



Social Network Analysis of School Principals' Glocal Leadership Behaviors and Interaction with Stakeholders*

Pınar MARDİN YILMAZ**, Şefika Şule ERÇETİN***

Article Information	ABSTRACT
Received: 26.05.2025	This study investigates school principals' glocal leadership behaviors and their stakeholder interactions within the vocational and technical education system using a mixed-methods research design. School principals' glocal leadership behaviors were assessed using non-parametric statistical analyses, while stakeholder interaction patterns were examined through social network analysis. The participants consisted of 540 principals, vice principals and assistant principals working in public vocational and technical Anatolian high schools in Ankara, Türkiye. Data were collected using the Multidimensional Glocal Leadership Scale and the Stakeholder Interaction Questionnaire on the Dimensions of Glocal Leadership and analyzed using SPSS and UCINET software. The findings indicate that school principals demonstrated high levels of glocal leadership behaviors. Network density ranged from 1% to 21% across interaction networks. The Ministry of National Education and provincial and district directorates of national education emerged as the most central stakeholders, whereas interaction with other ministries was relatively limited. Furthermore, stakeholder interactions differed across the dimensions of glocal leadership, with vision and local literacy primarily associated with educational authorities, social network management linked to institutional collaboration, and global literacy reflected in interactions with international organizations. This study contributes to the literature by integrating glocal leadership with social network analysis and demonstrating how stakeholder interaction patterns shape leadership practices in vocational and technical education. Keywords: glocal leadership, leadership, social network analysis, stakeholder, vocational and technical education.
Accepted: 27.07.2026	
Online First: 30.07.2026	
Published: 31.07.2026	
doi: 10.16986/hunefd.1706830	
Article Type: Research Article	

Citation Information: Mardin Yılmaz, P., & Erçetin, Ş. Ş. (2026). Social Network Analysis of School Principals' Glocal Leadership Behaviors and Interaction with Stakeholders. *Hacettepe University Journal of Education*, 41(3), 738-759. <https://doi.org/10.16986/hunefd.1706830>

1. INTRODUCTION

Globalization has become one of the defining forces of the twenty-first century, profoundly reshaping economic, technological, political, social, cultural, and educational systems worldwide. Beyond increasing international integration and cooperation, globalization has transformed the ways institutions operate, collaborate, and respond to emerging global challenges (Aktel, 2001; Erçetin & Hamedoğlu, 2007; Spring, 2008). These transformations have introduced new markets, technologies, actors, and governance structures, requiring organizations to continuously adapt to increasingly complex and interconnected environments (Doğan, 2002).

Educational institutions are among the organizations most profoundly affected by both global and local dynamics (Zhao, 2009). As societies become increasingly interconnected, schools are expected not only to respond to global developments but also to address the specific needs and priorities of their local communities. This dual responsibility is reflected in the concept of glocalization, which emphasizes the integration of global perspectives with local values and practices. Adopting a glocal approach enables educational institutions to design learning environments that are globally informed while remaining responsive to local contexts, thereby supporting students' holistic and multidimensional development (Canbolat, Mumcu, Şahan, Öcal, & Akdoğan, 2018; Gök, 2014; Korkmaz, 2021).

* This study is based on the first author's doctoral dissertation. This study was ethically approved by the Hacettepe University Ethics Committee with its decision dated 20.03.2020 and numbered 35853172-300.

** Dr., Republic of Türkiye Ministry of National Education, Ankara-TÜRKİYE. e-mail: pinarmardin89@gmail.com (ORCID: 0000-0001-8867-3717)

*** Prof. Dr., Hacettepe University, Faculty of Education, Department of Educational Sciences, Ankara-TÜRKİYE. e-mail: ssule@hacettepe.edu.tr (ORCID: 0000-0002-7686-4863)

Within education systems, school principals play a pivotal role in translating educational policies into practice and guiding institutional improvement. In vocational and technical education (VTE), however, leadership extends beyond traditional instructional and administrative responsibilities. School leaders are expected to respond simultaneously to local labour market needs, national education policies, and rapidly changing global developments. This multidimensional responsibility is reflected in the concept of glocal leadership, which emphasizes the integration of global perspectives with local priorities while influencing individuals' motivations, behaviours, and organizational practices across diverse cultural and institutional contexts (Francois, 2015).

VTE plays a strategic role in national education systems by strengthening the relationship between education and the labour market, supporting workforce development, and contributing to economic growth. Consequently, it receives greater policy attention and public scrutiny than general secondary education (Bennell & Segerstrom, 1998; Organisation for Economic Co-operation and Development [OECD], 2010, 2015; Özer, 2018; World Bank, 2019). Owing to its distinctive characteristics and close connections with industry and the labour market, VTE requires school leaders to possess competencies that extend beyond those expected in general education (European Centre for the Development of Vocational Training [CEDEFOP], 2011; Educational International, 2009; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2016; Özdemir & Şahin, 2016, 2020). These contextual characteristics make stakeholder engagement a core component of glocal leadership, requiring school leaders to balance global educational developments with local economic and social priorities through effective collaboration with employers, public institutions, and other stakeholders. Such stakeholder networks not only facilitate graduates' transition to employment but also enhance the responsiveness of VTE institutions to changing labour market demands (Özer & Perc, 2021).

Although the concept of interaction has been examined across various disciplines, it is generally defined in organizational and management studies as the capacity of individuals and organizations to establish direct communication and exchange information regardless of time and geographical distance (Tağ-Kalafatoğlu, 2017). Interaction extends beyond communication by involving reciprocal influence, collaboration, and the sharing of knowledge, resources, and responsibilities among different actors. Within organizational settings, public institutions, private organizations, and non-governmental organizations (NGOs) frequently collaborate to achieve shared goals and address complex societal challenges (Bryson, Crosby, & Stone, 2006).

These collaborative relationships are established through stakeholders, who are defined as individuals or groups that can influence, or are influenced by, an organization's decisions and activities (Freeman, 1984). From a systems perspective, schools function as complex organizations in which management processes—including planning, decision-making, communication, coordination, collaboration, and evaluation—depend on continuous interaction among multiple stakeholders (Hoy & Miskel, 2010). Consequently, stakeholder engagement is not merely a managerial activity but a fundamental mechanism for enhancing organizational effectiveness and achieving educational goals.

Social network theory contributes to the analysis of stakeholder relations. Social network theory emphasizes a more comprehensive and active relationship between actors than communication within a specific structure. Accordingly, continuous interaction, cooperation and partnership can take place between social actors beyond just acting together in providing resources, providing services and determining policy. It is stated that in this structure, the positions of individuals within the social structure, that is, their interactions with other actors in the network, are more important than their individual characteristics (Borgatti & Ofem, 2010; Coburn & Russell, 2008).

The network, which can be specified as a set of relations; "It consists of a set of objects (node as a mathematical term) and the description or mapping of the relationships between those nodes or objects." (Kadushin, 2004, p. 3). The network concept, in its most basic definition that represents structures between entities (Christakis & Fowler, 2012). According to Kilduff and Tsai (2003), the concept of network is present in different disciplines such as management, informatics, mathematics, psychology, sociology, anthropology (Novak, 2008).

Social network theory focuses on the interactions of various actors in a network structure (Scott, 2000). Essentially, by addressing the relationship networks in the organizational structure; it can be expressed as an important concept. It includes processes such as information flow and communication between actors in dimensions such as structure, behavior, culture, climate, power and politics. In social networks; actors, relations between actors and the characteristic structure of the network are important in the analysis phase (Katz et al., 2004). In social network analysis (SNA), which is used in different branches of science, studies are often conducted on the connections and interactions between actors (Bürhan et al., 2017). Van Duijn and Vermunt (2006) stated that social network analysis is important in defining, visualizing and modeling and revealing the network structure. The basic research topics of social network analysis include the ways and to what extent structural and relational patterns affect individuals in the social structure (Erçetin & Neyişci, 2016). Thanks to social network analysis; the connection and importance of any node in the network can be determined (Gürsakar, 2009). In connection with this situation, the main purpose of social network analysis is to identify and interpret the patterns of social relations between actors (De Nooy et al., 2011).

Previous research indicates that the first studies on social networks date back to 1930 (Novak, 2008). Moreno (1934), who used networks as a method of psychological approach, carried out the first studies mentioned. Moreno describes networks of

interactions and relationships between individuals using diagrams connected by lines representing social groups. Interpersonal ties are reflected in the psychological approach with positive and negative relationships (Scott, 2000, p. 10; Kilduff & Tsai, 2003, p. 41).

Studies in which educational leadership is conducted via social network analysis are mostly related to the outputs of social networks. These studies include topics such as the position of school principals in the school's social network, the level of realization of different leadership types, and the examination of leadership in the context of social networks with concepts such as change, culture, organizational commitment and climate (Daly, 2019; Daly & Finnigan, 2010, 2011; Daly et al., 2014, 2015; Moolenaar & Slegers, 2015; Moolenaar, Daly, & Slegers, 2010; Siciliano & Thompson, 2015; Uğurlu, 2013). In the aforementioned researches, possible effects of social networks have been revealed.

1.1. Statement of the Problem

The global leadership behaviours of school principals in VTE are closely associated with the structure and functioning of stakeholder networks. Effective global leadership requires principals to recognize communication patterns, identify influential actors, understand the flow of information, detect structural gaps that hinder collaboration, and facilitate interactions among individuals and organizations within the network. Moreover, competencies such as initiating and sustaining collaboration, managing organizational complexity, responding to local needs while maintaining a global perspective, and anticipating the implications of international developments for local educational contexts directly influence how principals establish and manage stakeholder relationships. Consequently, examining principals' global leadership behaviours through the perspective of social network analysis provides a comprehensive understanding of how leadership is enacted within complex stakeholder networks and how these networks contribute to organizational effectiveness.

The interactions that principals establish in the social network are also related to social capital. Lin (1999) proposes a definition that social capital refers to the gains achieved by an individual or group as a result of interaction between actors in a social network. For this reason, social networks are seen as the most important source of social capital. An effective reason for the high success levels of educational institutions with strong social networks is the opportunity to access social resources around them (Coleman, 1988; Dijkstra, Veenstra, & Peschar, 2004). At this important stage, the role and responsibility of the principal is at the forefront in the effectiveness of the social capital perspective in schools.

In increasingly uncertain and complex environments, organizations can no longer operate as isolated entities but must establish formal and informal relationships with diverse stakeholders (Franco, Mainardes, & Martins, 2011). Their long-term sustainability depends not only on internal capacities but also on access to external knowledge, resources, and collaborative partnerships (Erçetin & Neyişi, 2015). Consequently, developing and maintaining stakeholder networks has become a strategic necessity for organizations seeking to achieve sustainable development and organizational effectiveness. Educational institutions are no exception, as they increasingly rely on collaborative networks to respond effectively to changing societal, economic, and technological demands.

