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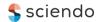
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### NETWORK LEADERSHIP IS A PROMISING DIRECTION IN MANAGEMENT SCIENCE

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Abstract: The social features of leadership and its influence on the development of organizations have long been an important and relevant research topic by scientists in effective management. This trend is related to the provision of research on practical tools managers use to achieve high economic results in a managed system. The humanization of processes in the organization and the manager's focus on employee development contribute to the formation of the organization's competitiveness and financial stability. The bibliometric analyses helped investigate the bibliographic characteristics of scientific works that reveal the content of the networking process and the practicality of its use in the social phenomenon of leadership. The bibliometric analyses proposed in the article show the quantitative indicators of the document flow in management to establish logical patterns between the broad management concept of «leadership» and the social features of the idea of «network leadership». The proposed study contributes to forming an informational scientific flow in the field of studying the development of various topical areas of leadership to increase organizations' financial results by targeting the manager to improve the conditions for the social resource in the managed system. Studying the development of network leadership allows you to consider all the positive aspects and correct certain shortcomings in this modern leadership direction. The proposed work highlights and analyses general concepts that connect the Networking category with the phenomenon of Network Leadership in organizations where managers focus on the social component of the managed organizational system - Social capital. The identified general definitions are the basis for effective manager activity. The study is helpful for managers who strive to achieve high results in management activities through the development of each organization member. The development of the professional potential of employees is an indicator of an effective manager and the basis for achieving the organization's goals. **Keywords:** leadership, network leadership, management, communication, bibliometric analysis. JEL Classification: O10, M12, M19

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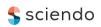
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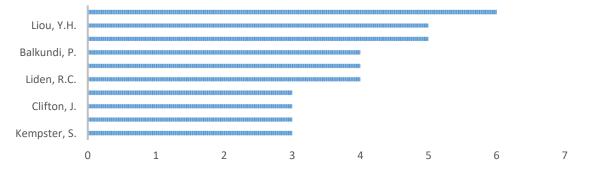


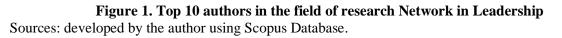


**Introduction.** Effective management in organizations can only exist with a manager with leadership qualities who understands the value of human resources. Leadership is one of the critical components of successful entrepreneurship and organizational development (Skrynnyk and Vasylieva, 2022). Despite numerous scientific studies of the social phenomenon of leadership, this topic continues to develop and change in connection with changes of a different nature worldwide (Kuzior et al., 2022 b). Such a trend determines the constant attention of scientists to a thorough analysis of leadership methods. The network relationship between the manager and the staff can ensure each participant's professional development in the process for the effective functioning of the organization. Employees are aimed at implementing the organization's strategy and are the driving force in the activities of a successful manager.

The article used the VOSviewer software toolkit to conduct two bibliometric analyses. The purpose of the proposed bibliometric analysis was to investigate the impact of the networking process on leadership effectiveness. Based on the selected 747 scientific publications using the keywords «network», «leadership», «theory», and 71 articles using the key indicators «leadership» and «network leadership», the VOSviewer program formed new clusters with the corresponding categories related to the process network management. The scientometric database Scopus indexes all scientific publications analyzed in the proposed study. With the help of visualizations available in VOSviewer, the author offers the identified relationship between the concepts related to the key categories, the chronology of the study of critical concepts, and the density of the study of the proposed keywords. When analyzing two fragments of a network visualization based on the essential concepts of «Networking» and «Network leadership», six management concepts were revealed that reveal the essence of such leadership – «Leadership style», «Leadership theory», «Leader», «Leadership», «Manager» and «Social capital». The connection between the process of Networking in Leadership and the development and effectiveness of management in organizations is an important and relevant issue in modern management science. The relevance lies in the need for managers to create favourable conditions for developing personnel to implement the organization's mission. From the theoretical side, the systematization of information scientific flow in the field of research of modern directions in leadership is necessary to facilitate managers' understanding of changing processes in management science. On the practical side, the study of the development of network leadership allows managers to use networking principles for the effectiveness of organizations effectively.

