Inter-organizational relationships

The management system of inter-organizational relations between ATP and partners has been improved, which is formed on the basis of the apparatus of cybernetic modeling of viable systems, as well as the use of structural modeling methodology SADT. The methodological basis for assessing the level of inter-organizational relationships of ATP with individual partners, which, unlike existing ones, is based on the use of the generalized Harrington desirability function, as well as the radar method to assess the generalized indicator of the relationship between ATP and partners, has been further developed. The methodological provisions of the assessment level of inter-organizational relationships of ATP with partners in the network based on the definition of strategic synergy have been further developed .

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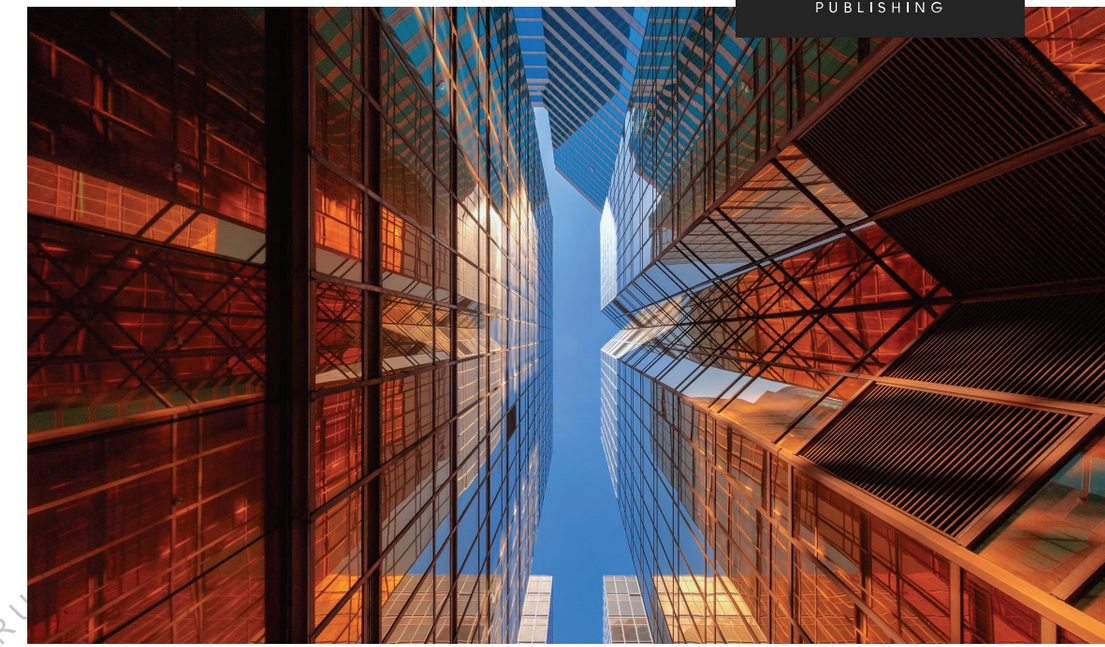

Inter-organizational relationships

Management of inter-organizational relationships between the company and its partners

Irina Fedotova
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Contents

ANNOTATION

Work 146 p., 32 figures, 30 tables, 88 sources.

Objective of the study: to develop a theoretical framework and methodological recommendations for the management of inter-organisational relations between ATP and partners.

In order to achieve the objective, a number of tasks need to be undertaken.

Research objectives:

- Formulate the concept of "relationships", "inter-organisational relations", "inter-organisational network";
- Analyse existing approaches to managing ATP relationships with partners;
- Justify the management of the inter-organisational relationship between the ATP and its partners;
- Develop a system of evaluation indicators that characterise the level of the ATP's relationship with its partners;
- Develop a methodology for assessing the level of the ATP's relationship with individual partners;
- Develop a methodology to assess the level of ATP's relationships with partners in the network.

These tasks are carried out using the following methods:

- The method of analysis and synthesis, the systematic approach, logical analysis and the method of generalisation;
- SADT methodology and systems approach;
- analysis and synthesis and logical analysis;
- the desirability function and the radar method;
- calculation method and systematic approach.

Object of the study: the process of inter-organisational relationships between the ATP and its partners.

Subject of the study: the system and methods for managing the inter-organisational relationships of the ATP with its partners.

Scientific results:

- The management system for inter-organisational relationships between ATP and partners has been improved and is formed on the basis of the apparatus of cybernetic modelling of viable systems, as well as the use of the SADT structural modelling methodology;
- The methodological basis for assessing the level of ATP's inter-organisational relationships with individual partners has been further developed and, unlike existing ones, is based on the use of a generalised Harrington desirability function as well as a radar method to estimate a generalised indicator of ATP's relationships with partners;
- The methodological provisions for assessing the level of inter-organisational relationships between ATP and network partners, based on the definition of strategic synergies, have been further developed.

The practical significance of the obtained results lies in the use of improved and adapted to the specifics of road transport methodological recommendations for the management of inter-organisational relations between road transport operators and partners.

List of key terms

Relationships

Inter-organisational relationships

Partnership

Commercial partnership

Non-profit partnership

Full partnership

Limited partnership

Strategic partnership

Managing relationships with partners

Managing ATP's inter-organisational relationships with partners

A systemic approach

Inter-organisational network

Strategic synergies

INTRODUCTION

One of the main trends in the development of today's entrepreneurial environment is the change in the shaping of business relationships between partners, including those between competitors. A sign of the times is the demonstration of purposeful efforts of entrepreneurs to ensure competitiveness and business efficiency by using the potential of inter-company cooperation based on a long-term basis and involving a certain mutual alignment and control of market behaviour to achieve common goals. For domestic businesses, despite the obvious market gains, the formation of strategic partnerships has not yet become an everyday practice. Although research shows that attempts to form such partnerships in the business environment do exist. In view of the above, it is of practical importance to develop a system for managing the relationship between a road transport enterprise (RTA) and its partners on the basis of inter-firm cooperation, as well as to form differentiated methodological approaches to managing various types of partnerships.

The most important constraints are the difficulties in developing effective management mechanisms for such structures due to the need to reconcile the interests of different parties and the low level of trust in the domestic business environment. In this connection, the development of a system of partnership management on the basis of inter-firm cooperation, as well as the formation of differentiated methodological approaches to the management of various types of partnerships is of practical importance.

The analysis of this phenomenon has benefited substantially from the contributions of P. Buckley, B. Gomes-Casseres, J. Jarillo, I. Doze, J. Zudow, M. Cunningham, B. Cogut, F. Contractor, D.Mowery, W. Powell, C. Prahalad, I. Snehota, P.W. Turnbull, D. Tees, J. Thompson, O. Williamson, D. Faulkner, D. Ford, J. Hagedoorn, J.F. Hennart, H. Hokansson, G. Hemel, J. Child, etc. In the world practice many works of scientists are devoted to the question of interaction. However, the main problem is that there is no literature on interaction directly in

road transport as such. Regarding developments in the transport industry and in road transport in particular, there is no clear defined process of interaction between the transport enterprise and its partners in Ukraine. The analysis of recent studies of publications of domestic authors showed that there are a lot of scientific works devoted to the issues of interaction such as: Solovey N.V., Kosarev I.K., Levin M.I., Gordon Y., Fedotova I.V., Shinkarenko V.G., Pushkar A.I. Malin A.I.

CHAPTER 1

THEORETICAL FOUNDATIONS FOR THE MANAGEMENT OF INTER-ORGANISATIONAL PARTNER RELATIONSHIPS

1.1 Essence, concepts and types of inter-organisational relationships between ATP and partners

One of the main trends in the development of today's entrepreneurial environment is a change in the principles of forming business relationships between an organisation and its partners. A sign of the times is the demonstration of focused efforts by entrepreneurs to ensure business competitiveness and efficiency by exploiting the potential of inter-firm cooperation based on a long-term basis and involving a certain mutual alignment and control of market behaviour to achieve common goals. Examples of this cooperation are the formation of numerous strategic alliances, joint ventures, business networks, strategic partnership agreements, consortia and the like.

Gaining long-term competitive advantage in industrial markets depends to a large extent on how a company builds relationships with customers, suppliers and other partners.

The main concept in inter-organisational relationships is the concept of "relationship". The explanatory dictionary interprets "relationship" as an interrelationship, interaction, reciprocal relationship between two or more persons or the coherence of the relationship between whom (48).

The Encyclopaedic Dictionary of Psychology notes that relationships are undocumented subjectively experienced relationships between people, objectively manifested in the nature and ways of mutual influence that people have on each other in the process of communication and interaction. The structural unit of informal relationships is an informal social role, which is a set of stereotypes of human behavior to perform a certain function, provides an appropriate socio-psychological need of the collective. A critical set of informal

group roles should ensure the development and stabilization of psychological states and properties of the collective [57].

By another definition, a relationship is a subjectively experienced connection and relationship between people. It is a system of interpersonal attitudes, orientations, expectations, which are determined by the content of people's joint activities and their communication. They are formed in the interaction of people, and then affect the effectiveness of joint work and the nature of the course and intensity of the process of communication. It is characterized by selectivity and often bright emotional coloring. At the same time, the phenomenon of selectivity is conditioned by the required sphere of the person. Primary and secondary relationships are distinguished [11].

Primary relationships are long-term relationships based on strong emotional ties and a sense of commitment to the other person. Unlike secondary relationships, they are rather diffuse, encompassing many roles, behaviours and situations; they are usually not constrained by strict rules of interaction, and the people involved usually know each other very well. Primary relationships are such that one participant cannot simply replace the other with a new person.

Secondary relationships are relatively short-lived relationships between people, characterised by limited interaction, fairly clear rules and fairly defined social roles. Unlike primary relationships, they are rarely characterised by much emotional involvement, and participants in a relationship can be replaced quite easily.

In psychology, a relationship is the reciprocal position of one person towards another, the position of the individual in relation to the community.

Relationships are attitudes, from people to people, "towards each other". Whereas in a relationship there is not necessarily a feedback loop to the person, in a relationship there is always a "feedback loop". Relationships in contact do not always have the same modality (the same tone).

In economic terms, a "relationship" consists of a series of episodes of interaction between a consumer or partner and a company, with the basic condition for its

occurrence being that the service has been arranged at least twice. It is noted that a relationship occurs when a series of interactions between partners and the company occur.

The existence of a relationship requires that both parties perceive the existence of the relationship, or that the relationship is perceived as the possession of some 'special status'. The authors believe that relationships are characterised by other properties, but that the absence of those properties makes the existence of a relationship impossible.

In line with the challenges posed by relationship marketing and the network approach in marketing, researchers emphasise stakeholder collaboration beyond transactional marketing. It does not simply involve mutually beneficial exchanges, but rather the creation of 'relationship networks', with consumers usually being the key stakeholders. However, other groups can also represent significant value, and the choice of partners with whom to carefully build long-term relationships becomes a matter of evaluation and strategic choice. It has been noted that relationships occur when there is a series of interactions between partners and the company [1].

Having looked at the different approaches to defining 'relationship', the common thread is that it is a direct interaction between someone or something. Therefore, the most accurate definition of "relationship" is the term - subjectively experienced connections and relationships between people. It is a system of interpersonal attitudes, orientations, expectations that are determined by the content of people's joint activities and their communication [48].

Thus, a relationship is understood to be a direct process of interaction between two or more market actors, prompting further cooperation and mutual benefit, with the main condition for their emergence being the organisation of a service at least twice.

When considering the different types of relationships, the ATP's relationship with partner organisations should not be forgotten, namely the inter-organisational relationship.

The nature of relations between individual organisations in the market has always been under the scrutiny of economists. Nevertheless, for quite a long period there have been various concepts that attempt to explain the general principles of the functioning of markets in general and the characteristics of organisational behaviour in particular. It should be noted that organisations and the principles of their interaction were first studied within the framework of purely economic theory. And while classical economic views insist that organisations are competitive and independent in nature, sociology suggests that their behaviour should be seen as oriented towards other market participants. It envisages that even between direct competitors who are not bound by any economic agreements, a complex set of social ties emerges, which stabilises the market environment to a certain extent. Moreover, the concept of organisations begins to encompass not only 'firms', i.e. those 'artificially created social groups of institutional nature' which see profit-making and profit-maximisation as their purpose. Research focuses on a number of social associations which, while having interrelated specific goals, also fulfil a specific social function. Such views extend the understanding of the market to the perception of it as an organisational field.

For a better understanding of inter-organisational relations, let us consider the views of different authors. Thus, V. Zelizer [34], believed that competition and social relations are opposite mechanisms, moreover, their combination leads to negative consequences. That is, the intensification of competition should lead to the destruction of social relations, and their installation should undermine free competition.

Italian researchers of inter-organizational linkages A. Gradovi and J. Soda [71] offer numerous theories and mechanisms of cooperation between firms, began to consider inter-organizational linkages and inter-organizational networks as an effective mechanism to reduce costs in the context of management activities. Concepts related to institutional economics have begun to consider inter-organisational linkages and inter-organisational networks as an effective mechanism to reduce costs in the context of management activities.

O. Wilmson [85] suggested several theories for defining inter-organisational relations:

- Sectoral market theory - the inclusion of inter-organisational interactions optimises production costs through economies of scale and diversity, specialisation and organisational expertise.
- Transaction cost theory - in a situation where market principles of coordination are ineffective, transactional costs must be replaced by alternative forms, which are seen as inter-organisational links.
- Game theory - it assumes that market actors react only to the results of actions already taken or to possible actions. As a result, in game theory models, actors do take into account the strategies of other market actors, but each actor continues to behave as an autonomous entity. Parallel to the development of ideas of inter-organisational relations in economic theory, a number of sociological concepts have also contributed.

The Granovert approach [13] notes that economic relations between organisations are built on an already existing network of social relations that determine the basic directions and forms in which economic relations can develop.

Another approach, using the network model for inter-organisational relations, is the evolutionary theory [53]. Its peculiarities in explaining such forms of cooperation are the emphasis on a more detailed analysis of the learning process and the dynamic nature of the external environment, which determines the behaviour of organisations that are members of a network and predetermines their configuration.

In general, most definitions of inter-organisational relationships, while varying in detail, converge on a common view of the existing relationship between organisations as a result of repeated interactions with mutual benefit. To summarise the above, the following definition can be proposed:

Inter-organisational relationships are the formation, maintenance and development of sustainable, multilateral relationships between organisations through planning, analysis, organisation, accounting and control to achieve the

objectives of the enterprise and the partner, taking into account the influence of macro-environmental factors.

Considering the concept of "inter-organisational relationships" in ATP, the repeated successful relationships between firms form relationships with partner enterprises. Therefore, it is advisable to consider the concept of "partner relationships" their types and types.

Partnerships are social relationships that pursue the common goal of shared value. Partnership, although based on cooperation, does not mean the same thing. It implies closer cooperation, the prerequisite of which is a relationship oriented towards solving problems not only from one's point of view, but also from that of the other party. Partnership marketing focuses on long-term cooperation and aims to provide consumers and partners with long-term value.

A partnership is a relationship between a supplier organisation and a client organisation, assuming that both parties recognise them as partners, with the primary objective of both parties sharing the benefits of improved efficiency and productivity from the joint commitments made in the relationship. The benefits of partnership include: lower transaction costs; guarantee of continuity of supply; improved supplier-customer coordination; and more reliable barriers to market penetration by outsiders [37].

It is equally important to identify the main types and forms of business communication. This is a complex issue on which there is no unambiguous opinion in scientific publications. Different authors propose their own classifications. An analysis of the available information allows us to state that there is a partnership:

- Horizontal (where business partners have equal status) and vertical (where there is a hierarchy between business partners)
- In terms of results - constructive (strengthens and develops business relationships) and destructive (destroys partnerships)
- By nature and content - direct ("face-to-face") and indirect (via business letters, written orders, instructions, reports, etc.) (Figure 1.1).

There are the following forms of partnership - commercial, non-commercial, full, limited, strategic.

A commercial partnership is a membership-based commercial organisation whose purpose is to make a profit.

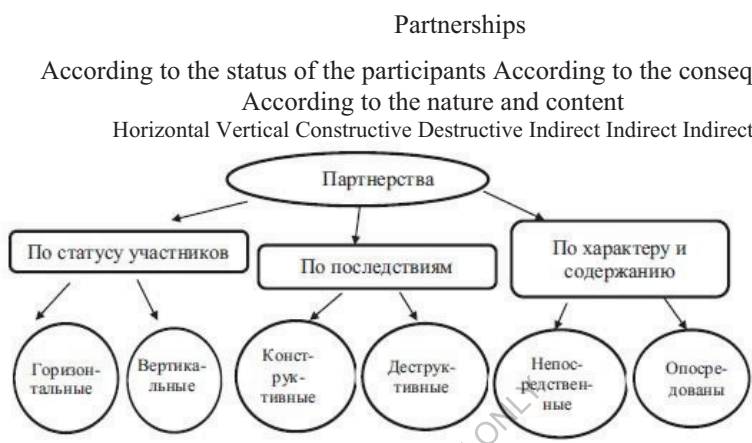


Figure 1.1 - Types of partnerships

A non-profit partnership is a membership-based non-profit organisation whose purpose is to assist its members in achieving social, charitable, cultural, educational, scientific and other objectives.

A general partnership is a partnership whose members are both jointly and severally liable.

Limited - a partnership whose members have limited liability.

A strategic partnership is the cooperation of an economically significant partner, usually at the level of legal entities, i.e. the cooperation of one company with a larger and more financially powerful company that can provide the resources to achieve its strategic goals.

Accordingly, a company's partner relationship system is understood as the existing set of relationship formats (single transactions, recurring transactions, long-term relationships, buyer-seller partnerships, strategic alliances, networks, vertical integration) of a company with all partners: consumers, suppliers,

intermediaries, consultants, research organisations, non-profit organisations, governmental and public institutions, employees, etc.

П. Doyle [2, p.108] analyses the company's system of relationships with partners, highlighting the relationships of the central firm and its four areas of cooperation: partnerships with consumers; partnerships with suppliers; internal partnerships, which include relationships with employees, functional departments and strategic units of the company; external partnerships, which include relationships with competitors, state and government organisations, authorities, and external partners.

Г. Morgan and Hunt [3] propose a classification of relationships between firms from the perspective of the central firm, dividing the relationship exchanges of the central firm into supplier partnerships, horizontal partnerships, customer partnerships and internal partnerships, and as a result they distinguish 10 types of partnerships (Table 1.1).

Table 1.1 - Areas of interaction in the relationship system and types of partnerships [3]

The direction of interaction	Type of partnership
1	2
Relationship with suppliers	1.Partnerships related to exchanges between producers and their suppliers, e.g. in just-in-time procurement or in integrated quality management. 2. exchanges with service providers, such as an advertising agency or market research agency with its clients.
Horizontal relations	3. Strategic alliances between firms and competitors, such as technology alliances or marketing alliances. 4. alliances between firms and non-profit organisations, such as social partnerships. 5. Partnerships for the purpose of joint research and development, e.g. between firms and the local or federal government.

End of Table 1.1.

1	2

Consumer relations	6. Long-term exchanges between firms and end-users, e.g. in the marketing of services. 7. Exchanges when interacting with intermediaries, e.g. in distribution channels.
Relationships within the company	8. Exchanges between functional units, e.g. between the marketing department and R&D. 9. Exchanges between companies and their employees, internal marketing. 10. Intra-company exchanges between business units, e.g. subsidiaries, divisions, strategic business units.

According to their model, the relationship system includes not only the consumer as the only actor in the exchange, as a single object of study within the concept of relationship marketing, but also a whole range of partners (Figure 1.2).

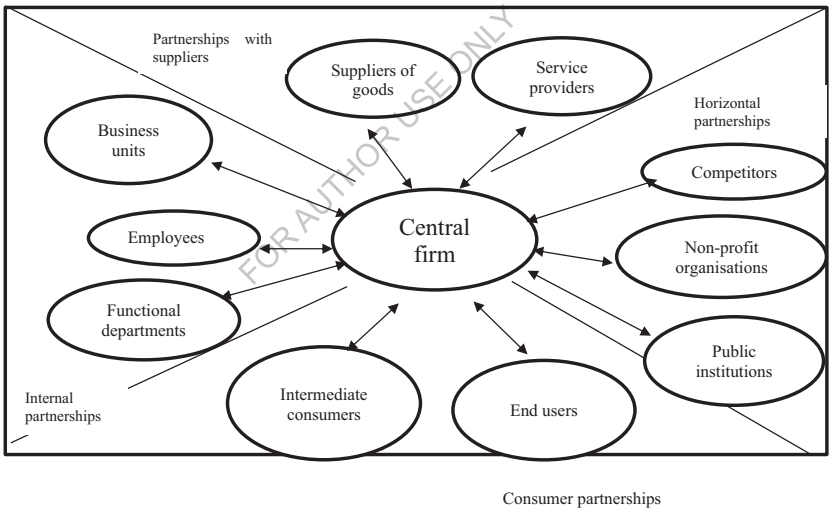


Figure 1.2 - Types of partnerships [38].

Having considered the types of partner relationships, in order to form a system for managing the relationship between the ATP and its partners, it is necessary to find out who the partners are for the enterprise.

In the course of its operation, the APP is in direct interaction with its immediate environment (customers, competitors, intermediaries, etc.). To understand this

concept, it should be noted that the subjects of the immediate environment are economic entities with which the enterprise interacts through its direct relations. These enterprises constitute the immediate surroundings of the enterprise and at the same time are its external marketing microenvironment. The main subjects with whom ATP interacts in the course of its activities are: consumers, competitors, suppliers, intermediaries, and contact audiences [58].

Consumers are the actors to whom ATP provides services. Also, competitors, suppliers, intermediaries and contact audiences are defined as entities that provide services and goods to or influence the activities of ATP (58).

Some authors define them as "stakeholder" (from the English word Stakeholder) literally: "shareholder (interest recipient) holder of an establishment", from the very beginning - a manager (trustee) of disputed, pledged or ward property, shareholder; in the narrow sense of the word: the same as shareholder (shareholder, participant), that is a person who has a share in the authorised (share) capital of an enterprise; in the broad sense: one of natural or legal persons interested in financial and other results of the company [4].

It is customary to divide all stakeholders into internal (management, employees, owners, sponsors) and external (government regulators, legislators, legal, judicial and political institutions, as well as competitors, local communities, media). In addition, there are groups that lie between internal and external parties, which should primarily include customers and suppliers [4]. Also, competitors, suppliers, intermediaries, and contact audiences are defined as the micro-environment of the enterprise (direct impact environment) - it includes the composition, the set of actors and factors that directly affect the organization's ability to serve its customers [20].

Maintaining the independence of companies in strategic partnerships causes governance problems, in particular generating conflicts over coordination, allocation of responsibility and control. Developing common approaches to solving problems in the management of strategic partnerships is complicated by

the fact that in practice they are very diverse and have their own specifics depending on industries, corporate culture, purpose of cooperation and the like.

Table 1.2 - Types of strategic partnerships [52,27,55]

Differentiation criteria	Type of partnership
1	2
1. tightness of interaction between partners	Partnership with weak links, partnership with moderate links, partnership with strong links
2.Scope of activities	Strategic joint marketing partnerships, strategic joint sales partnerships, strategic joint technology licensing partnerships, strategic joint R&D partnerships, joint production, joint development of foreign markets, outsourcing
3.Mode of operation	Formal strategic partnerships, informal strategic partnerships
4.Period of interaction	Strategic partnerships with short-term engagement, medium-term engagement, long-term engagement
5.Number of participants	Strategic partnerships with two participants, strategic partnerships with more than two participants
6.By type of participant	Strategic partnerships between competitors, strategic partnerships with horizontal interactions with vertical interactions

End of Table 1.2

1	2
7. According to the economic properties of the participants	Strategic partnerships between economically strong partners, between economically weak partners, between economically strong and economically weak partners, between economically equal partners

Scholars have based their classification of strategic partnerships on various criteria (Table 1.2), which reflect certain characteristics of these structures, but provide little insight into management issues.

So, any natural or legal person with an interest in the performance of the ATP acts as a partner.

The main partnerships with which the ATP interacts in the course of its activities are shown in Figure 1.3 [59].

Having looked at partnerships, it is obvious that they consist of many links, namely partnership with the internal environment, partnership with suppliers, partnership with competitors, partnership with consumers, partnership with intermediaries, partnership with contact audiences.

Having analysed the literature, there are not the same views on the definition of 'inter-organisational relationships', but there are commonalities in the formation of the concept. Therefore, the need to define the problematic issue itself has arisen.

Thus, in this section relationships, approaches to the formation of inter-organisational relationships were considered - their essence and definition from the point of view of different authors were considered, and other definitions were proposed. Approaches to the definition of partner relationships were considered and systematized.

Types of partners with which ATP interacts

Internal environment partnerships	***External environment partnerships***				
	Partnering with consumers	*Partnering with competitors*	*Partnering with suppliers*	*Partnering with intermediaries*	*Partnership with audiences*
Entities					
Personnel, owners, organisational units	Businesses, individuals, non-profit organisations, public institutions	Active competitors, partner competitors	Suppliers of goods, service providers	Transagencies, warehouses, marketing agencies	Credit and financial institutions, media, government agencies, civic groups, local and

					general audiences.
Purpose of the activity					
Co-ordination of resources, activities and operations of the ATP	Consumers of ATP services	Helping to meet consumer needs	Providing ATP with material and non-material resources	Assisting ATP in the allocation of road transport services	Dissemination of information, influencing the ability of the ATP to provide capital

Figure 1.3 - Main road transport partnerships

1.2 Approaches to managing business relationships with partners

In the current situation, the efficiency of a company mostly depends on interaction with partners in various market segments. However, organising effective interaction with partners is quite difficult: around relationships with different partners there is competition between suppliers, who often poach partners from each other.

The prerequisites for the development of a comprehensive mechanism for the coordination of relationship management processes began to emerge in the mid-1990s: a clear trend of companies moving from vertical integration to more flexible forms of management organisation. The need for more and more coordination between the activities of different companies, the growth of competition in domestic and foreign markets, causes the need to search for new forms of management organisation.

These changes necessitate the formation of a new company management system that is capable of linking the whole range of relationships with different partners. The concept of "relationship management" has been studied by foreign scientists, among whom L. Berry [64], K. Gjonroos [71], E. Gumesson [72] and others

should be mentioned. Noteworthy are the achievements of the Russian scientific school, relationship management has been devoted to the works of S.P. Kushch [30.31], M.M. Smirnov, V.A. Rebyazin [47] and others. The following domestic scientists have also paid attention to relationship management: A.V. Balabanits [9], L.V. Balabanova [10], D.V. Raiko [46], V.G. Shinkarenko, I.V. Fedotova [4]. At the same time, the author faces the ambiguity of approaches to the definition of "relationship management". Some of the definitions are given in Table 1.3.

