Tomcikova et al., 2021, p. 98). Also, according to their research, most companies (70%) did not recruit employees during the COVID-19 pandemic.

Kraus et al. (2020) interviewed 27 top managers or responsible areas managers of family businesses in 5 European countries during the spring of 2020 to find out how these businesses were affected by the COVID-19 situation. Regarding organising, most of these firms implemented remote work, supported their employees with the technology necessary for their work, and closed social meeting places (cafeterias) or discouraged them from meeting each other.

Also, rearranging scheduled tasks was identified as one of the changes due to COVID-19 (Hartmann & Lussier, 2020).

Planning, thus identifying and selecting organisational goals and courses of action (Jones & George, 2017), was probably the most affected because no one knew what would happen (what restrictions would be applied, how long the situation would last, etc.) This is partly confirmed by Manko (2021), who revealed that some managers (26% out of 158 asked) had problems making or implementing new plans. That is why organisations should have action plans planned before some similar situation happens to be able to respond quickly (Tomcikova et al., 2021).

Soluk (2022) based the research on 112 interviews with managers of family firms and revealed that, usually, family businesses are intensely focused on their long-term perspective. However, due to the COVID-19 situation, they shifted towards survival in the short term.

The least studied was the controlling function, which evaluates the level of achieving organisational goals and taking corrective actions if necessary (Jones & George, 2017).

In this context, only Almazrouei and Zacca (2022) mention that managers had to adapt their management style to be able to monitor employees remotely. They also identified that managers experienced lower levels of KPIs achievement and performance.

Additionally, few research papers dealt with topics related to management functions that could not be categorised individually.

Zaoui et al. (2021) dealt with the impacts of strategic innovation management during the COVID-19 pandemic on consumer purchasing behaviour. Although this paper is not directly related to specific managerial functions, it cannot be omitted because it deals with strategic innovation management initiatives that contain processes related at least to planning, leading, and organising. For example, their research revealed that 89% of respondents (n=57 managers of Moroccan

companies) adopted new digital capabilities and technologies, 81% introduced a new product or service or improved an existing one, and 74% adopted Customer and Supplier Relationships practices. All these changes were applied during the COVID-19 pandemic, and most were directly accelerated by it.

Dănilă and Adam (2020) based their research on documentation analysis and interviews with five project managers. The research is primarily focused on the influence of the COVID-19 situation on the decision-making of project managers. However, some changes in the four managerial functions can also be identified. For example, managers faced decisions regarding people working on projects (leading and organising) or urgent need for a strategy to finish the projects (planning).

Difficulties in the Performance of Examined Managerial Functions (RQ2)

The COVID era was demanding and challenging and negatively affected the management of organisations (Hartmann & Lussier, 2020; Tomcikova et al., 2021). Managers' workload increased (working hours were not counted, phone calls had to be done, etc.) (Racaite-Samusiene et al., 2021). They had to face "higher pressure, higher costs and lack of ability to change" (Cervinka & Novak, 2022, p. 6), time pressure (Schleper et al., 2021), lots of decisions (Dănilă & Adam, 2020), and also management style was influenced due to the necessity to work, manage and monitor employees remotely (Almazrouei & Zacca, 2022).

Similarly, Messabia et al. (2022), who surveyed restaurant owners, stated that "stress" was the most often mentioned experience regarding COVID-19. Also, they had to deal with the shortage of employees, financial difficulties, and adapting to the changes (ensuring that customers wear masks, maintaining social distancing, increasing the use of food delivery services, etc.).

Kraus et al. (2020), for example, identified that communication in larger family firms was more difficult than in smaller ones, especially in the need to reach all employees or internal stakeholders.

Also, some managers had difficulties contacting their authorities, receiving late or ambiguous recommendations (Dănilă & Adam, 2020), or accessing the correct information necessary for their remote work (Manko, 2021). The author also mentions that half of the surveyed managers stated that remote working distracted them from work, and they face problems in leading people, planning, or dealing with emergencies.

Rashid and Ratten (2021) mention that many small businesses had to lay off many jobs because they could not pay employees. Consequently, managers had to work longer shifts to cover the orders. In addition, the shift from a long-term perspective to a short-term perspective (in the case of planning) revealed by Soluk (2022) was challenging because managers had to solve many problems at the moment.

Regarding RQ2, 12 publications stated that performing managerial functions was more complicated; the rest of the analysed publications did not deal with it.