Literature Review. Research on the formation of effective management and the study of a special place in this leadership is constantly ongoing and is always relevant. In recent decades, scientists have studied new trends in leadership (Eagly et al., 2002, Dirks et al., 2002, Judge et al., 2002, Judge et al., 2004, Brown et al., 2005, Uhl-Bien et al. ., 2007, Avolio et al., 2009) and summarized existing scientific data on this phenomenon in organizations (Hogan et al., 2005, Posner et al., 2007, Burns, 2012, Daft 2013, Chemers, 2014). Key concepts in leadership were considered by scientists Stogdil R.M., Tannenbaum R., Schmidt, W.H. Zaleznik A., Bolden R., Dinh J.E., Lord R.G., Gardner W.L., Meuser J.D., Liden R.C., Hu J., Pretty, J. (Zaleznik, 2004, Bolden, 2004, Dinh et al., 2014). One of the topical issues in leadership theory is the study of Network Leadership Theory, which is related to the humanization of organizational processes worldwide. The practical mechanisms of using this process can be considered from the side of using the Networking process when achieving efficiency in management practice by a leader. With the help of Analyse search results, the author presented a visualization of two blocks of analytical data Author's documents, respectively. Figure 1 shows the first block of data by authors who dealt with issues related to the search keywords «network», «leadership», and «theory».

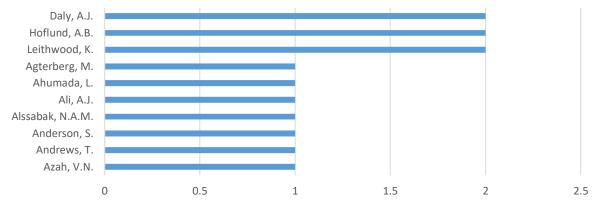








Each of the proposed authors explored in a certain way the question of using the Networking process in leadership. The main issues of the most cited works of each of the authors are the role of Network in Change management and Leadership in the educational sphere (Daly et al., 2010), to unpack the complex social work of leadership (Liou et al., 2015), increasing the level of effectiveness of the leader's communication with followers (Venkataramani et al., 2010), the importance of relationships, actors' embeddedness, the social utility of connections, and the structural patterning of social life (Balkundi et al., 2005), the process of differentiation of subordinates to inclusion in organizational processes (Liden et al., 1997), emotional self-awareness, social cognition, and ethical decision making (Boyatzis et al., 2014), the influence of communication on the leader's identity (Clifton, 2015), entrepreneurial leadership as a social process of becoming located in particular contexts and communities (Kempster et al., 2010). Figure 2 shows the second block of data on authors who dealt with issues related to the search keywords «leadership», «network leadership».



**Figure 2. Top 10 authors in the field of research Network Leadership** Sources: developed by the author using Scopus Database.

The authors of this data block investigated the issue of Network Leadership from the following perspectives: social position and personal traits of leaders in the network (Daly et al., 2013), decision making processes of network administrative organizations (Hoflund, 2012), characteristics of effective leadership networks (Leithwood et al., 2016), leadership strategies to support organizational learning through networks of practice (Soekijad et al., 2011), strategy to support the development of networked leadership capacities (Pino-Yancovic and Ahumada et al., 2020), people management and performance in organizations across a range of disciplines (Ali et al., 2021), international experience of entrepreneurship development (Cunha et al., 2015), network participation, network activities, network leadership, and professional impact on network members (Anderson et al., 2018), improving network leadership (Keppell et al., 2012).

Also, world scientists studying the nature of network leadership focused their attention on the consideration of network leadership as a dynamic process in the organization (Schreiber et al., 2008), research on the differences between hierarchical leadership and network leadership (Silvia, 2011), analysis of network approaches to leadership (Cullen-Lester et al., 2016), the need to use the principles of network leadership at the level of implementing strategic changes in organizations (Díaz-Gibson et al., 2016, Strasser et al., 2016), the network perspective of the development of leadership relationships in the organization (Sydow, 1998). Scientists considered the practice of network leadership from the perspective of the system of principles of distributed leadership (Harris et al., 2021), an overview of the various roles of participants in the organizational process in network leadership (Strasser et al., 2022), the use of network leadership in creative teams (van den Born et al., 2022).