Relationship management is the process of forming, maintaining and developing long-term relationships with partners to achieve mutually beneficial goals through the exchange of market values and the mutual fulfilment of obligations [14, p.35].

Table 1.3 - Definition of relationship management by foreign authors

Author	Contents
Л. Berry [64].	Attracting consumers, supporting and developing customer relationships
К. Grjonroos [71]	Establishing, maintaining and developing relationships with customers and other partners in order to generate profits and achieve common goals. This is ensured by mutual exchange and fulfilment of commitments
Г. Morgan, S. Hunt [38]	All marketing activities aimed at establishing, developing, maintaining successful relationships
E. Gummesson [72]	Relationships, networks and interactions that are designed for long-term, mutually beneficial relationships with individual consumers
M. Haker [73]	Actively creating, developing and maintaining loyal, interactive and profitable relationships with certain consumers over a period of time
A. Parvatiyar and J. Sheth [81].	A continuous process of involving intermediaries and end-users in joint programmes and activities in order to create and increase overall economic value while reducing costs
M. Brun [65].	Actions aimed at analysing, planning, implementing, monitoring activities that cause, stabilise, strengthen and restore business relationships with the company's stakeholders, mainly customers, and to create mutual value in the process of these relationships

By analysing these definitions, it is possible to formulate a definition of this concept for ATP. Thus, the management of inter-organizational relationships of ATP with partners is a process of forming, maintaining and developing long-term relationships of ATP with partners through planning, analysis, organization, accounting and control of the implementation of each activity process to achieve mutually beneficial goals through exchange of market values and mutual fulfillment of obligations.

The existence of a large number of definitions of the concept of "management" indicates that there is no precise definition of this concept. Authors such as V. Atamanchuk [7], A.I. Radchenko [45], A.V. Tikhonov [53] define the concept of "management" as the regulation of human actions and interaction, keeping them within manageability.

The most "general" definition of governance is given in philosophical and sociological dictionaries. Thus, the Philosophical Encyclopaedic Dictionary defines management as "elements, function of organized systems of various nature (biological, social, technical), ensuring preservation of their definite structure, maintenance of activity mode, implementation of program, purpose of activity" [67]. [67].

So, based on an analysis of the sources, management is the process of one person influencing another person in accordance with the objectives set.

Building on the definition of 'governance' and 'relationship' suggested in the previous section, it is useful to consider the definition of 'relationship management'.

Relationship management is the process of forming, maintaining and developing long-term relationships with partners to achieve mutually beneficial goals through the exchange of market values and mutual fulfilment of obligations [16].

When looking at enterprise relationship management, the authors take different approaches to defining it: in terms of marketing, psychology, management, philosophy and information technology.

The influence of psychology on relationship management is supported by S. Lovelock [76], D. Ford [67] and others. The essence of this approach is based on the fact that managers should understand that it is the right type of psychology and emotional atmosphere, the environment in which employees are asked to create, coordinate and improve the whole business environment that facilitates the emergence of healthy network relationships. This type of interaction determines the ultimate source of competitive advantage in a dynamic environment [59].

The relationship management philosophy focuses on external and competitive analysis, internal analysis of all complex activities within the organisation, customer satisfaction with high quality, and in turn long-term relationships, mutually beneficial relationships, connections and interactions outside the organisation with suppliers, dealers and other employees, continual improvement of existing relationships.

The essence of a relationship from a philosophical perspective is based on communication and interaction in one form or another. Furthermore, everything that happens between participants in an interaction can be seen as part of the continuation or preparation for an upcoming interaction (87).

With the development and emergence of the latest information technology, it is most important to provide the information needed for a successful relationship or partnership. R. Ackhrol [62], B. Konsinski and F. Macfarnal [75], B. Pawar and R. Sharda [82], note that without information and its exchange it becomes almost impossible to manage and create partnerships. The problem of integrating information technology in the construction of market relations has not yet been sufficiently solved. Unfortunately, many researchers see it as a separate pillar in the development of relationships or as a stimulus for relationships, but not as a key element that has an impact on every aspect of all types of organization [66].

Relationship management in a marketing strategy is suggested by researchers in the form of the following roles:

- In relationship management, the emphasis is on the content of the relationship with all the interlocutors. Marketers must determine which relationships will be maintained and develop them.
- Managers must identify and decide how to attract new allies.
- Managers should identify the needs and expectations of technical and functional quality from customers.
- Managers should develop strategies to meet customer expectations, taking into account the capabilities and missions of the organisation [75].

To manage relationships, enterprises apply specific marketing and management concepts that rely on information technology. The basis of these concepts is 'relationship marketing' (Table 1.4).

Table 1.4 - Current scientific perspectives on the category of relationship marketing

Author	Definition
1	2
M. Hunt [38].	Relationship marketing refers to all marketing activities aimed at establishing, developing and maintaining successful exchange relationships
Э. Paine [43].	Relationship marketing is a holistic approach to attracting and keeping profitable customers and building shareholder value. To achieve these goals, the system requires strong strategic control of the business and its markets, powerful data management tools and a mix of channels
M. Porter [83].	Relationship marketing - a process in which both parties organise effective, comfortable, inspiring and ethical relationships, personal and professional, beneficial to both parties
Ф. Kotler [28]	Relationship marketing - the practice of long-term, mutually beneficial interactions with key market partners in order to establish long-term, privileged relationships

End of Table 1.4

1	2
Л. Berry [64].	Relationship marketing - attracting consumers, maintaining and developing relationships with consumers

K. Grönroos [16]	Relationship marketing is marketing designed to establish, maintain and develop relationships with consumers and other partners in order to achieve common goals and profits
Ф. Newell [41]	Relationship marketing is a process whereby you are aware, not controlling and allowing customers to guide you; it is the only way that companies will create and maintain profitable relationships with customers
S.P. Kushch [31]	A marketing area, the main idea of which is to create long-term and mutually beneficial relationships with partners

The term "relationship marketing" was introduced into scientific discourse by L. Berry [64], who used it on service marketing. However, as early as 1950-1960, a number of works with direct relevance to the relationship marketing theory appeared. The works of E. McGarry [30] stressed the importance of the relationship between consumers and companies. The work of W. Alderson [62] who explored the elements of relationship marketing. Later, the works of A. Adler and J. Arndt [30] gave an impetus to the use of the concept of relationship marketing.

It should be noted that relationship marketing as the process of establishing, maintaining and developing a firm's relationships with consumers and other market participants appeared long before the term 'relationship marketing' or 'partnership marketing' was coined.

The main task of ATP relationship management is to find the most effective form of interaction with all its business partners on the basis of modern relationship marketing theory and practice.

For example, F. Webster [84] in his famous work "The Changing Role of Marketing in the Corporation" argues that "relationship marketing is not something new, it has simply not been a priority for most companies for a long time and has not been part of the basic conceptual framework of marketing as a scientific discipline".

Earlier definitions view the essence of partnership marketing from the perspective of the traditional supplier-customer relationship. For example, J. Egan [21] sees partnership as "the relationship between a supplier organisation and a customer

organisation, assuming that both parties recognise them as partners, with the primary objective of both parties sharing the benefits of the increased efficiency and productivity of the joint commitment made in the relationship".

Thus, the management of inter-organisational relationships between ATP and partners is the process of forming, maintaining and developing long-term relationships between ATP and partners by planning, analysing, organising, recording and monitoring the performance of each activity process to achieve mutually beneficial goals through the exchange of market values and the mutual fulfilment of obligations.

Further research has significantly expanded the field of relationship marketing. The scientific community and practitioners began to agree that in addition to customer orientation, the company must take into account the need to maintain cooperation with suppliers, intermediaries, internal customers, governmental and public.

Analyzing works of authors, it is possible to draw a conclusion that there is no unity of opinions, each author allocates management of mutual relations on the basis of various subjects. Some authors L. Berry [64], F. Kotler [28], J. Egan [21] consider customers (consumers), distributors, suppliers and employees as participants of relationships, and others E. Payne [43], F. Newell [41] allocate only customers and employees of the organization as subjects of relationships.

Effective partner relationship management is a strategically important process. Figure 1.4 shows the main tools for managing the company's relationships with business partners.

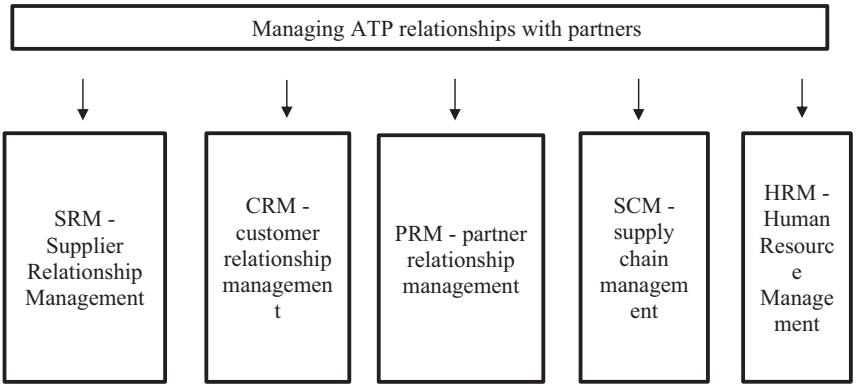


Figure 1.4 - Enterprise partner relationship management tools.

To manage relationships, businesses apply specific marketing and management concepts that rely on information technology. The basis of these concepts is 'relationship marketing'.

In the theory and practice of marketing and management two tools of company relationship management are already widely studied: Supplier Relationship Management (SRM - Supplier Relationship Management); Customer Relationship Management (CRM - Customer Relationship Management) [8].

In recent years, much attention has been paid to the study of supply chain management (SCM).

SCM systems are designed to automate and manage all phases of a company's supply chain and to control the entire flow of goods throughout the company. The SCM system makes it possible to significantly better meet the demand for the company's products and significantly reduce logistics and procurement costs. In addition, the scientific literature increasingly uses the term 'industrial marketing', which implies comprehensive management of relationships with all partners with a focus on the end consumer.

Industrial marketing and SCM, consists of the relationship management process of an industrial company and cannot be considered in isolation. It is therefore clear that there is a need to develop a mechanism to coordinate the two components.

The management of a company's relationships with business partners is represented in the literature by the main systems:

SRM - Supplier Relationship Management;

CRM - customer relationship management;

SCM - supply chain management;

PRM - partner relationship management;

HRM - Human Resource Management.

The relationship management of a company aimed at maximising the coordination of all interactions between participants in the value chain - from suppliers to end consumers. However, as the interactions of modern companies evolve, the overlap between marketing and SCM is expanding. Supplier relationship management is becoming an integral part of modern marketing.

But with an increasing number of holding structures and companies with an extensive partner network, there is a need to improve the efficiency of relationships not only with customers and suppliers, but also to build complex systems for partner interaction. Partnerships need to be managed properly. Therefore in recent decades special programs and concepts on partner relationship management - PRM (Partner Relationship Management) [18] began to appear.

The idea of PRM is identical to CRM and can be considered its evolutionary development, because one of the main ideas of CRM is the transition of the client into a partner of the company. In turn, PRM involves, among other things, building an optimal customer relationship management strategy.

PRM is a business strategy for selecting partners and managing mutual relations with them in order to increase their efficiency and value to the enterprise. In particular, PRM includes optimizing the work with partners to achieve the best results in transactions with common customers and ensure the final customer and partner satisfaction [18, p.4].

PRM (Partner Relationship Marketing) is a form of marketing that emphasises customer retention by meeting customer demand.

E. Gumesson [7] offers an in-depth analysis of TRM (Total Relationship Marketing) as part of marketing. The author calls attention to the fact that an organisation's partners can be customers, competitors, government and the media.

Φ. Newell proposes to generalize relationship management and distinguishes the concept of TRM (total relationship menedgement) which includes (SRM - Supplier Relationship Management) and (CRM - Customer Relationship Management) [19].

M. Zinedine [88] on the construction of a TRM system in the form of a house. The author has demonstrated the components of TRM in the form of columns, so to speak groups consisting of seven basic components (principles), model 7C.

The organisation, having built its home, must adopt an overall strategic relationship management philosophy:

- C1 - establishing and managing a marketing audit system, which is part of the enterprise's macro-environment. This improves the organisation's ability to predict the future of the market.

- C2 - Establish and manage a marketing audit system, which includes market and competition, to identify key strategic issues, challenges and opportunities. This allows earlier detection and assessment of future trends in market opportunities (competitive analysis).

- C3 - establishment and management of internal marketing, planning discipline in all parts and functions of the organisation. The planning adopted is based on certain objectives, which units should pass on to their activities. It is important to continuously improve internal relationships, as they directly affect the quality of the entire enterprise process.

- C4 - creating and managing relationships with distributors. Equally important for creating and maintaining professional relationships with them, they directly or indirectly influence the quality of the organisation's activities. They are a valuable

source of information on needs, wishes, which are the basis for the overall improvement of the enterprise.

- C5 - building and managing relationships with suppliers who provide material. Creating a quality network with suppliers increases the ability to fluctuate, predicts demand levels, reduces operating costs and improves the quality of products to achieve effective scale, as a result of deepening relationships.
- C6 - creating and managing relationships with external employees who contribute to the organisation's improvement, success and long-term growth.
- C7 - Creating and managing mutually beneficial and honest relationships with customers, by continuously improving the functional and technical quality of the product or service. This positions the client, individual or firm at the heart of the organisation's activities.

Figure 1.5 illustrates the TRM house, which demonstrates the main components, principles and concepts related to the relationship management mix.

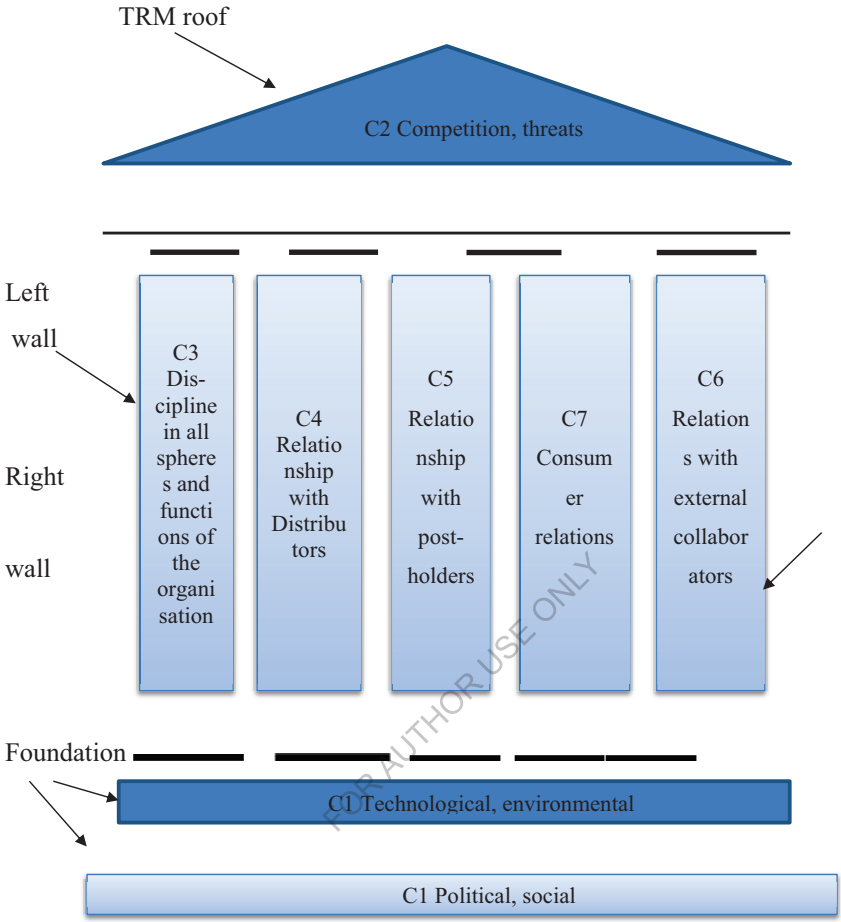


Figure 1.5 - TRM house of a complex hike model 7C [88]

The House of General Relationship Management represents:

- A roof consisting of the most important factors affecting the organisation, i.e. the macroeconomic components;
- The backbone of the house provides a systematic competitive analysis to identify strategic issues, challenges and opportunities;

- The right wall of the house shows the internal activities and relationships of the organisation, as well as those with partners;
- The left-hand wall of the house gives the most important considerations in the organisation's activities, i.e. internal relationships and functions as well as relationships with distribution channels.

The management of the road transport company's relations with business partners provides for: a unified information system, defining the way information is received and distributed among network members; an adequate organisational structure of the central firm; the ability of the central firm to coordinate the objectives, business processes of partners; a common strategy for forming relationships with business partners; a process for managing partner company interactions; and the existence of a system for monitoring results.

The main condition for effective management of company relationships with business partners is a balance of objectives, which stipulates that the goals of individual relationship subjects do not dominate over the overall goals. Relationship management should be based on a system of values and goals between all participants in the interaction. Exactly the general purposes is that key factor, which provides durability and longevity of relationship and gives to companies steady positions on the markets in the conditions of rigid competition. Realisation of the mechanism of coordination of processes of management of relationships is one of components of strategic marketing and company management.

There is a need to further refine the management concept and develop a multi-stakeholder relationship management system.

1.3 Setting up a system to manage the inter-organisational relationships between ATP and partners

Having defined the concept of "management of inter-organisational relationships between ATP and partners", it is necessary to form a system of management of inter-organisational relationships between ATP and partners. The company's principle is to create long-term, mutually beneficial relationships with partners, and the entire management system should be subordinated to this principle.

In general terms, management is understood as the process of generating and implementing purposeful impacts on any object in order to achieve a defined outcome, i.e. a pre-determined and understood goal based on information about the control object and the external environment. If management is seen as a process, then the mechanism that enables this process will be the management system.

A system is a combination of multiple constituent elements, links and interactions between them and the external environment, creates inherent integrity, qualitative certainty and purposefulness in a given system. A management system is a set of two interacting subsystems that form a new system (58).

The systemic approach is an approach to the study of an object (problem, phenomenon, process) as a system in which the elements, internal and external connections influence the results of its functioning and the objectives of each of the elements, based on the overall purpose of the object.

The basis of the directly managed relationship marketing system of the enterprise is the process of the relationship with the partners itself. Today's businesses operate in a competitive climate and offer a huge variety of new products and services to end consumers. Today's organisations have to constantly change their business processes, policies, attitudes and relationships. Effective relationships are only possible when organisations recognise each other's existence as collaborative partners. This requires that the people who make up the chain of relationships through which end user needs are met must themselves work together to identify boundaries of mutual interest and potential for sharing.

A major problem and challenge is the difficulty of effectively coordinating internal and external business environments. Coordinating internal and external functions and relationships is not easy, but it is what determines competitive advantage among other firms. As a result, organisations can no longer afford to maintain barriers between agency functions. Managers must constantly adjust the interaction of different environments to achieve business goals. This process is at the heart of TRM, which is linked to:

- External and competitive analysis;
- Internal analysis of all complex activities within the organisation (internal relations)
- Customer satisfaction with high quality products/services, long-term profitability;
- Mutually beneficial relationships, connections and interactions outside the organisation with partners, and continuous improvement of these relationships.

The main objective of relationship management is to acquire and retain partners, and as a result to reduce costs and increase profits. According to any operational and strategic decision should be aimed at increasing the ATP's income.

The ATP and its relationships with partners, namely suppliers, customers (clients), staff, intermediaries, distributors - interaction with the external environment, setting policies and objectives, creating the conditions of operation as a result of creating contacts.

In accordance with the goals and objectives set in the management of ATP relationships with partners, the managing subsystem (the subject of management) should influence the object of management - relationships with partners and provide goals and resources. The managing subsystem should, on the one hand, provide internal integration of resource and supporting subsystems and, on the other hand, ensure adaptation to changes in the external environment.

Thus, the process of interaction of marketing activity objects from the point of view of the system approach was considered in detail by V. Shinkarenko [60]. The author notes the presence of two objects of marketing activity, interact on the

process of matching demand and supply of services through a feedback system. The approach assumes interaction of two open systems of ATP and partner management. In the presented case, this is the interaction between ATP and the client.

With the help of the same principle it is possible to present the general system of relationships between ATP and partners (Figure 1.6). Since other partners are also identified in the work, it is reasonable to present not only the relationship with the customer, but also with other partners. The figure depicts a generalized process of alignment of the goals and relationships between ATP and its customers. Thus, blocks 1-1 and 2-2 are demand for goods and services and providing them to the partner, and blocks 3-3 and 4-4 are demand for goods and services and providing them to the TPA. In the following the system presented will be discussed in more detail and for each partner.

An important factor for a company's business operations is its resource endowment. The resource subsystem includes financial, information and production resources. Production resources include raw materials and supplies, premises, transport, as well as labour. Financial resources are determined by the funds that are owned by the enterprise. The supporting subsystem includes the PRM electronic information system.

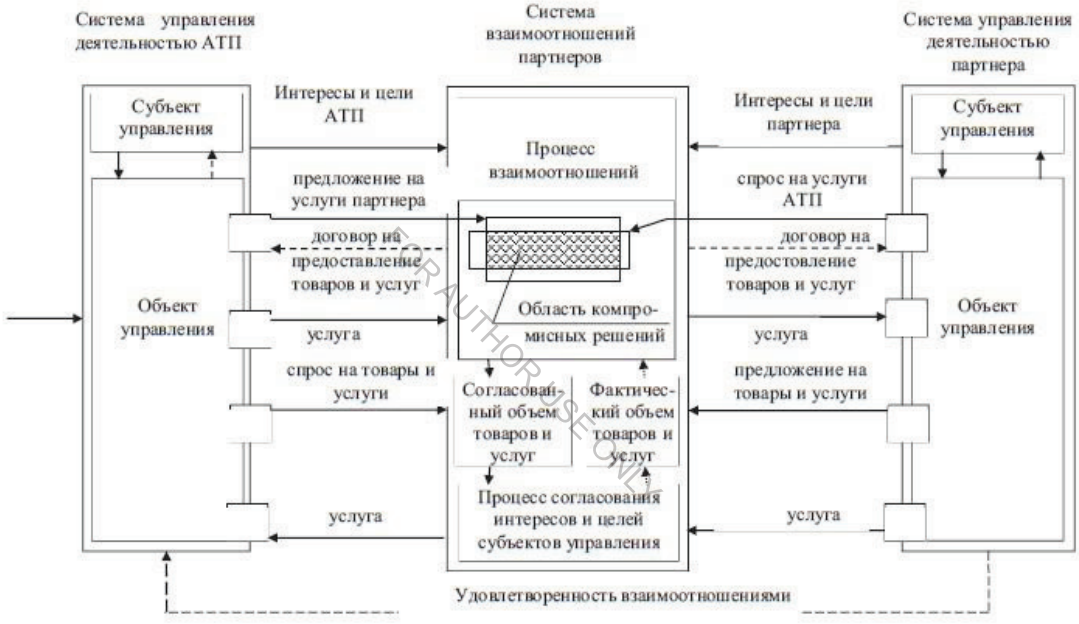


Figure 1.6 - A general framework for shaping the ATP-partner relationship

It is used to automate marketing in terms of managing relationships with business partners. The formation of ATP relationships with business partners is influenced by external environment factors: political, economic, social, environmental. At the final stage ATP receives the result of relationship management with business partners (Figure 1.7).

The complexity of economic relations and the impact of the external environment of a road transport operator pose a number of challenges to managers. Solving these challenges requires the development of new, better management methods that take into account limited resources, outdated technological base and the requirements of the road transport services market. This requires, first and foremost, the development of management methods and models which will enable the company to develop in line with its capabilities and needs.

The need therefore arises to form a management system for the ATP that can indefinitely maintain and sustain an independent existence, can adapt to changes in the environment and meet the requirements for survival, i.e. a viable enterprise management system.

Let us consider a conceptual model of relationship management based on the cybernetic model of a viable system by S. Beer [15]. Note that the proposed model is also consistent with Henry Mintzberg's model of the modern organization [79], used by many analysts in the field of organization theory.

C. Beer described the model of a viable system in the form of a neurocybernetic model, the prototype of which was the architecture of the human central nervous system, where in the normal state there is autonomous work of subdivisions and only in extreme circumstances the "dictatorship of the centre" is included. The feasibility of the proposed model, Beer argued, was based on the elementary laws and principles of cybernetics. However, despite the prevalence of this approach, it should be noted that the concept of viable systems, abstracted from the practical activities of specific enterprises, makes it very difficult to apply.

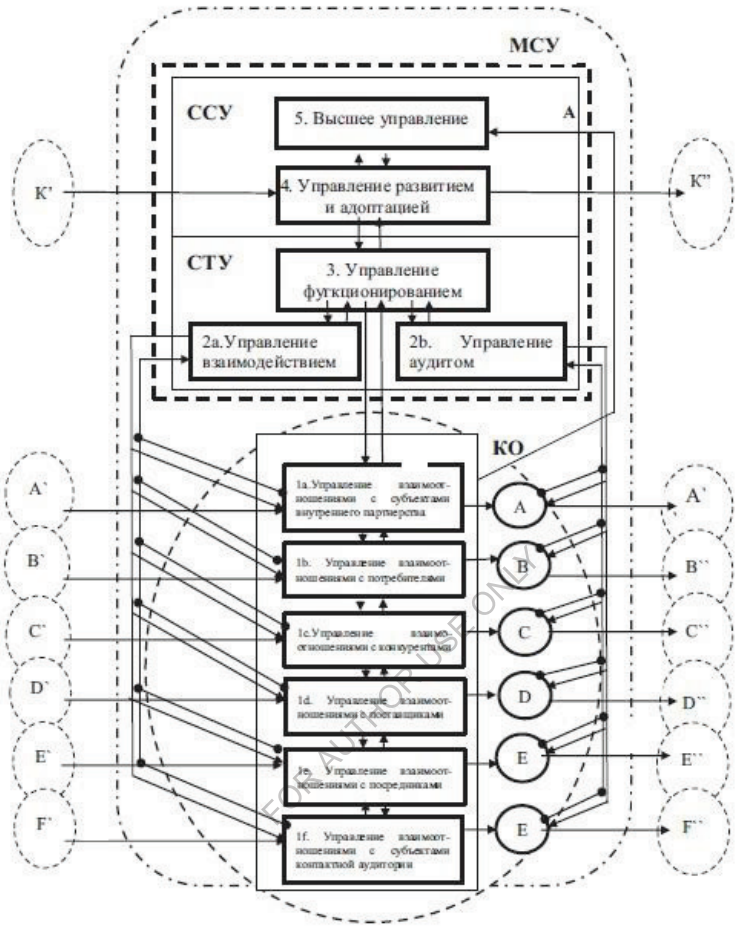


Figure 1.8 - Conceptual model for ATP relationship management

The scheme shown in Figure 1.8 has the following elements: an external environment (EA), a system (S) consisting of a meta-management system (MMS) and a controlled object (SO). The meta-management system (MMS) contains two systems: the strategic management system (SMS) and the tactical management system (TMS).