One of the defining characteristics of the Turkish education system is its centralized administrative structure, which shapes the relationships between central and local authorities as well as between public institutions and non-state actors. However, recent developments in vocational and technical education have strengthened participatory governance and multi-stakeholder collaboration. Although school administration remains primarily under the responsibility of the central government, local governments, private sector organizations, professional associations, and non-governmental organizations have assumed increasingly significant roles in educational processes. As a result, school principals are expected to establish and coordinate effective relationships with a wide range of internal and external stakeholders to support educational planning, implementation, and continuous improvement.

Vocational and technical secondary education represents one of the most stakeholder-intensive sectors of the education system because it operates simultaneously within local, national, and international contexts. Furthermore, the implementation of Vocational Education Law No. 3308, which regulates school- and work-based learning, distinguishes VTE from general secondary education by requiring continuous cooperation between schools and enterprises. The effective planning, implementation, and supervision of vocational education and workplace training therefore depend on strong collaboration among multiple stakeholders. Consequently, school principals are expected to possess competencies extending beyond instructional leadership, including production and service management, workforce planning, organizational management, and the coordination of human and material resources. At the same time, educational activities must remain responsive to local opportunities while aligning with national priorities and global developments. This multidimensional governance structure requires continuous interaction among local, national, and international stakeholders, making an understanding of stakeholder networks essential for effective school leadership and organizational performance.

Despite the growing body of research on educational leadership and social network analysis, limited attention has been paid to how school principals' global leadership behaviours are reflected in stakeholder interaction networks, particularly in vocational and technical education. By integrating global leadership and social network analysis, this study offers a relational perspective

on educational leadership, contributes to the understanding of stakeholder collaboration in VTE, and provides empirical evidence to inform leadership practice and educational policy.

1.2. Purpose of the Study

The aim of this study is to determine the extent to which school principals in VTE demonstrate glocal leadership behaviours and to examine stakeholder interaction by mapping the social networks of schools. Because glocal leadership requires the integration of global perspectives with local needs, understanding how principals establish and maintain stakeholder relationships is essential for effective school leadership. Principals who adopt a glocal perspective are better positioned to incorporate global developments into local educational practices, strengthen stakeholder collaboration, and respond more effectively to the changing demands of vocational and technical education.

By integrating glocal leadership with SNA, this study provides a relational perspective on school leadership that extends beyond the assessment of individual leadership behaviours. Mapping stakeholder networks makes it possible to identify interaction patterns, influential actors, communication pathways, and structural characteristics that shape collaboration within schools. Consequently, the study contributes to a better understanding of how stakeholder relationships support leadership processes and organizational effectiveness in vocational and technical education.

The findings are expected to contribute to both educational research and practice. For researchers, the study extends the literature by combining the concepts of glocal leadership and social network analysis within the context of vocational and technical education. For practitioners, it provides evidence that may assist school principals in utilizing stakeholder networks more effectively to strengthen collaboration and improve organizational performance. The findings may also support policymakers and decision-makers by providing empirical evidence for leadership development, stakeholder engagement, and data-informed decision-making. In particular, identifying the structural characteristics of school networks may contribute to the planning of professional development activities, the identification of leadership support needs, and the development of policies that strengthen collaboration among educational stakeholders. Ultimately, the study aims to contribute to the literature as well as to educational leadership practice and policy development.

1.3. Problem of the Study

Vocational and technical education requires school principals to collaborate with diverse stakeholders while responding to both local and global challenges. Despite the growing interest in glocal leadership and stakeholder collaboration, limited research has examined these issues from a social network perspective. Therefore, this study addressed the following research question: What are the social network characteristics of school principals' glocal leadership behaviors and their interactions with stakeholders in vocational and technical education?

1.3.1. Sub-problems of the study

The sub-problems of this study are as follows:

1. What is the level of school principal's realization of glocal leadership behaviors?
2. What is the daily frequency and distribution of interaction with stakeholders?
3. What is the weekly frequency and distribution of interaction with stakeholders?
4. What is the monthly frequency and distribution of interaction with stakeholders?
5. What is the annual frequency and distribution of interaction with stakeholders?

2. METHODOLOGY

This study employed a mixed-methods research design, integrating quantitative methods with SNA to provide a comprehensive understanding of school principals' glocal leadership behaviours and stakeholder interactions (Creswell, 2014; Neuman, 2013). The quantitative component examined the extent to which school principals demonstrated glocal leadership behaviours, whereas the social network analysis component explored and mapped principals' interactions with stakeholders. Integrating these complementary approaches enabled the findings to be examined from both behavioural and relational perspectives, thereby enhancing the validity and comprehensiveness of the study (Creswell & Plano Clark, 2011).

Social network analysis was selected because it provides a systematic approach for examining relationships, communication patterns, and interaction structures among actors (Marsden, 2005; Scott, 2000). Unlike conventional quantitative approaches that focus primarily on individual characteristics, SNA enables the visualization and analysis of the direction, intensity, and structure of relationships within a network. Consequently, it offers a deeper understanding of stakeholder interaction by identifying communication patterns, influential actors, and structural characteristics that shape organizational relationships.

2.1. Participants

In SNA, the focus is placed on the relationships among actors rather than on selecting a sample from the target population (Marsden, 2005; Wasserman & Faust, 1994). Accordingly, all actors connected to the identified participants within the social network are included in the study. This approach enables researchers to identify relationship patterns and examine the structure and characteristics of the network as a whole.

The stakeholder network in Turkish vocational and technical education is extensive and consists of thousands of actors. Therefore, Ankara was selected as the research setting because collecting data from the entire national network was not feasible. The target audience of the research is the principals of official vocational and technical Anatolian high schools in Ankara in the 2020-2021 academic year. Within the scope of the study, all principals could not be included in the network due to limitations such as voluntary participation, resignation, appointment, assignment, norm staff change, administrative leave and COVID-19 outbreak, and 540 principals were reached. The number of principals reached corresponds to 73% of the target network. However, there was at least one participant from each school, all schools were represented in the network. Demographic information of the principals reached is presented in Table 1.

Table 1.
Participant Characteristics

Features		N	%
Gender	Female	202	37,4
	Male	338	62,6
Position	Principals	125	23,1
	Vice principals	11	2,0
	Assistant principals	404	74,8
Level of education	Associate degree level	6	1,1
	Bachelor's level	364	67,4
	Master's level	168	31,1
	Doctoral level	2	0,4
Location of the School	Metropolitan-central district	405	75,0
	District center	128	23,7
	Neighborhood outside the city	6	1,1
	Town, village, etc.	1	0,2
Years of service at the current school	0-1	97	18,0
	2-4	283	52,4
	5-8	103	19,1
	9 and above	57	10,6
Experience	0-10	102	18,9
	11-20	150	27,8
	21-30	225	41,7
	31 and above	63	11,7

As shown in Table 1, it is seen that 37.4% of the participants are female and 62.6% are male. The number of principals is determined according to the legislation that determines the norm staff of the schools (Official Gazette, 18.06.2014). Assistant principals constituted the majority of the participants (74.8%), reflecting the administrative structure of vocational and technical education institutions. In terms of educational attainment, the majority of the participants (67.4%) held a bachelor's degree. The rate of those who have completed postgraduate education is lower than undergraduate and before. In addition, most of the schools are located in metropolitan-central districts (75%). In this case, it can be stated that Vocational and Technical Anatolian High Schools are generally located in central settlements. Due to the periodic rotation policy for school principals, most participants had served at their current schools for between two and four years (52.4%). Most participants had between 21 and 30 years of professional experience (41.7%).

2.2. Data Collection Tools

Data were collected using two instruments: the Multidimensional Glocal Leadership Scale and the Stakeholder Interaction Questionnaire on the Dimensions of Glocal Leadership. Both instruments were administered concurrently to capture school principals' glocal leadership behaviours and their stakeholder interactions. Combining these instruments enabled the integration of behavioural data with social network data, providing a comprehensive assessment of how glocal leadership is enacted and reflected in stakeholder network structures.

2.2.1. Multidimensional glocal leadership scale

In the study, the level of realization of glocal leadership behaviors of school principals was obtained with the Multidimensional Glocal Leadership Scale developed by Erçetin et al. (2011). The scale reveals how often school principals display glocal leadership behaviors. There are four sub-dimensions in the scale, which consists of 28 items in total.

Having a Vision. This dimension refers to the ability of leaders to develop leadership approaches with its intellectual and operational dimensions (Erçetin, 2000). Having a vision can be accepted as the starting point of glocal leadership. The orientation and development of strategic thinking is related to vision. Sample actions on the scale related to this dimension can be stated as "Developing agreed and adopted goals for the future" and "Creating individual and organizational capacity at the global and local level".

Management of Social Networks. In terms of managers, social networks enable them to use social networks effectively in the information network by being aware of interaction and interaction-related elements (Çakmaklı, 2011). Social networks are one of the structures where leaders can use their influence in the most efficient way. Sample actions in the scale related to this dimension are the items "To be able to reveal the disconnections that negatively affect the interaction in social networks" and "To initiate and develop interactions in social networks".

Global Literacy. Globalization is defined as the weakening of the borders between cities, regions and countries with the increase and development of economic, technological, political and cultural relations, and accordingly the processes, acceptances and sanctions that develop global society and citizenship awareness (Karabağ, 2014). All institutions and organizations take their share from the effects of globalization. Sample actions in the scale related to this dimension are "To predict that what is done in daily life at the individual and organizational level can affect individuals and organizations in other countries" and "To make things simple and harmonious in order to manage complexity".

Local Literacy. The interaction of the leader with the local environment and its impact on his work is within the scope of local literacy. Issues such as the accessibility and interaction of leaders with local actors are considered in this dimension. The exemplary actions in the scale related to this dimension are "Being sensitive to local values, characteristics, situations, conditions and priorities" and "To be able to put forward local and original ideas".

2.2.2. Stakeholder interaction questionnaire on the dimensions of glocal leadership

Survey forms, archive records, observations, diaries, recording devices and other secondary data can be used to provide data to be used in social network analysis. However, the most commonly used data collection method in social network analysis is surveys. Questionnaires make a greater contribution to reaching relationships between individuals or institutions. In order to determine the relationship between the actors, there is often only one question in the questionnaires (Gürsakar, 2009; Marsden, 1990).

In studies where SNA is to be conducted, the question form or survey is prepared specifically for the study. In this regard, there are no restrictions such as personal perception-attitude scales applied to individuals and no validity and reliability tests of the scale are involved in SNA. (Gürsakar, 2006; Marsden, 1990). Therefore, this questionnaire which is the tool of the data collection stage, was prepared in three parts in accordance with the aims of the research and the answers to the research questions.

The first section, which is personal information, included questions such as gender, position, educational status, years of service at your current school, seniority and location of the school. In the second section, which is views on interaction, four open-ended questions were asked in order to learn the participant views on interaction. In the third section, the interaction level, it was tried to obtain opinions about the interaction of principals with stakeholders. These are the sections related to describing the relationship with the determined stakeholders and stating it as present/absent, interaction frequency (day, week, month and year), amount of interaction (1,2,5,18,20,300 etc.), type of interaction (positive, negative) and defining in which dimension of glocal leadership the interactions are (having a vision, management of social networks, global literacy, local literacy).