**Methodology and research methods.** The research used the VOSviewer software toolkit for bibliometric analysis. Two bibliometric analyses were conducted for a thorough examination of the studied phenomenon of Network Leadership:

1. For a general study of the development and application of the Networking process in leadership, a bibliometric analysis 1 was conducted - 747 scientific publications were selected from the Scopus scientometric database using the keywords «network», «leadership», «theory» for the period 1977-2022. Clusters that include key management concepts taking into account the influence of Networking. Thanks to VOSviewer, three visualizations were created: Network visualization, Overlay visualization, and Density





visualization. Also, during bibliometric analysis 1, a fragment of Network Visualization for the term «Networking» was illustrated to identify related management categories. The choice of keywords for the first bibliometric analysis is due to the need to study the development of the theoretical foundations of network leadership. For a general overview of the theoretical foundations of the concept of development of Network Leadership Theory, the following were chosen from the proposed subject areas - Social Sciences; Business, Management, and Accounting; Psychology; Economics, Econometrics, and Finance; Decision Science for a broad understanding of the formation of the idea of the studied phenomenon in these fundamental social spheres of activity. Such a limitation determined the chronology of the work.

2. For a more thorough analysis of the network nature of relations between a leader and followers, bibliometric research 2 was conducted - 71 scientific studies were selected from the Scopus scientometric database on the keywords «leadership» and «network leadership» for the period 1997-2022. 12 clusters were formed to unite the concepts characterizing the essence of the Network Leadership phenomenon. During bibliometric analysis 2, a fragment of Network Visualization for the term "Network Leadership" was visualized to identify the connection with other management indicators. Keywords for the second bibliometric analysis were selected, taking into account the clarifying nature of scientific information for a thorough study of network leadership development. The subject areas were chosen Social Sciences; Business, Management, and Accounting; Psychology; Economics, Econometrics, and Finance; Decision Science; Multidisciplinary. The chronology of publications is in the proposed range of the database Scopus.

3. Based on two fragments of Network Visualization, the essence of general concepts connecting the broader Networking category and the specific Network Leadership concept was identified and considered.

4. The proposed study is based on the evidence-based resource Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and includes the main checklist items (Page et al., 2021) of the parts of a scientific study, as well as the title, abstract, introduction, literature review, methodology, results, conclusions, and references.

**Results**. Seven hundred forty-seven scientific publications indexed by the scientometric database Scopus during 1977-2022 were selected to study the theoretical principles of network leadership using the basic search with keywords (titles, abstracts). The relevant publications were selected using a set of keywords - network, leadership, and theory. The selected indicators are related to such fields of knowledge as Social Science; Business, Management, Accounting; Psychology; Economics, Econometrics, and Finance; Decision Sciences; Multidisciplinary. Based on the bibliometric analysis 1 current scientific publication indexed by Scopus during 1977–2022, a thesaurus containing 20 terms was visualized using the VOSviewer toolkit. The selected terms are categories meaningfully related to the set of provisions of the Network Leadership Theory. The results of bibliometric analysis 1, namely Network visualization between critical concepts and tangent categories, are presented in Figure 3.

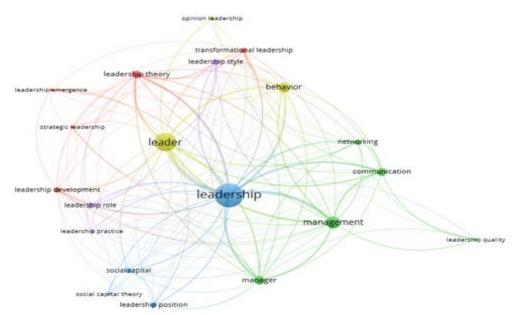


Figure 3. Network visualization of network, leadership and theory connected with other concepts Sources: developed by the author.



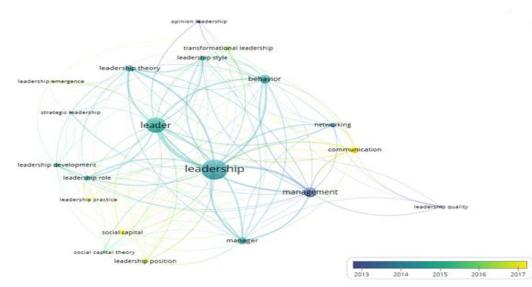
During bibliometric analysis 1, five clusters were formed, where the categories were united by content. Table 1 shows the distribution of concepts by clusters with conventional titles.