The strategic management system (SMS) comprises two subsystems: top management (5) and development and adaptation management (4). Subsystem 5 develops strategic goals, mission, vision and policies, while subsystem 4 develops

decisions related to strategic planning, model development and evaluation criteria, and adaptation to the external environment to meet future needs. The areas of the external environment related to the projected "future" are denoted as K`, K`.

The Tactical Management System (TMS) corresponds to the managerial activity of making tactical decisions that contain both parametric (quantitative) and incentive (qualitative) control actions, and consists of three subsystems.

The performance management subsystem (3) optimises the functioning of the system as a whole, coordinates the distribution of efforts and resources between the sub-units, and ensures the necessary synergies. The interaction management subsystem (2a) regulates the interaction of units, stimulating or inhibiting their functioning. The audit management subsystem (2b) monitors, controls and internal audits.

The controlled object (SO) implements the process that ensures the use of the main goal of the system functioning. Since the goal of the system functioning is a tree-like structure and is decomposed into subgoals in the goal tree, the QA block contains fractal subsystems A, B, C.

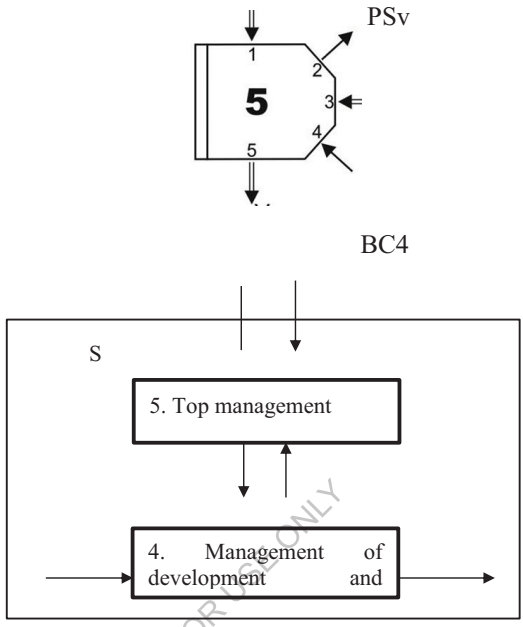
The operational management system (OMS) is represented by the relationship management subsystems with the main groups of partnerships A, B, C, D, E, F which include: internal environment partnerships, customer partnerships, competitors, suppliers, intermediaries and contact audiences respectively. 1a, 1b, 1c, 1d, 1e, 1f are defined through partnership relationship management. The relationship-related external environment areas are denoted as A, B ', C', A ', B ', C ', respectively. The input and output parameters are denoted as x, y.

A particularly prominent relationship is that referred to as the algedonic signal (AS). The algedonic signal is neurologically associated with signals of pain, pleasure and anxiety. An acute feeling of discomfort, unpleasantness causes a person to stop performing an errand, the meaning of which is well understood and which the person seeks to complete. It is possible to manage people by explaining to them analytically 'why' and 'how' certain actions should be carried out, or

'algedonically', using a system of rewards and indications without any explanation. This non-analytical communication is also used when top-level managers are indirectly informed about the performance of specific lower-level units. An algedonic signal can be artificially created, for example, by online discussions of decisions made by management at the moment.

It is useful to divide the interactions between system elements into two subsets: functional influences and information links. Functional influences can be controlling, coming in the form of objectives, strategic plans or orders, in the form of output data or the result of information links in their purpose can be divided into directional and backward. Forward information links are linked to the input data and outputs of the subsystem. Reverse information links are connected to inputs, and the type of feedback can be either negative or positive. In other words, the feedbacks can be either clarifying or extending in relation to the function being performed. A full description of functional and information interactions is given in Figure 1.9, which represents the five varieties of control subsystems as polyhedrons, with each facet corresponding to a particular information link or functional impact.

Sub-system 5 - external control



HL - external management office for relationship management

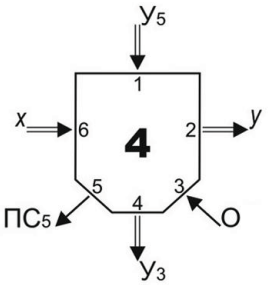
PSv - direct link to external management

A - alhedonic signal

OS4 - feedback from subsystem 4: development and adaptation management

5. U4 - controlling effects on sub-system 4: development and adaptation management

Sub-system 4 - development and adaptation management



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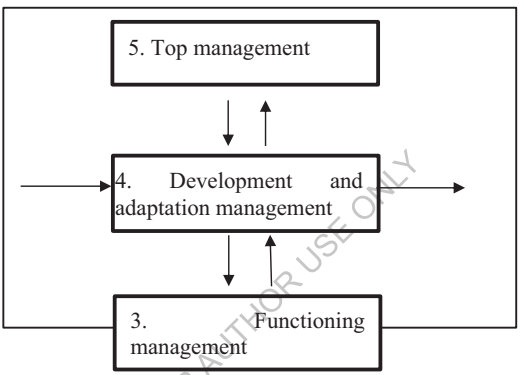


U5 - management of the higher management subsystem

y - output to the outside environment

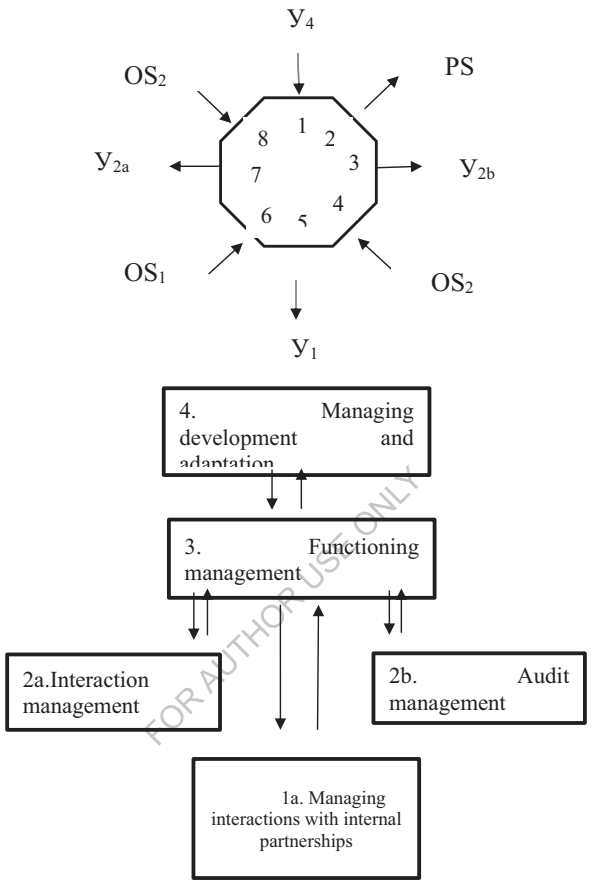
OS3 - feedback to the performance management subsystem

Uz - control impacts on the performance management subsystem

PS5 - direct link to higher management subsystem

x - input from the outside environment

Subsystem 3 - operation management



G4 - management of subsystem 4 : development and adaptation

PS4 - direct link to the development and adaptation subsystem

U2b - controlling impact on the audit management subsystem

OS2b - feedback to the audit management subsystem

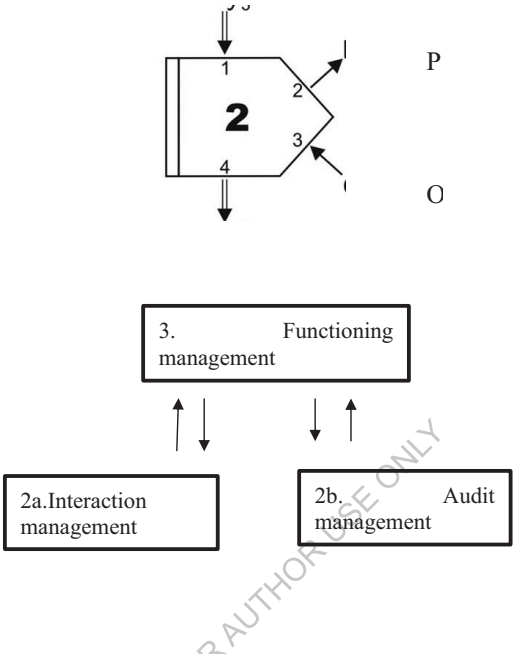
Y1 - management impact on the internal partnership management subsystem

OS1 - feedback to the customer relationship management subsystem

U2a - control impact on the interaction management subsystem

OS2a - feedback to the interaction management subsystem

Subsystem 2 - interaction management



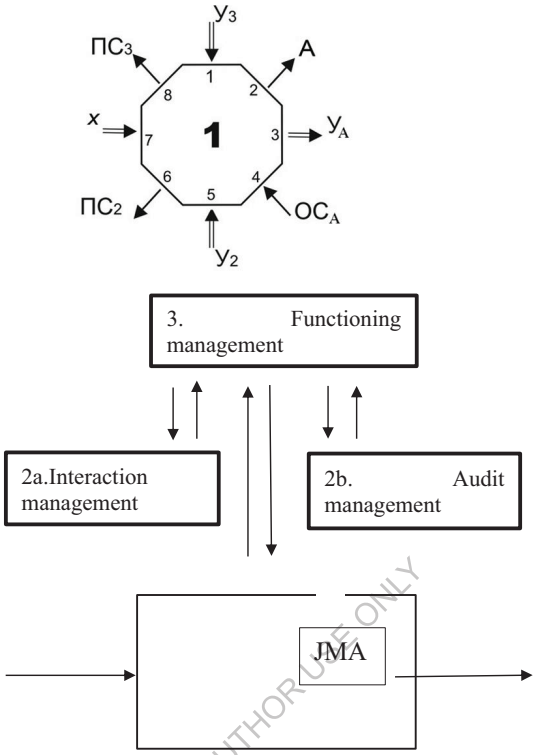
U3 - management of the performance management subsystem

PS3 - direct link to the performance management subsystem

OS1 - feedback from the higher management subsystem

U1 - controlling effect on the upstream subsystem

Subsystem 1 - relationship management



U3 - management of the performance management subsystem

A - alhedonic signal

OA - managing the impact on process A: managing the relationship with the internal partnership (B,C)

OS A - Process A feedback: managing the relationship with the internal partnership

U2 - management of subsystem 2

PS2 - direct link to sub-system 2

X - incoming parameters

PS3 - direct link to the performance management subsystem

Figure 1.9 - Interaction of the element structure of the conceptual model

The variety of functional elements of the conceptual model under consideration represents a meaningful basis for the design of a new type of management system.

The configuration of its architectural construction of such systems is fundamentally different from the world famous methodology of structural analysis and design SADT [32], which is known to use as a methodological basis the tetrahedral cellular model of neural connections. At the same time, it is easy to see that the degree of interaction of control subsystems, i.e. the number of connections, lies in the range from 4 to 8, which agrees the conceptual model with psychological constraints, according to which human ability to hold 7 ± 2 objects simultaneously in the head [77].

This approach reflects the reality more fully than the SADT methodology, which, in this case, is only a particular, simplest, variant of this approach. The proposed conceptual model of relationship management satisfies the main cybernetic and synergetic principles: the principle of necessary diversity; the principle of feedback; the principle of duality; the principle of adaptivity; the principle of homeostaticity; the principle of soft and resonant management.

The principle of necessary diversity is realised by managing complexity, in which the strategic management system plays a special role. The information links from the strategic management system to the managed entity and then to the external environment ensure that diversity is increased, e.g. goals, programmes, regulations and standards are further interpreted and implemented at each non-desired level.

External information flows (from the external environment to the managed entity and from the managed entity to the strategic management system) ensure that diversity is narrowed. For example, the management system level receives reports on the implementation of strategic plans, to key indicators. Instead of going through and analysing all situations possible under the external environment, it is the strategic management system that covers all the diversity of requests from the external environment and formulates strategic goals taking into account future needs.

Another way of managing complexity is through the recursiveness property of the model: the unit management model replicates exactly at its level the management

model of the system as a whole. For organisational management, the level of recursiveness descends from the management system of the organisation as a whole to the level of the individual controlling some process. Accordingly, the strategic management system is reduced to the higher parts of the human brain responsible for controlling other parts of the brain, transforming all external impulses, and regulating complex reactions, including behaviour.

The ATP relationship management system, shown in Figure 1.10, contains the following elements: external environment, enterprise management system, and consists of a metasystem of management - the subject of management and an operational element - the object of management. The metasystem contains two levels of management: strategic and tactical. The strategic management system includes two subsystems: system 5 top management and system 4 development and adaptation management. System 5 is fit for purpose, develops strategic goals, mission, vision and policy, performs basic management functions: planning, organization, management, motivation, control, system 4 - decisions related to strategic planning, development of model and evaluation criteria, adaptation to external environment, provides competitive analysis, identification of strategic issues, problems and opportunities.

The targeting subsystem consists of the owners of the enterprise, the board of directors and the management board, depending on the legal form. Subsystem 4 includes the top management of the ATP, which forms the development directorate. The tactical management level corresponds to the direct management activity, which consists of the development of tactical decisions containing both parametric (quantitative) and incentive (qualitative) impacts, and consists of three subsystems. System 3, performance management, optimises the functioning of the system as a whole, coordinates the distribution of efforts and resources among the sub-systems and provides the necessary synergies. It forms the basis of the current operations directorate, which consists of the various area managers, deputy directors or heads of departments. System 3* - Audit management, monitors, controls and internal audits. Monitoring of the implementation of the plans

includes evaluating the indicators characterising the development of the various fields of activity and, if necessary, setting a task for the sub-systems below to eliminate discrepancies between the planned and actual indicators.

System 2 - interaction management, regulates the interaction of units, stimulates or inhibits their functioning, i.e. it is the centre of regulation of the enterprise and conducts intermediate results of all subsystems 1. At the level of subsystem 2, business process managers coordinate and reconcile the decisions taken among themselves. Where direct coordination is not possible, due to conflicts of interest between the various business processes, coordination takes place at system level 3, under the direction of the directorate of current operations. However, there are no mappings to business units or officials, so it is more likely to be a management business process.

This business process is a set of procedures for reconciling operational results and decisions made at subsystem level 1, as well as procedures for moving aggregated information to a higher management level.

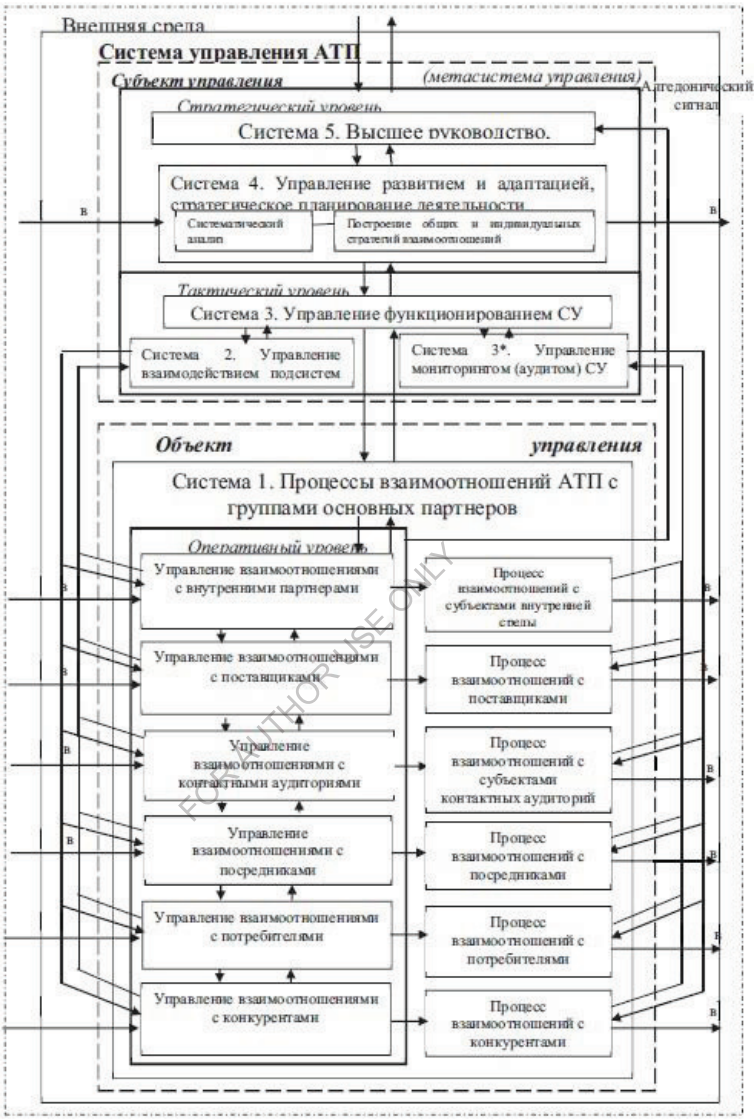


Figure 3.1 - Model of the ATP relationship management system

The management entity implements the business processes that ensure the fulfilment of the main purpose of the ATP functioning. System 1 is presented in the form of five groups of processes of relations between the enterprise and its

partners: customers, suppliers, intermediaries, personnel, external relations (government agencies, media, financial institutions) and partner relationship processes. For each process, input and output parameters, respectively resources and results of each business process are given. On the system level 1, business process managers manage their activities. Interaction and interconnection between the sub-systems pass through the decision makers, with the same managers participating in several levels of management at the same time.

A shift from the functional management approach used in the resilient systems concept to the more advanced process approach will increase the versatility of the concept being developed.

Between the operational and strategic levels of management, the communication used when higher level managers are directly informed about the performance of specific lower level units is called an alhedonic signal. Algedonic signals are signals generated to alert executive modules to the need to intervene in system activities, which are raised through the recursion level when actual execution has failed or exceeds the capacity of the system. The TRM system cannot interact without principles aimed at improving the performance of the organisation as a whole. The TRM principles reflect the overall focus of the ATP. Therefore, it is reasonable to propose the following list of principles (Figure 1.11).

The principle of having a single database of information provides for a database into which information about the partners is collected. The use of communication channels implies the servicing of partners by telephone, e-mail, events, meetings, webinars, advertising, social media. Analysis of collected information - preparation of data for making appropriate organisational decisions: segmentation of partners based on relevance to the enterprise, etc. Management of individual relationship subjects, anticipating control and forecasting risks at each stage of the interaction process.

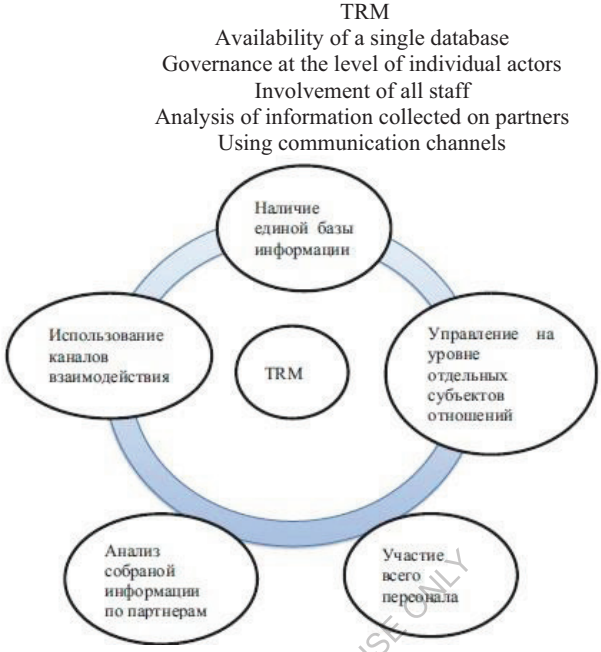


Figure 1.11 - Principles of TRM operation

Participation by all staff - involves taking responsibility for solving problems, actively seeking possible improvements in relationships, better representing the organisation to the partner, enthusiasm and pride of employees in knowing they are part of the organisation.

It is advisable to support the approach of M. Zineldin [87] to build a TRM system in the form of a house. The author has demonstrated the components of TRM in the form of pillars, so to speak groups consisting of seven basic components (principles), model 7C: creation and management of external marketing, creation and management of marketing audit system, which includes market and competition, internal marketing, planning discipline in all links and functions of the organization, management of relationships with distributors, creation and management of relationships with suppliers who provide material, relationships with external employees, honest relationships with the customer It

can be agreed that the roof of the house consists of the most important factors affecting the organisation, i.e. the macroeconomic components, while its foundation is made up of external factors that affect the business.

Referring to previous studies, this approach does not accurately reflect the current state of the relationship. The above-mentioned components play a significant role in the building of TRM partnerships. Applying them as part of the TRM house, there is a need to combine them into one block. Therefore, taking the modified components into account, the TRM house would look as follows (Figure 1.12).

Competition, threats

Relationships with internal partnership actors
Consumer relations
Relationship with competitors
Relationship with suppliers

Relationships with intermediaries

Relationship with the actors of the contact audience
Technological, environmental

Political, social

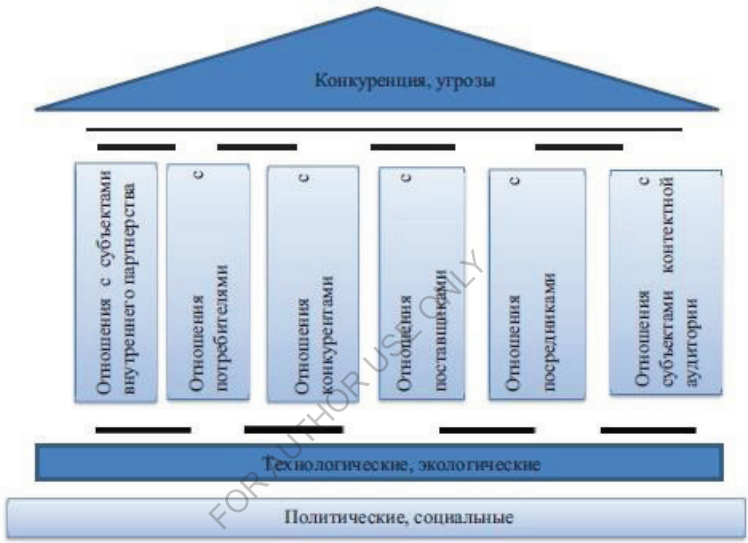


Figure 1.12 - Components of a TRM house

The TRM system provides a viable means of developing and maintaining long-term business relationships. The principles of the system should be used to ensure the capacity and capability of the relationship. The TRM concept is controversial because each member of the house is prioritised for quality improvement by all the internal and external relationships and processes of the ATP. Using a relationship management system has the following advantages (Figure 1.13).

The benefits of using
Increasing profits
Increased customer satisfaction
Increasing the competitiveness of the ATP
Increased productivity
Improving the quality of management decisions
Improving the image and reputation of the company
Ensuring the economic sustainability of the ATP and the rational use of

Figure 1.13 - Benefits of using TRM by an organisation

With the help of the proposed TRM system, decision makers will be able at different levels of management to carry out coordinated decision-making and implementation of decisions on the functioning of the enterprise. The diversity of functional elements of the conceptual model, the proposed scheme of TRM formation, the basic principles of TRM operation are analyzed, the home of TRM, the benefits of using TRM system by the organization are considered and supplemented.

CHAPTER 2

METHODOLOGICAL FOUNDATIONS FOR MANAGING INTER-ORGANISATIONAL RELATIONSHIPS WITH PARTNERS

2.1 Inter-organisational network as a mechanism for coordinating business relationships

In today's environment, it is increasingly difficult for enterprises to conduct their business activities without long-term and profitable connections. One of the ways to stay afloat is the association of enterprises in inter-organisational networks, which become a form and simultaneously a mechanism for their development. The formation of relationships determines the need to develop a mechanism for coordination of interaction between enterprises. The coordination of interaction subjects' activities appears to be one of the topical problems of marketing. Traditionally, three mechanisms of coordination of market interaction actors are distinguished: market, hierarchical and inter-organisational networking [32].

Table 2.1 - Mechanism for the coordination of business relationships [32].

Coordination mechanism	Type of relationship	Type of marketing	Type of coordination mechanism
Market	Transactions	Transactional marketing	Market-based coordination mechanism
	Repeated transactions		
	A long-term relationship		
Network	Consumer-supplier partnerships	Relationship marketing	Mechanism for coordinating ATP's relationship management processes with partners
	Strategic alliances		
	Network organisations		
Hierarchy	Vertical hierarchy	Internal corporate marketing	Hierarchical coordination mechanism

Analysing previous studies, the choice of an inter-organisational network as a mechanism for coordinating ATP's relationships with partners becomes apparent.

Theoretical issues of interaction in inter-firm networks are also considered by domestic researchers. A.Sterlin and A.Ardishvili [3], V.Katkalo [24] analyzed the problem of developing network structures as a new organizational form of management. The work by A. Tretiak and M. Rumyantseva [54] provides a generalized analysis of the main interpretations of the phenomenon of network forms of interfirm cooperation. O. Tretiak [7], A. Yuldasheva [7] summarized the results of theoretical studies of the new concept of marketing management of the firm.

The work of S. Kusch [31] analyzes inter-firm networks as the most complex form of relationship marketing development. The author offers to divide marketing relationships into two levels: Marketing of relationships "based on the market" (consumer markets), and marketing of relationships "based on networks" fig.2.1.

