Managerial Challenges for Networks and Beyond

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Abstract Networks are increasingly visible in a growing number of sectors. However, as with individual companies, not all networks will succeed, but only those which are able to build and maintain their competitive edge. Dynamic changes in the business environment, especially since the turn of the century, have made it difficult to imagine a network functioning in the absence of managers. As in the case of a single company, they are the prime determinant of whether the network will succeed. Indeed, a good manager can do so more efficiently and effectively than a weak one. The goal of the paper is thus to present the major challenges facing network managers. Perceptions of managers within networks, the basic functions and competences of network managers, the roles played by managers depending on the structure (type) of the network, as well as practical research results in this area and challenges for network management, have all been described in this paper.

1 Introduction

Globalization and technical and technological changes, combined with deregulation and demographic changes, have created a new competitive reality, which imposes greater demands on modern companies. To make such organizations more efficient and able to adapt to new business conditions, they are obliged to constantly seek out new mechanisms and concepts of operation. It is claimed that one such possibility is offered by network structures which allow both flexibility

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and productivity (Prokopenko 2000). It is even believed that the individual company will no longer lie at the hub of its business network, but rather will have to participate in numerous technology-enabled and social networks. To be able to participate, the business processes of all network members will necessarily be compatible, and information will need to be portable—a formidable challenge (Vervest and Zheng 2009: 4).

Changes in technology linked to the globalization of products and services also affect market dynamics and bring about greater uncertainty in terms of demand. This essentially means that the company's competitive position depends on its ability to understand these changes and respond appropriately to meet these requirements (Nix 2000: 27–28). Regardless of whether the company operates independently or within a network organization, such a set of circumstances means new challenges for managers. It should be emphasized that these challenges are significantly greater in network organizations, which generally consist of a number of companies (sometimes dozens or even hundreds), often from different countries and cultures. This is mainly due to the fact that it is managers who determine whether a network will succeed or fail. Taking the network assumptions into account, managers link individual intentions with the strategy of the network, which often requires a change in perceptions, thinking, and the understanding of the organizational reality.

From network structures arise new organizations which link the interests of numerous business entities. Therefore, this issue is of particular interest to both theorists and practitioners of management. The goal of our paper is thus to present the major challenges facing network managers. Perceptions of managers within networks, the basic functions and competences of the network managers, the roles played by managers depending on the structure (type) of the network, as well as practical research results in this area and challenges for network management, have all been described in this paper.

2 Image of the Manager in Network Organizations

When creating an image of a manager in network organizations, one should look at the functioning of the companies in the global economy. The disappearance of national borders, inter-penetration of cultures, tolerance of different value systems, the development of knowledge and information, as well as functioning as part of international teams are regarded as some of the determinants shaping the image of the manager in a network organization (Liberman and Torbiörn 2000).

Decision-making within network structures is linked with doubled levels of risk, in that a decision is both an internal action of the organization, being the choice of the targeted solution in the context of its operation, and at once is also an intra-network action due to considerations of responsibility for the functioning of the entire network. One may even claim that network contextuality increases the complexity of decision-making processes, as a greater number of problems require solving. The assumption of Kutschker and Bäurle (1997: 105–106) is that the functioning of modern organizations should be considered as dynamic, as a process, rather than static. The creative ability of the decision-maker in network organizations affects the quality of decisions made in the area of network strategy.

Each manager in the network has his or her own way of solving problems. In fact, routine decisions do not require the application of complex decision-making techniques. However, in risky situations, decision-making becomes more complex and requires more information, as well as detailed analyses. This generally means that the image of the manager as the decision-maker changes within network organizations. The plethora of information which reaches managers operating within networks means that he/she has to select from it and distinguish important data from that which is less important.

Heterarchy is also a determinant of the decision-making process in the network organizations, which is to say that hierarchical structures give way to organizations whose structures are equivalent to a large extent. Heterarchy separates privileges and opportunities for decision-making amongst multiple managers (Fairtlough 2005). Implementation of heterarchy does not, however, mean the complete elimination of the hierarchy. This relates to the lean hierarchy—which is characterized by "controlled disorder" of information—and decision-making network structures (Müler 1997: 84).