Table 1. The clusters and the	concepts according to the r	esults of bibliometric analysis 1

Cluster	Concepts	
Cluster 1. Leadership theory	Leadership development	Leadership emergence
	Leadership theory	Strategic leadership
	Transformational leadership	
Cluster 2. Management	Communication	Leadership quality
	Management	Manager
	Networking	
Cluster 3. Leadership	Leadership	Leadership position
	Social capital	Social capital theory
Cluster 4. Leader	Behavior	Leader
	Opinion leadership	
Cluster 5. Leader interaction	Leadership practice	Leadership role
	Leadership style	

Sources: developed by the author using Scopus Database.

Cluster Leadership Theory consists of five concepts that are critical components of the leadership knowledge system. This cluster includes two categories that characterize the fundamental processes in leadership – emergence, and development, as well as suitable types of manager behavior with followers -Strategic leadership and Transformational leadership. Cluster Management includes five definitions characterizing an effective formal management structure in an organization. The Communication and Leadership quality categories are the essential elements of management for achieving the goals of the organizational system and realizing its mission. As an activity in the organization, networking is a necessary tool for the manager to achieve high financial indicators and develop motivated personnel. Cluster Leadership includes one of the leading research terms – Leadership and three concepts characterizing its structure. Social capital is the central resource of managers, capable of ensuring the development of the managed system and achieving a high level of economic performance in the organization. Cluster Leader combines three concepts - Behavior, Leader, and Opinion leadership. These terms are interconnected by the social characteristics of leadership, where the key figure is the leader himself. Cluster Leader interaction includes three categories that determine the leader's interaction with followers – Leadership practice, Leadership role, and Leadership style. The effectiveness of managerial activities and the organization's effectiveness depend on the manager's correctly selected leadership style. Also, based on bibliometric analysis 1, Overlay visualization was formed from 2013 to 2017. The results of this part of the bibliometric analysis are presented in Fig. 4.



**Figure 4. Overlay visualization of network, leadership and theory connected with other concepts** Sources: developed by the author.

According to Overlay visualization, since 2017, the study of leadership has gained relevance in issues

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requiring detailed research of Social capital theory. Shifting the attention of scientists toward a detailed analysis of the social component of the organization is due to the development of human-oriented activities of managers. The following research stage is Density Visualization (bibliometric analysis 1), which illustrates the density of relationships between categories from the proposed thesaurus. Figure 5 shows the results of this visualization.

	apinion leasership	
leadership theory	transformational leadership leadership style behavior	
strategic leadership	r networking	
leadership development	communication	
Inadership role :	management	leadership quality
social capital	manager	
lestership positi	on	

Figure 5. Density visualization of network, leadership and theory connected with other concepts Sources: developed by the author.

In Figure 5, two colours (yellow and green) indicate the density of connections between the identified concepts. The brightest yellow colour around the images of leadership and leader indicates many studies in these areas. The dullest colour indicates a decrease in the number of studies related to the category of Networking as a process related to management. Based on the results of bibliometric analysis 1, namely Network visualization, we will consider the critical category of Networking and its relationships with other identified management concepts. Figure 6 shows a fragment of Network visualization.

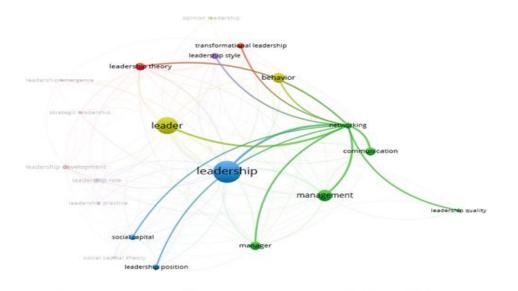


Figure 6. The fragment of Network Visualization for the term «Networking» Sources: developed by the author using VOSviewer software.

