A. Mesjasz-Lech, PhD
Czestochowa University of Technology
(Al. Armii Krajowej 19 B, 42-200 Czestochowa, Poland,
E-mail: agata.mesjasz@poczta.fm)

The Significance of the Information Technologies in the Functioning of the Network Organisations

The paper presents the possibility of use of IT in network organisations and its influence on efficiency of network organisations functioning, especially in realisation its the uppermost goals.

Рассмотрены возможности использования информационных технологий в организациях с сетевой структурой и влияние этих технологий на эффективность их функционирования, особенно при реализации главных приоритетов.

K e y w o r d s: network organisation, typology of network organisations.

The development of the information technologies provided the possibility for the network organisations to arise. Their major distinguishing features are remote management and local or global dispersal. In computer networks, they constitute the physical points of the information exchange between particular members of the network and between the network and the clients. The use of information technologies makes the data and information transfer fast, increases the efficiency of networks independently of the level of dispersal of its members and their localisations, provides unlimited access to information, gives the opportunity for the management of huge data bases, enables the clients to benefit from the shorter time of realisations of their orders, establishes strict control of the physical flows among the members of the network.

The chief goal of a network organisation, as a group of companies linked by a computer network, is the enhancement of the decision-making processes whose efficiency depends on the key competences of the members of the network and the direction of the flow of information between the members and the clients.

Network organisations and the uncertainties of business activity. Dynamic environment compels the companies to continually improve their organisational structures. The increasing number of network organisations is the reason for changes in the interrelations between their particular nods which results in the constant evolution of relevant structures within the organisations. We can

assume that the formation of organisations is the consequence of uncertainties which intensify the disintegration of the organisational structures. The disintegration consists in the replacement of monoliths which have one decisions centre, hierarchy and clear structure, with the networks of loosely connected units which have different degree of autonomy. They fulfil tasks together, but remain separate at the same time [1]. Therefore, the network organisations come to existence to diminish the uncertainties of the environment. The creation of the organisations is dictated by the necessity to respond immediately to risks and chances which are not easy to foresee. The dynamics of the target market requires the companies to cooperate with one another and exchange the competence and resources they have, since a company working alone would have to accumulate them on its own. The process of the transformation from a monolith into a network is depicted in Fig. 1.

A network organisation can be defined as:

1) a group of independent firms — suppliers, receivers and, as it often happens, former rivals — linked by information technologies in order to share skills, costs and shares on different markets [2];

