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Risk in coopetition between logistics enterprises

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Abstract

Aim: Coopetition, as a way to increase the operational efficiency of business operations, is an attractive but high-risk strategy. The aim of the study was to demonstrate that logistics enterprises undertaking competitive cooperation related to the supply chain in the area of supply and production logistics, while increasing their competitive advantage, are at the same time exposed to a greater risk of losing strategic resources.

Methodology: Risk in this context means that despite the effective management of logistics processes within the framework of coopetition between enterprises, there may be circumstances related to the risk of cooperation which will make it difficult to achieve results in the area of enterprise logistics in coopetition relations. Regarding the acquisition of information, qualitative research was used, based on the knowledge of experts and employees involved in logistics processes as part of coopetition between the surveyed logistics enterprises, especially in the area of supply and production processes.

Results: This article presents the results of research into the risks in the area of logistics processes for selected 49 companies belonging to the TSL (transport, shipping, logistics) sector out of a research group of 223 companies belonging to various sectors, including information technology, transport, production, finance, cooperating within competitive ties. The outcome of the undertaken research is the identification of significant threats related to competitive cooperation between enterprises, which has a significant impact on logistics activities and processes which ensure the assumed effects of this cooperation. The study allowed to determine the risks that exist in the competitive cooperation processes in the surveyed enterprises.

Implications and recommendations: The conducted research related to the identification of risks of competitive cooperation has a practical dimension, because by identifying them we have a picture of threats to competitive cooperation. Secondly, before making a decision on competitive cooperation, this risk should be estimated and the right decision should be made.

Originality/value: The article provides valuable guidelines useful for business practice in the form of a classification of the sources of risk occurring in the process of coopetitioning between enterprises at different stages of cooperation, considered in different cross-sections (object of exchange, number of entities, degree of formalisation of cooperation, intensity of relations). These findings should help avoid problematic situations in the coopetitive relation.

Keywords: risk, coopetition, logistics processes, risk factors, risk measurement, risk level

1. Introduction

Enterprises have sought and will continue to seek ways to improve business efficiency. One promising strategy is coopetition, which is a specific strategy that involves both competition and cooperation. Taking the car industry as an example, companies compete on customer tastes (car design), while some materials and stages of the production process are carried out jointly for several car brands. However, this operational cooperation in the logistics of procurement and production processes – in addition to its obvious positive features – can also give rise to various problems (risks). Coopetition, as a result of risk assessment in competitive cooperation between logistics enterprises, is important due to the increase in the number of unsuccessful (wrong) competitive cooperation projects resulting in taking over strategic resources, e.g. information, knowledge or experiences, leading to irreversible losses.

The intention expressed by the authors was to present coopetition as an alternative to cooperation between logistics enterprises in a competitive market in order to increase efficiency, quality and competitiveness. The aim of the study was to demonstrate that logistics enterprises undertaking competitive cooperation related to the supply chain in the area of supply and production logistics, while increasing their competitive advantage, are at the same time exposed to a greater risk of losing strategic resources. The research hypothesis is that managing the risk of coopetitive relations in companies under conditions of globalisation of the world economy is a complex and multifaceted process that allows companies to achieve many tangible and non-quantifiable benefits, including the development of effective cooperation, provided an analysis of the sources and types of risks that this type of co-operation brings. In order to check this relationship, a study of literature sources, practical cases and observations was carried out. At the planning stage of the research on risk management in the process of cooperation, it was decided to use the method of non-random (purposive) selection of logistics enterprises. The result of the research undertaken was the identification of significant risks (sources and types of risk) related to the coopetitive cooperation of enterprises, with a significant impact on logistics activities and processes, ensuring the assumed effects of this cooperation.

The following section reviews the literature on risk and coopetition in the context of logistics processes. The review was based primarily on Polish literature (books and journals), complemented by selected

publications from the Web of Science and Scopus scientific databases (the most valued and up-to-date sources of knowledge).

2. Literature review

2.1. Logistics processes vs. risk

Modern logistics processes are the processes of the flow of physical goods (materials, primary commodities, semi-finished products, finished products and goods) along with the accompanying flow of information within and between enterprises. The basic logistics processes include transport, storage, transhipment, packaging. Logistics processes therefore form a certain composition, constituting the process of physical flow (Świerczek, 2006, p. 117). Logistics processes bind a company's entire activities and are primarily aimed at increasing the exchange and use value of products with spatial and temporal assets. A spatial asset is associated with the fact that logistics processes efficiently bring a product to its destination. A temporal asset results from taking into account relevant delivery time arising from direct demand (Ballou, 1987).

Logistics processes cause the transformation of products, e.g. storage processes implement time changes, transport processes concern space changes, transhipment processes introduce changes in quantity and kind, etc. (Pfohl, 1998). Logistics processes are carried out using the physical structure of the logistics system. The physical structure is a set of nodes and paths that constitute the system through which streams of materials, cooperative elements, finished products, energy and information flow (Sołtysik, 2000). Nodes symbolise the function of overcoming time and/or physically transforming logistics objects, while paths suggest the tasks of overcoming space (Sołtysik, 1995).

The use of the physical structure of the logistics system is a basic condition for optimal and effective shaping of logistics processes, i.e. planning, organizing, implementing and controlling them in such a way as to achieve specific goals (Świerczek, 2006, p. 119). Individual logistics processes should not be considered in isolation from each other because the effect of such an action leads to the suboptimisation of decisions made. Therefore, the use of a systemic approach is useful in the analysis of logistics processes (Sołtysik, 2000).