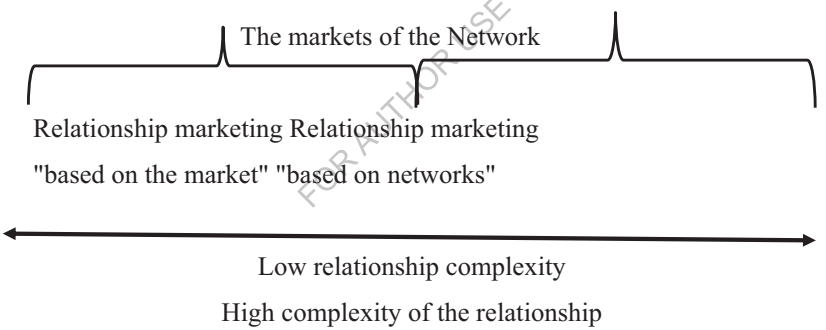


Figure 2.1 - The two main types of relationship marketing

Here are the most important characteristics of relationship marketing suggested by the author.

"Market-based" (consumer markets):

- The development and management of customer relations;
- Management of marketing activities for each consumer segment;
-Managing individual consumer relationships: initiation, development, support, completion;

- Establishment of a modern, flexible information system and database to strengthen long-term customer relations;

"Network-based":

- Managing the enterprise from a resource exchange perspective;
- Development and management of exchange relationships with companies;
- Creating, maintaining and terminating networks;
- Management of individual company interactions - initiation, development, support, termination;
- Initiating and developing strategic partnerships;
- Constructing a network of suppliers and a network of consumers.

This distinction defines two levels of relationship marketing. It may be more correct to define the first level as consumer (end-user) relationship marketing and the second level as the network (inter-organisational) approach in marketing, which is the highest form of relationship marketing and includes all the actors mentioned above.

Recently, with the growth of competition, enterprises have started to pay more attention to the formation and maintenance of partnerships and business networks. Mutual cooperation in the economy has become the basis for the development of high-tech products, the growth of enterprise network competitiveness and the basis for the creation of strategic visions between business partners.

The advantages of networking are: cost saving, additional value creation, easier access to resources for agents, rational use of labour force, optimisation of management processes. The disadvantages are: danger of opportunistic behaviour, possible weak motivation of network participants, possible significant divergence of goals, not always participants receive the same benefits.

The term "network" is generally interpreted in the same way and means a way for organisations to interact, to unite these organisations into one integrated organisation, to coordinate and control their activities through market structures and mechanisms based on mutually beneficial cooperation with a special relationship. In general terms, the inter-organizational network is perceived as a

way of regulating interdependence between enterprises, which, on the one hand, differs from the intra-firm (hierarchical) and, on the other hand, market coordination as a response to market mechanisms [3].

Network associations solve the problems of rational design of partnerships, finding a compromise between centralization and decentralization of management, successful management of several entities in achieving common goals under considerable variability and uncertainty of the external environment, reducing the dependence of an individual firm on its own resources. The network approach implements the concept of interaction, which relies on a number of attributes such as [75]:

- The similarity of the target benchmarks of actually functioning business entities;
- The need to use state support measures;
- The need to attract investment in markets;
- The need to strengthen innovation capabilities;
- Development of information and communication technology;
- Aiming for synergies;
- Promoting the learning and constructive use of lessons learned by business leaders;
- Development of ideology and partnership.

Vertical, horizontal, conglomerate integration processes that take place between subjects of market relations become the basis for uniting organisations into a single network. Let us consider varieties of the network form of integration found in modern industry. The authors present the results of research into variants of network form of integration of such foreign authors as R. Miles, C. Snow, R. Paturel. One of the most clear-cut and rational, quickly becoming the classical classification of network structures was suggested by R. Miles and Ch. Snow who, moving from simple to complex, considered the inter-firm networks as a new stage in the evolution of network structures: linear structures - divisional - matrix - network. The authors distinguished internal, stable and dynamic networks, and described mechanisms of functioning of each of them. It is this classification of

network associations that B. S. Milner proposes as the basic one. S. Milner in his basic textbook "Theory of Organization". [76]. According to R. Miles and C. Snow, the dynamic network is the most suitable for the needs of the emergence of a new stage in the evolution of organizational structures. It is the dynamic network that is a temporary structure whose relations between the participants are built on the basis of trust and market coordination.

R. Paturel, professor at the Graduate School of Business in Grenoble, the results of his research into the type of network form of integration are also presented in Table 1, believes that the transition to modern management methods is now closely connected with the development of network organisational structures, hierarchical structures giving way to network systems, and distinguishes two networking models based on the direction of integration cooperation and the degree of interdependence of partners.

It is reasonable to consider varieties of the network form of integration, according to foreign authors. R. Miles and C. Snow [77] suggested three types of network: internal, stable and dynamic (Table 2.2).

Table 2.2 - Main characteristics of network organisations

Type networks	Features of the organisation	Areas of application	Costs associated with network expansion	Costs associated with modifying the structure
Stable	Large firm (with a centre), which creates market-oriented links with limited upward and downward flow of information	Extractive industries that require large capital investments. The pooling of ownership by partners limits risk and encourages the full use of all resources	Excessive use of suppliers and vendors can lead to overdependence on the centre of the firm	High expectations of cooperation can limit the creative potential of partners
Internal	Shared ownership, distribution of resources according to a value purpose using market mechanisms	Extractive industries that require large capital investments. Market prices allow the performance of internal units to be evaluated	A firm can extend asset ownership beyond "internal market" opportunities and performance measurement mechanisms	Firm managers use teams instead of influence and incentives to guide internal operations
Dynamic	Independent form elements along the value chain form temporary alliances from a large number of potential partners	Low-tech industries with short production cycles and fast-changing high-tech industries (electronics, biotechnology, etc.)	The expertise may be too narrow and the benefits of the value chain may reach another firm	Effective mechanisms can be developed to prevent resistance from partners. Limited communication with downstream and upstream partners

Features of an internal network: does not involve the transfer of activities to the external environment of the firm, but requires the creation of a market economy within the firm. Organisational units sell and buy goods and services from each other at prices established in the open market. If internal operations reflect market prices, the various components must be able to evaluate the quality of the goods and their prices by buying and selling outside the firm at all times. The objective

of the internal network is to gain a competitive advantage by allowing broad entrepreneurial freedom with a focus on the bottom line.

The advantages of a network are gaining a competitive edge through the sharing of scarce resources, consistent development and the sharing of management and technological expertise.

The next network involves serving the intended market by connecting specialised resources according to a given product value chain. Instead of a single vertically integrated organisation, the stable network replaces a number of components of the firm, each closely linked to its core, specific agreements. Each component maintains its competitiveness by serving customers outside the network and partially ordering goods and services externally. Assets are owned by several firms specialising in different activities. The advantages of this approach are security of supply and distribution, close cooperation in production schedules and quality control.

A dynamic network involves centralised performance measurement and local operational autonomy combined with a dynamic network, where independent firms join together to produce a one-off good or service. To achieve the full potential of a dynamic network requires a plurality of firms (or divisions of firms) operating towards a value chain, willing to join together to perform a particular task and then disconnect to become part of another temporary alliance. The existence of multiple possible partners willing to apply their skills and resources to the common goal of the dynamic network is not only a guarantee of success, but also a source of potential problems. As a result, a dynamic network places demands on its components to continuously improve their technical competence and scope of activities, not only to maintain their own resilience, but also to make the network as a whole capable of maintaining its own competence and resisting factors that threaten its activities.

The advantages of using specialisation and flexibility, especially when many independent firms need to be organised with minimum cost and loss of operational time for a temporary or urgent joint project.

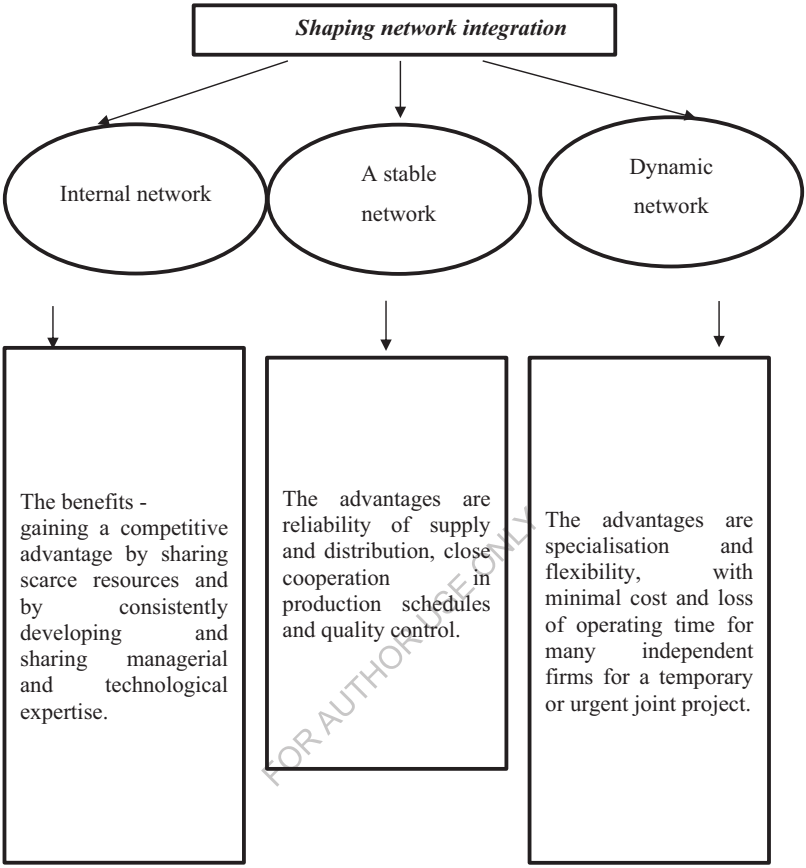


Figure 2.2 - Varieties of network form of integration

P. Paturel [78] proposed two types of network: hierarchical and horizontal with equal partners.

The first type assumes a large company, gathers smaller firms around it, and assigns them various specialist tasks. Firms may have their own divisions necessary for production, but will require a very high degree of specialisation. The large company dominates business operations, being the main customer.

Smaller structures quickly become dependent on a more powerful partner. The central enterprise exercises control through market mechanisms. Large firms select partners that are highly flexible, adaptable to changing conditions, and creative.

The advantages of using such a network are that, because of the limited scope of operations, and hence their highly professional execution, the need for planning and coordination is reduced, businesses are able to accelerate the production of new goods and services in order to keep up with the pace of modern market changes.

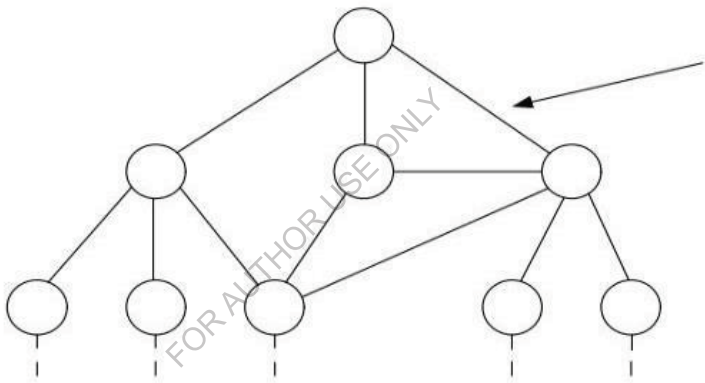


Figure 2.3 - Schematic representation of the hierarchical network

Horizontal network with equal partners - a set of enterprises that are close in size, most of which are legally independent, but support each other's economic sustainability, which is very important for everyone. Advantage - increases the competitiveness of produced goods and services. It stimulates investment and business processes and simplifies the management tasks of small and medium-sized enterprises - members of the network.

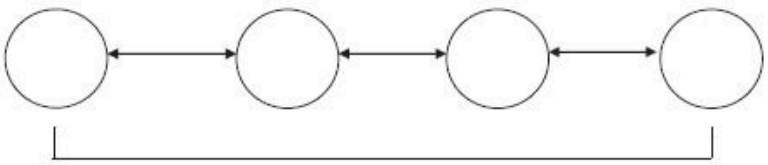


Figure 2.4 - Schematic representation of the horizontal network

Such scholars as A.L. Rvacheva, E.P. Berezhkova [79] consider the network from three positions: corporate network development, choice of partnership (client) relationships and franchising.

The peculiarities of the corporate network development network are that the company continues to fully own all businesses, opens new branches, engages in advertising and marketing policy and manages the entire network. In developing a corporate network, the company uses its own funds, but it is also possible to invest, although the investor may not be the owner. When there are too many branches, companies may opt for another network route - partnership (or client) relationships.

The advantage of using this approach is the optimal combination of production factors in the network, a unified purchasing, sales, assortment and advertising policy and, as a consequence, access to new markets, maintaining production costs, product quality and productivity at a given level.

Choice of partnerships (customer relationships) - the company can open new businesses both under its own name and under the name of network partners Coordination of activities, marketing and advertising functions are carried out jointly. Partners can share each other's resources, technology, knowledge and expertise. The closeness of the relationship is established on a case by case basis, but in a partnership relationship there cannot be any rigid rules. The participants have a certain freedom of doing business, a large sphere of influence on the market, but have to share it among themselves.

Benefit: increased awareness of partners, legal and accounting support from a stronger partner, increased market clout, access to new markets, increased market efficiency, reduced risk, new competitive advantage.

Franchising involves:

- Providing various forms of management advice (consultancy)
- Support in the formation of management, organisation of work and production;
- Provision of marketing services: market research, a range of promotional activities, implementation of a unified advertising policy;
- Supply of material resources to support the production process.
- At the same time, the franchisee's right of control and regulation is used in such a way that the franchisee's legal and economic independence is not compromised in any way.

The advantage of using such a network is an increase in the quality of the final product and a reduction in production costs for franchisees. The advantage of using such a network is that the quality of the final product is improved and the franchisee's production costs are reduced. The franchisee receives a number of financial benefits, as the bank treats it as part of a larger system, which makes it easier to obtain loans. With a network brand, the average income for individual companies and the value of the business increases.

E. P. Karlina [81] proposes network companies (business networks) and network-companies (intra-company networks). Network companies (business networks) involve the creation around a large core firm of a network of property-independent partners with relatively narrow functional specialisation, who are either its suppliers or its distributors and have their own development objectives.

With a limited range of operations, and hence highly professional execution, the need for planning and coordination is reduced and businesses are able to accelerate the production of new goods and services to keep up with the pace of change in the modern marketplace.

Company networks (intra-company networks) - involves the association of equal partners within a single property complex, most of whom are legally

separate entities, united not only by a common purpose but also by interaction in a common space of flows.

The advantage of this approach is that it increases the competitiveness of the organisation as a result of the interactivity of intra-system economic links over external ones, stimulates innovation and commercial processes, and simplifies the management tasks of small and medium-sized enterprises - network members. Internal networks are usually set up for competitive advantage without excessive outsourcing.

P. Paturel distinguishes an 'inverted vertical model' of network organisation - the network mechanism is the same as in the formation of the 'umbrella model', where a large corporation has maximum financial, technological, social and other types of power, i.e. it is a large 'umbrella' under which small and dependent members of the corporation are charged. In the case of the 'inverted vertical model', however, centralisation is not based on a large, classic network partner but on monopolistic ownership of a valuable resource, knowledge or technology, which may be owned by a small or medium-sized company. Thanks to the network organisation, the central firm has immediate access to tuned technology and intangible resources - the image of the manufacturing plant.

Rigidly integrated vertical model of network organization - highlighted by the domestic author O. Michurina [83] is characteristic of complex, multi-stage production, when each subsequent processing stage is a consumer of the preliminary stage and, at the same time, each stage is allocated into a separate production. As a rule, separate productions - stages of a single technological process - are subsidiaries with a single management and centre, and operate within a single property complex.

The advantage of using this network is the efficiency of network operation, which is achieved by realising the benefits of vertical integration.

Partly integrated vertical model of network organisation - creation around the central firm of a network of property-independent partners with relatively narrow functional specialisation, which are either suppliers of the central firm or its

distributors. They have their own development goals, with the central firm being either a large firm or a small or medium-sized organisation - the owner of a rare resource or an innovative, scientific development, delegates the performance of production functions to large industrial enterprises.

It allows the central firm to focus on core business processes, improve quality of execution, reduce planning and coordination costs and thereby accelerate the production of goods and services, improve adaptability to changes in the modern marketplace; gain access to already existing technology and intangible resources.

Michurina also distinguishes a tightly integrated horizontal model of network organisation, a partly integrated horizontal model of network organisation and a network organisation model with an internal network.

Rigidly integrated horizontal model of network organisation - assumes functioning within a single property complex. The main company continues to fully own all the businesses, selects locations for opening new branches, conducts financial, marketing, advertising policies and manages the network from the centre. Network partners can be legally separate entities, but are united by one goal and function in the same spatial flows allows to ensure each other's sustainability by transferring financial, human and other resources.

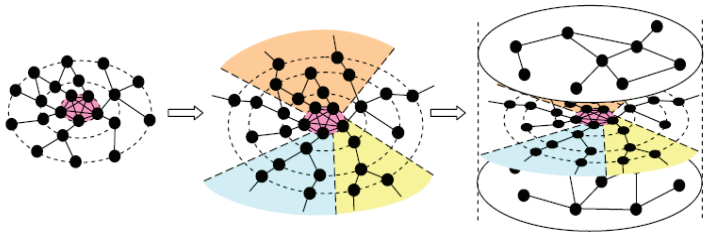
The advantage of using such a network is that it works within a single activity, increasing the efficiency and competitiveness of the organisation by simplifying the management tasks of network members, increasing their commercial and innovative activity, establishing long-term economic ties with suppliers of goods from the centre and reducing handling costs.

A partly integrated horizontal model of network organisation - its creation involves the association of equal independent partners, each of which has its own purpose of operation. The interaction between the elements of such a network is based on contractual relations, i.e. it is more market-based. The partners can advise each other on how to do business, local markets and legislation, but in each case it is decided individually, as there cannot be any rigid rules in the partnership.

Allows to eliminate contradictions that exist between native regional or international markets, to interact effectively over time, to react quickly to innovations in technology, to adapt to new trends in the market. Cooperation between equal partners provides the basis for entry into new markets, new industries, access to new information about an unfamiliar market and culture, and opens up new opportunities by pooling the resources of network partners. Partnerships can increase the competitive pressure of partners against common rivals while weakening their competition with each other.

Network organisation model with internal networking - elements of market relations are introduced into the functioning of the classical organisational structure, such as the purchase and sale of goods, components, services by subdivisions from each other at prices established in the external market. That is, in this case the subdivisions of the firm will not be oriented in their activity only on administrative methods of management: plans, schedules, intra-company cost calculation, intra-company pricing, but will work at market prices. This model enhances the flexibility of the individual units of the organisation and leads to a continuous improvement in the efficiency of the units' operations.

The authors propose different models of network structure formation [50]. Thus, the previously developed type of organisational interaction models - planetary, radial-planetary and sandwich models, represent degrees of generalisation and synthesis of model ideas about network organisational structures in relation to the road transport industry. (Figure 2.5).



Planetary model Radial-planetary model Sandwich model

Figure 2.5 - Networking models

Planetary structures - concentric flat structures - are largely aimed at modelling and describing the internal structure of the corporate road transport network and its links by external orbits in shallow depth.

Radial-planetary models - flat radial sectoral structures - are designed to model the system of relationships between the ATP and the immediate economic environment.

Sandwich models - spatial structures - are designed to solve problems of modelling relationships of road transport with Ukrainian regions and economic entities on a national scale.

A. N. Asaul, E. G. Skumatov, G. E. Loktevoy [5] offer a model of implementation cooperation network that provides for the interaction of business units in solving problems: providing raw materials necessary for the production of finished products and sales of finished products.

The advantage of use is the reduction (or elimination) of transaction costs. The effect is to unify the resourcing process of the network of partners; the sales process of the network partners' products.

The production (intermediate) cooperation network model - one organisation either produces individual elements of a product for a second organisation, or

performs individual intermediate technological operations and works, while producing its own specific products. The effect in the local operation of the network partners from deepening their specialisation; from the interaction of the network partners, in order to distribute and concentrate the same type of work on each of the network partners.

The mixed production co-operation network model involves the co-operative supply of the final products of individual organisations that are used as components in the production process of another member of the network. The advantage of using such a network is that part of the production is sold. A sustainable supply of component parts on favourable terms by deepening its specialisation.

Network model of business unit specialisation in individual stages of the production process. Deeper specialisation of network partners, deepening the division of labour. A rational level of division and cooperation of labour in the network, rhythm of production and rational material flows between the network partners must be ensured. Greater specialisation and a deeper division of labour: Increased productivity, shorter production cycles, increased security of supply and lower transaction costs.

The picking network model is a combination of the second, third and fourth options. It provides for increased productivity, shorter production cycles, improved delivery reliability and lower transaction costs. The co-operation network model of finance, management and new product creation. The network partners can be investors, customers, developers, construction organizations of the same profile, innovation organizations, etc.

The advantage of strengthening market positions, securing additional investment flow, establishing information contacts, opportunities to obtain public contracts, using unified elements of commercial propaganda.

Options for classifying the network form developed by the authors have common and distinctive features, as each author identifies separate network factors.

The shift to networked forms of enterprise operation is an evolutionary step that firms need to take in order to gain a competitive advantage in the face of the increasing risks associated with the transition from an industrial to an information economy. This is represented by a dramatic increase in the importance of innovation and in the ability of organisations to develop and implement it quickly and reliably. Networking is a complex subject of research and its widespread use suggests to the face the relevance and need for further research on this topic.

2.2 Existing approaches to assess the level of inter-organisational relationships between ATP and partners

In case of formation of stable intercompany networks one of tasks of the manager arises to take into account various interests of participants of a network as the network is a complex system of contacts between formally independent economic agents for the purpose of optimum combination and use of resources. It is certain that every participant in the relationship has his or her own personal strategic objective, and striving for it determines the choice of the relationship. Strategic interests are also decisive in the choice of certain partners or networks of relationships.

Based on the above material, there is a need to review existing methodologies and approaches for assessing the level of inter-organisational relationships between ATPs and partners.

Portfolio theory is widely used in relationship marketing research. Let's consider several models, analyzing the portfolio of relationships with partners as a whole, which can be applied to analyze the relationship of the company with any partners (suppliers, consumers, intermediaries, research organizations, consultants, etc.): D. Wilson's model [86]; T. O'Toole and B. Donaldson [80]; D. Ford model [68].

Д. Wilson proposed as a portfolio model a scheme for selecting the type of relationship between a supplier company and a consumer company based on the

relationship between the value added by the partner to the product and the degree of risk of doing business with that partner (Figure 2.6).

On the horizontal axis is the added value that the partner is able to add to the existing product; on the vertical axis is the degree of operational risk associated with doing business with that partner. "Operational risk is the risk borne by the partner in cases where the supplier fails to make a component of appropriate quality, to deliver the required product on the specified date, or fails to meet other obligations on the counterparty" [86]. [86].

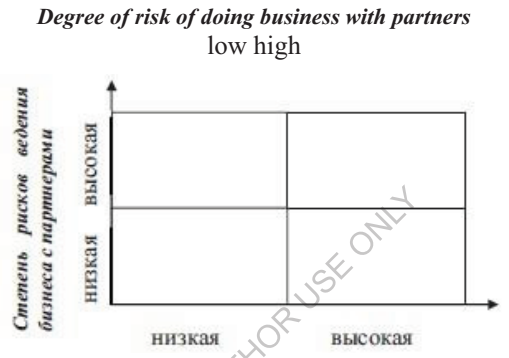


Figure 2.6 - Potential partner selection scheme

When building a portfolio of relationships with partners, a benefit-cost analysis is necessary, based on which the company decides whether to develop or terminate a relationship with a partner and whether to add new companies to the portfolio of relationships. In other words, it is worth engaging and developing relationships with each partner.

Thus, the relationship portfolio strategy is one element of the company's overall relationship strategy with its partners and is based above all on a system of shared values and goals.

T. O'Toole and B. Donaldson presented a relationship portfolio model based on two criteria describing the strength of the relationship: trust in the partner - the social context of the relationship (e.g. partners' thoughts about each other);

partners' actions to develop the relationship - the economic context of the relationship (e.g. investment in the relationship).

Based on the assessment of the strength of the relationship according to the above two criteria, all partner relationships are divided into four types (Figure 2.7):

1) Bilateral relations;

2) a recurring relationship;

3) discrete or opportunistic relationships;

4) hierarchical relationships (supplier or consumer domination).

Figure 2.7 - Matrix of partner relations [80]

A relationship is one-sided if the level of trust is high and the partners take active action to develop the relationship. If the activity to develop the relationship is high and the belief that the relationship will bring benefits is low, the relationship is hierarchical and dominated by the supplier or the consumer, depending on the specific situation. If the level of trust in the partner is high, but there is no need to develop the relationship by taking specific actions of an economic nature (e.g. repeat purchases), the relationship between partners can be classified as recurring. Finally, in the situation where the level of trust is low and the partners do not take

actions to develop the relationship, there are discrete transactions or even opportunistic behavior of the interaction participants and, therefore, the relationship is at the lowest level of development. Thus, the model of T. O'Toole and B. Donaldson's model is based on the analysis of the level of involvement of partners in the relationship and can help managers in making strategic decisions to develop the capacity of the relationship and to take it to the next level.

The question arises: how to manage a portfolio of relationships as a whole if a different management strategy is needed for each relationship type than for the other relationship types? The authors conclude that it is necessary to develop a management strategy for each of the relationship types, but do not provide guidance on how to do this in practice.

Д. Ford et al [68] proposed a model of relationship portfolio formation (Figure 2.8) depending on the level of involvement and duration of the relationship:

- A long-term distanced relationship;
- A long-term close relationship;
- Short-term distanced relationships;
- Short-term close relationships.

Duration of the relationship

high Long distance relationships Long close relationships

Low Short-term distant relationship Short-term close relationship

Involvement in relationships

Figure 2.8 - Matrix of company relationships with partners by level of engagement and duration [68].

For example, long-term distanced relationships, compared to high-involved relationships, are characterised by formal contacts and little specific investment. The most important advantage of a long-term distanced relationship is the low cost of the relationship.

Depending on the specific situation, it makes sense for a company to develop a specific type of partner relationship: short-term or long-term; high- or low-involvement relationships. However, each type of partner relationship has disadvantages: with high levels of involvement there is a high cost of maintaining the relationship and a high degree of dependence on the partner; with low levels of involvement the costs of adapting standardised products increase.

Thus, high-involvement relationships are not always justified because they involve coordinating joint activities, adapting to the partner's needs and organising employee interaction at all levels. A company cannot maintain high involvement relationships with all partners because the costs are too high.