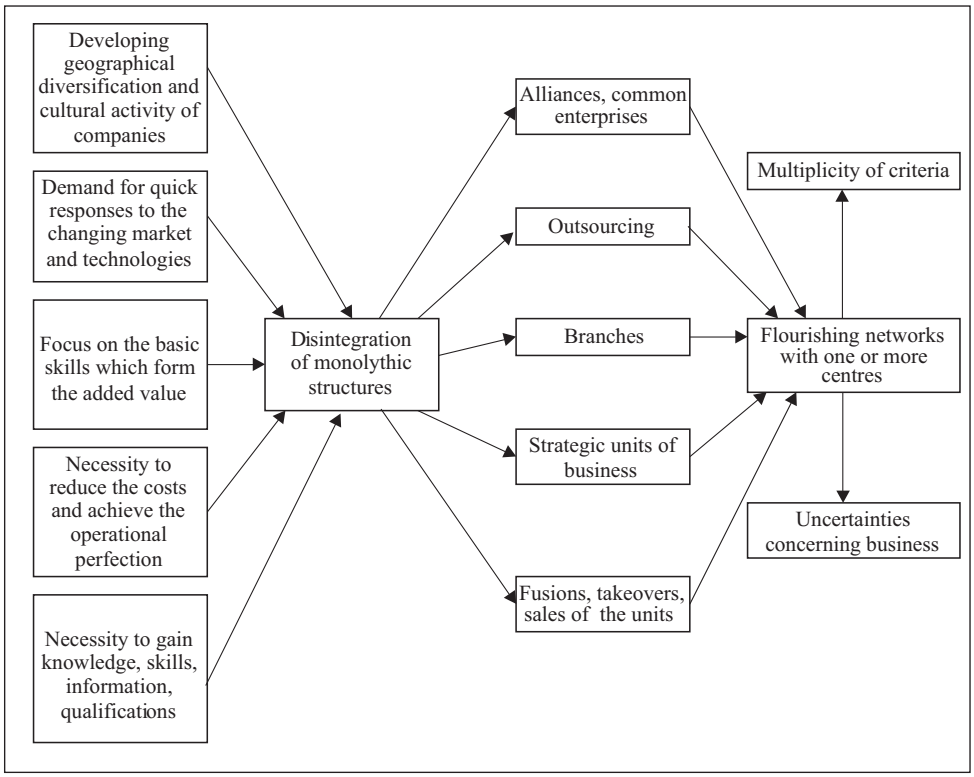

Fig. 1. Scheme a monolith transformation into a network [1]

2) an organism of perfect businesses which is formed according to the principle of the partnership of the best and equal [3].

Therefore, the basis function of network organisations is the creation of such configurations of partners which will guarantee the highest level of efficiency in the realisation of tasks. A network organisation is based on the knowledge and key competences of its members.

The distinguishing features of the organisations are [4]:

the opening of borders between the members;

having common goals;

high level of confidence;

low level of vertical integration and hierarchy between the members who dispose of different sources and competences which very often complement one another;

capacity for learning, innovation and flexibility;

transparency of information thanks to the use of advanced information technologies.

Spreading of the structures of network organisations tarnishes the boundaries between the organisations and their environment. The possibility of creating different configurations of partners in the network is the basic way of reducing business uncertainties. The integration of economically and legally independent partners, who bring competences relevant for accomplishment of a task, into one organism, gives the opportunity to take advantage of the competitive supremacy of each of them and the whole network accordingly.

The directions of the flow of information in the network organisations. The most important feature of network organisations is the fact that their configuration depends on the flow of information between their members. Physical flows are necessary to realise the client's orders. But the complexity of tasks realised by the organisations requires the flows to be of best quality and supply the best information. The functioning of network organisations is possible thanks to the spreading of information technologies and communication systems which give the means for the unlimited exchange of information on any scale [5]. The literature of the subject offers several examples of the typology of network organisations. According to the manner of flow and character of information exchanged between the members of the organisations and their clients, we can distinguish following types of network organisations: virtual face, star alliance, market alliance, co-alliance, value alliance, parallel alliance [5].

The typology of network organisations according to the manner of flow and character of information based on [5] is following.

Virtual face:

the company (or its part) uses electronically platform for maintaining contacts with clients and realising transactions;

the company is fully responsible for planning, operational activity, coordination and contacts with clients;

two-way flow of operational information with the clients;

the company cannot be replaced by any other company.

Star alliance:

the organisation consists of the key member (core organisation) and independent partners gathered around it;

the key member is in possession of the most important resources and the know-how characteristic for this organisation;

only the key partner maintains contacts with clients, he represents the organisation (the other members cannot contact clients);

the organisation is formed either by outsourcing of some operations or by assigning other partners to perform the tasks;

the key partner cannot be changed, which does not apply to the other members of the organisation;

the key partner exchanges the coordinational and operational information with the other partners.

Market alliance:

in the organisation, there is a key partner and other independent partners concentrated around him;

marketing is the sole task of the key partner — the other partners offer him ready products which are distributed and sold by the key partner;

only the key partner maintains contact with the target market and clients;

the key partner cannot be replaced by another — he imposes all the changes in the established network organisation;

the other partners can: quit the organisation, sell their products via other distribution channels or other virtual organisations.

Co-alliance:

there is no key partner — all partners comprising the organisation are independent and have equal status (none of the partners is in dominion);

when it comes to the realisation of a particular task or project, all partners can establish direct contacts with their clients;

the partners bring complimentary competences necessary for realisation of a particular task or project — each partner plays different roles in the realisation of a project or task and, accordingly, apart from performing operational activities, he also takes part in the planning and coordination of the activities;

information concerning operations, planning and coordination are exchanged between the partners and the client.

Value alliance:

the organisation resembles a chain;

the place of the client can be at the end of the chain, or at the end and at the beginning at the same time;

consecutive partners supply the chain with a new value in relation to the preceding partners;

all partners, except for the first in the chain, get a task which has been partially done, they enrich it and pass it on to the next partner. (They do not work on the task simultaneously);

there is no key partner in this kind of organisation;

it is possible to replace particular partners with other companies on condition that they supply the chain with a value which is identical or very similar to the one brought by the replaced partner;

organisational information is exchanged right after the organisation has been established;

information concerning planning and coordination is exchanged during the forming of the organisation.