As seen in Figure 6, the Networking category relates to the managerial concepts of Leadership, Leader,





Management, Manager, Leadership Style, Transformational Leadership, Leadership Theory, Leadership Quality, Leadership Position, Social Capital, Communication, and Behavior.

For a more detailed analysis of the Network in Leadership phenomenon, seventy-one scientific publications were selected, induced by the Scopus scientometric database for 1997–2022. The selection of relevant scientific works was carried out using the keywords - leadership and network leadership. The proposed indicators are tangential to such fields of knowledge as Social Science; Business, Management, Accounting; Economics, Econometrics, and Finance; Psychology; Decision Sciences.

Based on the bibliometric analysis 2 selected scientific publications indexed by Scopus during 1997–2022 using the VOSviewer toolkit, a thesaurus containing 37 terms was visualized. The proposed terms are managerial categories related to the phenomenon of Network Leadership. The results of bibliometric analysis 2, namely Network visualization between key concepts and related categories, are presented in Fig. 7.



#### Figure 7. Network Visualization of Leadership and Network Leadership connected with Other Concepts

Sources: developed by the author.

As a result of bibliometric analysis 2, twelve clusters were identified, where the categories are combined according to the management content. Table 2 shows the cluster distribution of concepts with conventional titles.

Clusters	Concepts	
Cluster 1. Practice leadership	Leadership behavior	Leadership skill
	Leadership style	Manager
	Network leadership style	Transformational leadership
Cluster 2. Leadership theory	Formal leader	Leader influence
	Leadership emergence	Leadership level
	Leadership theory	
Cluster 3. Leadership model	Leadership model	Leadership structure
	Network leadership concept	Network leadership model
	Network leadership role	
Cluster 4. Leader	Leader	Leadership challenge
	Leadership strategy	System leader
Cluster 5. Network Leadership	District leader	Individual leader
	Network leadership	
Cluster 6. Leadership	Leadership	Local leadership
	Network leadership team	
Cluster 7. Social capital	Leadership capital	Leadership pattern
	Social capital	
Cluster 8. Leadership activity	Leadership activity	Shared network leadership
Cluster 9. Network leadership theory	Network leadership theory	Social capital benefit
Cluster 10. Spiritual leader	Leadership role	Spiritual leader
Cluster 11. Leadership competency	Leadership competency	
Cluster 12. Place leadership	Place leadership	

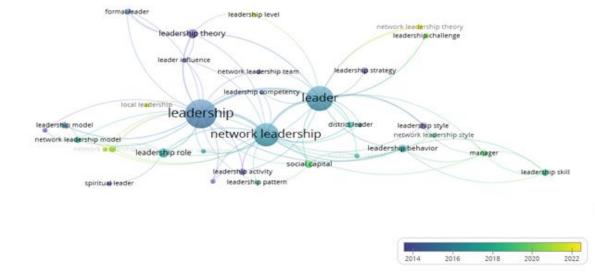
 Table 2. The Clusters and the Concepts According to the Results of Bibliometric Analysis 2

Sources: developed by the author using Scopus Database.





Cluster Practice leadership includes six concepts characterizing the practical use of the phenomenon of leadership in management. Leadership behavior, skills, and style of the manager's interaction with subordinates ensure effective organizational activity. Cluster Leadership theory unites five constituent parts of the concept of leadership and reflects the levels of leadership participation in the organization. The Cluster Leadership model comprises five indicators that reveal the essence of Network leadership – the researched process. Cluster Leader contains four concepts meaningfully connected around the critical object of research. The Leader, Leadership Challenge, Leadership strategy, and System leader characterize the long-term nature of relations with followers. Cluster Network Leadership includes three indicators describing forms of leadership in organizational systems. For effective management, understanding the content of such forms is a necessary tool manager. Cluster Leadership includes three key concepts of the social features of the leadership phenomenon - Leadership, Local leadership, and Network leadership team. Cluster Social capital includes three concepts that are united by the critical element of leadership, namely, the social component of the organization - the staff, which is aimed at implementing the mission and financial results in its activities. Cluster Leadership activity, Cluster Network leadership theory, Cluster Spiritual leader, Cluster Leadership competency, and Cluster Place leadership combine categories characterizing effective leadership styles. Also, based on the results of bibliometric analysis 2, Overlay visualization was created from 2014 to 2022, which was showed in Fig. 8.