Traditionally, high-involvement relationships that require a high level of investment are considered to be long-term relationships. But it is not always the case that a long-term relationship is characterised by a high level of involvement. A company may be interested in a long-term relationship with a partner in which a high level of involvement is not required.

Consequently, according to D. Ford [68] there is no definite correlation between the level of involvement and the duration of the relationship. This conclusion contradicts the evolutionary approach in relationship marketing theory, according to which close relationships are always long-term and distant ones are always associated with switching from one partner to another, and proves the need to form a portfolio of relationships between the company and its partners, including different types of relationships and allows to choose between them depending on the goals of the company.

But there is a need for further research, as portfolio theory only focuses on the evaluation of the individual relationship, i.e. the relationship with the individual partner.

However, the biggest disadvantage of the approaches discussed is that no quantitative estimates are offered. However, a valuation methodology with calculations is extremely necessary.

It is proposed to assess the level of the relationship based on the construction of a matrix of the relationship between the ATP and the partner. The matrix is constructed in a two-dimensional plane formed by the indicators of the partner's value for ATP and the partner's loyalty to the enterprise, on which the coordinates of the final indicators characterizing the level of ATP relationship with each partner are plotted (Figure 2.9).

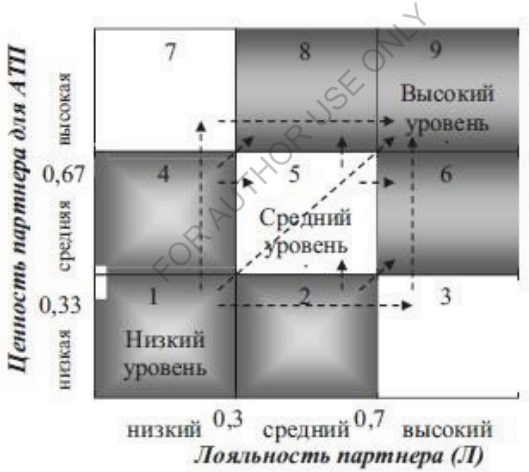


Figure 2.9 - Determining the position of partners according to the level of relationship with the ATP

The matrix space is divided into nine cells. Partners in certain cells can be grouped into groups, each of which is characterised by a particular level of relationship between the ATP and the subject of the interaction. The light grey filled cells of the matrix are the zone with a low level of relationship, the non-

filled diagonal cells are the zone with an average level of relationship, the darkened cells are the zone with a high level of relationship.

The assessment places the partner in one of the 9 sectors, but individual relationship strategies are only developed for key partners. The higher the sector number, the higher the partner's loyalty to ATP and its services, and therefore the higher the level of the relationship.

By comparing the value of the partner to the ATP and its level of loyalty, it becomes possible to develop a relationship strategy that takes into account the interests of the two parties and the subject of interaction and the enterprise. In Figure 2.9 arrows show possible directions of improvement of ATP's relationship with the partner. Taking into account possible and desirable for ATP prospects of relationship development with each partner, the enterprise develops a number of relationship strategies.

The opposite is the mathematical model of Western researchers R. Ackoff and F. Emery [1], who rely on a systems approach, describing three states of interaction between actors A and B - cooperation, conflict and independence.

Let (EVAB) be the expected unit value for A of his choice situation when B is present, and (EVAB ') be the same value but in the absence of B.

Then:

if (EVAB)> (EVAB '), then B cooperates with A;

if (EVAB) <(EVAB '), then B conflicts with A;

if (EVAB) = (EVAB '), then A is independent of B.

Thus, it can be argued that:

- B cooperates with A if the presence of B increases the expected value of A's condition (i.e. the presence of a partner improves the performance of that entity relative to its stand-alone position);
- B is in conflict with A if the presence of B diminishes this value (i.e. the presence of a partner impairs the performance of this entity relative to its stand-alone functioning);

- A is independent of B if the presence of B has no effect on the expected unit value for A.

Given the high degree of abstractness of mathematical modelling of relations between subjects, it should be noted that it provides some basis for methodologically significant conclusions, in particular, that the presence or absence of a conflict situation in relations between economic subjects is determined mainly by the nature of mutual influence of partners on the final results of each other's activities.

It seems that in this model (obviously, due to the specificity of the modeling object and the great importance for mathematicians of the need to "relief" the differences between "conflict" and "cooperation" as compared to the concept of "nuances" of these phenomena) the emphasis is placed on the opposition of cooperation and conflict as two modes of interaction and cooperation is understood as actually only successful, mutually beneficial for the parties interaction. In the traditional understanding, however, cooperation can have many characteristics, including the inclusion of some conflict "potential" (contradictions are almost inevitable in any cooperation), and some possibility of "neutrality" (the parties other than their cooperation often remain autonomous economic entities with interests, not affecting the area of their interaction in any way).

The premise that the success of an organisation is measured by the satisfaction of all its stakeholders is the foundation and basis in stakeholder theory. This theory has now served as the basis for a significant amount of research in economics and management.

According to the underlying assumptions of stakeholder theory, it is necessary to form, maintain and develop relationships with all stakeholders, regardless of their level of importance. The AAR (Activity - Actors - Resources) model can be used to analyse stakeholders in order to identify potential partners with whom to build sustainable, long-term relationships. This model provides an analysis on three

dimensions: actors, their actions and resources. The identification of potential partners is possible at different levels:

1) Organisational (members of a company's internal network who can influence its overall strategy through their position in the network);

2) Sectoral (partners in the company's immediate environment with whom the market value of the product or service can be enhanced);

3) sub-organisational (inter-organisational networks, clusters, ecosystems);

4) National (groups of socio-cultural, economic, political, technological factors, such as religious organisations, community groups, media, trade unions, tax authorities, universities, research centres, etc.);

5) International (international institutions and organisations).

H. Egorova [19] proposes an economic-mathematical method, namely, the structural approach, to characterize the structural properties of the network. The essence of the structural approach is decomposition (partitioning) into functions: the system is divided into functional subsystems, which in turn are divided into sub-functions, subdivided into tasks and so on. The decomposition process continues all the way down to specific procedures. In doing so, the system retains a holistic view in which all components are interlinked.

The meaning of the selected coefficients is as follows:

- The comparative sustainability and viability of a network can be investigated using coefficients of density, strength and closeness of links. A higher value of these coefficients usually indicates a higher resilience of the network structure;

- The social ties formed in the network and intertwined with formal connections play a kind of "passionate" role and create a transformational impulse. This impulse can act either in the direction of strengthening network integration or in the direction of making it a new market entity. This can be established if the threshold values of the network identification coefficients are known. In this case, the transformational impulse forms an appropriate strategy which has irreversible consequences for the functioning of the enterprise and

which determines the further course of evolution of the network as a whole. Significance of social networks in the formed formal entity. If the level of this coefficient is high, while the indicators of density, strength and closeness of connections are decreasing, it can be stated with a greater degree of certainty that the network formation enters the phase of transformation of those evolutions towards softer forms of integration.

- There is a relationship between the change in the coefficient system and the synergistic effect; if this relationship is quantified, it is possible to target the network and improve the structure of the object interrelationships.

A. Balabanitz [9] singles out an indicator of the value of marketing relations that reflects the economic efficiency of marketing interaction can be determined by the ratio of the totality of benefits received from relations and the cost of marketing efforts needed to implement them:

$$Ц_{МВ} = \frac{\sum_{i=1}^{n} B_i}{\sum_{j=1}^{m} З_j^{МВ}} \quad (2.1)$$

where CMV is the value of the marketing relationship;

Bi is an estimate of the i-benefit of the interaction, in points;

n is the number of benefits of the interaction;

$З_j^{МВ}$ - the score of the jth marketing effort required to implement the marketing relationship, in points;

m is the number of marketing efforts required to implement the marketing relationship.

The formation of marketing relationships of high value to both the enterprise and its business partners contributes to synergistic marketing performance and sustainable competitive advantage.

Based on the above, it should be noted that the synergetic effect of marketing interaction can be calculated using the formula:

$$P_c = K_{\text{e}} \cdot (\sum_{i=1}^{n} Ц_{\text{мв}_i}^{\text{с}} + \sum_{j=1}^{m} Ц_{\text{мв}_i}^{\text{б-п}} + \sum_{k=1}^{k} Ц_{\text{мв}_i}^{k}), \text{ (2.2)}$$

where *Ps* is the synergistic performance of the marketing interaction;

Ke is an emergence coefficient, reflecting the quantitative assessment of qualitative synergies in the marketing interaction system;

$Ц_{\text{мв}_i}^{\text{с}}$- the value of the marketing relationship with the i-th consumer (segment) of the target market, in points;

n is the number of consumers (segments) in the target market;

$Ц_{\text{мв}_i}^{\text{б-п}}$ - the value of the marketing relationship with the jth business partner (supplier and/or intermediary) of the enterprise, in points;

m is the number of business partners;

$Ц_{\text{мв}_i}^{k}$ – the value of the marketing relationship with the enterprise's fth competitor, in points;

k is the number of competitors of the enterprise with which marketing interaction is carried out.

The assessment of synergies should be made both for the current situation and for the future, because the impact of the various factors - sources of synergies - will depend on the strategic changes that the enterprise is making in the marketing interaction system.

Д. Popov [44] proposed a mathematical model for calculating comparable economic effects that takes into account changes in gross revenue, transaction costs and operating expenses when a business enters the network.

The coordination of the network structure by the system integrator will be successful when the existing and potential relationships, the motivations of the participants are known and modelled and the universality of the goals of their interaction is ensured. The number, content, and strength of the cooperative ties between the participants are indicative of the sustainability of the network. A prerequisite for the creation of a cooperative link between any two enterprises is the possibility of exchanging one resource or another. Cooperative linkages

between enterprises are usually multi-channel and consist of several exchange loops. Five kinds of exchange loops are most common: 1) information (i.e. documentation), 2) materials, semi-finished, finished products; 3) property (on various legal grounds, including lease) 4) specialists and workers; 5) production, technological, marketing, organizational, and other experience. The more exchange loops, the more sustainable the interaction between the enterprises and the more sustainable the network. The exchange loops, being formalised on a contractual basis, constitute transactions.

The author proposes a model for the alignment of interests in each of the resource exchange circuits for each pair of enterprises, based on the provisions of the theory.

Suppose you want to determine correspondences between two sets X and Y. The elements of these sets can be mapped to each other in some way, forming pairs (x, y). If the way of such a mapping is defined, that is, for a single element $x \in X$ an element $y \in Y$ can be specified, the sets X and Y are said to correspond. It is not necessary that all elements of the sets X and Y participate in the mapping.

The set $Q \cap X \times Y$ that defines the rule by which the matching is done, that is, it lists those pairs (x, y) for which the matching is held. Thus, the set Q consisting of elements (x, y) in which the correspondence according to the given rule is maintained is distinguished from the set $X \times Y$. The symbol $\cap$ denotes a non-strict inclusion of one set into another. A correspondence, depicted as q, is a triple of sets:

$$q = (X, Y, Q) \quad (2.3)$$

If $(x, y) \varepsilon Q$, it means that an element x is matched with an element y. The correspondence between x and y will be denoted by an arrow, i.e. $x \rightarrow y$.

If the interaction of two enterprises in a network structure on the five above-mentioned contours is planned, it is necessary to ensure the correspondence between the sets when planning and organizing the interaction. The compensatory

model of M. Fishbein, applied in the theory of consumer behaviour [85], is used to quantify the level of relations between partners in the sales system.

Using this approach, we will present a formula for quantifying the relationship of one company to another in the sales system as follows:

$$A_{\text{отн}} = \sum_{i=1}^{i=n} w_i b_i e_i, \tag{2.4}$$

where bi is the strength of thought that the partner company has parameter i expressed with a certain strength; ei is an estimate of the company's attitude (positive or negative) towards parameter i; wi is the importance of the i-th parameter; n is the number of parameters taken for calculation.

The strength of thought indicates how confident one company is that another partner company has the presence of the considered parameter i. This opinion is measured on a 7-point scale from "very strong presence" (3) to "totally absent" (-3). The value is a rating of the attitude towards the relevant parameter, also measured on a 7-point scale from "very good" (3) to "very bad" (-3).

Taking into account the importance of parameter i (which is not taken into account in M. Fishbein's model) allows us to refine the estimation of the ratio. Calculation of the ratio by formula (2.4) aims to determine its total (generalised) value, when a negative opinion on one parameter can be compensated by a positive opinion on another parameter. In general terms, the choice of evaluation criteria can be represented as Table 2.3.

Table 2.3 - Selection of evaluation criteria by different authors

Evaluation Factors	Authors						
1.Consolidation of assets	-	-	-	-	-	-	+
2.Developing cooperative links	-	-	-	-	-	-	+
3.Network synergies	-	-	-	-	-	-	+
4.Network density	-	-	-	-	+	-	+
5.Degree of network value	-	-	-	-	+	-	-
6.The power of business relationships	-	-	-	-	+	-	-
7.Tight business relationships	-	-	-	-	+	-	-

8.Length of business relationship	-	-	-	-	+	-	-
9. Resilience of links	-	-	-	-	+	-	-
10. Degree of formalisation of links	-	-	-	-	+	-	-
11.Communicativeness	-	-	-	-	+	-	-
12.The benefits of implementing a marketing relationship	-	-	-	-	-	+	-
13.Marketing efforts	-	-	-	-	-	+	-
14.Partner cooperation	+	+	-	+	-	-	-
15. Conflict of partners	-	-	-	+	-	-	-
16. Independence of partners	-	-	-	+	-	-	-
17. Long distance relationships	-	-	+	-	-	-	-
18. A long-term close relationship	-	-	+	-	-	-	-
19.Short-term distance relationships	-	-	+	-	-	-	-
20.Short-term close relationships	-	-	+	-	-	-	-
21.Confidence of partners	+	+	-	-	-	-	-
22. Actions of partners in the network	-	+	-	-	-	-	-
23.The degree of risk of doing business with a partner	+	-	-	-	-	-	-

Thus, speaking in general about methods and approaches to assess the level of interaction, it should be noted that there is no universal approach. Therefore, future work will focus specifically on the formation of a methodological approach to assess the level of inter-organisational relationships between ATP partners.

2.3 Developing a methodology for assessing the inter-organisational relationships of ATP with individual partners

The move to networked forms of enterprise is an evolutionary step that firms need to take in order to gain a competitive advantage in the face of the increasing risks associated with the transition from an industrial to an information economy. This is reflected in a dramatic increase in the importance of innovation and the ability of organisations to develop and implement it quickly and reliably.

Assessment of the level of inter-organizational relationships of ATP with partners can be carried out in terms of the possibility of implementing the economic interests of partners, partner groups, which makes it possible to identify at different stages of development the moments of deterioration of the level of relationships. The realization of the interests of the network entities represents the

realization of satisfaction, and the overall goal of each participant (staff, customers, intermediaries, etc.) is to maximize the corresponding satisfaction. Naturally, the degree of preservation or realisation of a particular satisfaction can act as an indicator of the relationship level of the system from the perspective of specific actors. When assessing the level of the relationship in terms of the realisation of interests, for example, at the level of the ATP - which are the interests of owners and investors - it is necessary to proceed from the target development function of this enterprise.

The analysis of the literature in the previous subsection showed that some authors assess the individual relationship with each partner, while others assess the relationship as a whole in the network without regard to the individual.

Based on the above, there is a need to assess the relationship by combining it on two levels: individually with each partner and the relationship of the enterprise with partners in the form of a network cooperation. The study of the relationships of the partners individually makes it possible to assess the quality of each individual partner and to find out their weaknesses. The assessment of the relationships of all partners as a whole will show how well the partner base of enterprises is selected, considering them as a network formed on the principle of self-organization.

Knowing its partners allows the enterprise to avoid conflicts of interest with them in a particular segment of the external market, while analysing their activities will help to identify their strengths and weaknesses in order to use this information in developing its own enterprise strategy.

In case of a conflict of interests of each party, it leads to a deterioration of financial results in the long term. Any cooperation consists of seeking, gathering and processing information, exchanging it with partners, conducting and regular monitoring of partners' actions, conducting negotiations, making decisions, costs to control and legally defending their interests.

Attitude in inter-organisational relationships is formed in the process of interaction between actors and is the evaluative component to characterise

satisfaction with the transactional exchange, including economic and marketing aspects. The attitude is bipolar, that is, it can be both positive and negative. If the partners are satisfied with the interaction, their assessment of the relationship between them will be positive. If any of the partners is dissatisfied with the interaction, their attitude will be negative, and there may be resistance from the dissatisfied company in order to establish more favourable terms of engagement. If this opposition is not successful, then the dissatisfied company may leave the organisational relationship. Conflicts in the inter-organisational relationship arise when there is a negative relationship between the business partners. As L. Stern notes, relationships can be harmonious, hostile, misinterpreted or poorly managed (61). Thus, he also confirms the evaluative nature of the category "attitude". The basis of the relationship is the unity or similarity of goals, as well as the commonality of processes aimed at providing goods and services to the consumer (Table 2.4).

Table 2.4. - Criteria for harmonious relationships

Processes	Aims	
	Various	Similar
Similar	Incorrectly deciphered relationships	Harmonious relationships
Various	A hostile relationship	Poorly managed relationships

It follows from Table 2.4 that harmonious relationships require common goals and similar processes. The absence of these attributes leads to an unfriendly relationship and the impossibility of such companies working in the same channel. If harmonious relationships are ongoing and the companies' goals are strategic, they are partnerships. L. Stern believes that most often partner relationships in the channel arise around two main processes - purchase order and customer service. Consequently, it is in the ordering process that the most important interactions that can lead to positive or negative relationships between companies take place. Three approaches can further strengthen the relationship.

1. Increased financial benefits through marketing incentive programmes (discounts, hobby club membership, etc.)

2. Customer personification. The famous American salesman Harvey McKay recommends compiling a 66-point dossier on each customer, describing that person not only as an employee, but also in terms of their interests, lifestyle and marital status.

3. The development of structural links through joint production, procurement, sales or the creation of a single information system. In other words, the relationship will be deeper (strategic) if the parties invest in each other.

In defining attitude as an evaluative category of interaction, we need to keep in mind its characteristics as a psychological characteristic. Using the theory of consumer-individual behaviour, it is possible to identify the properties of attitude in relation to the subjects of marketing channels.

The attitude of the ATP towards its partners should be assessed in terms of financial and non-financial benefits. In doing so, the indicators for evaluating the relationship should be universal for all actors in the network. The achievement of the TPA's objectives should be assessed by means of company performance indicators, which will be selected from the company's documentation.

Partners' attitudes towards the ATP are considered in three areas: satisfaction with price, and service. An assessment of the relationship would be feasible through a partner questionnaire.

Table 2.5 - Indicators for assessing the inter-organisational relationship between ATP and partners

Satisfaction rates		Actors in the immediate environment							
		Entities internal environment (personnel)	Consumers	Suppliers	Competitors	Mediators	Contact audiences		
							MEDIA	The state	Financial institutions
1		2	3	4	5	6	7	8	9
ATP's attitude towards the partner	Financial	Share of staff in total revenues of ATP; level of staff costs; productivity of 1 employee	Share in total service revenues; profitability; cooperation	ATP's share of total supplier income	Influence of competitors on price levels	Cost-effectiveness of cooperation	The level of the advertising rate	Number of violations detected	Price for the services of a financial institution
	Non-financial	Number of skilled workers	Share of ATP orders; range of services; seasonality of service requests	Share of total requirements; range of services; seasonality of ATP requests for materials and components	Promoting innovative development	Mediator's range of services; seasonal sucks in calls to ATP	A range of services for the ATP	Frequency of inspections	Stability of work; duration of the relationship

Continued Table 2.5

1		2	3	4	5	6	7	8	9
partner's attitude towards the ATP	Satisfaction with the price	Satisfaction with the level of wages	Satisfaction with the price level of services	Satisfaction of the ATP with the price level	Satisfaction with the price level of the ATP	Satisfaction with delivery price levels	Satisfaction with the price level of services		
	Satisfaction with the service	Satisfaction with working conditions	Satisfaction with the quality of services	Satisfaction with the quality of services	Satisfaction with the quality of services	Satisfaction with the quality of services	Satisfaction with the quality of services		
	Satisfaction with the service	Satisfaction with working hours	Length of relationship with the ATP at the moment; satisfaction with the general level of service	The length of the ATP-supplier relationship; the strength of the business relationship	Length of relationship with the mediator; strength of business relationship	Length of relationship with the mediator; strength of business relationship	The term of the ATP's relationship with the representatives of the contact audiences		

Relationship prospects	Financial opportunities	Increase in wages	Increased share in consumer business; increased profitability from working with consumers	Increase the level of ATP orders; obtain price discounts;	Increasing the customer base from interaction with a competitor		Increasing the percentage of sales through the intermediary	Receiving discounts	Reducing the level of fines	Receiving discounts for the services of a financial institution

End of Table 2.5

1	2	3	4	5	6	7	8	9
Non-financial opportunities	Long-term cooperation; improved work performance	Extension of the relationship; expansion of the range of services	Long-term cooperation	Long-term relationships; Increase the level of participation in ATP collaborative activities	Long-term relationships	Long-term relationships; Increasing the number of services used by the ATP	Increase the level of compliance with regulations; Decrease in the number of violations	Long-term relationships; Increase in the number of services used by ATP

Real-world objects and processes are usually very complex. They often require the simultaneous consideration of several, sometimes very many, parameters. Each object can be characterised by an entire set of parameters, by any subset of this set, or by a single optimisation parameter. In the latter case, other characteristics of the process no longer act as an optimization parameter, but serve as constraints. Another way is to construct a generalized optimization parameter as a function of a set of input data. At present, modelling and ranking of objects by a desirability function is becoming common in the economic literature.

One of the most convenient ways of constructing a generalised response is the Harrington generalised desirability function [74]. The basis for the construction of this generalised

The idea of transforming the natural values of individual responses into a dimensionless scale of desirability or advantage. The desirability scale refers to psychophysical scales. Its purpose is to establish correspondence between physical and psychological parameters. Here, physical parameters refer to the possible responses that characterize the functioning of the object under study.

These may include aesthetic and even statistical parameters, while psychological parameters refer to the experimenter's purely subjective assessment of the desirability (advantage) of a particular response value. In order to obtain a scale of desirability, it is convenient to use ready-made correspondence tables between relations of advantage in empirical and numerical (psychological) systems (Table 2.6).

The value of the partial response, which is rung in a dimensionless desirability scale, is denoted by di (i = 1, 2, ..., n) and is called the partial desirability (from desirable). The desirability scale ranges from zero to one. The value di = 0 corresponds to the absolutely unacceptable level of the given property, and the value di = 1 corresponds to the best value of the property. The choice of 0.63 and 0.37 on the desirability scale is explained by the convenience of calculation: 0.63 "1- (1 / e), 0.37" 1 / e. The value di = 0.37 usually corresponds to the limit of acceptable values.

Table 2.6 - Relationship between quantitative values of the dimensionless scale and a person's psychological perception

Desirability	Marks on the scale of desirability
Very good	1,00 - 0,80
Good	0,80 - 0,63
Pleasantly	0,63 - 0,37
Bad	0,37 - 0,20
Too bad.	0,20 - 0,00

Table 2.6 shows the numbers corresponding to some points on the curve (Figure 2.11), which is given by the equation:

$$d = \exp[-\exp(-y)] \quad (2.5)$$

The ordinate axis shows the desirability values varying from 0 to 1. The abscissa axis shows the response values written to a conditional scale. The value corresponding to the desirability of 0.37 is chosen as the starting point 0 on this axis. This point was chosen because it is the inflection point of the curve, which in turn provides some comfort in the calculations. The same is true for the desirability value corresponding to 0.63. The choice of this curve is not the only possibility. However, it has arisen as a result of observation of real solutions of experimenters and has such useful properties as continuity, monotonicity, and smoothness.

Symmetrically to zero on the Y axis (Y - coded scale) are the coded response values. It is customary to select a value on the coded scale between 3 and 6. The choice of the number of intervals determines the steepness of the curve in the middle zone. Such a curve theoretically fully performs the function of translating feedback into a dimensionless parameter, but a number of difficulties arise when using them in practice.

Firstly, parallel to the coded y scale, named Y 1, Y 2, ... recall scales have to be placed, which have to be calibrated at the points shown in Table 2.6, and this calibration is quite arbitrary.

$$d = \exp[-\exp(-y)]. \qquad (2)$$

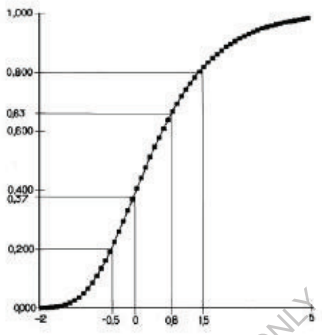


Figure 2.11 - Graph of the Harrington desirability function

This almost always results in an uneven school (e.g. for Y 1 the area of satisfactory parameter values contains 3 V and good values 5 V). To obtain a value of d 1 j it is not necessary to find a point of a particular numerical value of Y 1 j on the scale of Y 1, and then plot it on the function graph and read the corresponding value of d 1 j along the ordinate axis. Naturally, the accuracy of such a conversion will not be great.

Second, the given rigidity of formula (2.5) does not allow the use without additional distortions of Y responses distributed according to laws other than normal. The biggest difficulties are caused by those responses whose quality first increases as their numerical values increase, and then after a certain value (or range of values) begins to decline.

Thirdly, the generalised desirability function proposed by Harrington as a single composite indicator of product quality has the disadvantage that it recognises all feedback as equilibrium, although in practice this is far from the case:

$$D = \sqrt[m]{\prod_{i=1}^{m} d_i} \tag{2.6}$$

where m is the number of unit reviews - the product quality indicators being compared.

The proposed methodology for assessing the level of the enterprise's inter-organisational relationship with each individual partner, which, unlike other existing methods, will provide indicators of the level of the relationship for each bilateral relationship with a partner. In order to obtain an overall assessment both for each group of partners and as a whole with all partners, it is necessary to use a method that will allow to summarize the obtained indicators. The most illustrative method for assessing the level of relationship is the RADAR method. The essence of the RADARA method is that it reflects graphically the results of the indicators obtained. It is used when characterising a set of indicators for assessing the competitiveness of an enterprise. In this case, it is used to assess the level of relationship between the ATP and individual partners. This method has significant advantages: clarity, as it is already possible to assess in what way this or that indicator is inferior or, on the contrary, superior to others, according to the form of the radar. The method is comprehensive, which allows for a single subjective assessment when using different indicators. It also enables predictive, comparative and controlling assessments to keep the indicators at the required level. RADAR of indicator values is based on the principles shown in Figure 2.12. The RADAR method is conveniently used when assessing levels by indicator mass and coefficients.