Parallel alliance:

functioning of this organisation is based on the close cooperation of usually two independent partners;

partners do not work together on one task — each of them works on a separate one. The tasks, however, are interrelated;

there is no key partner in this kind of organisation;

it is possible to replace the partner with another on condition that he brings an identical value to the organisation;

the work is planned at the beginning, immediately after the establishment of the organisation;

changes during work are permitted to the extent agreed in the process of planning;

the client is in permanent contact with all partners of the organisation.

A network organisation can consist of units geographically scattered. Its structure is determined by the character and direction of the exchanged information. The type of organisation depends mainly on the kind of task performed and the anticipated period of time in which it will be completed.

Information technology used in network organisations. The development of IT, which is the physical platform on which network organisations operate, gives the opportunities to realise clients' orders effectively. The matter of special importance here is the use of such computer networks that are the basis of functioning of different IT systems. There are following types of IT systems used by network organisations [6]:

systems controlling the workflow;

systems of group work (e. g. discussion lists);

systems of managing knowledge (e. g. LMS, CMS, LCMS);
teleconferences, videoconferences;
systems of managing contacts with clients (CMS);
MRPII/ERP systems (especially the modules supporting e-business;
systems of so called «fourth generation» (e.g. «intelligent» agents, expert systems, the exploration of data, artificial neural systems);
systems dedicated to virtual organisations;
corporation portals;
IT systems which make it possible to recognise speech and handwriting.

Strategy which is more and more often used by network organisations is Collaborative Planning, Forecasting and Replenishment (CPFR). This strategy is perceived as the means over which it is possible to join the knowledge concerning the planning and realisation of demand for a particular good, which is in possession of different, geographically scattered economic entities. CPFR is a business process whose goal is to plan, prognosticate and synchronise the circulation of products. The partners take advantage of technologies and basic tools involved in this process which is based on cooperation realised over the Internet. CPFR is defined as those collaborative business practices that enabled trading partners to have visibility into one another's critical demand, order forecasts and promotional forecasts through a systematic process of shared brand and category plans, exception identification and resolution... The objective of CPFR is to improve efficiencies across the extended supply chain, reducing inventories, improving service levels and increasing sales [7]. The mechanism of CPFR is depicted in Fig 2.

The concept of CPFR gives the possibility for organisations to realise its uppermost goals. According to the partners of network organisations those goals are: Reduce Out-of-Stocks; Improve Trading Partner Relationship; Improve Service Levels; Improve Forecast Accuracy; Decrease Inventory; Increase Sales; Better Deployment of Organization's Resources; Improve Internal Communication; Better Asset Utilization.

Fig. 3. presents the hierarchy of goals which is characteristic for business entities with implemented CPFR.

As we see above, the majority of entities treated the reduction of out-of-s tocks as their primary goal. Apart from this, other important goals concerned the improvement of trading partner relationship and service levels. These objectives are to be achieved by the implementation of CPFR. Fig 4. will tell us which of the goals were in fact realised.

Information technologies support the companies and increase the effectiveness of their functioning [9]. What becomes especially important at this point is