2.3. Data Collection

Data collection techniques that can be used in the social network analysis process are generally divided into three (Gürsakar, 2009; Kilduff & Tsai, 2003; Ushakov & Kukso, 2015): These; full network data collection is a data collection and documentation technique with snowball sampling. Consequently, before the data collection process within the framework of the research, all the principals in the target group and the schools they work in were listed.

Ethics committee permissions and legal permissions were obtained from the relevant official institutions in order to carry out the research. The data were collected in the 2020-2021 academic year. In order to apply the data collection tools, online applications were used and the <http://doktoratezi.net/Giris> website was prepared. Principals selected the district and school on this page, entered the institution code information and filled in the data collection tools. The link regarding the research process, necessary permissions for the data collection process and data collection tools was sent to the corporate e-mails of the

schools on 15.11.2020. This process was repeated four times at regular intervals. In addition, school principals were contacted via telephone. The data collection process was completed in approximately 4 months.

2.4. Analysis of Data

The data obtained in this study were analyzed using both quantitative statistical techniques and social network analysis (SNA), in accordance with the research questions. Quantitative data collected through the Multidimensional Glocal Leadership Scale were analyzed to determine the level of school principals' glocal leadership behaviors. In addition, the data obtained from the Stakeholder Interaction Questionnaire on the Dimensions of Glocal Leadership were analyzed using social network analysis to examine the interaction patterns between school principals and their stakeholders and to reveal the structural characteristics of these interaction networks.

2.4.1. Quantitative analysis

The quantitative data obtained from the Multidimensional Glocal Leadership Scale were analyzed using descriptive statistical techniques. Arithmetic means, standard deviations, minimum and maximum scores were calculated to determine the level of principals' glocal leadership behaviors across the four dimensions of the scale. These analyses provided a comprehensive description of principals' perceptions regarding their glocal leadership competencies and enabled comparisons across the dimensions of the construct. The descriptive findings served as the quantitative basis for interpreting the level of glocal leadership behaviors demonstrated by school principals.

2.4.2 Social network analysis

In social network analysis, three main units of analysis are commonly employed: ego networks, dyadic relationships, and whole network analysis (Kilduff & Tsai, 2003). Ego network analysis focuses on a focal actor and the relationships directly connected to that actor, whereas dyadic analysis examines interactions between pairs of actors. In contrast, whole network analysis investigates the complete set of actors and the relationships among them within a defined network boundary. As noted by Marsden (2011, p. 371), a whole network encompasses the ego networks of all actors in the system, thereby providing a comprehensive understanding of the overall network structure. Since the present study aimed to examine the interaction patterns between school principals and all stakeholder groups within the school context, whole network analysis was considered the most appropriate analytical approach.

The data obtained through the Stakeholder Interaction Questionnaire on the Dimensions of Glocal Leadership were analyzed using UCINET 6, one of the most widely used software packages for social network analysis (Borgatti, Everett, & Freeman, 2002). UCINET was used to generate adjacency matrices, calculate network measures, and perform centrality analyses, including degree, betweenness, closeness, and eigenvector centrality. To facilitate the interpretation of the findings, the network structures were visualized using NetDraw, the visualization module integrated with UCINET. The sociograms produced through NetDraw enabled a clear representation of stakeholder interaction patterns and the relative positions of actors within the network.

The data obtained from the principals were saved in the Microsoft Excel program and then transferred to the UCINET program. The relation value is specified in the intersecting cell. 540 principals were accessible in the network, and in this study, weighted N (number of principals) $\times$ M (number of stakeholders) data matrices with 2 modes were obtained. The relationship between the actors in the matrix is entered as one-way. Data entry is for the interaction of the principals with the stakeholder. In the weighted matrix; relationships, the presence or absence of the relationship and the weighting (frequency) of the relationship.

In SNA, factors such as the importance of the relations, the frequency of the relations, the strong or weak ties between the actors can be evaluated in order to weight the relations between the actors (Güzeller, Eser, & Aksu, 2016). Weighting of relationships; The density of the relations in the network mechanism can provide a more precise determination of the position of the actors and obtain more detailed information about the relations between the actors.

The following steps were followed in the analysis of the data:

1. First of all, the obtained data were turned into matrices. For this, different tables were obtained for the frequency of interaction (daily-weekly-monthly-yearly).
2. Network centrality measures were calculated, which reveal which stakeholder plays a central role among the stakeholders that make up the network and has a higher capacity to influence the network. Accordingly, the central actors in the network were determined by the calculations of degree, betweenness, closeness and eigenvector centrality. Centrality is one of the most important analyzes of social network analysis and can be calculated on the basis of actors and networks. The issue under consideration here is the centrality of the network. Network centrality takes a value between 0-1. As the specified value approaches 0, the difference in centrality values between the actors decreases. As the value moves towards 1, the difference in centrality values between the actor at the center of the network and the other actors increases. The centralization of a network refers to the intensity of interaction over a relatively limited number of actors.

3. The interaction network with the stakeholders was analyzed with the UCINET program and the interaction network maps were created by visualizing it with the Netdraw program. Network maps were drawn according to the frequency of interaction as daily, weekly, monthly and yearly. In addition, separate maps were drawn according to the type of positive and negative interaction. Key actors have been identified.
4. The positions of the stakeholders in the network are revealed.
5. Isolated actors in the network were identified.

2.4.3. Validity and reliability of the research

Permission to use the Glocal Leadership Scale was obtained from its developers prior to data collection. The internal consistency of the scale was assessed using Cronbach's alpha coefficients. The Cronbach's alpha values for the four sub-dimensions ranged from .94 to .96, while the overall reliability coefficient of the scale was .96. These findings indicate that the scale demonstrates excellent internal consistency and is highly reliable for assessing school principals' glocal leadership behaviors.

To ensure the validity and reliability of the questionnaire, a comprehensive review of the relevant literature was conducted during the instrument development process. Content validity was strengthened through expert evaluation, and the questionnaire was revised in line with the recommendations received. Subsequently, a pilot study was conducted to assess the clarity and applicability of the instrument, and the final version of the questionnaire was prepared based on the pilot findings. Furthermore, detailed descriptions of the research design, participants, data collection procedures, and data analysis processes are provided to enhance the transparency and reproducibility of the study.

In SNA, actors are considered interdependent rather than independent because the focus is on the relationships among actors rather than on their individual characteristics (Barabási, 2010; Christakis & Fowler, 2012; Scott, 2000). Accordingly, when an actor is included in the analysis, the relationships with connected actors are also incorporated, allowing the overall network structure to emerge. Therefore, the validity and reliability of SNA findings depend largely on accurately defining the network boundaries, correctly identifying the actors, and clearly specifying the relationships among them. In the present study, the boundaries of the principal-stakeholder network were explicitly defined, all stakeholder groups were identified prior to data collection, and interaction criteria were clearly specified. In addition, the interaction data were reviewed for completeness and coding consistency before the matrices were transferred to the social network analysis software. These procedures helped to minimize boundary specification and coding errors, thereby increasing the trustworthiness of the network measures and findings.

3. FINDINGS

The findings are presented in two complementary dimensions. First, the level of school principals' glocal leadership behaviors is reported based on the quantitative findings obtained from the Multidimensional Glocal Leadership Scale. Second, the structural characteristics of stakeholder interaction networks are examined through SNA. Within this scope, sociograms were generated to visualize the stakeholder network, while centrality measures (degree, betweenness, closeness, and eigenvector centrality) were used to identify influential actors and their positions within the network. In addition, interaction frequencies were analyzed at four temporal levels (daily, weekly, monthly, and annually), providing a comprehensive understanding of communication patterns and stakeholder engagement over time.

3.1. Level of Realization of Glocal Leadership Behaviors According to Perceptions of Principals

In the first sub-problem, it was aimed to reveal the level of realization of glocal leadership behaviors of principals. As a result of the application of the Multidimensional Glocal Leadership Scale, the statistics of principals on having a vision, managing social networks, global literacy and local literacy are presented in Table 2.

Table 2.

Levels of Realization of Glocal Leadership Behaviors of Principals

Variable	N	$\bar{X}$	Standard deviation	Minimum Score	Maximum Score
Having a Vision	540	3,295	,657	1,00	4,00
Management of Social Networks	540	3,216	,657	1,00	4,00
Global Literacy	540	3,211	,643	1,00	4,00
Local Literacy	540	3,320	,634	1,00	4,00

As shown in Table 2, the glocal leadership behaviors of principals are very high in the dimension of "Having a Vision ($\bar{X}=3,295$)", while "Management of Social Networks ($\bar{X}=3,216$)", "Global Literacy ($\bar{X}=3,211$)" and "Local Literacy ($\bar{X}=3,320$)". It is striking that they have a perception that they can achieve a high level in the dimensions of ". This situation shows that principals can

exhibit global leadership behaviors at a sufficient level. When the standard deviations of the sub-dimensions are examined, it can be stated that they have a similar change.

3.2. Daily Frequency and Distribution of Interaction with Stakeholders

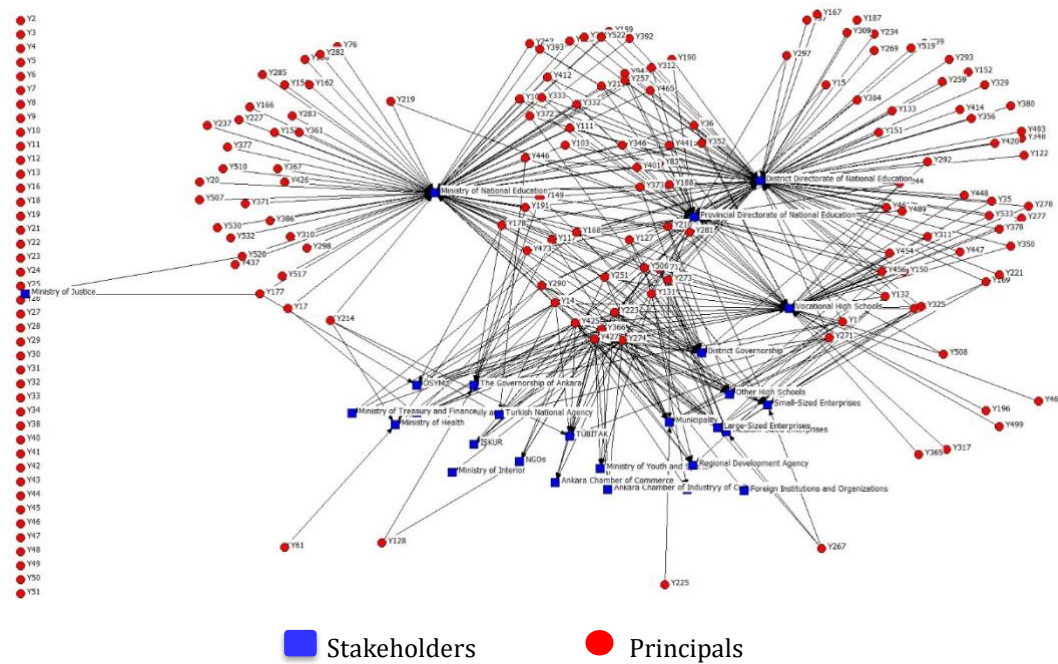


Figure 1. Network structure for daily interaction.