The role of a manager in the network is extended to negotiation activities (Mintzberg 1975). A manager acts as a negotiator within his or her company, as well as between the company and its network partners, and finally between the company and its environment. The scope of the negotiations is determined by the specificity of network links between the companies (the scope of cooperation, the strength of the links within the network, number of organizations in the network, international scope of the network, and so on). This means that the more extensive the network and the greater its involvement in markets in different countries or regions, the more business negotiations take place.

It is further believed that among the entities within the network structure, the requirement to learn is more or less "mandatory". Managers are required to have both knowledge, as well as the ability to create a learning environment within the network (Sroka et al. 2014). Knowledge transfer and building intellectual capital is more important within network organizations than in entities outside the network structures. This results from an additional component of the learning process, namely intra-network learning. Besides learning within the organization and the acquisition of knowledge from the environment, this component brings together the network entities and binds them in a somewhat stronger manner, in terms of the implemented business strategy.

The logical continuation of any discussion on the work of managers within network organizations is to strive for leadership on many levels: intellectual (the managers' level of knowledge), moral (ethics, network co-responsibility), as well as psychological-physical (physical fitness, ability to build interpersonal relationships).

Managers operating in networks are also required to appreciate the benefits of coopetition, and the ability to deal with the "network organizational rules". An important prerequisite for the smooth functioning of the network is the elimination of the traditional context of thinking in terms of one organization only.

The specific image of the network manager is also related to human resource management. Network structures which go beyond the boundaries of a given country (the internationalization of activities within network links) result in the implementation of new solutions in the field of human resource management. There are issues of multiculturalism, changes in motivation systems, the delegation of workers to work abroad, to give but a few examples. Therefore one can state that a 'clash' arises in terms of the image of a network manager functioning in international business structures: universalism and tradition on the one hand, and the ability to acquire a new international identity on the other hand. International business conditions often give rise to the need to negate the existing rules and ways of doing business.

The interpersonal role of managers in the network is greater than in entities operating independently. In fact, managers are regarded as formal representatives of various organizations, as well as serving as connectors between the network members. Therefore, the scope of interpersonal contacts is extended. Managers in the network structure are intermediaries between their own company and other members of the network.

The organizational role of the managers in network structures can also be extended, in the sense that in addition to the "hard" elements (specific and clearly defined, such as a fixed range of activities and authorizations, the mandatory principles of behavior, scope of responsibility, links between entities), there are also "soft" elements (vague, interpersonal relationships, values, traditions, ethical standards, and so on). The essence of organizational roles, especially the "soft" elements, is influenced by many factors, including the expectations of network participants, the prestige associated with functioning within the network structures and so on. Table 1 presents the importance of particular managerial roles in the functioning of network structures.

Table 1 Importance of particular managerial roles

Role of the manager	Network level
Decision-maker	Achievement of expected results and planned goals of the network
	Ability to manage changes at the organizational level and within network structures
	Ability to harmonize the goals of the organization with the goals of the network
	Ability to undertake multi-faceted cooperation with organizations creating networks
	Systematic and holistic thinking
	Flexibility in operations and customer orientation in the context of additional value created in the network
Connector	Ability to select information and find out relevant information
	Ability to communicate by taking into account the complexity of the phe-nomena and external factors (cultural norms, ethics, tradition)
	Ability to manage time (reasonable separation time between work in the organization and work in the network structures)
	Ability to share knowledge at the level of network structures
Representative	Representing both the interests of organization and the network
	Ability to attract new organizations to the network structures
Employer	Broadening the scope of employees' competences
	Employment in new positions resulting from the necessity of network functioning
Organizer	Focus on the merits (competencies, tasks, activities, responsibilities), and socio-cultural elements (acceptance of cultural diversity, ethics, honesty, loyalty, etc.)