The method also requires all indicators to be a reference value, in this case the reference value is 1. The values of the indicators improve as you move away from the centre of the circle.

All evaluation indicators should have the same "weight", so the circle is divided into equal sectors, the number of which is equal to the number of evaluation parameters	The higher the loyalty level, the larger the radar area; this means that the integral coefficient approaches 1
All groups of indicators have equal weighting	The scale on the radial lines is graded so that all indicators lie within the evaluation circle
It is assumed that the reference value is 1	As you move away from the centre of the circle, the values improve

Figure 2.12 - Principles of RADAR

After construction, the integral K indicator is calculated using the following formula:

$$K = Sp / S, \quad (2.7)$$

where Sp - radar area, sq. cm

S - total area of the circle, sq. cm.

The RADARA area is calculated using the following formula:

$$Sp = \sin \alpha \cdot \Sigma \alpha i \cdot bi, \quad (2.8)$$

where αi, bi are the lengths of two adjacent estimation lines;

α is the angle between the two estimate lines (α = 360 / n)

n is the number of individual evaluation parameters.

The total area of the circle is calculated using the following formula:

$$S = \pi r2, \quad (2.9)$$

where r is the radius of the assessment circle, cm.

As a result of the proposed methodology, an algorithm for assessing the level of interaction is provided below (Figure 2.13).

Network structures are one of the means of economic integration of enterprises involved in production efficiency. Enterprises with current organisational

structures of management are most often not operating efficiently, which leads to the need to change their organisational configuration, integrating with other economic agents. As a result of such integration, the number of mergers and acquisitions is increasing, as well as the number of companies and the scale of network structures. This leads to the need to investigate network structures from the perspective of emerging interconnections. The analysis of studies showed that each author uses different directions and indicators to evaluate inter-organisational relationships of ATP with partners within a network.

For example, N. Egorova [19] proposes to evaluate the level of relationships in a network by calculating a set of indicators, such as network density, degree of network centralisation, strength of business relationships, closeness of business relationships, duration of business contacts, sustainability of relationships, degree of formalisation of relationships and communicativeness.

The essence of the structural approach is decomposition (breakdown) into functions: the system is broken down into functional subsystems, which in turn are divided into sub-functions, subdivided into tasks and so on. The decomposition process continues all the way down to specific procedures. In doing so, the system retains a holistic view in which all components are interlinked.

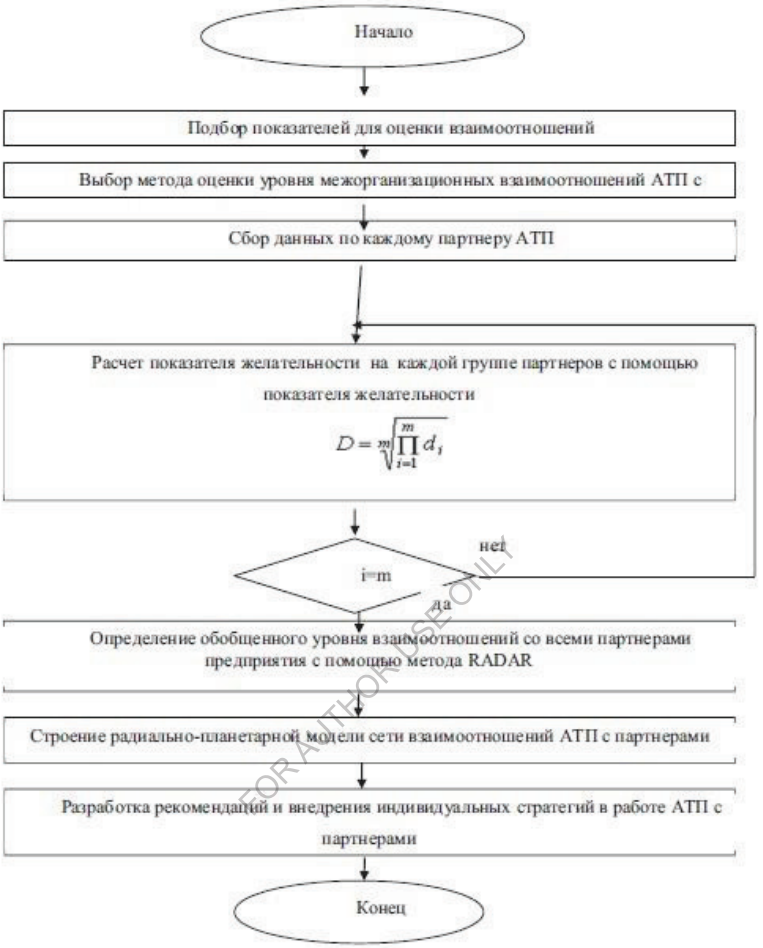


Figure 2.13 - Algorithm for assessing the level of ATP's relationships with individual partners

2.4 Generalised methodology for assessing the inter-organisational relationships of the ATP with partners in the network

One should take into account the developments of A.A. Gulin and V.I. Shchedrov [17] to determine synergies based on the establishment of increased

income and cash flow enhancement of the formed group. The opinion of S.V. Savchuk [49] on determining the overall momentary synergistic effect at time t after the formation of a group association should also be taken into account. In this case, we propose to express the effect of joint activities (Cp) as follows:

$$Cn = \Delta ПМ + \Delta ПР + ЭВК + \Delta ЭМП + ЭВ + \Delta ЭД + \Delta ЭНП + \\ + ЭЦ - ИРР \pm \Delta ПН - ИО - РФ, \quad (2.10)$$

where Δ PM is the estimated additional profit from the expansion of the scale of operations in achieving a more optimal production volume and augmentation of resources; Δ PR is the estimated additional profit from risk reduction through intrasectoral diversification of activities; EVC is the saving of equity in case of establishing a holding-type group (profit on loans and other capital, difference in interest paid, etc. ΔEMP - effect from the establishment of a monopoly position in the market and the possibility to influence consumers, customers and suppliers; ES - saving of current costs of logistics interaction; Δ EPP - effect from elimination of inefficiencies in processes and improvement of logistics interactions (determined by comparing old and new values of costs of individual processes); EC - saving from centralised management and removal of duplicating functions, which is defined as the difference between the sum of costs of individual group members to the merger and costs of the centralised

But the calculation of this methodology assumes that the indicators are determined at a point in time of network formation, which does not clearly characterise the level of the relationship between the ATP and the partners interacting over a sufficiently long period of time.

Attention to synergy as an economic phenomenon was first attracted by the work of I. Ansoff [2], where he showed that a strategy based on the use of synergy can be considered as the core of the diversification process, allowing a market entity to use current advantages in new strategic areas of management. Thus, the author defines the economic basis of synergies (the possibility that the result of

the joint efforts of several business units will exceed the bottom line of their independent activities). The synergy equation is partly based on the economic benefits of economies of scale. For example, it is possible to reduce the costs of two business units by increasing the utilisation rate of a facility, using a common workforce or combining sales efforts.

Another vision of assessing the inter-organisational relationships between ATP and partners is offered by E. N. Knyazeva and S. P. Kurdyumov [25]. P. Kurdyumov [25]. The main reason for restructuring companies in the form of mergers and acquisitions is the desire to obtain and enhance synergies. As the authors point out, strategic synergy allows a new approach to the problem of effective management of the development of complex systems (socio-natural, environmental, economic).

The author I.I. Bazhin [8] proposes the calculation of the success rate of synergistic formations (Ksin), which is expressed by the ratio of the total effect of the system with manifested synergy ($E_{ГР}^{СИН}$) to the effect of the i-th component of the system (E_i^C):

$$Xin=E_{ГР}^{СИН} / \sum E_i^C \quad (2.11)$$

In doing so, the individual constituent elements can be used as the i-th components of the system to be calculated by the formula. In addition, the coefficient of synergistic transformation can be calculated by the ratio of the potential of the group activity to the potential of its individual members. According to the authors, the main disadvantage of these approaches is the inability to take into account the asymmetry of the formed group and the actions aimed at obtaining unilateral advantages or distributions by one economic participant of production at the expense of another - unilateral violation of contractual obligations, evasion of the subjects' orders. Manifestation of this factor may even result in termination of the group's activities and bankruptcy of

some of its members. Based on the above, there is a need to develop a generalised methodology for assessing the inter-organisational relationships of the ATP with partners in the network.

A.N. Asaul, E.G. Skumatov, G.E. Lokteeva [6] in their work focus on the fact that any strategic decision to enter a business unit into the network should bring economic benefits in all areas of activity. Such an effect implies identifying the factors that form the overall economic effect of vibnicho-economic activity:

$$Э_{ЛБПСП}=Э_{СП}=Э^{КМ}_{СП}+Э^{КП}_{СП}+Э^{КР}_{СП}+Э^{КУ}_{СП}+Э^{КС}_{СП}+Э^{КФ}_{СП} \qquad (2.12)$$

$Э^{КП}_{СП}$ - the effect of cooperation in modernising production and individual processes, using the know-how of partners, etc;

$Э^{КП}_{СП}$ - the effect of the production cooperation of construction organisations;

$Э^{КП}_{СП}$ - the effect of cooperation with resources;

$Э^{КУ}_{СП}$ - the effect of cooperation in the performance of management functions;

$Э^{КУ}_{СП}$ - the effect of co-operation in the sales functions of construction products;

$Э^{КФ}_{СП}$ - the effect of the cooperation of financial resources.

This approach allows you to calculate the benefits of having a business unit in the network on an individual area of the partners' work, as well as the work of the network as a whole.

Most authors consider assessing the level of inter-organizational relationships of ATP with partners within the network through the use of indicators of strategic synergy. This approach makes it possible to assess the level of cooperation on the main types of processes of interaction between a road transport operator and a partner. Namely, strategic synergies from: cooperation in the modernization of road transport services of individual processes, use of partners' know-how; partners' production cooperation; resource cooperation; cooperation in the use of

management functions; cooperation in the use of functions of AO services implementation; cooperation of financial resources.

Synergy is a term borrowed from physiology, literally meaning the interaction of a group of muscles. In management, it refers to the interaction of different areas of a firm's business. For example, different businesses may share production facilities, company-wide services, research and development units, distribution networks, etc. Thus, synergy is a synergy effect that provides business efficiency that is greater than the simple arithmetic sum of the activities of individual enterprises.

Based on previous studies by A.N. Asaul, E.G. Skumatov, G.E. Lokteev, it can be argued that strategic synergies from the entry of a business unit into an enterprise network involves its transformation into a network partner, characterised by the sum of synergies from the cooperation of the main elements of its potential.

Assessment of synergies between ATP's inter-organisational relationships with partners in the network					
Modernisation and service cooperation	Production cooperation	Co-operation of resources	Cooperation of management functions	Cooperation in the implementation of IT services	Co-operation of financial resources

Figure 2.14 - Components of overall strategic synergies

It is essentially a strategic synergy of the local business plan of the respective network partner and is reasonable to calculate as follows:

$$S_{\text{П}} = S_{\text{АП}}^{\text{КМ}} + S_{\text{АП}}^{\text{КП}} + S_{\text{АП}}^{\text{КР}} + S_{\text{АП}}^{\text{КУ}} + S_{\text{АП}}^{\text{КС}} + S_{\text{АП}}^{\text{КФ}} \qquad (2.13)$$

where $S_{\text{АП}}^{\text{КМ}}$ - synergies from the cooperation of road transport service modernisation activities of individual processes, using the know-how of partners;

$S_{\text{АП}}^{\text{КП}}$ - synergies from production cooperation between partners;

$S_{\text{АП}}^{\text{КР}}$ - synergies from resource cooperation;

$S_{\text{АП}}^{\text{КУ}}$ - synergies from cooperation in the use of management functions;

$S_{АП}^{КС}$- synergies from cooperation in the use of the AT services implementation functions;

$S_{АП}^{КФ}$ - synergies from the cooperation of financial resources.

Start
Collecting indicators to calculate strategic synergies
Calculation of strategic synergies for each partner group $S_{П} = S_{АП}^{КМ} + S_{АП}^{КП} + S_{АП}^{КР} + S_{АП}^{КУ} + S_{АП}^{КС} + S_{АП}^{КФ}$
Calculation of overall strategic synergies of ATP with partners in the network $S_{заг} = S^{АТП} + S^{П}$
i=1
Comparison of strategic synergies before and after joining the network
m=35, i=1 yes no
Development of recommendations and implementation of tailor-made strategies in ATP's work with partners in the network
End

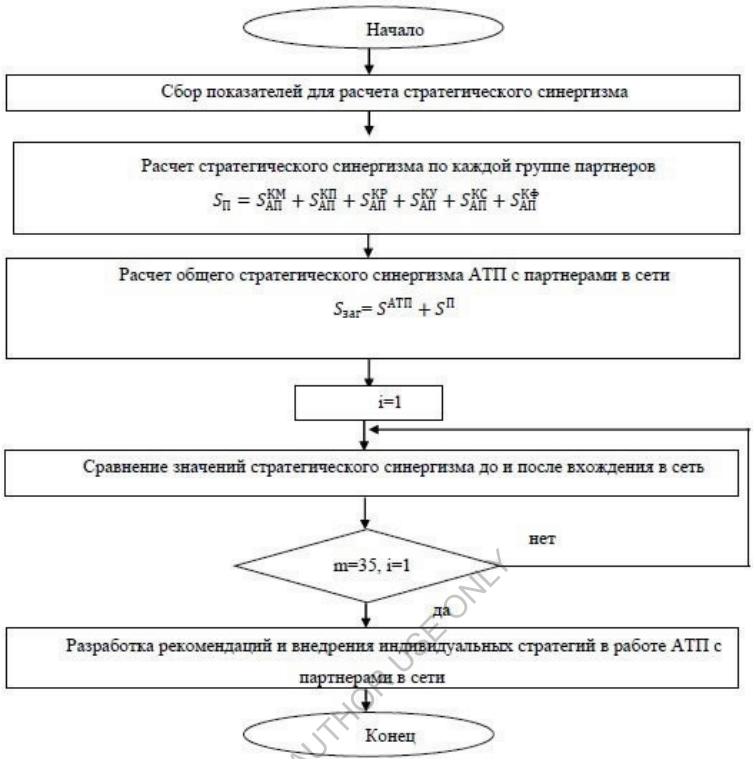


Figure 2.15 - Algorithm for assessing the level of inter-organisational relationships between ATP and network partners

And the degree of cooperation of each element of a business unit's potential can be from 0 to max. It is also necessary to note the properties of the duality of synergies from the cooperation of network partners. Thus, strategic synergies should be obtained from the transfer of the co-operation of the execution of the i-th job:

- ATP is the No. 1 network partner that passes on the work;
- ATP's partner is partner number two, who gets the job done.

In general terms, the strategic synergies from such an event are as follows:

$$S_{\text{заг}} = S^{\text{АТП}} + S^{\text{П}} \quad (2.14)$$

where $S^{\text{АТП}}$ - ATP synergies from interactions with a partner in the network;

$S^{\text{П}}$ - partner synergies from interactions with the ATP in the network.

As a result of the proposed methodology, an algorithm for assessing the level of interaction in a network is provided below (Figure 2.15).

As a result of the study, methodological provisions for assessing the inter-organisational relationships of ATPs with partners in the network are proposed, taking into account the definition of strategic synergies.

CHAPTER 3

EXPERIMENTAL STUDIES

3.1 Determining the level of inter-organisational relationships between ATP and individual partners

Assessing the level between the organisational relationship of ATP and the individual partner involves collecting data on each indicator for each partner. According to the research in the previous section, indicator systems have been considered to compare the paired relationship between an ATP and an individual partner. But before estimating the components of the indicators of the level of inter-organisational relationships of ATP with partners in the network, there is a need to represent the view of the network graphically. Thus, there is a need to build levels of management of ATP inter-organizational relationships with partners in the network, including all subjects of the network built on the basis of self-organization and should be centralized in the management system (Fig. 3.1). The first group of partners that is considered is the personnel. Data is collected by means of a questionnaire (Appendix A). When considering a road transport company from an internal market perspective, a clear understanding of the existence of several groups of staff and their respective interoperability is quite important.

The following personnel groups are distinguished: drivers, maintenance and auxiliary workers, managers. At the first stage, each worker is assessed separately. A questionnaire has been developed to determine whether the level of performance meets the relevant requirements, taking into account the relationship of the personnel to the ATP (Appendix B). The questionnaire is completed with only one symbol (cross) per line. The scale for evaluation is as follows:

- "fully complies" - 5 points,
- "answers, but not completely" - 4 points,

- "sufficiently consistent" - 3 points,
- "poorly matched" - 2 points,
- "no response at all" - 1 point.

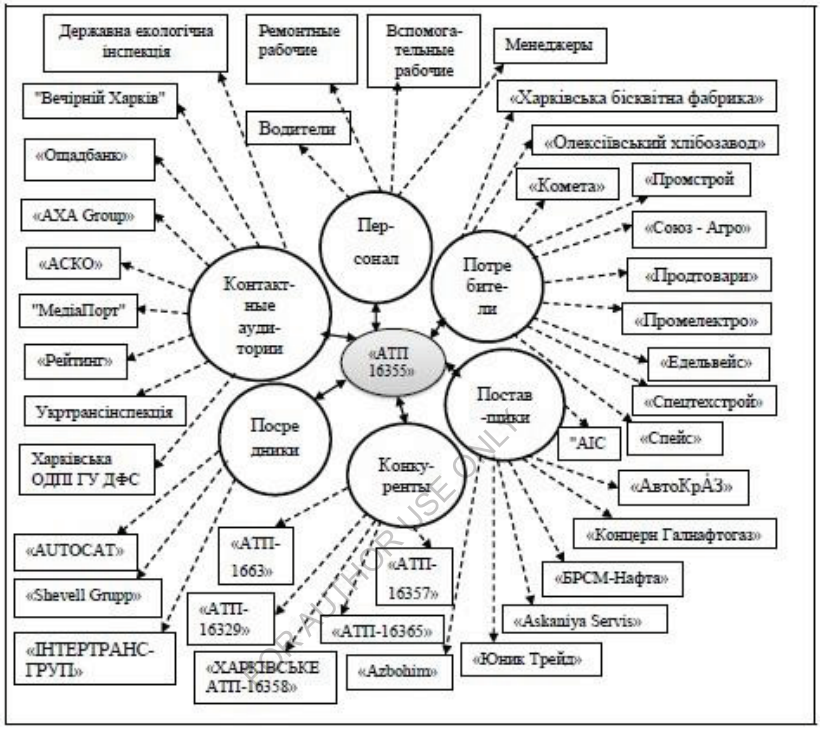


Figure 3.1 - Levels of management of inter-organisational relationships of ATP-16355 with partners in the network

A scale for assessing satisfaction:

"5" - very satisfied,

"4" - satisfied,

"3" - satisfied enough,

"2" - not very satisfied,

"1" - not happy at all.

The results of the questionnaire are shown in summary form and summarised in Table 3.1.

Table 3.1 - Values of the components of the composite indicator of satisfaction with the relationship between ATP and staff

Indicator	Description	Personnel			
ATP's attitude towards staff					
Level of professionalism, points (max 5)	Rp	4,1	5,2	3,0	4,4
The personal qualities of the employee, score (max 5)	Oya	2,3	4,0	4,5	5,3
Work performance, points (max 5)	Rp	3,4	4,1	3,2	4,3
Profitability of cooperation,%	Rsp	18	15	13	21
Staff attitudes towards the ATP					
Satisfaction with the level of wages, points (max 5)	Zzp	3,2	3,0	3,1	3,4
Satisfaction with working conditions, score (max 5)	Zup	2,1	4,3	4,2	5,1
Satisfaction with work schedule, points (max 5)	Zgr	1,2	3,4	2,5	4,6
Staff relations perspective					
Possibility of long-term cooperation, e.g.	Ms	1	0,5	0,5	0,5
Opportunity to improve performance, points	Mpr	4,5	5,0	5,2	6,1
Potential for salary increase,%	Mzp	10	8	11	6

Further it is proposed to consider the following group of partners - consumers. The main activities of PJSC ATP-16355 are provision of cargo transportation services to enterprises, organisations and individuals, provision of repair and maintenance services for motor vehicles, leasing of equipment and machinery for industrial and technical purposes.

For PJSC "ATP-16355" the consumers are:

1. CJSC Alekseevsky Bakery Plant;
2. OJSC Promstroi;
3. Prodtovary Plant Ltd;
4. Soyuz-Agro Ltd;

5. OJSC Kharkiv Biscuit Factory;

6. Promelectro Ltd;

7. Comet Ltd;

8. Edelweiss Ltd;

9. Spetstroi Ltd;

10. Space Ltd.

Data collection is proposed by analysing the financial statements and questionnaires of the company's customers (Appendix A). The results of the survey are shown in Table 3.2.

Table 3.2 - Values of the components of the composite indicator of satisfaction with customer relations

Indicator	Moustache. Description.	Consumers									
		1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11	12
ATP's attitude towards consumers											
Share of consumption in total transport,%	*DQ*	8,45	12,50	17,91	8,78	14,86	16,22	7,09	3,72	6,42	8,45
Range of services used, units.	A	3	5	4	2	3	4	2	3	4	3

End of Table 3.2

1	2	3	4	5	6	7	8	9	10	11	12
Seasonality of service requests, d.o.b.	Ss	0,75	0,58	0,93	0,68	0,86	0,73	0,62	0,77	0,72	0,64
Reliability of the service user, points	Ns	0,6	0,8	0,8	1	0,6	0,6	0,8	0,8	0,6	0,6
Consumer share of total transport revenues,%	*Д*D	8,46	12,3	17,6	8,80	14,9	16,6	7,1	3,6	6,6	8,46
Consumer solvency, UAH / UAH	Ps	0,32	0,35	0,24	0,21	0,37	0,38	0,4	0,3	0,2	0,26
Consumer attitudes towards ATP											
Satisfaction with the quality of the final service, points	Zyap	7	7	9	8	8	8	8	7	6	8
Satisfaction with the technical and functional features of the service, points	Ztf	7	9	7	8	8	7	8	6	8	8
Satisfaction with the price of the service, points	Zzz	6	7	8	7	6	8	7	7	6	5
Length of relationship with ATP so far, years	St	3	2	8	9	2	8	8	10	6	5

Satisfaction with staff contact, points	Sal	8	7	9	8	7	8	6	8	7	8
A consumer relations perspective											
Ability to extend the relationship; points	Mw	1	1	0,6	0,8	0,6	0,8	1	0,8	1	0,5
Possibility of expanding the range of services; units.	Mz	1	1	0	0	1	1	0	0	0	1
Opportunity to increase share in consumer's business,%	Mzn	4	6	2	4	6	8	2	6	2	8
Opportunity to increase customer profitability,%	Mpr	12	12	4	6	11	4	9	8	1	7

The next step is to calculate the indicators of the ATP's relationship with suppliers. It is useful to calculate an assessment of partner relationships based on a questionnaire survey. From the point of view of ATP these are suppliers of rolling stock (automobile plants or their dealers); suppliers of fuel and lubricants; suppliers of engineering, managerial and working personnel (universities, technical schools, vocational schools, driver training schools) capital suppliers (banks); suppliers (mass media, specialized firms). But in order to correctly calculate the relationship between ATP and suppliers, it is advisable to select only suppliers of material resources:

1. AvtoKrAZ Holding Company
2. AIS Corporation ("KrAZ")
3. Concern Galnaftogaz PJSC
4. PJSC BRSM-Nafta
5. Askaniya Servis PJSC
6. PJSC "Azbohim"
7. Unic Trade Company

Table 3.3 - Values of the components of the composite indicator of satisfaction with the relationship between the ATP and the supplier

Indicator	Meaning	Suppliers						
		1	2	3	4	5	6	7
ATP's attitude towards the supplier								
Supplier's share of total procurement by ATP; %	Dz	8	3	5	6	10	4	3
Timeliness of deliveries; e.g.	Sp	0,5	0,84	0,75	0,93	0,63	0,74	0,52

Range of goods and services used by ATP; units.	Up	5	5	3	3	2	3	5
Satisfaction with the price of the supplier's goods and services; points (max 5)	Zzz	5	4	4	3	4	5	4
Supplier reliability, points (max 5)	Kn	4	4	3	5	2	4	5
The supplier's attitude towards the ATP								
Satisfaction with payment for services (availability of arrears); score (max 5)	Zop	4	3	3	5	4	2	4
Satisfaction with regularity of ATP orders of goods or services; score (max 5)	Zrz	2	4	5	3	4	4	3
Satisfaction with ATP's order volume; score (max 5)	Zoz	5	5	4	3	5	5	2
Term of the ATP-supplier relationship, years	St	8	10	5	6	2	3	4
A supplier relationship perspective								
Possibility of a long-term relationship; e.g.	Mw	0	0	0,5	0,5	1	1	1
Possibility of increasing ATP's order level; e.g.	Mz	0	0	1	1	0,5	0,5	1
Possibility of discounts to price; %	Mzn	15	15	10	10	5	8	8

Calculation of the components of the composite indicator of satisfaction with the relationship between a road transport operator and its competitors involves a study of the main competitors with which the enterprise cooperates (Table 3.4). The competitors of ATP are other road transport operators and road transport entrepreneurs, enterprises of other types of transport, cargo owners who use their own road transport.

ATP-16355 has the following competitors:

1.PrAT "ATP-16357"

2.PAO "ATTP-16365"

3. PJSC "Green Light"

4.PJSC KHARKIV 16358

5.PAO "ATTP-16329".

Table 3.4 - Values of components of the composite indicator of satisfaction with ATP's relationships with competitors

Indicator	Meaning: "The number of the	Competitors				
		1	2	3	4	5

	door" is shown on the display.					
ATP's attitude towards competitors						
Frequency of participation in joint competitive events, units.	Chu	18	6	13	14	23
Range of services provided by competitors, points (max 5)	Up	3	4	3	2	5
Competitor reliability, points (max 5)	Np	5	4	2	4	5
Increase in customer base from interactions with a competitor,%	Zc	5,1	3,2	0,83	1,7	6,4
Increase in the level of income from interactions with a competitor,%	Zd	3,2	4,1	2,8	1,5	5,0
Attitudes of competitors in the ATP						
Satisfaction with the frequency of participation in joint competitive activities, score (max 5)	Zkz	3	5	4	5	2
Satisfaction with the range of ATP services, points	To	4	5	4	3	5
Duration of ATP and competitor relationship, years	St	2	6	7	3	1
Satisfaction with the reliability of the ATP, points (max 5)	Zn	5	4	3	3	4
Perspective on relationships with competitors						
Possibility of a long-term relationship; e.g.	Mw	1	0	0	0,5	1
Possibility to increase the level of participation in joint ATP activities; e.g.	Mz	1	0,5	0,5	0,5	1
Opportunity to increase customer base from interaction with competitor; %	ibc	12	5,6	7,4	10,2	15

The next step is to calculate the components of a composite indicator of satisfaction with the relationship between road transport operators and intermediaries (Table 3.5) using a questionnaire survey. The intermediaries can be transport forwarding companies and firms that sell information on the location of vehicles.