Note: Only a subset of the isolated nodes is displayed to improve readability.

As seen in Figure 1, while some actors are centrally located within the network structure, others are peripheral. While the stakeholders are in the center, the principals generally took place in the periphery. However, it appears to be a network with a high level of interaction between principals and stakeholders in terms of network location, closeness and node numbers. However, there are also nodes (isolated) that are outside the network and they do not interact. While lines with high interaction are thicker, and lines with low interaction are thinner. Relationships are indicated by linear arrows. The ends of the arrows indicate the direction of the relations. The centrality measures of the actors forming the network are presented in Table 3.

Table 3.
Centrality Measures for Daily Interaction

No	Stakeholders	Degree	Closeness	Betweenness	Eigenvector
1	Ministry of Justice	0.004	0.197	0.000	0.005
2	Ministry of Family and Social Services	0.009	0.208	0.000	0.058
3	Ankara Chamber of Industry	0.006	0.208	0.000	0.046
4	Ankara Chamber of Commerce	0.006	0.208	0.000	0.046
5	Municipality	0.026	0.210	0.001	0.144
6	Regional Development Agency	0.009	0.208	0.000	0.060
7	Large-Sized Enterprises	0.020	0.209	0.000	0.110
8	Ministry of Environment and Urbanisation	0	0.177	0	-0.000
9	Ministry of Foreign Affairs	0	0.177	0	-0.000
10	Other High Schools	0.026	0.210	0.000	0.144
11	Energy and Natural Resources Ministry	0	0.177	0	-0.000
12	Ministry of Youth and Sports	0.006	0.208	0.000	0.040
13	Ministry of Treasury and Finance	0.006	0.207	0.000	0.036
14	Ministry of Interior	0.002	0.207	0	0.015
15	Provincial Directorate of National Education	0.080	0.214	0.005	0.338
16	District Directorate of National Education	0.180	0.222	0.037	0.596
17	Turkish Employment Agency	0.009	0.208	0.000	0.074
18	District Governorship	0.037	0.211	0.001	0.192
19	Small-Sized Enterprises	0.026	0.210	0.001	0.132
20	Ministry of Culture and Tourism	0.004	0.207	0.000	0.024
21	Ministry of National Education	0.150	0.220	0.333	0.469
22	Vocational High Schools	0.091	0.215	0.010	0.347

23	Ministry of National Defense	0	0.177	0	0.000
24	Medium-Sized Enterprises	0.020	0.209	0.000	0.111
25	Measurement, Selection and Placement Center Presidency	0.017	0.209	0.000	0.106
26	Ministry of Health	0.011	0.208	0.001	0.054
27	Ministry of Industry and Technology	0	0.177	0	0.000
28	Non-Governmental Organizations	0.009	0.208	0.000	0.055
29	Ministry of Agriculture and Forestry	0	0.177	0	0.000
30	Ministry of Trade	0	0.177	0	0.000
31	The Scientific and Technological Research Council of Türkiye	0.015	0.209	0.000	0.090
32	Ministry of Transport and Infrastructure	0	0.177	0	0.000
33	Turkish National Agency	0.015	0.209	0.000	0.083
34	The Governorship of Ankara	0.024	0.210	0.001	0.133
35	Foreign Institutions and Organizations	0.002	0.207	0	0.015

Degree centrality indicates the number of connections of actors within the network (Everett & Borgatti, 2005). Therefore, as the connections of the actor in the network increase, the efficiency that can be obtained from the network also increases. Actors with high degree centrality are located in the center (inner areas), while actors with less or no connection are located at the margins of the network map (periphery). Consequently, when Table 3 is examined, it can be stated that the actor number 16 district directorate of national education (Deg.=0.180) has the highest centrality. This actor is called the most active and powerful entity in the network. MoNE (Deg.=0.150) is in the second place and vocational high schools (Deg.=0.091) are in the third place.

Since proximity specifies the average length of the shortest paths between a node and other nodes, proximity centrality also measures the proximity of one entity to the others in the network (Everett & Borgatti, 2005). Accordingly, the fact that the actor has direct or indirect access to many actors in the organizational network mechanism affects the degree of proximity centrality of the actor (Kilduff & Tsai, 2003). The District Directorate of National Education (Actor 16) had the highest closeness centrality value (Clo. = 0.222), followed by MoNE (Clo. = 0.220) and vocational high schools (Clo. = 0.215).

Since betweenness is shown as the degree to which an actor is between two actors who are at the closest distance to each other in the network mechanism, the higher this value, the higher the information and control benefit it will gain. Betweenness is based on the view that actors positioned in structural gaps and acting as intermediaries (bridges) can gain more benefits. Therefore, the actor with the highest center of in-betweenness is MoNE (Betw.=0.333). In the second place is the district directorate of national education (Betw.=0.037). Vocational high schools (Betw.=0.010) are in the third place.

Eigenvector centrality, which can be expressed as an indicator of the importance of an actor in the network, assumes that not all connections are of equal value and that influential actors also affect less influential actors with whom they are connected (Gürsakar, 2009). District Directorate of National Education (Eigw.=0.596) was the actor with the highest eigenvector centrality. According to the legislation, it seems normal for schools to interact more intensely with the district directorate of national education, which is the closest hierarchical step. MoNE (Eigw.=0.469) is in the second place and vocational high schools (Eigw.=0.347) are in the third place.

3.3. Weekly Frequency and Distribution of Interaction with Stakeholders

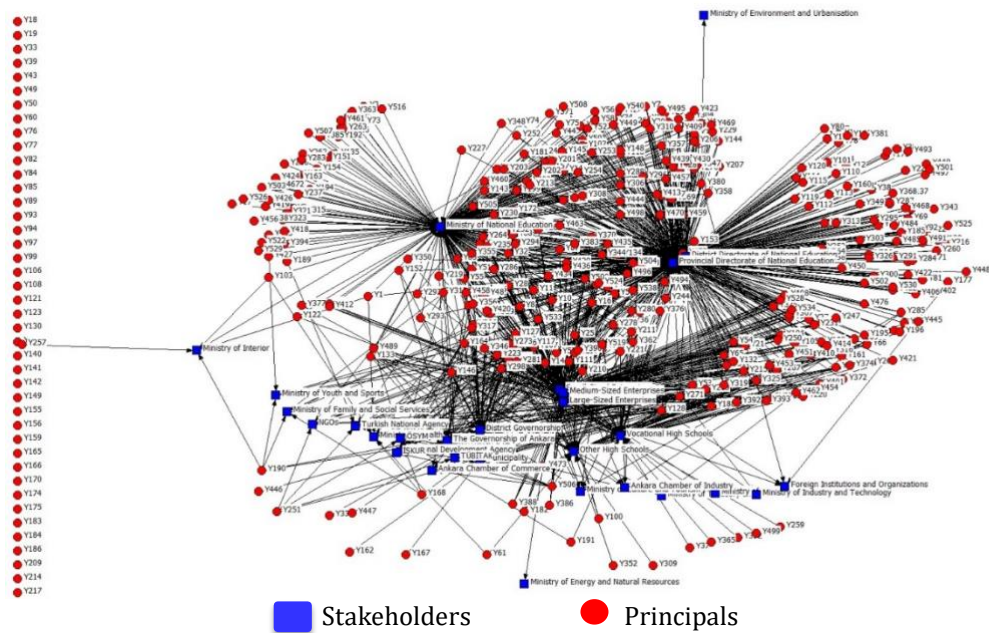


Figure 2. Network structure for weekly interaction

Note: Only a subset of the isolated nodes is displayed to improve readability.

As seen in Figure 2, while some actors are centrally located within the network structure, some are peripheral. While the stakeholders gathered in the center, the principals generally took place in the periphery. However, it appears to be a network with a high level of interaction between principals and stakeholders in terms of network location, closeness and node numbers. However, there are also nodes (isolated) that are outside the network and do not interact. Lines with a high amount of interaction are thicker, while lines with a low amount of interaction are thinner. Relationships are indicated by linear arrows. The ends of the arrows indicate the direction of the relations. The centrality measures of the actors forming the network are presented in Table 4.

Table 4.

Centrality Measures for Weekly Interaction

No	Stakeholders	Degree	Closeness	Betweenness	Eigenvector
1	Ministry of Justice	0	0.151	0	0.000
2	Ministry of Family and Social Services	0.013	0.263	0.000	0.013
3	Ankara Chamber of Industry	0.015	0.263	0.000	0.018
4	Ankara Chamber of Commerce	0.013	0.263	0.000	0.016
5	Municipality	0.048	0.268	0.007	0.055
6	Regional Development Agency	0.017	0.263	0.000	0.023
7	Large-Sized Enterprises	0.154	0.282	0.010	0.204
8	Ministry of Environment and Urbanisation	0.002	0.252	0	0.002
9	Ministry of Foreign Affairs	0	0.151	0	-0.000
10	Other High Schools	0.085	0.273	0.011	0.094
11	Energy and Natural Resources Ministry	0.002	0.219	0	0.002
12	Ministry of Youth and Sports	0.011	0.262	0.000	0.012
13	Ministry of Treasury and Finance	0.006	0.260	0.000	0.006
14	Ministry of Interior	0.009	0.256	0.003	0.004
15	Provincial Directorate of National Education	0.496	0.341	0.146	0.541
16	District Directorate of National Education	0.537	0.350	0.192	0.561
17	Turkish Employment Agency	0.019	0.263	0.000	0.027
18	District Governorship	0.087	0.274	0.010	0.103
19	Small-Sized Enterprises	0.193	0.288	0.020	0.252
20	Ministry of Culture and Tourism	0.013	0.263	0.000	0.016
21	Ministry of National Education	0.428	0.328	0.171	0.429
22	Vocational High Schools	0.128	0.278	0.023	0.130
23	Ministry of National Defense	0.002	0.257	0	0.002
24	Medium-Sized Enterprises	0.178	0.286	0.015	0.234
25	Measurement, Selection and Placement Center Presidency	0.035	0.266	0.002	0.040

26	Ministry of Health	0.019	0.264	0.001	0.015
27	Ministry of Industry and Technology	0.004	0.256	0.000	0.005
28	Non-Governmental Organizations	0.017	0.263	0.000	0.020
29	Ministry of Agriculture and Forestry	0	0.151	0	0.000
30	Ministry of Trade	0	0.151	0	0.000
31	The Scientific and Technological Research Council of Türkiye	0.024	0.265	0.001	0.028
32	Ministry of Transport and Infrastructure	0	0.151	0	0.000
33	Turkish National Agency	0.020	0.264	0.001	0.025
34	The Governorship of Ankara	0.054	0.269	0.005	0.064
35	Foreign Institutions and Organizations	0.007	0.260	0.000	0.007

As seen in the Table 4, actor number 16 stands out as the actor with the highest connection to the district directorate of national education (Deg.= 0.537). In the stakeholder network of the District National Education Directorate, which is the actor number 16, it is positioned as the star actor in the social network analysis term as the leader of the network mechanism among 35 actors. Provincial directorate of national education (Deg. = 0.496) is in the second place and MoNE (Deg. = 0.428) is in the third place.