3 Basic Functions and Competences of Network Managers

The importance of managers to network effectiveness has been confirmed by the research of numerous scholars (e.g. Batterink et al. 2010; Rampersad et al. 2010). This is because, as with single organizations, innovative networks need to be managed thoroughly (Heidenreich et al. 2014). From the perspective of network managers, an innovative network consists of sets of vertical and horizontal relationships established among various organizations. Such relationships must be orchestrated; a network manager is therefore closely involved in all the activities of a network and interacts regularly with all participants, thus representing the ultimate reference point regarding the allocation, coordination and management tasks which arise in an innovation network. The employment of a network manager should enhance the core management functions in innovation networks and thus contribute to their overall performance.

It is claimed that by appointing a dedicated network manager to administrate, coordinate, and regulate, the management of tasks is bundled and centralized within a single entity (Landsperger et al. 2012). Therefore, the employment of a network manager should enhance the core management functions in networks, which in turn should have a positive effect on performance (Heidenreich et al. 2014).

The management of interorganizational relationships in an innovation network comprises four core management functions (Landsperger et al. 2012):

– selection function—the inclusion in and removal of participants from the network; the better a network member, in possession of valuable resources, the more opportunities for the network and thus its relational performance,
– allocation function—ensuring the efficient coordination of resources and tasks and their allocation in the network,
– regulation function—providing rules for cooperation and ensuring clear and transparent communication between the network participants,
– evaluation function—capturing members' performance contributions, as well as provision of all necessary information to the members, as well as regular documentation of network progress. Landsperger and Spieth (2011) claim that doing so enhances performance in terms of both structure and the achievement of goals.

Generally one can state that the implementation and execution of the four core management functions contributes to the relational and structural performance of the network, as well as facilitating the successful achievement of set goals.

An aggregation of competencies is necessarily included within network structures, which include the competencies of individual employees, the competencies of individual organizations, and even the competencies of local and regional authorities as well as the other members of the network. As a result, the competencies of the entire network are obtained (Fig. 1).

Managers, as representatives of particular organizations, are in possession of both universal competencies (required for a given position from all or nearly all managerial staff), and specific competencies relevant to certain functions. In general terms, this means that within the network, the competencies occur at the level of individual organizations, as well as in relation to the network structure (Table 2).

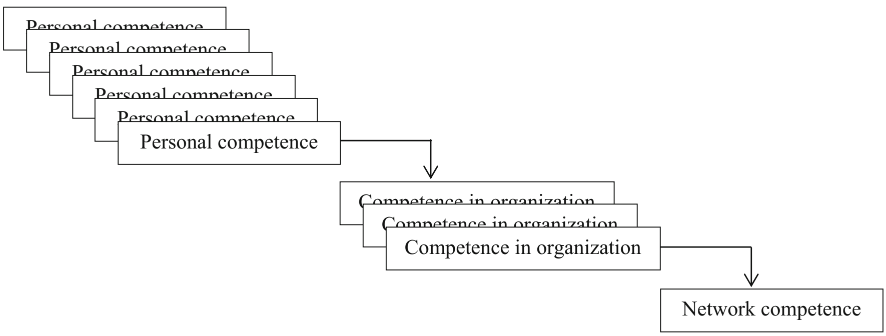

Fig. 1 Aggregation of competencies in the network structures

Table 2 Competencies of the managers: organization level vs. network level

Organization level	Network level
The ability to shape and effectively implement the mission, vision and strategy of the organization	The ability to shape and effectively implement the mission, vision and strategy of the network
The ability to achieve goals	The ability to achieve joint goals
The ability to manage different areas of business	The ability to manage joint areas within the framework of network structures
Knowledge and professional skills enabling compliance with all management functions	Knowledge and professional skills enabling compliance with all management functions through connecting the interests of the organization and the network
The ability to use appropriate methods, techniques and tools to manage and improve processes	The ability to use appropriate methods, techniques and tools useful for improving multi-level processes within network structures
Efficient and rational use of resources: human, financial, physical as well as time and information	Efficient and rational use of resources, with special attention paid to time and information
The ability to efficiently communicate and exchange information	The ability to efficiently communicate and exchange information (more information resources at the network level than at the organizational level)
The ability to work as part of a team	Networking ability (greater complexity of processes and phenomena than at the organizational level)
The ability to act as a representative of the organization against the environment	The ability to act as an ambassador of network structures against the environment