At PJSC ATP-16355, such enterprises are:

1. Intertransgroup Ltd.
2. AUTOCAT,
3. Shevell Grupp.

Table 3.5 - Values of the components of the composite indicator of satisfaction with the relationship between ATP and intermediaries

Indicator	Description	Mediators

		1	2	3
ATP's attitude towards intermediaries				
Percentage of ATP sales through an intermediary,%	Vp	6	12	9
Rhythmicity of interaction, e.g.	Rv	0,78	0,94	0,63
Range of services sold by the intermediary, units.	Up	2	3	4
Intermediaries' attitudes towards the ATP				
Satisfaction with the price of ATP services, points (max 5)	Zzz	4	3	2
Satisfaction with the quality of services, points (max 5)	Zyap	4	4	3
Term of the ATP and intermediary relationship, years	St	4	4	2
Perspective on the relationship with intermediaries				
Possibility of a long-term relationship; e.g.	Mw	0,5	0,5	1
Possibility of increasing the percentage of sales through the intermediary; %	Mzp	8	15	10

The last group of partners are contact audiences (Tables 3.6, 3.7, 3.8). State administration bodies can also interact directly with ATP: local executive authorities, branches of the Ukrainian Transport Inspectorate, bodies of the State Tax Inspectorate, other bodies (the organisation itself, suppliers, intermediaries, customers, competitors, banks, mass media, governmental organisations, financial institutions, etc.). Such partners in PJSC "ATP-16355" are:

1. JSC Rating
2. MediaPort Agency
3. The Vecherny Kharkiv newspaper
4. Kharkiv OGNI of the SSD of the DFSS in Kharkiv region
5. Ukrtransinspection in Kharkiv region
6. State Environmental Inspectorate in Kharkiv Oblast
7. PJSC "Ukrsotsbank"
8. PJSC "PrivatBank"
9. JSC Oschadbank

Table 3.6 - Values of the components of the composite indicator of satisfaction with the relationship of the ATP with the contact audience (media)

Indicator	Description	Contact audiences

		1	2	3
Attitudes of the ATP in the media				
Increase in revenue after the advertising campaign,%	Pd	4,3	3,1	2,6
The extent of the impact on the development of the ATP, score (max 5)	Rvp	5	5	4
Number of interactions, units.	Kv	21	13	17
Stability of operation, points (max 5)	Wed	5	4	5
Range of media services, units.	Up	4	2	3
Attitudes of the media towards the ATP				
Satisfaction with the timeliness of ATP payments, points (max 5)	Zzzp	3	5	2
Satisfaction with the terms of cooperation, score (max 5)	Soos	5	4	5
Length of media and ATP relationship, years	St	2	7	4
A media relations perspective				
The possibility of a long-term relationship, d.od.	Mw	1	0	0,5
Possibility of increasing the number of services used by ATP, points	Mp	5	1	3
Possibility of discounts,%	Mz	0	15	10

Table 3.7 - Values of the components of the composite indicator of satisfaction with the relationship of the ATP with the contact audience (public authorities)

Indicator	Description	Contact audiences		
		4	5	6
Attitudes of the ATP towards state authorities				
Share of fines in ATP revenues,%	Dash	1,2	3,1	2,4
Number of violations detected, units.	Kp	7	4	8
Frequency of inspections, units.	PE	12	9	4
Attitudes of state authorities towards the ATP				
Satisfaction with compliance with ATP regulations, points (max 5)	Zdn	4	1	2
Satisfaction with the volume of deductions, score (max 5)	The Call	3	2	5
Perspective on relations with public authorities				
Possibility of reducing the level of penalties, e.g.	Msh	0	0,5	1
Possibility of increasing the level of compliance, points	Mn	5	3	3
Possibility of reducing the number of violations, units.	Mp	10	7	2

Table 3.8 - Values of components of the Composite Indicator of Satisfaction with ATP's Relationship with Contact Audiences (Financial Institutions)

Indicator	Description	Contact audiences		
		7	8	9

ATP's attitude towards financial institutions				
Share of financial institutions in ATP's borrowed funds; %	Dz	4,6	2,9	5,2
Reliability of the financial institution, points (max 5)	Nf	5	5	5
Satisfaction with the price of services provided by the financial institution, points (max 5)	Zzz	5	4	5
Attitude of financial institutions towards the ATP				
Satisfaction with ATP's credit history, points (max 5)	Zc	3	5	2
Satisfaction with the completeness of ATP's use of financial institution services, points (max 5)	Sal	5	4	5
Term of the ATU-Financial Institutions relationship, points (max 5)	St	2	5	4
Perspective on relations with financial institutions				
The possibility of a long-term relationship, d.od.	Mw	1	0	0,5
Possibility of increasing the number of services used by ATP, points	$M_п$	1	0	0,5
Possibility of discounts on services of a financial institution,%	Mz	5	15	10

The next step is to calculate an integral indicator of the level of inter-organisational relationships between the ATP and the individual partners using a generalised Harrington desirability function:

$$d_i = \exp\left(-\exp\left(-x_i\right)\right), \tag{2.15}$$

After obtaining the initial parameter values, it is necessary to convert them into a dimensionless desirability scale that establishes the correspondence between the psychological and physical characteristics of the object under study (Tables 3.9-4.7).

Table 3.9 - Normalised value of ATP personnel relations indicators

Indicator	Symbols for the following symbols.	Personnel			
		Drivers	Repair workers	Additional workers	Managers
ATP's attitude towards staff					
Level of professionalism, points (max 5)	Rp	0	1,00	-1,00	0,27
The personal qualities of the employee,	Oya	0,53	1,67	2,00	2,53

score (max 5)					
Work performance, points (max 5)	Rp	-1,0	0,56	-1,44	1,0
Profitability of cooperation,%	Rsp	0,25	-0,50	-1,00	1,00
Staff attitudes towards the ATP					
Satisfaction with the level of wages, points (max 5)	Zzp	-1,0	-3,0	-2,0	1,0
Satisfaction with working conditions, score (max 5)	Zup	-1,0	0,5	0,4	1,0
Satisfaction with work schedule, points (max 5)	Zgr	-1,0	0,3	-0,2	1,0
Staff relations perspective					
Possibility of long-term cooperation, e.g.	Ms	1,0	-1,0	-1,0	-1,0
Opportunity to improve performance, points	Mpr	-1,0	1,0	1,0	0,0
Potential for salary increase,%	Mzp	0,6	-0,2	1,0	-1,0

Table 3.10 - Normalised value of ATP customer relations indicators

Indicator	M.O.S.	Consumers									
		1	2	3	4	5	6	7	8	9	10
ATP's attitude towards consumers											
Share of consumption in total transport,%	*DQ*	-0,2	0,4	1,3	-0,2	0,8	1,0	-0,5	-1,0	-0,6	-0,2
Range of services used, units.	A	-0,8	-0,3	-0,5	-1,0	0,5	-0,5	-1,0	1,0	0,8	-0,8
Seasonality of service requests, d.o.b.	Ss	0,3	0,0	1,0	0,8	-0,5	-0,5	0,3	-2,8	0,0	-1,0
1	2	3	4	5	6	7	8	9	10	11	12
Reliability of the service user, points	Ns	1,0	0,5	0,5	1,0	0,0	0,0	-0,5	-1,5	-0,5	0,0
Consumer share of total transport revenues,%	*Дp*	-0,3	0,2	1,0	-0,3	0,6	0,9	-0,5	-1,0	-0,6	-0,3
Consumer solvency, UAH / UAH	Ps	0,5	-0,1	1,0	0,1	0,8	0,3	-0,6	-1	-0,3	-0,5
Consumer attitudes towards ATP											
Satisfaction with the quality of the final service, points	Zyap	0,3	0,3	-0,3	-1,0	1,0	-0,3	0,3	-1,0	-0,3	0,3
Satisfaction with the technical and functional features of the service, points	Ztf	1,0	1,0	1,0	-0,3	0,3	-1,0	-0,3	0,3	-1,0	1,0
Satisfaction with the price of the service, points	Zzz	0,3	-0,3	0,3	-1,0	1,0	1,0	1,0	0,3	-0,3	-1,0
Length of relationship with ATP so far, years	St	-0,1	-0,7	0,4	-0,4	-1,0	0,1	-0,7	1,0	-0,4	-0,1
Satisfaction with staff contact, points	Sal	-0,3	0,2	1,0	-0,3	0,6	0,9	-0,5	-1,0	-0,6	-0,3
A consumer relations perspective											
Ability to extend the relationship; points	Mw	0,0	0,0	-1,0	0,0	1,0	0,0	0,0	-1,0	0,0	0,0
Possibility of expanding the range of services; units.	Mz	0,0	1,0	-1,0	1,0	1,0	0,0	1,0	-1,0	1,0	0,0
Opportunity to increase share in consumer's business,%	Mzn	0,3	0,3	1,0	0,6	-1,0	0,3	0,3	1,0	0,3	0,3

Opportunity to increase customer profitability,%	Mpr	0,0	0,0	-1,0	0,0	1,0	0,0	0,0	-1,0	0,0	0,0

Table 3.11 - Normalised value of ATP's supplier relationship indicators

Indicator	Meaning	Suppliers						
		1	2	3	4	5	6	7
ATP's attitude towards the supplier								
Supplier's share of total procurement by ATP; %	Dz	0,4	-1,0	-0,4	-0,1	1,0	-0,7	-1,0
Timeliness of deliveries; c.i.f.	Sp	-1,1	0,6	0,1	1,0	-0,5	0,1	-1,0
Range of goods and services used by ATP; units.	Up	1,0	1,0	-0,3	-0,3	-1,0	-0,3	1,0
Satisfaction with the price of the supplier's goods and services; points (max 5)	Zzz	1,0	0,0	0,0	-1,0	0,0	1,0	0,0
Supplier reliability, points (max 5)	Kn	0,3	0,3	-0,3	1,0	-1,0	0,3	1,0
The supplier's attitude towards the ATP								
Satisfaction with payment for services (availability of arrears); score (max 5)	Zop	0,33	-0,33	-0,33	1,00	0,33	-1,00	0,33
Satisfaction with regularity of ATP orders of goods or services; score (max 5)	Zrz	-1,00	0,33	1,00	-0,33	0,33	0,33	-0,33
Satisfaction with ATP's order volume; score (max 5)	Zoz	1,00	1,00	0,33	-0,33	1,00	1,00	-1,00
Term of the ATP-supplier relationship, years	St	0,50	1,00	-0,25	0,00	-1,00	-0,75	-0,50
A supplier relationship perspective								
Possibility of a long-term relationship; e.g.	Mw	-1,0	-1,0	0,0	0,0	1,0	1,0	1,0
Possibility of increasing ATP's order level; e.g.	Mz	-1,0	-1,0	1,0	1,0	0,0	0,0	1,0
Possibility of discounts to price; %	Mzn	1,0	1,0	0,0	0,0	-1,0	-0,4	-0,4

Table 3.12 - Normalised value of ATP's relationship indicators with competitors

Indicator	Description	Competitors				
		1	2	3	4	5
1	2	3	4	5	6	7

Attitudes of APR towards competitors						
Frequency of participation in joint competitive events, units.	Chu	1,0	-1,0	0,2	0,3	1,8
Range of services provided by competitors, points (max 5)	Up	-0,3	0,3	-0,3	-1,0	1,0
Competitor reliability, points (max 5)	Np	1,0	0,3	-1,0	0,3	1,0

End of Table 3.12

1	2	3	4	5	6	7
Increase in customer base from interactions with a competitor,%	Zc	0,5	-0,1	-1,0	-0,7	1,0
Increase in the level of income from interactions with a competitor,%	Zd	0,3	1,0	0,0	-1,0	1,7
Attitudes of competitors in the ATP						
Satisfaction with the frequency of participation in joint competitive activities, score (max 5)	Zkz	-0,3	1,0	0,3	1,0	-1,0
Satisfaction with the range of ATP services, points	To	1,0	-1,0	0,2	0,3	1,8
Duration of ATP and competitor relationship, years	St	-0,7	0,7	1,0	-0,3	-1,0
Satisfaction with the reliability of the ATP, points (max 5)	Zn	1,0	0,0	-1,0	-1,0	0,0
Perspective on relationships with competitors						
Possibility of a long-term relationship; e.g.	Mw	1	-1	-1	0	1
Possibility to increase the level of participation in joint ATP activities; e.g.	Mz	1	-1	-1	-1	1
Opportunity to increase customer base from interaction with competitor; %	ibc	0,4	-1,0	-0,6	-0,2	1,0

Table 3.13 - Normalised value of ATP's intermediary relationship indicators

Indicator	Description	Mediators		
		1	2	3
ATP's attitude towards intermediaries				
Percentage of ATP sales through an intermediary,%	Vp	-1,0	1,0	0,0
Rhythmicity of interaction, e.g.	Rv	0,0	1,0	-1,0
Range of services sold by the intermediary, units.	Up	-1,0	0,0	1,0
Intermediaries' attitudes towards the ATP				
Satisfaction with the price of ATP services, points (max 5)	Zzz	1,0	0,0	-1,0
Satisfaction with the quality of services, points (max 5)	Zyap	0,5	0,5	-0,5
Term of the ATP and intermediary relationship, years	St	1,0	1,0	-1,0
Perspective on the relationship with intermediaries				
The possibility of a long-term relationship; e.g.	Mw	-1,0	-1,0	1,0

Possibility of increasing the percentage of sales through the intermediary; %	Mzp	-1,0	1,0	-0,4

Table 3.14 - Normalised value of ATP's contact audience (media) relationship indicators

Indicator	Description	Contact audiences		
		1	2	3
Attitudes of the ATP in the media				
Increase in revenue after the advertising campaign,%	Pd	1,0	-0,4	-1,0
The extent of the impact on the development of the ATP, score (max 5)	Rvp	1,0	1,0	-1,0
Number of interactions, units.	Kv	1,0	-1,0	0,0
Stability of operation, points (max 5)	Wed	1,0	-1,0	1,0
Range of media services, units.	Up	1,0	-1,0	0,0
Attitudes of the media towards the ATP				
Satisfaction with the timeliness of ATP payments, points (max 5)	Zzzp	-0,3	1,0	-1,0
Satisfaction with the terms of cooperation, score (max 5)	Soos	1,0	-1,0	1,0
Length of media and ATP relationship, years	St	-1,0	1,0	-0,2
A media relations perspective				
The possibility of a long-term relationship, d.od.	Mw	1,0	-1,5	0,0
Possibility of increasing the number of services used by ATP, points	Mp	1,0	-1,0	0,0
Possibility of discounts,%	Mz	-1,0	1,0	0,0

Table 3.15 - Normalised value of TPA's relationship indicators with the contact audience (public authorities)

Indicator	Description	Contact audiences		
		4	5	6
Attitudes of the ATP towards state authorities				
Share of fines in ATP revenues,%	Dash	-1,0	1,0	0,3
Number of violations detected, units.	Kp	0,5	-1,0	1,0
Frequency of inspections, units.	PE	1,0	0,3	-1,0
Attitudes of state authorities towards the ATP				
Satisfaction with compliance with ATP regulations, points (max 5)	Zdn	1,0	-1,0	-0,3
Satisfaction with the volume of deductions, score (max 5)	The Call	-0,3	-1,0	1,0
Perspective on relations with public authorities				
Possibility of reducing the level of penalties, e.g.	Msh	-1,0	1,0	3,0

Possibility of increasing the level of compliance, points	Mn	1,0	0,0	-1,0
Possibility of reducing the number of violations, units.	Mp	1,0	0,2	-1,0

Table 3.16 - Normalised value of TPA's relationship indicators with the contact audience (financial institutions)

Indicator	Description	Contact audiences		
		7	8	9
Attitudes of the ATP towards state authorities				
Share of fines in ATP revenues,%	Dz	0,5	-1,0	1,0
Number of violations detected, units.	Nf	1,0	-1,0	1,0
Frequency of inspections, units.	Zzz	1,0	-1,0	1,0
Attitudes of state authorities towards the ATP				
Satisfaction with compliance with ATP regulations, points (max 5)	Zc	-0,3	1,0	-1,0
Satisfaction with the volume of deductions, score (max 5)	Sal	1,0	-1,0	1,0
Perspective on relations with public authorities	St	-1,0	1,0	0,3
Possibility of reducing the level of fines, e.g.				
Possibility of increasing the level of compliance, points	Mw	-1,0	0,3	0,0
Possibility of reducing the number of violations, units.	$M_п$	1,0	-1,0	0,0
Attitudes of the ATP towards state authorities	Mz	-1,0	1,0	0,0

We then use the formulas given in Section 2.3 to calculate the desirability function and compare the results on a scale of desirability. The results of the desirability function are shown in Table 3.17.

According to the results of the desirability scale, the ATP's relationships with each partner are on average at a poor level and yet with some partners (staff, competitors, intermediaries, contact audiences) have a satisfactory value. For a better perception of the situation, it is advisable to refer to the RADAR method. In order to calculate a generalised indicator using the radar method, the average value of the relationship scores for each group of partners must be determined.

Table 3.17 - Value of the generalised desirability indicator

Value of the desirability indicator	Personnel			
	Drivers	Repair workers	Support workers	Managers
Overall assessment	0,19	0,06	0,10	0,40
Desirability scale	Too bad.	Too bad.	Too bad.	Satisfactory

Consumers										
General Evaluation	1	2	3	4	5	6	7	8	9	10
	0,39	0,40	0,38	0,26	0,39	0,34	0,27	0,04	0,27	0,26
Desirability scale	Odds and ends	Udovyeletvo-ritelno	Odds and ends	Badly	Udovyeletvo-ritelno	Bad	Bad	Too bad.	Bad	Bad

Suppliers							
General Evaluation	1	2	3	4	5	6	7
	0,28	0,31	0,36	0,35	0,24	0,31	0,27
Desirability scale	Bad	Bad	Bad	Bad	Bad	Bad	Bad

Competitors					
General Evaluation	1	2	3	4	5
	0,46	0,24	0,17	0,20	0,45
Desirability scale	Satisfactory	Bad	Too bad.	Too bad.	Satisfactory

Mediators			
General Evaluation	1	2	3
	0,19	0,43	0,20
Desirability scale	Too bad.	Satisfactory	Too bad.

MEDIA			
General Evaluation	1	2	3
	0,41	0,15	0,26
Desirability scale	Satisfactory	Too bad.	Bad

The state			
General Evaluation	4	5	6
	0,36	0,21	0,27
Desirability scale	Bad	Bad	Bad

Fin. institution			
General Evaluation	7	8	9
	0,27	0,18	0,42
Desirability scale	Bad	Too bad.	Pleasantly

Table 3.18 - Average value of relationship scores for each partner group

Partners	Desirability function results obtained	Average of scores

Personnel	Drivers	0,19	0,19
	Repair workers	0,06	
	Auxiliary workers	0,10	
	Managers	0,40	
Consumers	CJSC Olekseevsky bread factory;	0,39	0,30
	PJSC Promstroi;	0,40	
	Prodtovary Plant Ltd;	0,38	
	Soyuz - Agro Ltd.	0,26	
	PJSC "Kharkiv Biscuit Factory";	0,39	
	Promelectro Ltd;	0,34	
	Comet Ltd;	0,27	
	Edelweiss Ltd;	0,04	
	Spetstroi Ltd;	0,27	
	Space PE	0,26	
Suppliers	AvtoKrAZ Holding Company	0,28	0,30
	Alc Corporation ("KrAZ")	0,31	
	Concern Galnaftogaz PJSC	0,36	
	PJSC BRSM-Nafta	0,35	
	Askaniya Servis Ltd.	0,24	
	Azbohim Ltd.	0,31	
	Unic Trade	0,27	
Competitors	CHAO "ATTP-16357"	0,46	0,30
	LTD. ATP-16365	0,24	
	Green Light Ltd.	0,17	
	PJSC KHARKIV 16358	0,20	
Mediators	PJSC "ATTP-16329"	0,45	
	INTERTRANSGROUP LTD.	0,19	0,27
	AUTOCAT LTD,	0,43	
	Shevell Grupp Ltd.	0,20	
Contact audiences	Rating Ltd.	0,41	0,28
	MediaPort Agency	0,15	
	The Vecherniy Kharkiv newspaper	0,26	
	Kharkiv regional office of the State Fire Service in Kharkiv oblast	0,36	
	Ukrtransinspection in Kharkiv Oblast	0,21	
	State Environmental Inspectorate in Kharkiv Oblast	0,27	
	PJSC "Ukrsotsbank"	0,27	
	PAO PrivatBank	0,18	
	PJSC Oschadbank	0,42	

Once the individual relationships have been assessed, it is useful to summarise the data using the RADAR method, based on the calculations in Table 3.18, to present the overall conclusions about the relationship of the ATP with all partners.

Figure 3.2 - Desirability function indicator value radar for each partner group

As can be seen from the figure, the level of relationships between the ATP and its partners is at a low level. The lowest level of relationship is with the staff. After constructing the radar, let's calculate the total area of the circle, which corresponds to the maximum level of the desirability function:

S = 3.14 - 12 = 3.1416, with R = 1.

α = 360/6 ≈ 60°. or 1.05 radian.

Sin 60 ≈ 0.87.

The area of the radar itself by partner is equal:

SP1 = 1 / 2sin60o - (0.19 * 0.30 + 0.30 * 0.30 + 0.30 * 0.30 + 0.30 * 0.27 + 0.27 * 0.28 + 0.28 * 0.19) = 0.19

The integral indicator is equal to:

K1 = 0,19 / 3,1416 = 0,062

According to the results of the calculations, the integral indicator is 0.062, which compared to the desirability scale is very bad. Thus, the relationship between the ATP and its partners is poor, both at the individual level with each group and in general with all. It is recommended that the enterprise should pay special attention to the development of these relationships in all directions. In order to do so, it is advisable for the enterprise to unite with the sparse partners into a common network on the principles of self-organisation.

The study thus analysed the components of the assessment of ATP's relationships with individual groups of partners: staff, customers, suppliers, intermediaries, competitors, media, government agencies and financial institutions by calculating a generalised desirability function. The resulting relationship level values show how and at what level the ATP's relationships are with its partners that do not yet form a network. Thus, only some alliances show a satisfactory level of relationship on the Harrington scale.

The generalised function is a quantitative, unambiguous, unique and universal indicator of the quality of the object under study and can be used as an optimization criterion through its adequacy, efficiency and static sensitivity. So, the next step is to assess the level of inter-organisational relationships between the ATP and the partners in the network.

Given the advantages of using the network form of interaction between enterprises, it is advisable to propose the functioning of the ATP and partners in the network. The result of this cooperation will be an improvement in the performance of both parties and in the overall level of the relationship between the TPA and the partners.

3.2 Identifying the level of inter-organisational relationships between ATP and network partners

The transfer of market relations to the internal sphere of the company ('internal markets') has given rise to a new type of structure - network organisations in

which the command sequence of a hierarchical structure is replaced by a chain of orders for the supply of products and the development of relationships with other firms. Networks represent a set of firms or specialised units whose activities are coordinated by market mechanisms instead of command methods. They are seen as a form that meets the modern requirements of the external environment.

Based on the calculations made, it is useful to build a networking model that clearly shows the distance of each partner from the ATP and from each other. Since the existing type of relationship is not effective, as evidenced by the preliminary calculations, it is possible to assume that the relationship will develop more effectively in a network.

Application of the radial-planetary model allows describing the interaction of OJSC "ATP-16355" directly with the economic environment in contrast to other previously considered models (fig. 3.3). Such relationship formations have become the practical embodiment of the network formed around the enterprise and are the most promising. In such a network, the interactions of the actors within the interrelationships should be built on the basis of inter-organisational relationships. They must contribute to the effective and profitable operation of both the entire network entity and individual constituent entities. Only when the interests of all parties are taken into account, additional synergy gains become possible. The construction of a radial-planetary network model is based on the preliminary calculations of the individual relationships between the ATP and the partners. The partners are placed in orbits 1,2,3,4 depending on the calculations and the value of the level of the relationship between the ATP and the partners according to the desirability function.

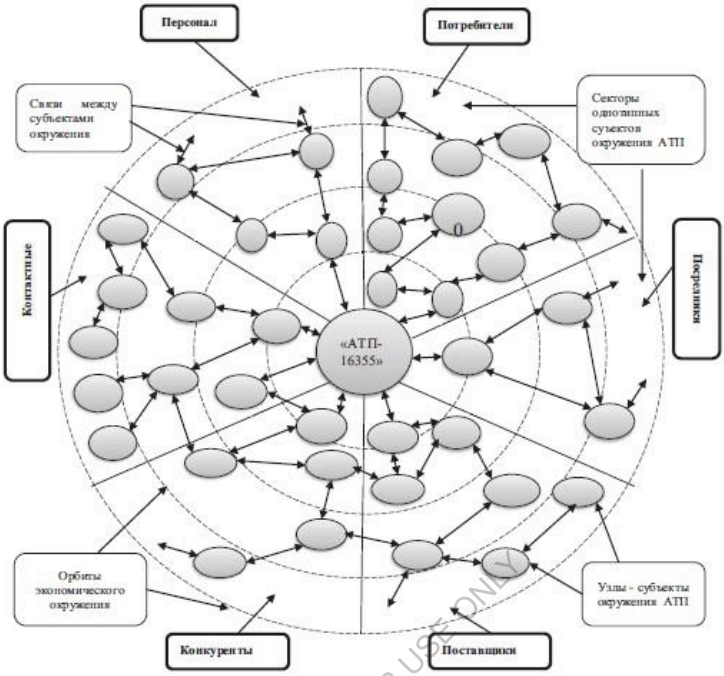


Figure 3.3 - Radial-planetary model of network interaction of PJSC "ATP-16355" with all groups of partners

Fig. 3.3 orbit 1 contains the nodes-enterprises - direct partners of ATP-16355, economic environment entities, which interact with it and supply products, resources, goods and services on the basis of contracts and agreements. In the same orbit there are the consumers and customers of ATP services, companies engaged in passenger and freight transportation and the like. In the orbit 2 there are subcontractors in relation to the central node, which are also consumers and suppliers of the enterprises of the orbit 1. Similarly in the next orbits there are nodes - companies - allied subcontractors, partners of a more distant degree of connection with ATP. The networking model is presented in the form of separate sectors representing the relationship of ATP with a separate group of partners.