The actor with the highest centrality of proximity is the district directorate of national education (Clo.=0.350). Provincial directorate of national education (Clo.=0.341) is in the second place, while MoNE (Clo.=0.328) is in the third place. Since proximity indicates the ability of the actor to access information and how quickly she/he can access other actors, it can be stated that the district national education directorate is dominant in the information flow in the network.

The actor with the highest in-between center is the district directorate of national education (Betw.=0.192). MoNE (Betw.=0.171) follows in the second place. Provincial directorate of national education (Betw.=0.146) comes in third place. Consequently, it can be stated that the intermediary function of the district national education directorate is strong. In the stakeholder network, it can be said that these institutions are in a more advantageous position compared to other actors in the network in terms of accessing information, negotiation and seizing opportunities.

The actor with the highest eigenvector centrality is the district directorate of national education (Eigw.=0.561). Provincial directorate of national education (Eigw.=0.541) ranks second and MoNE (Eigw.=0.429) ranks third. Considering that the eigenvector centrality shows the importance of the nodes in the network, it is striking that the stakeholders of educational institutions are the most important actors. Again, it is thought that this situation may have arisen from the central management approach.

3.4. Monthly Frequency and Distribution of Interaction with Stakeholders

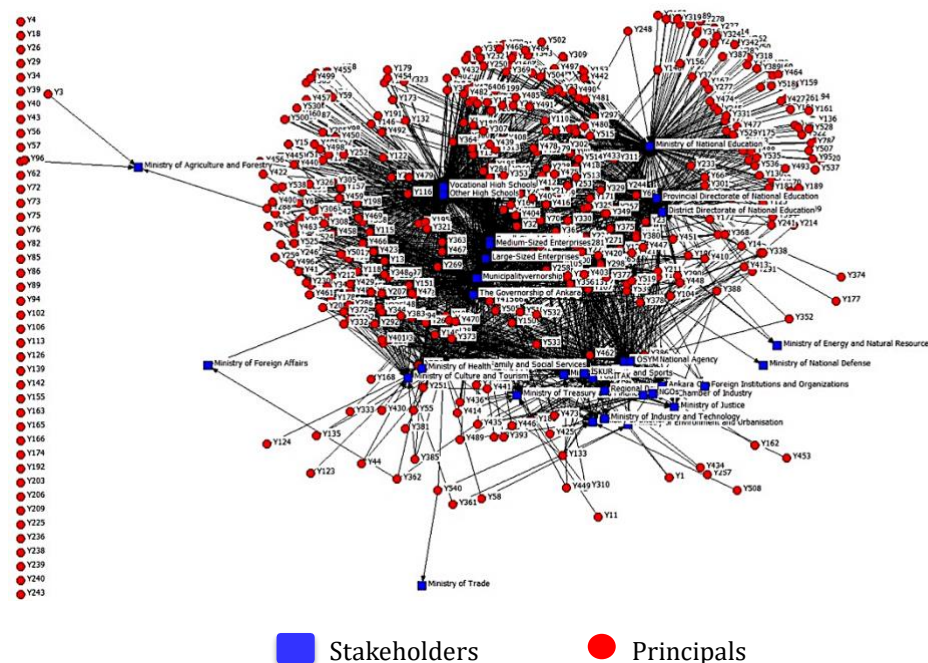


Figure 3. Network structure for monthly interaction

Note: Only a subset of the isolated nodes is displayed to improve readability.

Figure 3 illustrates that while some actors are centrally located in the network structure, some actors are peripheral. In terms of network location, it shows a dense and highly interactive network appearance with its proximity and number of nodes. However, there are also isolated nodes outside the network. Lines with a high amount of interaction are thicker, while lines with a low amount of interaction are thinner. The centrality measures of the actors forming the network are presented in Table 5.

Table 5.

Centrality Measures for Monthly Interaction

No	Stakeholders	Degree	Closeness	Betweenness	Eigenvector
1	Ministry of Justice	0.011	0.290	0.000	0.008
2	Ministry of Family and Social Services	0.119	0.312	0.021	0.096
3	Ankara Chamber of Industry	0.037	0.297	0.001	0.035
4	Ankara Chamber of Commerce	0.037	0.297	0.001	0.036
5	Municipality	0.293	0.344	0.044	0.288
6	Regional Development Agency	0.052	0.299	0.001	0.058
7	Large-Sized Enterprises	0.185	0.322	0.012	0.195
8	Ministry of Environment and Urbanisation	0.015	0.293	0.001	0.008
9	Ministry of Foreign Affairs	0.004	0.257	0.000	0.001
10	Other High Schools	0.472	0.388	0.121	0.411
11	Energy and Natural Resources Ministry	0.006	0.283	0.000	0.005
12	Ministry of Youth and Sports	0.080	0.303	0.009	0.072
13	Ministry of Treasury and Finance	0.069	0.302	0.009	0.050
14	Ministry of Interior	0.026	0.294	0.004	0.015
15	Provincial Directorate of National Education	0.254	0.336	0.043	0.220
16	District Directorate of National Education	0.228	0.331	0.027	0.210
17	Turkish Employment Agency	0.100	0.308	0.011	0.085
18	District Governorship	0.283	0.342	0.038	0.279
19	Small-Sized Enterprises	0.256	0.337	0.027	0.261
20	Ministry of Culture and Tourism	0.080	0.304	0.010	0.066
21	Ministry of National Education	0.474	0.387	0.232	0.326
22	Vocational High Schools	0.493	0.394	0.142	0.424
23	Ministry of National Defense	0.002	0.283	0	0.002
24	Medium-Sized Enterprises	0.254	0.336	0.026	0.258
25	Measurement, Selection and Placement Center	0.104	0.308	0.010	0.091
26	Presidency				
26	Ministry of Health	0.085	0.305	0.010	0.071
27	Ministry of Industry and Technology	0.020	0.293	0.000	0.019
28	Non-Governmental Organizations	0.031	0.295	0.003	0.029
29	Ministry of Agriculture and Forestry	0.006	0.254	0.006	0.001
30	Ministry of Trade	0.002	0.211	0	0.000
31	The Scientific and Technological Research Council of Türkiye	0.083	0.305	0.006	0.081
32	Ministry of Transport and Infrastructure	0	0.151	0	0.000
33	Turkish National Agency	0.087	0.305	0.005	0.087
34	Governorship	0.241	0.333	0.027	0.235
35	Foreign Institutions and Organizations	0.013	0.292	0.000	0.012

Table 5 indicates that vocational high schools (Deg.= 0.493), which is the actor number 22, is the actor with the highest connection. In the second place is MoNE (Deg.=0.474) and in the third place is other high schools (Deg.=0.472). These stakeholders are the actors with whom principals interact the most. The star actor in this network is vocational high schools.

The actor with the highest centrality of proximity is vocational high schools (Clo.=0.394). While other high schools (Clo.=0.388) are in the second place, MoNE (Clo.=0.387) is in the third place. Therefore, it can be stated that the actor that can easily (or indirectly) reach many actors in the network mechanism is vocational high schools.

The actor with the highest in-between center is MoNE (Betw.=0.232). Vocational high schools (Betw.=0.142) follow in the second place. Other high schools (Betw.=0.121) are in the third place. It can be stated that MoNE is in the position that offers the most opportunity in accessing and distributing information in the network.

The actors with the highest eigenvector centrality are vocational high schools (Eigw.=0.424). While other high schools (Eigw.=0.411) are in the second place, MoNE (Eigw.=0.326) is in the third place. Considering that the eigenvector centrality shows the importance of the nodes in the network, it is striking that vocational high schools are the most important actors.

3.5. Annual Frequency and Distribution of Interaction with Stakeholders

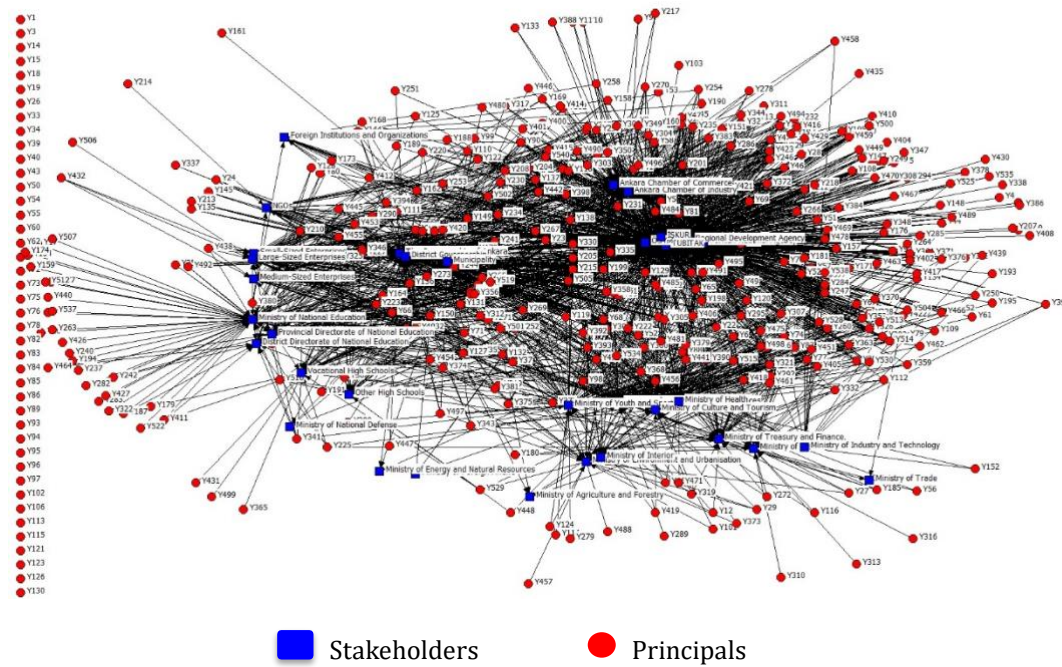


Figure 4. Network structure for annual interaction

Note: Only a subset of the isolated nodes is displayed to improve readability.