#### Figure 8. Overlay Visualization of Leadership and Network Leadership connected with Other Concepts

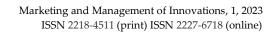
Sources: developed by the author.

According to the Overlay visualization, from 2022, leadership research will become relevant in questions requiring a detailed study of Network Leadership and its practical significance in management. The need to improve organizational management systems determines the analysis of Network issues in management.

The next stage of research (bibliometric analysis 2) is Density Visualization, which shows the density of connections between categories from the proposed set of terms (Figure 9). In Figure 9, two colours (yellow and green) indicate the density of connections between the identified concepts. The brightest yellow colour around the concepts of leadership and leader indicates many studies in these areas. The dullest colour indicates a decrease in the number of studies related to the category and which are components of Network Leadership.

Based on the results of bibliometric analysis 2, namely Network visualization, we will consider the critical category of Network Leadership and its relationships with other identified managerial concepts. Figure 10 shows a fragment of Network visualization. As can be seen from Figure 10, the Network Leadership category is associated with the management concepts of Leadership, Leader, Manager, Leadership Style, Leadership Theory, Social Capital, Leader Influence, Leadership Competency, Network Leadership Model, Leadership Model, Leadership Pattern, District Leader, Network Leadership Style, Leadership Behavior.



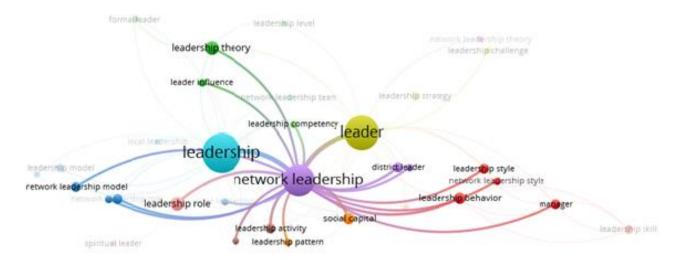


formal leader	leadership level		work leadership theory leadership challenge	
Teader Influer	nce network leadership team	leadership strati		
local resterable leade				
leadership model network leadership model	network leadership	district leader	leadership style network leadership style	
leadership role spiritual leader	social capit leadership activity leadership pattern		rship behavior manaj	per leadership skill

sciendo

Figure 9. Density Visualization of Leadership and Network Leadership connected with Other Concepts

Sources: developed by the author.



**Figure 10. The fragment of Network Visualization for the term «Network Leadership»** Sources: developed by the author using VOSviewer software.

After conducting the analysis fig. 6 and 10, the critical categories of Networking and Network Leadership are interconnected with six identical management indicators: Leadership Style, Leadership Theory, Leader, Leadership, Manager, and Social Capital. The definition of these management categories are shown in Table 3. The specificity of the Social Capital category lies in the fact that developed and motivated personnel are the basis of the organization's productivity. Social capital is the contextual complement to human capital, which affects the organization's productivity, and through innovation, the organization's development (Kuzior et al., 2022 a). Such a unique resource as social capital is necessary for a manager to implement the organization's tasks. Accordingly, the development of employees ensures the effectiveness of the



organization. The social capital metaphor is that the people who do better are somehow better connected. (Burt 2000).

Table 3. Managerial concepts related to the investigated categories of Networking and Network
Leadership

Terms	Definition
Leadership (Stogdill, 1950)	Leadership is manifested in the extent to which, as members of the
	organization, they differ in the impact they have on the organization; and
	the managerial influence of any individual staff member will be determined
	by the overall management structure of the organization.
Leader (Tannenbaum et al., 1973)	A successful leader is clearly aware of the forces that have the greatest
	importance for his behaviour in a certain situation.
Manager (Zaleznik, 2004)	Managers view activity as a favourable process that includes
	an effective combination of people and ideas working together to deliver
	organization and decision-making strategies.
Leadership Style (Bolden, 2004)	Openness, empathy, integrity and self-awareness are key factors in the
	formation of an effective style of interaction between a manager and staff.
	A leader not only engages colleagues, but also listens, responds to feedback
	and delegates responsibility to improve organizational performance.
Leadership Theory (Dinh et al., 2014)	Leadership theories are necessary for researching the causes and ways of
	the emergence of different types of leaders, identifying and developing
	leadership traits and behaviours that are constructive for the work of teams.
Social Capital (Pretty, 2003)	Social capital reduces the transaction costs of joint work, it promotes
	cooperation between team members. People confidently invest in collective
	activities and understand that others will do the same.