Also, ciphered under each number is a separate partner: 1-Drivers, 2-Repair workers, 3-Auxiliary workers, 4-Managers of the management level, 5-CJSC

Alekseevskiy Bakery Plant, 6-PJSC Promstroi, 7-Plant Prodtovary, 8-Soyuz-Agro, 9-PJSC Kharkov Biscuit Factory, 10-Proelectro, 11-Kometa, 12-Communications Company. , 8 - LLC "Union - Agro", 9 - PJSC "Kharkov Biscuit Factory", 10 - LLC "Promelectro", 11 - LLC "Comet", 12 - LLC "Edelweiss", 13 - LLC "Spetstroi", 14 - PP "Space", 15 - LLC "Intertransgrupp, 16 - JSC "AUTOCAT", 17-Shevell Grupp OJSC, 18-AutoKrAZ Holding Company, 19-KrAZ Corporation, 20-Concern Galnaftogaz OJSC, 21-BRSM Nafta OJSC, 22-AOAO Askaniya Servis, 23-AOAO Azbohim, 24-Unic Trade Company, 25-AAO ATP-16357, 26- PJSC ATP-16365, 27-PJSC ATP-1 663, 28-PJSC Kharkiv ATP-16358, 29-PJSC ATP-16329, 30-Kharkiv regional inspectorates of the Main Department of the DFS in Kharkiv region, 31-Ukrtransinspektatsiya in Kharkiv region, 32-State Ecological Inspectorate in Kharkiv region, 33-Rating PJSC, 34-MediaPort agencies, 35-Vecherniy Kharkiv newspaper, 36-insurance company AXA Group, 37-insurance company ASKO, 38-pJSC Oschadbank.

Network relationships involve partners interacting with each other. For example, some suppliers and intermediaries interact with competitors, and competitors in turn interact with consumers, government agencies and the media. This suggests that it is advisable for a business to have a closer relationship with its competitors.

Developed countries have already recognised the advantages of using network structures and are actively introducing them into various areas of economic life. The highlighted radial-planetary organisational model has found its practical application. The integration processes involved in the implementation process have led to the creation of giants such as transnational corporations. Their influence extends to the economies of several states and makes them literally "borderless". Entrepreneurial networks and clusters are becoming increasingly popular. Created according to the same network principles, but focused mainly on small and medium-sized businesses, they are a promising area of integration in Ukraine.

The above determines the need to identify the factors that create the prerequisites for improving the efficiency of production and economic activities of the business unit and a comprehensive analysis of the expected strategic synergies. The calculation of strategic synergies between ATP and partners in the network is based on the methodology developed in the previous section and involves the collection of constituent indicators by analysing the financial statements of the enterprise (Table 3.19).

Table 3.19 - Input data for calculating strategic synergies

Business denomination	Indicator	Indicator value UAH thousand/year	
		Before entering the network	After entering the network
1	2	3	4
	Ц- the price the ATP pays for the work	6400,8	5760,72
	$\Delta Д_К$ - quality account surplus	3532,2	3885,42
	$\Delta Д_{ВР}$- additional income on the time account	2444,4	2688,84
	$З^{ВР}$- the cost of the work	8148	7333,20

End of Table 3.19

1	2	3	4
ATP	$З^{В}$- partner costs (price)	8664,6	7798,14
	$З^{Т}$ - transportation costs	2826,6	2543,94
	$Д_К^{П}$- extra income because of the price	4334,4	4767,84
	$З^{РБ}$ - resource provisioning costs basic	15758,4	14182,56
	$З^{Р}$- the costs of resource cooperation	12650,4	11385,36
	$\Delta Д_Н^{Д}$- additional income from increased security of resources	4762,8	5239,08
	$Д_К^{П}$- Additional income from higher quality res.	2158,8	2374,68
	$З^{УР}$- the costs of management work	5707,8	5137,02
	$Ц^{У}$- price for carrying out management work	3670,8	3303,72
	$\Delta Д^{У}$- Additional income from improved quality of managerial work.	1898,4	2088,24
	$З^{Б}$ - Costs of implementation baseline	2381,4	2143,26
	$З^{РК}$- the costs of implementing cooperative sales	1986,6	1787,94

	$З^{Б}_{Ф}$- costs of implementing financial resources basic	5275,2	4747,68
	$З^{КР}$- the cost of fulfilling the financial resources of the cooperative	4380,6	3942,54
Partner	Ц - the price paid to the partner	6825	6142,50
	$З^{В}$- own costs in carrying out cooperative work	5636,4	5072,76
	$\Delta З^{Е}$- savings by reducing the fixed cost component	3070,2	3377,22
	$\Delta Д^{Д}$- extra income from additional output	3973,2	4370,52
	$З^{З}$- costs of securing resources basic	7702,8	6932,52
	$Д^{К}$- Reducing the cost of resources	2725,8	2453,22
	$Ц^{У}$- price for carrying out management work	4015,2	3613,68
	$З^{УР}$- Costs of implementing cooperative work	2826,6	2543,94
	$З^{РК}$- the costs of cooperative sales	3339	3005,10
	$Д^{З}$- Reducing the unit cost of operations on account of the concentration of work	2599,8	2339,82
	$З^{ФР}$- the costs of implementing financial cooperation	5296,2	4766,58
	$Д^{ФЗ}$- Reduced unit costs from financial cooperation	2259,6	2033,64

Next, we calculate the strategic synergies between the ATP and the partners after they have entered the network. The value of the components of the overall strategic synergies involves the calculation of the individual formulas presented in the table. The calculation will also be based on the actual performance of the TUA and the partners, which have been collected during the practical training and the projected performance of the partners after entry into the network.

Table 3.20 - Calculation of synergies between ATP and network partners

Synergy indicator	The formula		Value			
	ATP	Partner	ATP		Partner	
$S^{КМ}_{АП}$	$З - Ц + (\Delta Д_{К} + \Delta Д_{ВР})$	$Ц - З^{В}$	4918,2	8012,3	1188,6	1069,7
$S^{КП}_{АП}$	$З^{ВР} - З^{В} - З^{Т} + Д^{П}_{К}$	$\Delta З^{Е} + \Delta Д^{Д}$	991,2	3492,7	7043,4	10565,1
$S^{КР}_{АП}$	$(З^{РБ} - З^{Р}) + \Delta Д^{Д}_{Н} + \Delta Д^{Д}_{К}$	$З^{З} + Д^{К}$	10029,6	13179,6	10428,6	10647,0
$S^{КУ}_{АП}$	$З^{УР} - Ц^{У} + \Delta Д^{У}$	$Ц^{У} - З^{УР}$	3935,4	4680,9	1188,6	1069,7
$S^{КС}_{АП}$	$З^{Б} - З^{РК}$	$З^{РК} + Д^{З}$	394,8	355,3	5938,8	5344,9

$S_{АП}^{КФ}$	$З_{Ф}^{Б} - З^{КР}$	$З^{ФР} + Д^{ФЗ}$	894,6	805,1	7555,8	6800,2
$\sum S$	-	-	21163,8	30526,0	33343,8	35496,7

The calculation of overall strategic synergies is as follows:

- before entering the network:

Sdl = 21163,8+33343,8= 54507,6 thou UAH.

- after entering the network

Sdl = 30526,0+35496,7= UAH 66022,74 thousand.

The difference in strategic synergies before the implementation of the measure and after the entry of the ATP and partners into the network can also be represented graphically (Figure 3.4).

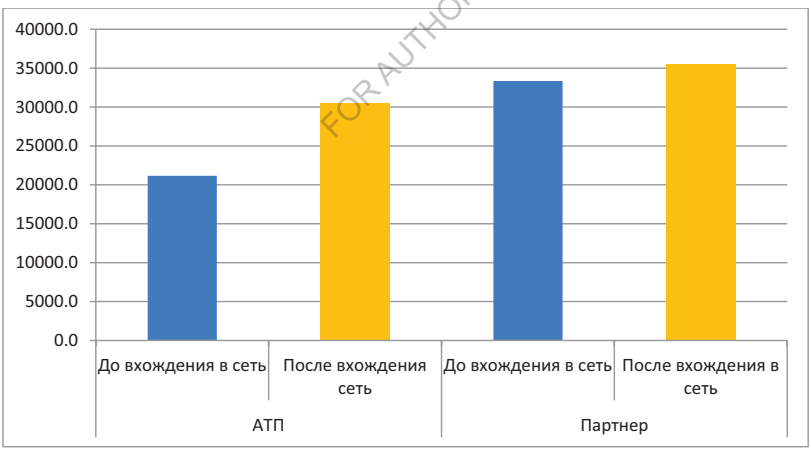


Figure 3.4 - Diagram of the dynamics of the strategic synergy indicator before and after the entry of the ATP and partners into the network

According to the results of the calculations, the projected value of total strategic synergies is higher after the entry of ATP and partners into the network by 11515.14 thousand UAH. This result is achieved by reducing costs on both sides and increasing revenues from joint activities.

So, as can be seen from the calculations, the advantages of PJSC ATP "16355" and partners joining the network are obvious. The assessment of the level of inter-organizational relations of ATP with partners showed a positive dynamics of changes in the performance of enterprises.

CONCLUSIONS

One of the main trends in the development of today's entrepreneurial environment is the change in the principles of forming business relationships between an organisation and its partners. A sign of the times is the demonstration of purposeful efforts of entrepreneurs to ensure competitiveness and business efficiency by using the potential of inter-firm cooperation based on a long-term basis and provides for a certain mutual alignment and control of market behaviour to achieve common goals. Therefore, assessments of inter-organisational relationships between ATP and partners is a rather relevant topic.

As a result of the research the existing approaches to relationship marketing were reviewed, their essence and definition from the point of view of different authors were considered, and other definitions were proposed. Approaches to the definition of partnerships were reviewed and systematised.

The established concepts of "relationship", "inter-organisational relations". Having analysed the literature, there are not the same views on the definition of "inter-organisational relationships", but there are commonalities in the formation of the concept.

The groups of partners with which the road transport company interacts, and the management of the relationships between them, are defined. The management of the road transport company's relations with business partners provides for: a unified information system, determining the way of receiving and distributing information among network participants; an adequate organisational structure of the central company; the ability of the central firm to coordinate the goals, business processes of partners; a common strategy for forming relationships with business partners; a process for regulating partner company interactions; the existence of a system for monitoring results.

As a result of the research, the management system of inter-organizational relationships of ATP with the main groups of partners was improved, which was formed on the basis of the methodological apparatus of cybernetic modeling of

viable systems, as well as the use of the SADT methodology, which allows comparing the needs and opportunities of the enterprise and realize its potential, ensure the stability of functioning and adaptation to the changing external environment.

With the help of the proposed TRM system, decision makers will be able at different levels of management to carry out coordinated decision-making and implementation of decisions on the functioning of the enterprise. The diversity of functional elements of the conceptual model, the proposed scheme of TRM formation, the basic principles of TRM operation are analyzed, the home of TRM, the benefits of using TRM system by the organization are considered and supplemented.

Types of inter-enterprise networking and their characteristics are considered. The existing approaches to assess the level of inter-organizational relationships of ATP with partners are analyzed. Speaking in general about methods and approaches to assess the level of interaction, it should be noted that there is no universal approach. Therefore, the method of assessment of inter-organizational relationships of ATP with individual partners, which, unlike other existing ones, is based on the used generalized Harrington desirability function and RADAR method for assessment of the generalized indicator of ATP-partner relations, was developed.

The study also proposed a methodological framework for assessing the inter-organisational relationships between ATPs and partners in the network, taking into account the definition of strategic synergies.

Thus, the components of the assessment of ATP's relationships with individual groups of partners: staff, customers, suppliers, intermediaries, competitors, media, government agencies and financial institutions were analysed by calculating a generalised desirability function. The resulting relationship level values, which show how and at what level the ATP's relationships are with its partners who do not yet form a network.

The level of inter-organisational relationships between the ATP and network partners has been determined. The advantages of PJSC ATP "16355" and partners joining the network are obvious. The assessment of the level of inter-organisational relations of ATP with partners showed a positive dynamics of changes in the performance of enterprises.

LITERATURE

1. Ackoff P. , Emery F. On purposive systems. M.: 1974. 272 c.
2. Ansoff I. Campbell E., Lachs C.S. Synergies and company business capabilities. Strategic Synergy. SPb. Peter, 2004. C. 36-58.
3. Aparina N.F. Interfirm networks: the problem of relations contracts: (Internet-conference, "Russia: options of institutional development") [Electronic resource]. Federalnyi educatsionnyi portal - 2006. URL: http://management.edu.ru
4. Arefyeva O. B. Komaretska P.V. Interests of stakeholders in organizational maintenance of strategic management of financial potential of enterprises. *Actual Problems of Economics*. 2008. №9. C. 80-85.
5. Asaul A.N. Aul, Skumatov E.G., Lokteva G.E. Methodological aspects of formation and development of entrepreneurial networks. SPb.: Humanistika, 2004. 256 c.
6. Asaul A. N. , Skumatov E.G., Lokteva G.E. Entrepreneurial Networks in Construction. Peter: Humanistica, 2005. 256 c.
7. Atamanchuk G.V. Theory of Public Administration: A Course of Lectures. Moscow: Omega, 2006. 584c.
8. Bazhin I.I. Information Management Systems. M.: GU-VSHE, 2000. 688 c.
9. Balabanits A.V. Integrated management of marketing interaction: imperatives, methodology, mechanisms: monograph. Donetsk: DonNUET, 2010. 509 c.
10. Balabanova L.V. Krivenko A.V. Management of enterprise competitiveness on the basis of marketing. Donetsk: DonNUET named after M. Tugan-Baranovsky, 2004. 147 c.
11. Baranov B.C. , Ginter E.K. , Kapranov N.I. , Rachinsky S.V. Genetic aspects of cystic fibrosis. Moscow: Medicine, 1995. 181c.

12. Barinov V.A. Zhmurov D.A. Development of network formations in the innovation economy. *Management in Russia and Abroad*. 2007. №1. C. 20-30.

13. Baker W. Market risks: the continuation and disruption of inter-organisational market linkages. У. Baker, R. Faulkner, D. Fisher; translated from English by Z.V. Kotelnikova. *Economic Sociology*. 2006. T.7, № 3. C. 27-52.

14. Beer St. The Brain of the Firm. M.: URSS, 2005. 416 c.

15. Galyamova E.F. The strategy of forming sustainable relationships with consumers of industrial enterprises. *Vestnik of Udmurt University*. 2011. №1. C. 31-39.

16. Grenroos, K. Marketing and management of services. F: Lexingston Books,1990. 245 c.

17. Gulin O. , Shchedrov V. Statistical analysis of synergy efficiency in industry corporations. URL: http://www.cfin.ru/bandurin/articl.

18. Economy of Work and Social and Labour Relations [Brich V.Y., Dyakiv O.P., Nadvynichny S.A. and others]; eds. P. Kachan. TV: TDEU, 2006. 373 c.

19. Egorova N.E. Modelling the activity of a small-scale enterprise functioning in economic symbiosis with a large industrial facility. *Economics and Mathematical Methods*. 1999. №2. C.15-18.

20. Zayarnyuk I.I. Marketing - the plan of activity of enterprise. Omsk, 2008. 71 c.

21. Egan J. Relationship marketing. Analysis of relationship-based marketing strategies [2nd ed.] MOSCOW: UNITY-DANA, 2008. 375 c.

22. Ideographic dictionary of Russian language / T.F.Efremova. Efremova's Explanatory Dictionary. 2000. 862 c. URL: http://ideographic. academic. ru/1304/relationship

23. Karlina E. P. Networking: two models of network organization of business processes. *Russian Entrepreneurship*. 2004. № 1. C. 48-51.

24. Kat'kalo B.C. Inter-firm networks: Problems of research on new organizational strategy in 1980-1990s. *Vestnik (Herald) of Saint Petersburg University*. 1999. Ser.5. Vyp. 2 (№12) P. 21 - 38.

25. Knyazeva E.N. Kursyumov S.P. Fundamentals of Synergetics. SPb: Aletheia, 2002. 414 c.

26. Komleva N.S. Formation of Relationship Management System of Industrial Company with Business Partners. *Modern directions of theoretical and applied researches' 2013*. URL: http://likeinvest.org.sworld.com.ua/index.php/

27. Kotelnikov V. Yu. Ten 3: New business models for a new era of rapid change driven by innovation [Text]. M. : Eksmo, 2007. 96 c.

28. Kotler F. Marketing management. Express course. 2nd ed. St.: Peter, 2006. 464 c.

29. Krevens D.V. Strategic Marketing [translated from English]. M.: Williams, 2003. 752c.

30. Kushch S.P. Approaches to development of coordination mechanism of industrial company's relationship management with partners. *Vestnik (Herald) of Saint Petersburg University*. 2006. Ser.8. Vyp.3. p.3-21.

31. Kushch S.P. Comparative analysis of basic concepts of relationship marketing theory. *Vestnik (Herald) of Saint Petersburg University*. Ser. Management. 2003. Issue. 4. C. 3-25.

32. Lamanov A. New forms of Russian industrial networks. *Problems of Management Theory and Practice*. 2004. № 1. C.57-62

33. Marka D.A. Structural Analysis and Design Methodology. Moscow: FRED LLP, Bankservice, 1993. 264 c.

34. Maslennikova I.L. Reasons for and types of inter-firm network structures. *Youth Scientific and Technical Bulletin*. 2012 №4. C. 36-47.

35. Milner B. Z. Theory of Organisation. M.: INFRA-M, 2008. 864 c.

36. Michurina O. To a question on classification of network organisations. *Scientific and Technical Bulletins of SPbSPU*. 2010. № 2. C. 89-94.

37. Moiseeva G.V. Relationship Marketing: Customers, Suppliers and Competitors. *Modern Management Technologies*, 2012. №4 (16). URL: http://sovman.ru/all-numbers/archive-2012/april2012/item/83-relationship-marketing-customers-suppliers-and-competitors.html

38. Morgan R. , Hunt S. The theory of commitment and trust in relationship marketing. *Russian Journal of Management*. 2004. Vol. 2, No2. C. 73-110.

39. Naroditsky I. Partner relationship management (PRM). *Finansovaya Gazeta*. 2010. Issue № 16. URL: http://base.garant.ru/5858564/

40. Naumov V.N. Development of interaction marketing principles for sales channel management. *Problems of Modern Economics*. 2008. № 2 (26). URL: http://www.m-economy.ru/art.php3?artid=24181.

41. Newell F. Why CRM systems don't work. Customer Relationship Management: How to Succeed by Letting Customers Manage the Relationship with Your Company [Translated from English]. Moscow: Good Book, 2004. 365 c.

42. Paturel R. Creating network organisational structures. *Problems of Management Theory and Practice*. 1997. № 3. C.76-81.

43. Payne E. The CRM Handbook: A Path to Management Excellence. Minsk: Grevtsov Publisher, 2007. 384 c.

44. Popov D. The evolution of enterprise development strategy indicators. *Company Management*. 2003. № 2. C.13-20.

45. Radchenko A.I. Fundamentals of State and Municipal Management: Systemic Approach: Textbook. Rostov-n/D. : Rosizdat, 1997. 448 c.

46. Raiko D.V. Economic and mathematical modelling of financial relations in the transfer system "enterprise-partner-consumer". Technology Transfer: Monograph. Under the editorship of P. G. Pererva, D. Kotsiska. Kharkiv: Virovets A. P. "Apostrof", 2012. 458 c.

47. Rebyazina V.A. Smirnova M.M., Kushch S.P. Portfolio and evolutionary approaches to building relationships of Russian companies with partners. Russian Management Journal. 2013. T. 11. № 3. C. 31-52.

48. Rvachev A.L. , Berezhkova E.P. Peculiarities of managing network enterprises. *Russian entrepreneurship*. 2007. № 6 Vyp. 1 (92). C. 52-56.

49. Savchuk S.V. Mergers and acquisitions of companies in world practice (Analysis of motives and results): Ph. Moscow: Williams, 2002. 167 c.

50. Sizyj S.V. Theory and methodology of formation of network organizational interaction on railway transport: doctoral thesis: speciality 05.02.22 "Organization of production (transport)". Ekaterinburg, 2011. 20 c.

51. Social psychology. Dictionary. [ed. by M.Y. Kondratyev]. MOSCOW: PERSE, 2006. 176 c.

52. Strategic Alliances [Text]: Translated from English. M. : Alpina Business Books, 2008. 244 c. (Ideas that work series).

53. Tikhonov A.V. Sociology of Management. Moscow: Canon + ROI Rehabilitation, 2007. 472c.

54. Tretiak O.A. , Rumyantseva M.N. Rumyantseva M.N. Network forms of inter-firm cooperation: approaches to explaining the phenomenon. *Russian Management Journal.* 2003. №3. С. 25 -50.

55. Wallace R. L. Strategic Alliances in Business. Technologies of building long-term partnerships and joint ventures [Text]; translated from English by Malkov I. M.: Good Book, 2005. 288c.

56. Philosophical Encyclopaedic Dictionary. [eds. Л. F. IlyichevP. N. Fedoseev, S. M. Kovalev, V. G. Panov]. M.: Sovetskaya Encyclopedia, 1983. 840 c.

57. Sheresheva M.Y. Inter-organizational networks in the system of forms of functioning of modern industrial markets: Abstract of doctoral thesis in Economics: specialty 08.00.01 "Economic Theory". Moscow, 2006. 53 c.

58. Sheresheva M.Y. Beck M.A., Beck N.N. Research Methodology of Network Forms of Business Organization. Moscow: Higher School of Economics Publishing House, 2014. С. 71-110.

59. Shinkarenko V.G. Marketing of interrelations of ATP with the main partners: Tutorial. Tutorial. X.: HNADU, 2012. 232 c.

60. Shinkarenko V.G. The object of marketing activity of enterprise. *Economy of transport enterprises*. 2013. №22. С.94-95.

61. Stern L. Marketing channels. M. Williams, 2002. 624 c.

62. Achrol R. Evolution of the marketing organisation: new forms for turbulent environments. *Journal of Marketing*. 1991. №4. P.77-93.

63. Alderson W. , Irwin D. Richard. Dynamic Marketing Behavior: A Functionalist Theory of Marketing. Canada, 1965. 280 p.

64. Berry L. Discovering the soul of service: The nine drivers of sustainable business success. New York: The Free Press, 1999. 288 p.

65. Bruhn M. Relationship Marketing: Management of Customer Relationships. M: Pearson Education, Ltd. 2003. 312 p.

66. Diller H. Customer Loyalty: Fata Morgana or Realistic Goal? Relationship Marketing: Gaining Competitive Advantage through Customer Satisfaction and Customer Retention. Berlin: Springer, 2000. 190 p.

67. Ford D. Managing Business Relationships. London: Industrial Marketing Management, 1998. 256 p.

68. Ford D. The Development of Buyer-Seller Relationships in Industrial Markets. *European Journal of Marketing*. *New York*. 1980. P. 339-354.

69. George W. Internal marketing and organisational behaviour: A partnership in developing customer-conscious employees at every level. *Journal of Business Research*. 1990. №1. 63 -70 p.

70. Grandori A. , Soda G. Inter-firm networks: antecedents, mechanisms and forms. *Organization Studies*. 1995. №.2. P. 183-214.

71. Gronroos Ch. Relationship marketing: Interaction, dialogue and value. N.Y.: Helsingfors, 1997. 327 p.

72. Gummesson E. Total Relationship Marketing: Rethinking Marketing Management from 4Ps to 30Rs. Oxford, UK: Butterworth-Heinemann, 1999. 392 p.

73. Haker M.J. Relationship Marketing Defined? An Examination of Current Relationship Marketing Definitions. *Marketing Intelligence and Planning*. 1999. Vol. 17. No. 1. P.13-20.

74. Harrington E.C. Industry. *Quality Control*. 1965. №10. P. 21-22.

75. Konsynski B. , McFarlan F. Information partnership - shared data, shared scale. *Harvard Business Review*, 1990. №10. P. 114-120.

76. Lovelock C. Managing Services: Marketing, Operations, and Human Resources. E: Prentice Hall College Div, 1992. 496 p.

77. Miles R. , Snow C. C. Causes of failure in network organisations. C: California Management Review, 1992. 72 p.

78. Miller G. The magical number seven, plus or minus two. Some limits of our capacity for processing information. NY: The Psychology of Communication: Seven Essays., Basic Book, 1967. 160 p.

79. Mintzberg H. Structure in Fives: Designing Effective Organisations. New Jersey: Prentice Hall, 1992. 312 p.

80. O'Toole T. , Donaldson B. Managing Buyer-Supplier Relationship Archetypes. Irish Marketing Review. *Ireland*, 2000. P. 12-20.

81. Parvatiyar A. Sheth J.N. Customer relationship management: emerging practice, process, and discipline. *Journal of Economic and Social Research*. 2001, 2002. 3 (2) Preliminary Issue. P. 1-34.

82. Pawar B. , Sharda R. Obtaining business intelligence on the Internet. *Long Range Planning*, 1997. P. 110 - 121.

83. Porter M. E. Competition in Global Industries. Boston: Harvard Business School Press, 1986. 581 p.

84. Webster Frederick E. The Changing Role of Marketing in Corporation. *Journal of Marketing*. 1992. №4. P. 1-17.

85. Williamson O. The economics of organisation: The transaction cost approach. *American Journal of Sociology*. 1981. Vol. 87, Is.3. P. 548 - 577. ISSN 0002-960.

86. Wilson D. An Integrated Model of Buyer-Supplier Relationships. *Journal of the Academy of Marketing Science - Pennsylvania*, 1995. P. 335-345.

87. Worthington S. A new relationship marketing model and its application in the affinity credit card market / S. Worthington, S. Horne. *International Journal of Marketing*. 1998. Vol. 16, 1. P. 39 - 44.

88. Zineldin M. IT and Total Relationship Management (TRM) a new marketing management perspective . URL: http://tvvlibrary.narod.ru/papers/2003/05.htm#_ftn1.