The network displayed in Figure 4 demonstrates that while some actors are centrally located within the network structure, some are peripheral. It shows a high level of interaction with the proximity of the network location and the number of nodes. However, there are also isolated nodes. Lines with a high amount of interaction are thicker, while lines with a low amount of interaction are thinner. The centrality measures of the actors forming the network are presented in Table 6.

Table 6.

Centrality Measures for Annual Interaction

No	Stakeholders	Degree	Closeness	Betweenness	Eigenvector
1	Ministry of Justice	0.057	0.267	0.009	0.034
2	Ministry of Family and Social Services	0.154	0.281	0.019	0.133
3	Ankara Chamber of Industry	0.230	0.292	0.027	0.215
4	Ankara Chamber of Commerce	0.209	0.289	0.022	0.202
5	Municipality	0.256	0.296	0.034	0.235
6	Regional Development Agency	0.356	0.313	0.046	0.339
7	Large-Sized Enterprises	0.072	0.269	0.005	0.073
8	Ministry of Environment and Urbanisation	0.056	0.267	0.007	0.033
9	Ministry of Foreign Affairs	0.007	0.258	0.000	0.007
10	Other High Schools	0.067	0.269	0.003	0.062
11	Energy and Natural Resources Ministry	0.006	0.257	0.000	0.005
12	Ministry of Youth and Sports	0.161	0.282	0.024	0.138
13	Ministry of Treasury and Finance	0.072	0.268	0.007	0.054
14	Ministry of Interior	0.037	0.264	0.001	0.033
15	Provincial Directorate of National Education	0.085	0.271	0.005	0.075
16	District Directorate of National Education	0.072	0.269	0.005	0.066
17	Turkish Employment Agency	0.359	0.313	0.048	0.346
18	District Governorship	0.202	0.287	0.019	0.195
19	Small-Sized Enterprises	0.076	0.270	0.003	0.080
20	Ministry of Culture and Tourism	0.135	0.278	0.016	0.113
21	Ministry of National Education	0.156	0.281	0.063	0.091
22	Vocational High Schools	0.083	0.271	0.012	0.070
23	Ministry of National Defense	0.007	0.260	0.000	0.006
24	Medium-Sized Enterprises	0.070	0.270	0.002	0.073
25	Measurement, Selection and Placement Center Presidency	0.406	0.321	0.069	0.379

26	Ministry of Health	0.106	0.274	0.014	0.088
27	Ministry of Industry and Technology	0.039	0.263	0.002	0.033
28	Non-Governmental Organizations	0.056	0.267	0.004	0.054
29	Ministry of Agriculture and Forestry	0.009	0.254	0.000	0.006
30	Ministry of Trade	0.004	0.251	0.000	0.002
31	The Scientific and Technological Research Council of Türkiye	0.396	0.320	0.059	0.378
32	Ministry of Transport and Infrastructure	0	0.151	0	0.000
33	Turkish National Agency	0.430	0.326	0.093	0.385
34	The Governorship of Ankara	0.207	0.288	0.023	0.195
35	Foreign Institutions and Organizations	0.033	0.264	0.000	0.030

When Table 6 is examined, actor number 33 (Deg.=0.430) is the actor with the highest connection. This position shows that actor 33 has more connections than other actors. Measurement, Selection and Placement Center Presidency (Deg.=0.406) is in the second place and The Scientific and Technological Research Council of Türkiye (Deg.=0.396) is in the third place. Compared to other stakeholders, these stakeholders appear to have more annual interaction rather than daily, weekly and monthly interaction. It is observed that there is frequent interaction with other institutions, but interaction with these stakeholder institutions is mostly on an annual basis.

The actors with the highest centrality of closeness are the National Agency (Clo.=0.326) and Measurement, Selection and Placement Center Presidency (Clo.=0.321). The Scientific and Technological Research Council of Türkiye (Clo.=0.320) is in the third place. Consequently, it can be stated that the National Agency has the highest level of opportunity to directly or indirectly reach many actors in the network.

Considering that the betweenness centrality is calculated by calculating the shortest path lengths of each node to all nodes, as a result of these calculations, the information of how many times each node is passed gives the betweenness value. Therefore, the actor with the highest centrality betweenness is the National Agency (Betw.=0.093). Measurement, Selection and Placement Center Presidency (Betw.=0.069) is in the second place, while MoNE (Betw.=0.063) is in the third place.

The actor with the highest eigenvector centrality is the National Agency (Eigw.=0.385). Measurement, Selection and Placement Center Presidency (Eigw.=0.379) is in the second place. The Scientific and Technological Research Council of Türkiye (Eigw.=0.378) is in the third place. Considering that the eigenvector centrality shows the importance of the nodes in the network, it is striking that the National Agency is the most important actors.

In the Stakeholder Interaction Questionnaire on the Dimensions of Glocal Leadership, it was asked which dimension of glocal leadership is associated with the interactions with the stakeholders. Consequently, principals were asked to indicate which sub-dimensions of glocal leadership behaviors they associate with their interactions with stakeholders. In this context, the opinions obtained are as follows; while most of the interactions with MoNE were associated with having a vision, there were fewer associations with the global literacy dimension. The principals associated a large part of the interactions with the district governorship, governorship and municipality with the local literacy dimension. A significant part of the interactions with institutions such as The Scientific and Technological Research Council of Türkiye, Measurement, Selection and Placement Center Presidency, Turkish Employment Agency has been associated with the management of social networks. Interactions with the National Agency and foreign institutions are mostly associated with the global literacy dimension.

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

Understanding glocalization is essential for examining organizational and leadership processes in the post-globalization era, which is characterized by interconnected, complex, uncertain, and dynamic conditions. Within this context, this study examined the glocal leadership behaviors of principals working in VTE institutions. It also analyzed stakeholder interactions through the perspective of social network analysis.

The findings revealed that principals demonstrated very high levels of glocal leadership behaviors in the Having a Vision dimension and high levels in the Management of Social Networks, Global Literacy, and Local Literacy dimensions. Overall, these findings indicate that VTE principals demonstrate glocal leadership behaviors at a satisfactory level. One possible explanation is that managing vocational and technical education requires a systematic, multidimensional, and collaborative leadership approach. In addition to implementing national policies and strategies, principals actively participate in international projects and partnerships, enabling them to develop a broader global perspective while maintaining responsiveness to local needs. Furthermore, the multi-stakeholder nature of vocational and technical education may enhance principals' awareness of stakeholder relationships and strengthen their capacity to manage social networks effectively. These findings differ from those reported by Erçetin et al. (2017), who found that managers demonstrated glocal leadership behaviors at a moderate level. Similarly, Çakmaklı (2011) reported low levels of leadership behaviors in the dimensions of Having a Vision, Management of Social Networks, and Local Literacy, and very

low levels in Global Literacy. Although that study was also conducted in a public institution, its findings differ considerably from those of the present study.

SNA evaluates relationships among actors by considering factors such as the importance and frequency of interactions, as well as the strength of ties. Weighting these relationships provides a more accurate understanding of network density, actors' positions within the network, and the overall interaction patterns among actors. Accordingly, the social network structures between principals and stakeholders were examined in detail.

The findings showed that principals interacted most frequently with the MoNE, district national education directorates, provincial national education directorates, and vocational high schools, whereas interactions with other ministries, including the Ministries of Transport and Infrastructure, Trade, and Foreign Affairs, were relatively limited. Principals primarily associated their interactions with MoNE with the Having a Vision dimension. This finding may be explained by the fact that schools develop their strategic plans and organizational goals in line with the Ministry's vision and policy framework. Similarly, interactions with provincial and district national education directorates, district governorships, municipalities, and governorships were mainly associated with the Local Literacy dimension. Given that these stakeholders primarily operate at the local level, this finding appears to be consistent with the characteristics of the Local Literacy dimension.

Interactions with stakeholders such as the Scientific and Technological Research Council of Türkiye, the Measurement, Selection and Placement Center Presidency, small- and medium-sized enterprises, the Turkish National Agency, the Ministry of Youth and Sports, the Ministry of Family and Social Services, the Ministry of Culture and Tourism, the Ministry of Health, and the Ministry of Treasury and Finance were primarily associated with the Management of Social Networks dimension. Although VTE principals do not have direct hierarchical relationships with these stakeholders, they frequently collaborate with them through projects, institutional partnerships, and other activities carried out during the educational process. Consequently, these stakeholders occupy an important position within principals' social networks.

Interactions with the Scientific and Technological Research Council of Türkiye, Regional Development Agencies, NGOs, and foreign institutions and organizations were primarily associated with the Global Literacy dimension. This finding may be attributed to the project-based activities carried out by vocational and technical education institutions. Principals of vocational and technical Anatolian high schools are expected to collaborate with these stakeholders while implementing national and international projects, making such interactions an integral part of the project cycle. Administrative procedures, documentation, and institutional cooperation are often conducted through these organizations. In particular, projects implemented within the framework of the Turkish National Agency and European Union programmes require continuous collaboration with both national and international stakeholders. Therefore, these interactions can reasonably be interpreted as reflecting the Global Literacy dimension of global leadership.

The findings further indicate that principals' global leadership behaviors are reflected in the structure of their stakeholder networks. Developing an organizational vision, formulating policies and strategies, establishing information networks, maintaining relationships with institutions and organizations, recognizing local stakeholders, and engaging with international partners are all important components of global leadership that contribute to the development of social network structures. Consistent with this perspective, principals reported interacting with a wide range of institutions and organizations within the stakeholder network.

When stakeholder interaction networks were evaluated using all network parameters, the findings suggested that schools generally operate within hierarchical interaction structures. Principals interacted most frequently with stakeholders positioned at the upper levels of the educational system. This finding is consistent with the centralized and hierarchical structure of the Turkish education system. In particular, vocational and technical Anatolian high schools demonstrated the highest degree centrality with MoNE, provincial national education directorates, and district national education directorates, reflecting the strong institutional connections within the formal administrative structure. As the interaction period extended over the course of the year, additional stakeholders became more prominent within the network. Vocational high schools, other types of high schools, the Turkish National Agency, and the Scientific and Technological Research Council of Türkiye emerged as central actors. This pattern may indicate that principals increasingly established collaborative relationships with other secondary education institutions throughout the year. Similar findings were reported by Özcan (2017), who identified MoNE and provincial and district national education directorates as the institutions with which secondary schools maintained the strongest relationships. Likewise, Ugurlu (2013) reported that public educational institutions maintained strong relationships with one another while demonstrating relatively limited external connections. Similarly, Uygun (2018) found that public institutions constituted the central actors within organizational networks.

Although stronger connections among educational institutions can be considered beneficial for collaboration and information exchange, the relatively limited relationships with other stakeholder groups indicate that the stakeholder network remains incomplete. Given that VET institutions operate as open systems, adapting to a dynamic and continuously changing environment requires stronger collaboration with external stakeholders. The findings suggest

that project-based activities increase schools' interactions with organizations such as the Turkish National Agency and the Scientific and Technological Research Council of Türkiye. As Adkins (2008) noted, actors with high degree centrality are more visible within the network and play a more influential role in information exchange and coordination. Accordingly, high degree centrality represents an important structural advantage within stakeholder networks.