Maintaining Identified Changes (RQ3)

Only changes identified as partly permanent were related to the greater use of technologies and their impacts on management. As Gonçalves et al. (2021) stated, it is expected that in the post-pandemic future, the main changes will be related to technology (for example, teleworking, homework, communication and leadership of remote workers). Also, Cervinka and Novak (2022) mention that digitalisation was accelerated due to the COVID-19 situation, which is the change organisations will benefit from even after COVID-19.

Thus, regarding RQ3, it is visible that almost no publications were dealing with this topic, simply because many of them were written at the beginning (2020) or at least during the COVID era. The only change that affects management and could be maintained in the post-COVID era is the greater use of technology that was implemented due to the necessity of remote working. However, this only applies to companies where remote working is possible.

Movement Into an Online Environment and Its Impacts on Management (RQ4)

Due to COVID, many people had to work remotely, which led to greater use of technology. Employees and managers sent and received emails more often, sold products virtually, met people over a video communication platform or used social media more often (Hartmann & Lussier, 2020, p. 103). Technology helps managers in the way they manage their employees, especially in communication (Almazrouei & Zaccia, 2022). However, they had problems keeping people on task (Manko, 2021). Also, managers had to deal with problems regarding the rapid change in buyers' behaviour when everyone requested the possibility to shop online (Schleper et al., 2021) or to be able to interact with their clients online (Zaoui et al., 2021).

Ayoko et al. (2021) also discussed online work in their bibliometric review. They stated that for a leader, it was essential to have skills in working virtually because the hybridisation of work multiplied due to the crisis.

As Tomcikova et al. (2021) mentioned, the COVID-19 pandemic caused changes in work and shifts towards virtual teams and working from home. Cervinka and Novak (2022) identified that COVID accelerated digitalisation and onlinesation. However, IT managers were very stressed when making these changes very quickly.

Also, not all organisations were able to move to the online environment. The employees who worked with specific infrastructure or sectors (production, hospitality) were usually not allowed to work from home (Kraus et al., 2020). The most typical

examples are restaurant owners (studied, for example, by Messabia et al., 2022) who cannot manage their companies online.

While many organisations reported problems with quick adaptation to remote working, some organisations or projects adapted to online activities very fast and without difficulties (Dănilă & Adam, 2020), and some were happy about it because their revenues increased (Rashid & Ratten, 2021).

Also, Gonçalves et al. (2021) stated that many technological changes will likely appear in the post-COVID future (see previous section).

Regarding RQ4, 12 publications deal with remote working or technology use and its impact on management. Although it was seen as a quick change, many enterprises can benefit from it.

Discussion

No publication aimed to study the changes in managerial function performance directly. Most of the analysed publications focused on some functional unit of the enterprise (for example, HR, sales, supply chains, etc.) and the changes in its management due to COVID. The publication was categorised accordingly based on whether these changes were related to any managerial function. The most often researched function in the context of COVID-induced changes (RQ1) is leading. In terms of this function, the problems with the motivation of employees and the role of management when dealing with it were identified seven times (Cervinka & Novak, 2022; Hartmann & Lussier, 2020; Koch & Schermuly, 2021; Manko, 2021; Racaite-Samusiene et al., 2021; Rashid & Ratten, 2021; Schleper et al., 2021). Then, the change in communication was identified five times. It was necessary to communicate more often (Cervinka & Novak, 2022) or to use online platforms (Kraus et al., 2020; Rashid & Ratten, 2021) and to allow employees to access necessary information (Manko, 2021). It was also found that transparent internal communication helped employees accept a change (Yue & Walden, 2022). Further, remote working was often mentioned as a challenge (in 4 cases). Managers had to have skills in working virtually (Ayoko et al., 2021). The same skills were necessary for employees. Thus, employee training and support changes were also identified (Almazrouei & Zacca, 2022; Gonçalves et al., 2021; Hartmann & Lussier, 2020).