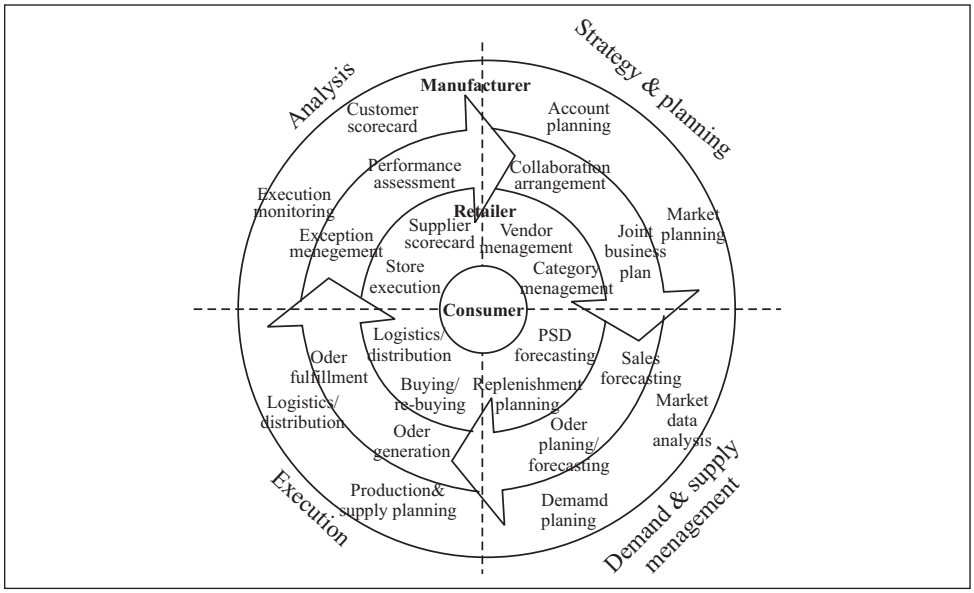

Fig. 2. Mechanism of CPFR [8]

that the companies need to be capable of implementing and adjusting the IT relevant for their objectives. The basic tools are computer networks and IT systems which use those networks as their platform. Network organisations use them in order to publicise their offers, look for partners, sources, services and gain knowledge. Hence, they build a system of contracts and contacts useful in the realisation of their goals [10]. Therefore, information technologies are the basis of functioning of network organisations which, as dynamic structures linking geographically scattered partners, are in constant need for the exchange of information concerning planning, coordination and operating.

Conclusions. Information technologies used in network organisations are determined by the structures of those organisations and are used to:

link organisation's suppliers, distribution functions and marketing and trade partners;

shorten the time needed for the realisation of orders;

strictly control the flow of goods within the organisation;

perform consultations between partners concerning the realisation of orders;

exchange and transmit data faster.

The condition of effective functioning of a network organisation is the continuity of data exchange which has to be preserved in every field of company's

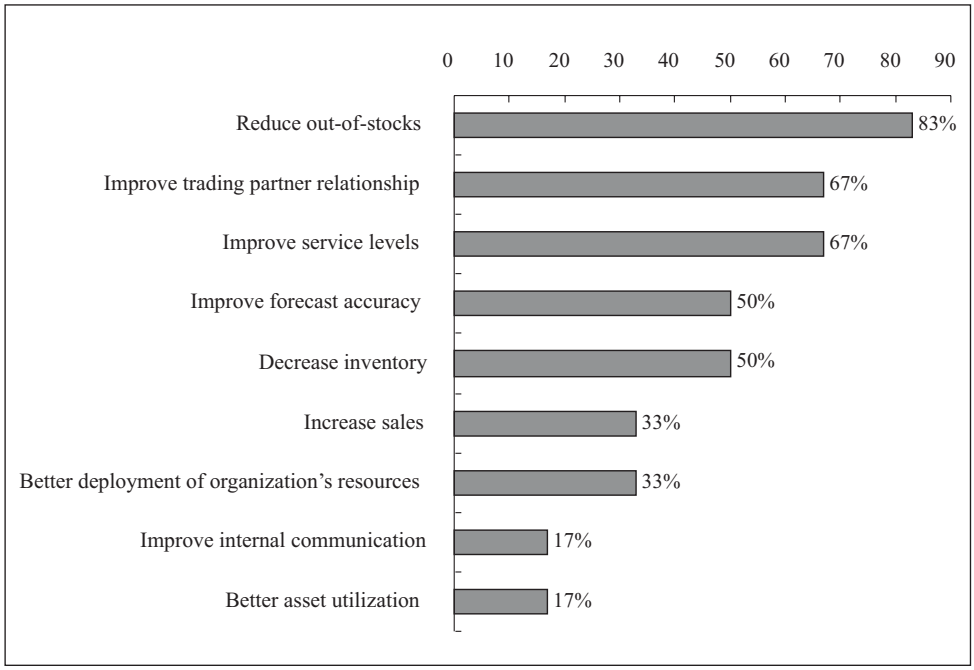

Fig. 3. Organizational goals [7]