Compared with educational institutions, interactions with public institutions, local governments, private sector organizations, and NGOs were relatively limited. One possible explanation is that responsibilities and communication channels with these stakeholders are largely defined by legislative and administrative regulations, resulting in less frequent interaction. However, schools are expected to function as collaborative organizations in which broad stakeholder participation contributes to institutional effectiveness. Therefore, strengthening relationships with external stakeholders appears essential for enhancing school-community collaboration and improving the overall effectiveness of vocational and technical education.

The findings regarding closeness and betweenness centrality were largely consistent with those obtained for degree centrality. Actors with high closeness centrality occupy advantageous positions in terms of information flow and communication within the network (Borgatti, 2006). In the present study, district national education directorates, MoNE, vocational high schools, other high schools, the Turkish National Agency, the Measurement, Selection and Placement Center Presidency, and the Scientific and Technological Research Council of Türkiye emerged as the most central actors according to closeness centrality.

Eigenvector centrality reflects the relative importance of actors according to their connections with other influential actors in the network. The findings indicated that district national education directorates, MoNE, vocational high schools, other high schools, the Turkish National Agency, the Measurement, Selection and Placement Center Presidency, and the Scientific and Technological Research Council of Türkiye had the highest eigenvector centrality values. These findings suggest that educational institutions and organizations constitute the most influential actors within the stakeholder network.

Network density is one of the structural characteristics commonly used to evaluate and compare social networks. Even without comparisons across different networks, density provides valuable information about the overall structure and cohesion of a network. The findings indicated that stakeholder networks generally exhibited low density. This result may partly be explained by the use of a one-way network structure in the analysis, where reciprocal relationships were not considered. Consequently, limited network density may restrict communication, information exchange, and the flow of resources among stakeholders.

The relatively low network density indicates limited cohesion among actors and comparatively weak relationships within the stakeholder network. Previous studies have suggested that low-density networks may restrict communication and reduce the flow of information and resources among actors (Hanneman & Riddle, 2005; Hatala, 2006). However, the interpretation of network density remains controversial. Some scholars argue that highly dense networks may generate redundant information and limit access to new knowledge, whereas less dense networks facilitate access to diverse information through weak ties (Granovetter, 1973). Hernández and Reyes López (2009) suggested that intermediate density values generally range between 40% and 70%, while Öztaş (2015) noted that networks with a large number of actors typically exhibit density levels below 50%. Considering the large number of stakeholders included in the present study, the observed density levels appear to be consistent with expectations reported in the literature.

The stakeholder networks also included isolated principals. According to Wasserman and Faust (1994), actors with low degree centrality are more likely to become isolated because they occupy peripheral positions within the network. The presence of isolated principals suggests that some school leaders maintain limited interactions with their external environment. From the perspective of open systems theory, schools depend on continuous interaction with their environment to obtain resources, exchange information, and respond effectively to external demands. Therefore, limited stakeholder interaction may reduce schools' capacity to adapt to changing conditions and may ultimately affect the quality of educational processes. These findings highlight the importance of developing initiatives that encourage principals to establish stronger and more diverse stakeholder relationships.

4.1. Recommendations

Based on the findings of this study, recommendations were formulated for researchers, policy makers, and practitioners. The recommendations are intended to support future studies and inform educational policy and practice. They are organized into separate sections according to their intended audience.

4.1.1. Recommendations for researchers

The findings of this study indicate that research on glocal leadership in educational settings remains limited in Türkiye. Future studies may investigate glocal leadership in different educational contexts, including primary, secondary, and higher education institutions, to enhance the generalizability of the findings. In addition, the relationships between glocal

leadership and different organizational variables, such as organizational commitment, school climate, innovation, and teacher collaboration, may be examined.

Further research could also explore the characteristics and roles of actors occupying central positions within stakeholder networks. Such studies could provide a better understanding of how these actors influence information flow, collaboration, and decision-making processes in educational organizations. Furthermore, comparative studies involving different school types and educational systems would contribute to the development of the global leadership literature.

Social network analysis has considerable potential for examining organizational relationships and interaction processes in educational institutions. Accordingly, researchers are encouraged to employ social network analysis more frequently in educational leadership and organizational studies. The wider use of this methodology would contribute to a deeper understanding of stakeholder interactions and organizational dynamics.

4.1.2. Recommendations for policy makers and practitioners

The findings suggest that strengthening stakeholder interaction should be considered an important component of school leadership practices. School principals may be encouraged to establish stronger and more frequent interactions with internal and external stakeholders to improve collaboration and organizational effectiveness. Policies supporting stakeholder engagement may contribute to stronger social networks within schools.

Schools should be encouraged to strengthen collaboration not only with educational authorities but also with universities, NGOs, industry representatives, regional development agencies, and other external stakeholders to promote broader stakeholder engagement.

Policy makers may also develop strategies to increase both the frequency and quality of positive interactions among school principals and stakeholders. Actors occupying central positions within stakeholder networks may be utilized more effectively in professional development, communication, and collaboration activities. Such actors may facilitate the dissemination of information and the coordination of organizational processes.

In addition, SNA may be incorporated into educational planning and evaluation processes. By examining network structures, policy makers can identify interaction patterns, isolated actors, and leadership positions within schools. Based on these findings, targeted interventions can be designed to strengthen collaboration, improve communication, and increase the overall effectiveness of school organizations.

Particular attention should be given to principals occupying isolated positions within stakeholder networks. Targeted interventions, mentoring opportunities, and collaborative activities may help strengthen their professional interactions and improve network integration.

Research and Publication Ethics Statement

This study was conducted as part of the first author's doctoral dissertation. All necessary ethical approvals and institutional permissions were obtained prior to data collection. Ethical approval was granted by the Hacettepe University Ethics Committee (Decision No. 35853172-300, dated 20 March 2020). Permission to conduct the research in schools was obtained from the Ankara Provincial Directorate of National Education (No. 14588481-605.99-E.15533102, dated 26 October 2020). The authors declare that all stages of the research were conducted in accordance with the principles of research and publication ethics.

Contribution Rates of Authors to the Article

This study was derived from the first author's doctoral dissertation, completed under the supervision of the second author. The first author was responsible for the conceptualization of the study, data collection, data analysis, interpretation of the findings, and preparation of the original manuscript. The second author contributed to the study design, supervised the research process, critically reviewed the manuscript, and contributed to the translation and revision of the article.

Support Statement

This research was carried out as part of a doctoral dissertation written at Hacettepe University, Institute of Educational Sciences, under the guidance of advisor Prof. Dr. Şefika Şule ERÇETİN. This research did not receive any specific grant from funding agencies in the public or commercial sectors.

Acknowledgement

The author would like to thank her advisor, Prof. Dr. Şefika Şule ERÇETİN, for her invaluable guidance and support. The author also thanks all the volunteer school principals who participated in this study and shared their valuable insights.

Statement of Interest

The authors declare that there is no conflict of interest.

5. REFERENCES

- Adkins, D. (2008). *The use of social network analysis to measure knowledge sharing in the New York State project management community of practice* (Unpublished doctoral dissertation). University of Albany, NY.
- Aktel, M. (2001). Küreselleşme süreci ve etki alanları. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 6(2), 193-202.
- Bennell, P., & Segerstrom, J. (1998). Vocational education and training in developing countries: Has the World Bank got it right? *International Journal of Educational Development*, 18(4), 271-287. doi:10.1016/S0738-0593(98)00021-2
- Barabási, A.L. (2010). *Bağlantılar*. İstanbul: Optimist.
- Borgatti, S. P., & Ofem, B. (2010). Overview: Social network theory and analysis. In A.J. Daly (Ed.), *Social network theory and educational change* (pp. 17-30). Cambridge, MA: Harvard Education Press.
- Borgatti, S.P. (2006). Identifying sets of key players in a social network. *Computational & Mathematical Organizational Theory*, 12(1), 21-34. doi:10.1007/s10588-006-7084-x
- Borgatti, S.P., Everett, M.G., & Freeman, L.C. (2002). *UCINET 6 for Windows: Software for social network analysis*. Lexington: Analytic Technologies.
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of cross-sector collaborations: propositions from the literature. *Public Administration Review*, 66(1), 44-55. doi:10.1111/j.1540-6210.2006.00665.x
- Bürhan, Y., Baykara, M., & Daş, R. (2017, September). *Sosyal ağ analizi ve veri görselleştirme araçlarının incelenmesi ve uygulamalı karşılaştırılması*. Paper presented at the International Artificial Intelligence and Data Processing Symposium (IDAP), Malatya, Turkey.
- Canbolat, S., Mumcu, S., Şahan, A., Öcal, F., & Akdoğan, N. (2018). Applicability of glocal leadership to educational institutions. In Ş. Ş. Erçetin (Ed.), *Chaos, complexity and leadership 2016* (pp. 573-579). Switzerland: Springer.
- CEDEFOP. (2011). *Exploring leadership in vocational education and training*. Luxembourg: Publications Office of the European Union. Retrieved from <https://www.cedefop.europa.eu/en/publications-and-resources/publications/6113>
- Christakis, N.A., & Fowler, J.H. (2012). *Sosyal ağların şaşırtıcı gücü ve yaşantımızı biçimlendiren etkisi*. İstanbul: Varlık Yayınları.
- Coburn, C. E., & Russell, J. L. (2008). District policy and teachers' social networks. *Educational Evaluation and Policy Analysis*, 30(3), 203-235. doi:10.3102/0162373708321829
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, 95-120. doi:10.1086/228943
- Creswell, J. W. (2014). *Research design qualitative, quantitative and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage.
- Çakmaklı, Y. (2011). *Glokal liderlik ve davranışsal göstergeleri üzerine bir çalışma: Bir kamu kurumu örneği* (Unpublished master's thesis). Ufuk Üniversitesi, Ankara.
- Daly, A. J. (2019). *Sosyal ağ teorisi ve eğitimde değişim* (T. Çalık & E. Er, Çev. Ed.) (1st ed.). Ankara: Pegem Akademi.
- Daly, A. J., & Finnigan, K. S. (2010). A bridge between worlds: Understanding network structure to understand change strategy. *Journal of Educational Change*, 11(2), 111-138. doi:10.1007/s10833-009-9102-5
- Daly, A. J., & Finnigan, K. S. (2011). The ebb and flow of social network ties between district leaders under high-stakes accountability. *American Educational Research Journal*, 48(1), 39-79. doi:10.3102/0002831210368990