Regarding organising, some identified changes were related to employees; for example, there was a shortage of employees (Messabia et al., 2022), changes in recruitment and selection (Gonçalves et al., 2021), or even no hiring of new employees during COVID-19 (Tomcikova et al., 2021). Additionally, some changes in work organisation (Gonçalves et al., 2021) or in processes that emerged, for example, from the need to buy and sell online (Rashid & Ratten, 2021) as well as to work remotely (Almazrouei & Zacca, 2022; Kraus et al., 2020) were identified. Also, managers had to be able to react quickly to immediate changes in the business

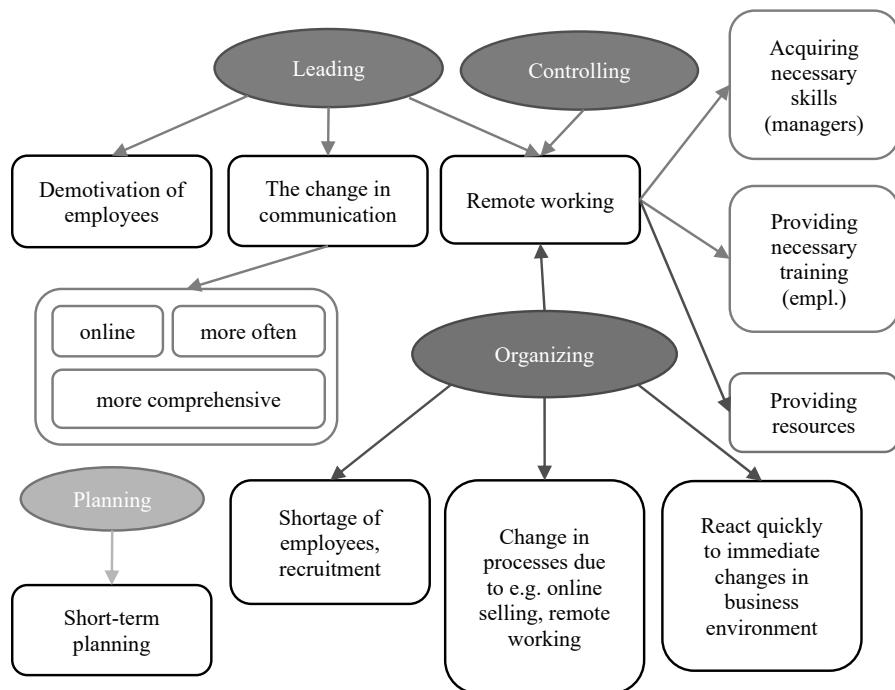
environment, for example, to deal with constant closures and openings (Messabia et al., 2022), and thus be able to rearrange scheduled tasks (Hartmann & Lussier, 2020). Managers had to secure the necessary resources (IT support, technology, etc.) to allow remote work – and often very quickly.

Planning, making or implementing new plans was an issue for many organisations (Manko, 2021). One significant change in planning was identified; instead of joint long-term planning, organisations had to deal with an immediate crisis, which led to a shift to short-term planning (Soluk, 2022) or an urgent need for a strategy on how to finish on time (Dänilä & Adam, 2020).

Regarding controlling function, Almazrouei and Zacca (2022) mentioned that managers had to adapt to remote controlling of their employees.

For better clarity, the identified changes in the performance of managerial functions are shown in Figure 4.

Figure 4. Identified Changes in the Performance of Managerial Functions Due Covid-19 Situation



The colours of the arrows show which function the identified change is related to. It is worth noting that remote working affected three functions at once. Also, the figure indicates how changes in one function can indirectly affect other functions

(for example, although the change in communication was mainly caused by the effort to lead more effectively in the COVID era, it had to be organised somehow). These relationships were not drawn up because as the functions generally relate closely, this figure would become confusing (for example, short plans need to be organised, led, and controlled). Thus, only changes that were identified in order to answer RQ1 were drawn up.

The difficulties in performing managerial functions (RQ2) most often resulted from a sudden lack of funds (Cervinka & Novak, 2022; Messabia et al., 2022), which unfortunately led to layoffs (Rashid & Ratten, 2021). Also, the sudden increase in workload (Racaite-Samusiene et al., 2021), which led to the necessity to work longer shifts (Rashid & Ratten, 2021), was not helping the situation. Some managers report problems with managing and monitoring employees remotely (Almazrouei & Zaccà, 2022), communicating with them (Kraus et al., 2020), or with their authorities (Dănilă & Adam, 2020). Dealing with many problems at the moment (Soluk, 2022), as well as solving the situations mentioned above, resulted in higher pressure and stress (Cervinka & Novak, 2022; Messabia et al., 2022), which made it challenging to perform managerial functions correctly.