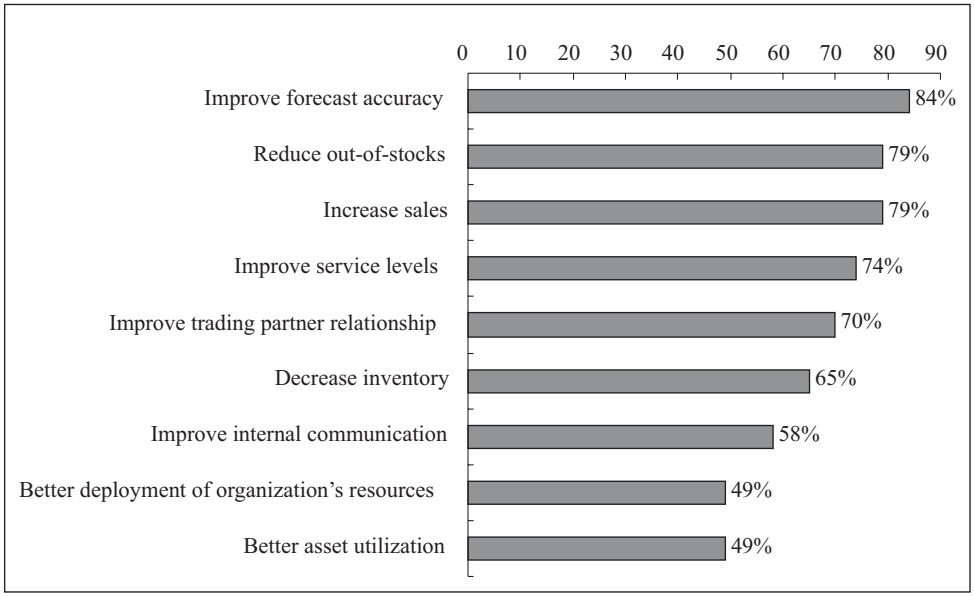

Fig. 4. Anticipated benefits of CPFR [7]

activity. This is obviously connected with the access to information resources dispersed in local and global networks. The complexity of tasks realised by an organisation and the geographical dispersal of its partners makes the fast communication of information very important. It enables the organisation to accomplish its objectives and realise customers' orders. By the means of information technologies, it is possible to handle almost all activities connected with the carrying out of orders.

Розглянуто можливості використання інформаційних технологій в організаціях із сітковою структурою та вплив цих технологій на ефективність їхнього функціонування, особливо при реалізації головних пріоритетів.

1. *Koźmiński A. K.* Zarządzanie w warunkach niepewności.— Warszawa: Wydawnictwo Naukowe PWN, 2005. — 288 p.
2. *Stern L. W., El-Ansary A. I., Coughlan A. T.* Marketing Channels. — N.J. : Prentice-Hall, Englewood Cliffs, 1996. — 576 p.
3. *Kempny D.* Logistyczna obsiuga klienta. — Warszawa : PWE, 2001. — 287 p.
4. *Witkowski J.* Organizacje sieciowe, sieci strategiczne i łańcuchy dostaw — próba systematyzacji pojęć. Strategie i logistyka organizacji sieciowych // Prace Naukowe Akademii Ekonomicznej im. O. Lanego we Wroclawiu. — 2005. — No 1078. — P. 181—182.
5. *Niestrój K.* Wybrane próby typologii informacyjnych organizacji sieciowych // Ibid. — Wroclaw, 2005. — No 1078.— P. 123—128.
6. *Adamczyk M.* Charakterystyka organizacji wirtualnej. Gazeta IT nr 9 (39), 19 października 2005. www.gazeta-it.pl/zw/charakterystyka_organizacji_wirtualnej.html
7. *CPFR* Baseline Study Manufacturer Profile, By KJR Consulting For the Collaborative Planning. Forecasting & Replenishment Task Force Logistics Committee Grocery Manufacturers of America. www.gmabrands.com/industryaffairs/docs/cpfr.pdf; www.vics.org/committees/cpfr/.
8. www.vics.org/committees/cpfr/.
9. *Grudzewski W., Hejduk I.* Przedsiębiorstwo przyszłości — wizja strategiczna—Warszawa: Difin, 2002. — 332 p.
10. *Olszak C.* (red.) Systemy e-commerce. Technologie internetowe w biznesie. — Katowice: Wydawnictwo Akademii Ekonomicznej w Katowicach, 2004. — 82 p.

Поступила 29.04.07