Source: Based on Le Deist and Winterton (2005) and Oleksyn (2006: 30–31)

4 Structure of the Network and Roles of the Managers

Network organizations are characterized by a multiplicity of forms and possible types. They are specified on the basis of a multi-criteria approach and one-criterion approach (e.g. Snow et al. 1992; Achrol 1997; Piercy and Cravens 1995; Inkpen and Tsang 2005; Sroka and Hittmar 2013). The criteria used in the framework of such approaches include: the number of member companies and the number of agreements signed; the goals of cooperation; the dominant logic of value creation; the specific nature of the operation and the degree of involvement of partners; and the relevant time horizon. The multiplicity of types of networks implies different challenges for managers.

From a practical point of view, the most common classification of the networks divides them into equal-partner networks and dominated networks. In the first case, the company has bilateral relationships with numerous entities. In turn, in the second case, companies establish close relationships and cooperate on various projects (Child et al. 2005: 155–156). Relationships exist between the companies in the dominated network, mainly those between a parent company and its satellites. The interaction between the satellites is, however, limited. Thus, the management of the dominated network is similar to the management of a classic holding company.

In contrast, there is no dominant company which controls the operations of other members in equal-partner networks. In practice, this means that managers manage the network which is regarded as a portfolio of bilateral alliances. Such a network also requires determined leadership so as to plan and execute strategy, and an information system which ensures effective communication between partners. This is not easy in cases which feature somewhat loose links among equal partners, despite the benefits of such a structure.

If the network members are of similar status, and the network is built as a federation of individual members, network management is usually executed by a specialized organization which may either be derived from the network members, or be a completely neutral third party. In turn, if one of the companies occupies a central position in the network, it usually takes full responsibility for management of the network. Networks are also able to function without joint management; in such cases, all companies maintain contacts with the leading company in the network, which in turn usually manages these multiple partnerships (Gomes-Casseres 1994). In the first approach, the partners split the expenses related to the functioning of such an organization (usually as a specified percentage of its revenue), which performs a number of functions, such as:

– it is a central point for communication and the exchange of information, facilitating access to the expertise and experience of particular companies,
– it protects the network against "stowaways" through its neutrality and by observations of the individual companies and their actions,
– it acts as an archive of information on results and best practices regarding the approach to the market, and innovation,
– it maintains defined standards of behavior within the network, and if necessary applies sanctions against those who violate them (Doz and Hamel 1998: 231–232).

The second approach is related to the occupation of a central position in the network by a given company. This company, and indeed the managers thereof, perform key functions relating to the management of the network. A major feature of the central company within the network is the ability to perceive the full range of businesses carried out by the network, as well as understanding the role of individual members of the network over the entire area of the value chain. Its managers have ideas and concepts—which may sometimes emerge and evolve over time—and persuade others of the efficacy of their implementation. Such a vision is dynamic and evolves with changes in the business environment. To maintain balance in the network, all companies maintain certain operations, e.g. control of the brand or development of the systems which integrate the network. In order to maintain its power, the central company in the network has to provide a free flow of information between the partners. This also requires an effective communication system for this reason (Lorenzoni and Baden-Fuller 1995).

5 Roles of Managers in Networks: Research Results

Research carried out by Hoffmann (2005) on the roles and positions of managers in the management of networks revealed that the most important role is played by alliance managers (Table 3). On a scale of 1 to 7, where 1 means "entirely unimportant" and 7 "extremely important", the average was 6.2 points. It should be emphasized that all the responses were located above the midpoint, which may indicate that respondents also discern the importance of other roles, though do not view them as of the same degree of importance as the management of individual alliances. The majority of companies surveyed assigned only minor importance to the role of managing the multiple alliances.

It is worth noting that research carried out on a group of 46 companies (40 from the list of 500 largest companies by Fortune, as well as 6 large Dutch companies) revealed that managers who manage multilateral alliances should be located on the lower level of the organization. The reason for this is that in the opinion of the companies surveyed, top management is too far removed to have a real impact on the success of cooperation (Draulans et al. 2003).