Caused by the unique crisis, these identified changes were relatively temporary and originated as a reaction to the crisis (RQ3). However, one change that will probably endure (at least partly) in the COVID era is the higher level of technology use. It was found that the positive fact of the COVID-19 situation was an acceleration of digitalisation (Cervinka & Novak, 2022); thus, it positively affected organisations where they planned to implement and use technology. However, this will probably not last in organisations that use technology only to communicate online instead of onsite.

That one, partly sustainable change, was also the topic of RQ4. Movement into an online environment was mentioned or studied in many research papers. It was identified that there were two reasons for this movement: to reach the organisation's employees (in case of remote working) and to reach its customers (in case of prohibition of on-site sales). People were sending and receiving more emails, meeting people over video (Hartmann & Lussier, 2020), working virtually (Ayoko et al., 2021), creating virtual teams (Cervinka & Novak, 2022) or using social media (Hartmann & Lussier, 2020; Rashid & Ratten, 2021). Managers re-quested to have the possibility to sell online (Hartmann & Lussier, 2020; Schleper et al., 2021) and to be able to interact with their clients online (Zaoui et al., 2021). These rapid changes brought problems not only to employees and managers who had to adapt to these changes but also to IT managers who had to make it happen (Cervinka & Novak, 2022). On the other hand, for some organisations, it meant also an increase in revenues (Rashid & Ratten, 2021)

Conclusions

This paper presents the results of SLR and focuses on the changes in the performance of managerial functions due to COVID-19. Special attention is also paid to one expected change – a movement to the online environment and its effects on management. It was revealed that most of the changes were related to the function of leading, for example, the need to motivate, communicate more clearly, provide all necessary information to employees, and support them to adapt to remote working. In organising, managers faced problems regarding the shortage of employees, constant reorganisation, and the issues accompanying remote working. Planning in the COVID era was very challenging, but not many research papers dealt with it, same as with controlling.

This paper has interesting findings from which researchers and practitioners (managers) could benefit. As to managers, the paper brings several findings that could be used to prepare them for a possible similar future situation. At first, this research helps to reveal the functions and related competencies that could be trained in advance to deal with similar situations better. As most changes affect leadership, managers are recommended to be more trained in motivating people and effective communication. Also, all functions were influenced by the fact that many issues had to be dealt with online/remotely. Thus, more preparedness to do managerial work remotely is necessary. This paper also confirms that performing these functions was very difficult (managers had to face more work, higher pressure, and difficult decisions, and they had to be able to adapt to the new circumstances almost daily); thus, for example, training in change management, decision-making, or how to handle stressful situations is recommended. Also, this paper identified one significant change that could prevail in the post-pandemic world and be seen as positive: acceleration of digitalisation and greater use of technologies. Thus, on the one hand, managers nowadays need to be able to see technology as a good assistant that could help them in their work; however, on the other hand, they need to know the problems (for example, managing people virtually) or even the dangers (threat of data leaks, hacker attack etc) associated with it. Thus, some related training and precautionary measures are recommended.

Also, as the general aim of this study was to find whether there is a need for further research on this topic, it benefits the researchers. Since this article describes the identified research gap (a relatively low number of identified papers dealing with this topic), its findings may be a good inspiration and starting point for future empirical research. Also, it can serve as a good theory base because it summarises the changes identified from the existing research. Thus, other researchers can pay attention to how to fill the already identified research gap instead of a long process of identifying and justifying their research. As future research, qualitative and quantitative studies that would purposely identify the changes management had to face (divided into categories according to managerial functions) can be recommended.

to follow, as well as the studies that researched the level of preservation of these changes in the post-COVID era. Regarding the first type, the research needs to be done urgently. In most countries, COVID-related restrictions have ended, management is no longer affected by these changes, and managers will soon forget the experiences from the COVID era (because people tend to forget bad things). The second type of research is not so urgent, and it could be interesting to see what was preserved in the long term.

The following are the standard limitations related to systematic literature reviews. The first limitation of the study is its focus on publications indexed only on the WoS and within the category of Management. Although this was necessary to limit the number of publications, it is possible that some relevant articles were omitted. In future research, other databases such as Scopus or Google Scholar could bring more numerous results. The second limitation is that the analysis of publications is subjective. Thus, some papers could have been omitted during the screening process even though they should have been part of the analysis. In this type of research, it is advisable that the screening is done by more than two people independently (in this case, it was done by both authors). However, the impact of this error would not be significant because even in these 18 identified publications, some changes have been repeated.

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