Sources: developed by the author.

Conclusions. Based on the results of bibliometric analyses and research on the main concepts related to the essence of Network Leadership, this is a relevant and promising direction in further developing the practical component of management. Network leadership contributes to the development of the professional potential of each staff member. Network leadership is an essential direction in management research because this phenomenon, as a social process, increases the efficiency of the organization's work and forms a strong team of like-minded people. People-orientation of the manager in managerial activities creates conditions for developing the organizational system he manages. The development of social capital is a powerful tool for a leader to implement the organization's mission. An effective manager must have the skills to influence the personnel he manages so that the achievement of the organization's goals satisfies the needs of each participant in the process. The choice of keywords for bibliometric analyzes and subject areas of research in the proposed work is logically justified. However, these criteria may be different for future studies of the management phenomenon of Network leadership and its practical implementation in organizations. The change of search indicators depending on the purpose of subsequent scientific works is the main limitation of the presented scientific work. Network leadership influences the other three network concepts – structure, health and connectivity (Leithwood et al., 2016). These concepts are essential for the productive work of the team. The manager's influence from the leadership position on the structure, health, and connectivity of the organization's personnel forms a team that implements strategic goals and a high level of economic development of the organizational system. Socio-psychological aspects of various forms of leadership require the attention of scientists who research the topics of effective management in organizations. Analysis of research papers on network leadership shows that this process contributes to each employee's development to increase the organization's effectiveness. However, it should be understood in which spheres of activity the use of Network Leadership will give a positive result, considering the ethical features (Kuzior et al., 2021, Kuzior et al., 2022c) of managers' activities. This issue can become the subject of further research.

Conflicts of Interest: Authors declare no conflict of interest.

Data Availability Statement: Not applicable.

Informed Consent Statement: Not applicable.



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#### Мережеве лідерство як перспективний напрям в у сфері менеджменту

Підвищення конкурентоспроможності компанії та забезпечення її фінансової стійкості вимагає постійного удосконалення компетенцій її працівників та розвиток їх лідерських якостей. Соціальні особливості лідерства та його вплив на розвиток організацій є важливою та актуальною тематикою досліджень науковців з ефективного менеджменту. Така тенденція пов'язана з необхідністю дослідження практичних управлінських інструментів, які менеджери використовують для підвищення ефективності функціонування керованої системи. Слід зазначити, що результати дослідження свідчать, що мережеве лідерство є одним з інноваційних механізмів розвитку компетенцій працівників компанії. У статті використано інструментарій бібліометричного аналізу наукових публікацій з тематики мережеве лідерство. Вихідну базу досліджень згенеровано з науково метричної бази даних Scopus. На основі результатів бібліометричного аналізу наукових праць з даної тематики визначено специфіку мережевого процесу та практичність його використання в соціальному феномені лідерства. Автором обгрунтовано логічні закономірності між широким управлінським поняттям «лідерство» та соціальними особливостями ідеї «мережевого лідерства». При цьому встановлено, що фокус керівника на покращення умов соціального ресурсу в керованій системі є висхідним базисом розвитку компанії та забезпечення її конкурентоспроможності. У статті проаналізовано та систематизовано теоретичні концепції, що пов'язують категорію нетворкінг з феноменом мережевого лідерства в організаціях, де менеджери зосереджуються на соціальній складовій керованої організаційної системи – соціальному капіталі. Дослідження сприяє систематизації наукових напрацювань у вивченні проблематики лідерства та його значення у забезпеченні конкурентоспроможності компанії. Отримані результати можуть бути використані керівниками компаній та організацій, які прагнуть підвищити ефективність функціонування шляхом розвитку професійного потенціалу трудового колективу.

Ключові слова: лідерство, мережеве лідерство, менеджмент, комунікація, бібліометричний аналіз.