- Daly, A. J., Finnigan, K. S., Jordan, S., Moolenaar, N. M., & Che, J. (2014). Misalignment and perverse incentives: Examining the politics of district leaders as brokers in the use of research evidence. *Educational Policy*, 28(2), 145-174. doi:10.1177/0895904813513149
- Daly, A. J., Moolenaar, N. M., Liou, Y. H., Tuytens, M., & Fresno, M. (2015). Why so difficult? Exploring negative relationships between educational leaders: The role of trust, climate, and efficacy. *American Journal of Education*, 122(1), 1-38. doi:10.1086/683288
- De Nooy, W., Mrvar, A., & Batagelj, V. (2011). *Exploratory social network analysis with Pajek* (2nd ed., rev. and expanded). New York: Cambridge University Press.
- Dijkstra, A., Veenstra, R., & Peschar, J. (2004). Social capital in education: Functional communities around high schools in the Netherlands. In H. Flap & B. Völker (Eds.), *Creation and returns of social capital: A new research program* (pp. 119-144). Routledge.
- Doğan, E. (2002). Eğitimde küreselleşme. *Eurasian Journal of Educational Research*, 6, 87-98.
- Educational International (2009). *Literature Review: Vocational Education and Training*. Retrieved from http://download.eiie.org/Docs/WebDepot/091213_VET_Literature_EDITED%20AA.pdf
- Erçetin, Ş. Ş. (2000). *Lider sarmalında vizyon* (Genişletilmiş 2. baskı). Ankara: Nobel Yayıncılık.
- Erçetin, Ş. Ş., & Hamedoğlu, M. A. (2007). Küreselleşme sürecinde ulusal liderlerin rolleri ve uluslararası izdüşümleri [National leaders' roles in the globalization process and their international projections]. In *Proceedings of ICANAS 38, International Congress of Asian and North African Studies* (pp. 159-163). Ankara, Turkey: Atatürk Supreme Council for Culture, Language and History.
- Erçetin, Ş. Ş., & Neyişci, N. B. (2015). Social networks: Connections in structures. In Ş. Ş. Erçetin & S. Banerjee (Eds.), *Chaos, complexity and leadership 2013* (pp. 299-303). Cham, Switzerland: Springer.
- Erçetin, Ş. Ş., & Neyişci, N. B. (2016). Social network analysis: A brief introduction to the theory. In Erçetin, Ş.Ş. (Ed.), *Chaos, complexity and leadership 2014* (pp. 167-171). Switzerland: Springer.
- Erçetin, Ş. Ş., Potas, N., Açıkalin, S. N., & Kısa, N. (2011). Multidimensional glocal leadership scale. *Middle-East Journal of Scientific Research*, 8(2), 314-318.
- Erçetin, S. S., Potas, N., Açıkalin, S. N., Yılmaz, M., Kısa, N., & Güngör, H. (2017). Glocal leadership behaviors of managers working in private institutions. *Polish Journal of Management Studies*, 16(2), 74-87. doi:10.17512/pjms.2017.16.2.07
- Everett, M., & Borgatti, S. (2005). Extending centrality. In P. J. Carrington, J. Scott, & S. Wasserman (Eds.), *Models and methods in social network analysis* (pp. 57-76). Cambridge: Cambridge University Press.
- Franco, M.J.B., Mainardes, E., & Martins, O. (2011). A review of inter-organizational networks: Evidence from studies published in 2005-2008. *Cuadernos de Administración*, 24(43), 133-155.
- Francois, E. J. (2015). *Building global education with a local perspective: An introduction to glocal higher education*. New York: Palgrave Macmillan.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Marshfield: Pitman.
- Gök, Ö. (2014). *Üniversite yöneticilerinin glocal liderlik ve uygulamalarına ilişkin görüşleri* (Unpublished master's thesis). Hacettepe Üniversitesi, Ankara.
- Granovetter, M. S. (1973). The strength of weak ties, *American Journal of Sociology*, 78(6), 1360-1380. doi:10.1086/225469
- Gürsakal, N. (2009). *Sosyal ağ analizi*. Bursa: Dora Yayıncılık.
- Güzeller, C.O., Eser, M.T., & Aksu G. (2016). *UCINET ile sosyal ağ analizi (1.baskı)*. Ankara: Maya Akademi Yayıncılık.
- Hanneman, R., & Riddle, M. (2005). *Introduction to social network methods*. Retrieved from <http://www.faculty.ucr.edu/~hanneman/nettext/>

- Hatala, J.P. (2006). Social network analysis in human resource development: A new methodology. *Human Resource Development Review*, 5(1), 45-71.
- Hawe, P., & Ghali, L. (2007). Use of social network analysis to map the social relationships of staff and teachers at school. *Health Education Research*, 23(1), 62-69.
- García Hernández, A., & de los Reyes López, E. (2009). *Analysis of the relationship between the properties of the social networks of R&D groups and their scientific performance*. Paper retrieved from CSIC Institutional Repository. Retrieved from http://digital.csic.es/bitstream/10261/10023/1/AC195_1_viewpaper.pdf
- Great Britain Home Office. (2016). *Social network analysis: 'How to' guide* (Report No. ISBN 978-1-78655-066-8). Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/491572/socnet_howto.pdf
- Hoy, W. K., & Miskel, C. G. (2010). *Eğitim yönetimi: Teori, araştırma ve uygulama* (S. Turan, Çev. Ed.). Ankara: Nobel Yayın Dağıtım.
- Kadushin, C. (2004). Some basic network concepts and propositions. In Kadushin, C. (Ed.), *Introduction to social network theory*. Retrieved from <http://ccftp.scu.edu.cn:8090/Download/7511966c-84c9-4e8d-ac4c-a2f99b478da0.pdf>
- Karabağ, S. (2014). *Mekânın siyasallaşması* (4. Baskı). Ankara: Pegem Akademi.
- Katz N., Lazer D., Arrow H., & Contractor, N. 2004. Network theory and small groups. *Small Group Research*, 35(3), 307-332.
- Kilduff, M., & Tsai, W. (2003). *Social networks and organizations*. London: Sage.
- Korkmaz, C. (2021). Glokal liderlik: Eğitim bağlamında bir alanyazın incelemesi. *Milli Eğitim Dergisi*, 50(232), 421-450. doi:10.37669/milliegitim.741585
- Lin, N. (1999). Building a network theory of social capital. *Connections*, 22(1), 28-51.
- Marsden, P. V. (2011). Survey methods for network data. In J. Scott & P. J. Carrington (Eds.), *The SAGE Handbook of Social Network Analysis* (pp. 370-388). London: Sage.
- Marsden, P.V. (1990). Network data and measurement. *Annual Review of Sociology*, 16, 435-463. doi:10.1146/annurev.so.16.080190.002251.
- Marsden, P. V. (2005). Recent developments in network measurement models and methods in social network analysis. In P. J. Carrington, J. Scott, & S. Wasserman (Eds.), *Models and methods in social network analysis* (pp. 8-30). Cambridge: Cambridge University Press
- Moolenaar, N. M., & Sleegers, P. J. C. (2015). Social networks, trust, and innovation: The role of relationships in supporting innovative climate in Dutch schools. In: Daly, A.J. (Ed.), *Social network theory and educational change*, (pp. 97-114). Cambridge: Harvard Education Press.
- Moolenaar, N.M., Daly, A. J., & Sleegers, P. J. C. (2010). Occupying the principal position: examining relationships between transformational leadership, social network position, and school's innovative climate. *Educational Administration Quarterly*, 46(5), 623-670.
- Moreno, J. L. (1934). *Who shall survive?: A new approach to the problem of human interrelations*. Beacon:Beacon House Inc.
- Neuman, W. L. (2013). *Toplumsal araştırma yöntemleri: Nicel ve nitel yaklaşımlar* (Cilt 1-2) (S. Özge, Çev.). İstanbul: Yayın Odası.
- Novak, D. A. (2008). *Leadership of organizational networks: An exploration of the relationship between leadership and social networks in organizations* (Unpublished doctoral dissertation). Regent University, Virginia Beach.
- OECD. (2015). *OECD reviews of vocational education and training*. Paris: OECD Publishing.
- OECD. (2010). *Learning for jobs*. Paris: OECD Publishing. Retrieved from <https://www.oecd.org/education/skills-beyond-school/Learning%20for%20Jobs%20book.pdf>

- Özcan, E. G. (2017). *Ortaöğretim kurumlarının diğer örgütlerle ortakyaşar ilişkileri* (Unpublished doctoral dissertation). Hacettepe Üniversitesi, Ankara.
- Özdemir, G., & Şahin, S. (2016). Development of the technical leadership skills scale in vocational and technical high school administrators: Reliability and validity studies. *Eğitim Bilimleri Araştırmaları Dergisi*, 6(1), 135-152.
- Özdemir, G., & Şahin, S. (2020). Mesleki ve teknik anadolu liseleri yöneticilerinin teknik liderlik becerilerinin geliştirilmesi. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 16(1), 63-79. doi:10.17860/mersinefd.632608
- Özer, M. (2018). 2023 eğitim vizyonu ve mesleki ve teknik eğitimde yeni hedefler. *Yükseköğretim ve Bilim Dergisi*, 8(3), 425-435.
- Özer, M., & Perc, M. (2021). Impact of social networks on the labor market inequalities and school-to-work transitions. *Yükseköğretim Dergisi*, 11(1), 38-50. doi:10.2399/yod.21.868353
- Öztaş, N. (2015). *Yönetim örgüt ve yönetim kuramları*. Ankara: Otorite Yayınları.
- Scott, J. (2000). *Social network analysis: A handbook* (2nd ed.). London: Sage.
- Siciliano, M. D., & Thompson, J. R. (2015). If you are committed, then so am I: The role of social networks and social influence on organizational commitment. *Administration & Society*, 50(7), 1-31. doi:10.1177/0095399715617987
- Spring, J. (2008). Research on globalization and education. *Review of Educational Research*, 78(2), 330-368. doi: 10.3102/0034654308317846
- Tağ-Kalafatoğlu, Ş. (2017). Etkileşim: Kavramsal açıklamalar, boyutları ve kuramsal yaklaşımlar. Z. Yüksek Bilgili (Ed.), In *Uluslararası Sosyal Araştırmalar Kongresi (USAK'17) Bildiri Kitapçığı (Cilt II)*. İstanbul.
- Uğurlu, Z. (2013). *Eğitim örgütlerinin örgütsel ağbağ düzeneğindeki konumunun iş birliği düzeylerine etkisi Sinop ili örneği* (Unpublished doctoral dissertation). Ankara Üniversitesi, Ankara.
- UNESCO. (2016). *Revised recommendation concerning technical and vocational education and training*. Paris: UNESCO. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000245068.page=5>
- Van Duijn, M. A., & Vermunt, J. K. (2006). What is special about social network analysis?, *Methodology*, 2(1), 2-6. doi:10.1027/1614-2241.2.1.2
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge: Cambridge University Press.
- World Bank. (2019). *World Development Report 2019: The changing nature of work*. Washington, DC: Author. Retrieved from <https://documents1.worldbank.org/curated/en/816281518818814423/2019-WDR-Report.pdf>
- Zhao, Y. (2009). *Catching up or leading the way: American education in the age of globalization*. Alexandria: ASCD.