In the context of the data presented, the results of research carried out in the steel industry (Sroka 2008) are somewhat interesting. The research included a complex functioning of the alliance networks in the sector mentioned. However, in the area of network management, the research comprised issues such as: network

Table 3 The role and position of managers in network management

No.	Role	Description	
1.	Alliance manager	Operating manager, for example, the head of a joint venture	6.2
2.	Sponsor	A person from the management of the company occupying the central position in a network, which is responsible for the development of an alliance on the senior executive level, and who is the contact person for the most senior managers of the partner company	5.0
3.	Internal consultant	A team of internal specialists providing technical support for individual tasks associated with the management of alliances (e.g. strategic analysis, integration)	4.6
4.	Manager for relationships management	Contact person for a particular alliance partner at the operational level who coordinates all cooperation with this partner	4.5
5.	Alliances coordinator	Internal contact person for a particular alliance or an internal coordinator of all cooperative activities in a specific area	4.3
6.	Alliance controller	The controller who supports and controls the development of cooperation, e.g. Member of the Supervisory Board	4.3
7.	Vice-President for alliances	The head of the central system for management of all alliances	3.8

Source: Hoffmann (2005)
Average on a point scale from 1 to 7 points, where 1: entirely unimportant, 7: extremely important

management; competence of network managers; structure (whether formal or informal); methods of conflict resolution in the network; and network performance. According to the managers surveyed, the competencies necessary in the management of alliances include (on a 1–5 point scale, where 1 means "of very little importance" and 5—"highly important"): creativity (4.17 pts.), expertise, including experience in the management of joint projects in the past (4 pts.) and the ability to consider multiple perspectives simultaneously (3.83 pts.). These competencies were assessed as most important. On the other hand, the least important were informal authority and pragmatism, earning average scores of 2.5 and 2.83 points respectively. It is worth noting that most indications ranged from 3 to 3.75 points.

6 Challenges for Network Management

The management of global alliance networks is a major challenge for their managers, as the success or failure of any co-operation depends mainly on the ways in which they are managed. Effective management and planning is the key to the success of the network and may reduce any inherent strategic risk. A well-managed network allows members to achieve a competitive advantage, both in terms of the network itself and the companies involved (Hung 2002). This means that the success of the leading company is closely linked to that of individual members of the network. Network management is essential in all phases of the existence of the network: at the stage of its creation, its functioning, and even during the final stages of cooperation (Sroka and Hittmar 2013). It should be emphasized that the support of top management is of crucial importance to the formation of the network and its long-term competitiveness. On the other hand, managers who are responsible for operational activity determine the success or failure of the network to a large extent. This is evidenced by, among others, research carried out by Doz and Hamel (1998: 231), according to which the need for both effective value creation and the capture of equitable value in alliance networks usually requires active management of the network.

In the context of management of individual alliances within the alliance network, one should emphasize the importance of personal relationships (Luo 2001). In fact, such relationships may have a positive effect during conflict resolution, enhance the flow of information, and also allow for mutual development planning. Direct personal interactions build a foundation of trust; therefore, a change of managers in partner companies may adversely affect or even alter the process of building mutual trust, being as it is a long-term process. Frequent changes in this area may thus result in a negative impact on the long-term results of cooperation (Lunnan and Haugland 2008).

The multiplicity of network types implies different challenges for managers. In addition, the matter is complicated by the fact that networks evolve due to possible changes in external conditions, or the desire of stakeholders for a change in strategy, and so on. Unforeseen events may occur which in turn can significantly affect the continued functioning of the network. Irrespective of the reasons, it is important to attempt to predict the possible directions in which a network may evolve. This is mostly determined by the aspirations of partners and their relative contributions. Basically, however, the evolution of the network will be conditioned by the forces and weaknesses of the parties and the relative importance of every member's contribution to the group. For example, the ownership rights to oil or coal would be viewed as a highly valuable contribution. Other examples include intangible resources such as a particular brand, marketing, technology, patents, and so on, and it is to be expected that the party who brings such assets to the network will be more important than a partner whose only contribution is facilitating access to the market.

The issues of uniform leadership and a shared vision of all network members are of key importance in network organizations, and are especially important in equal partner networks, in which there is no clear leader. It should be noted, however, that it is not always necessary to create a separate structure for the management of the network. Typically, such a structure is created in large networks in which strong internal competition between particular companies exists (Bamford et al. 2003: 241). In cases in which one strong company is located at the center of the network, it usually manages the activities of other members, and a shared vision is designed to connect partners, as competition between them erodes the cohesion of the network (Hwang and Burgers 1997). In turn, the role of leadership is to make team decisions and discipline those participants who try to "break out" from the network structure. This solution is preferred in a set of circumstances in which a company located in the center maintains a strong position on the market or has a unique product, without which the further functioning of the network ceases to make economic sense.

Under the opposite set of circumstances, there is a risk that the group may disintegrate, as networks without strong leadership tend to set off in different directions. Such a situation was observed within the MIPS group, which included companies such as Olivetti, NEC, DEC, Siemens, Daewoo, and a number of other entities; the relative weakness of MIPS in conjunction with the strength of the partners and divergent interests caused the dispersal of the parties. In turn, the group size relates to the fact that the larger the network, the more difficult it is to manage. In fact, networks which have "grown" to a large size and achieved success (e.g. Coca-Cola and Visa), usually have certain rules and principles of management. The network is thus effective and takes advantage of the resources of member companies, if it is able to combine their resources and manage them effectively.

Large global corporations apply a systemic approach to this issue. Successful transactions are carried out by proven and experienced managers. Gradually, they spread to other alliances belonging to the network, achieving a position of managerial leadership within them, depending on the effects achieved. This group is constantly extended as far as growth in the scale and scope of the group's activities. There are, however, significant limitations associated with the ability of other companies to copy such a solution. A prerequisite for its use is to have a large portfolio of alliances within the group, to which the particular managers may be delegated. In practice only the largest global corporations are able to take advantage of such favorable circumstances, while smaller companies do not have such a privilege.

This approach is utilized by the world's largest steelmaker, ArcelorMittal. External growth is a key factor in the strategy of the group, which has steelworks located on all continents (except Australia). One distinguishing factor is that its growth is based on successful acquisitions, rather than inter-organizational cooperation. In both cases, however, a similar approach is applied.

7 Conclusions

Alliance networks are increasingly visible in a growing number of sectors (Lazzarini 2007), and are a strategy increasingly applied by leading global corporations. Some of them have portfolios covering hundreds of alliances which generate up to 30 % of total corporate revenues. This demonstrates the growing popularity of this form of competition in the market, which—according to all forecasts—will be of interest to a growing number of companies. However, as individual companies, not all networks will succeed, but only those which are able to build and maintain their competitive edge. In turn, this will be possible only if the networks are managed by qualified managers.

In "Alliance revolution. The new shape of business rivalry", Gomes-Casseres (1996: 126) claims that without leadership and joint management, or at least some of the agreed formulae for joint decision-making, an alliance network is not in a position to formulate and implement a coherent strategy. Instead, the differences between the various members of the network will result in them heading in different directions. This thesis is still relevant to today's networks. Dynamic changes in the business environment, especially since the turn of the century, have made it difficult to imagine a network functioning without manager(s). As in the case of a single company, they are the prime determinant of whether the network will succeed. Indeed a good manager can do so more efficiently and effectively than a weak one. In summary, it is worth emphasizing the key challenges and tasks which, according to Vervest et al. (2009), are facing managers in the networked world:

- building networks deliberately and for real business goals,
- forgetting command and control, and leading through values,
- bonding people via networks, obliging them to become engaged in the process, creating their own vision, setting their own goals, giving complete transparency,
- breaking down a hierarchy and finding a network solution to make people want to share in or leave the network,
- choosing carefully which networks to enter and ensuring you can leave if you wish,
- identifying network structures and working on your position within the network,
- using networks widely to link with customers and communities,

– using supplier networks sparsely in order to be efficient and economical—befriending the supplier,
– partner choice on volume—every network partner should do no less than 30 % and no more than 70 % of its business with us.

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