Logistics processes management is a model example of the concept of business process management. The philosophy of product flow management, according to a systemic approach, is based on a comprehensive, integrated approach to planning, organizing and controlling logistics processes. The reference object of logistics processes management is therefore the process of the physical flow of materials, semi-finished and finished products, carried out within and between individual enterprises. According to the 7R principle, the objective of logistics processes management is to deliver the right products or services to the right place, the right customer, at the right time, while maintaining the desired quality and the lowest possible cost. The importance of the distinguished objectives of logistics processes management results from the role assigned to logistics in individual enterprises. In business practice there are entities in which logistics occupies an important position in the enterprise management system significantly affecting other functional areas. Then the objectives of logistics are the main objectives of the entire organization (Świerczek, 2006, pp. 120-121).

Logistics processes management can be considered in strategic and operational terms. The strategic dimension of logistics processes management consists in making decisions and undertaking actions as a result of which logistics strategies are created and implemented. Logistics process management can be defined as operational when it involves the implementation and control of detailed, everyday tasks related to the physical flow in an enterprise. The distinction of the strategic and operational level of logistics processes management depends on many factors, resulting mainly from the specificity of the business activity carried out (Świerczek, 2006, pp. 122-123).

An enterprise is an economic unit that operates on its own account in order to achieve material benefits (profit), and also bears risk and responsibility in accordance with legal and market relations. The current conditions for the functioning of economic entities are characterised by a dynamically changing environment and a constantly transforming political situation – both macro and micro-economic. Under such circumstances, decision-making is inextricably linked to risk, therefore it is necessary to determine what is happening in an enterprise and what factors are affecting the processes taking place in it and in the environment in which it operates (Salomon, 1999, p. 44).

Logistics includes planning, coordination and control of the course of real processes implementing the adopted objectives, both in terms of time and space. This applies, in particular, to the spatial and temporal distribution, and the state and flow of goods that are the subjects of these processes, i.e. people, material goods, information and financial resources (Krawczyk, 2001, p. 8). In particular, the subject-structural approach to logistics emphasises its essence as a process of flows of goods and an array of activities related to their implementation. Among the basic principles of modern logistics, special attention should be paid to comprehensiveness (all aspects of logistics processes should be closely related to other functional areas of an enterprise) and flexibility (the ability to adapt the logistics system to changes resulting from dynamically transforming input factors to the process) (Coyle et al., 2002, p. 25).

During the preparation and implementation of the logistics process it is very important to be aware of the possibility of the emergence of risk. Combined with good process organization, risk can be significantly reduced. An enterprise that wants to take a competitive position in the market must simultaneously accept a higher level of risk in its activities (including logistics processes) and deal with its increased level in an appropriate and systematic way, i.e. manage it professionally. The basic decisions regarding the risk of implementing logistics processes include answers to the following questions, such as: how restrictive an agreement will be signed by an enterprise, will it use the services of subcontractors to perform it and to what extent? The outcome of the emergence of risk in the broadly understood area of logistics could include: exceeding the assumed budget, failure to meet the deadline specified in the agreement, failure to meet the required technical conditions (quality, compliance with the intended use). The consequences of most risks in logistics processes are usually reduced to the financial dimension (Grzyl, 2013, pp. 11-13).

2.2. The essence of risk and risk management in coopetition between logistics enterprises

Issues related to risk have been of unflagging interest for a number of years. Decision-making uncertainty is naturally inherent in logistics processes management. The source of this uncertainty is the variability of conditions that determine their effects. Enterprises operating in a market economy, conducting economic activity in conditions of globalisation, have to cope with many challenges. In order to address the challenges of time and at the same time be competitive, enterprises establish various interorganizational relations – cooperative and coopetitive.

In this situation, enterprises must learn to use instruments that allow for increasing security both at strategic and operational level. Therefore, the importance of risk management is increasing, which allows for the identification of risk sources depending on possible event scenarios (Sobolewski, & Marcinkowski, 2017, p. 144). The risk is due to the lack of complete and reliable information, which is inextricably linked to the decision-making process, because uncertainty about the effects of decisions made accompanies every business activity, especially in coopetitive cooperation between enterprises. Risk management is therefore of strategic importance for business management, because it is aimed at the early identification of those risk areas that in the long term will allow the use of the existing potentials, or the creation of new ones, enabling the continued functioning of an enterprise. Risk is permanently inscribed in the activities of each enterprise. However, both the scope and effects of risk taken by an enterprise are diverse, and their level is mainly due to the type of business activity.

Risk cannot be eliminated, but it can be recognized in order to manage it by limiting making wrong decisions, incurring losses or moving away from the objectives set in an enterprise.

Risk is a common phenomenon, and occurs in a variety of situations. It assumes different dimensions depending on the context in which it takes place. For this reason, there is no single coherent definition that would identify all layers of its existence. The concept of risk may conceal a lack of information about individual elements of the cause-and-effect relationship, which is why risk can be defined as a deficit of information as to the possibility of achieving specific goals (Kaczmarek, 2008, p. 53). Therefore, risk is a portfolio of many internal and external factors affecting the decisions made in an enterprise.

From a practical point of view, risk management takes into account the positive and negative sides of risk, and its aim is to use the positive aspect of risk, and to protect and prepare for the materialisation of negative risk. It exerts strategic pressure that extends to all management functions. It uses risk to gain an advantage over the competition by learning about its main dimensions and improving the ways of proceeding in the face of risk materialisation, which results in the creation of added value for an enterprise and its increased value. Risk protection assumes that risk carries a danger and its purpose is to protect against the emergence of this risk. Risk assessment mainly takes into account the financial aspect (Staniec, 2015, p. 263).

A modern risk management system requires taking into account the interaction and flow of information between individual levels of management. The risk management process in an enterprise is a central element in the management of each enterprise, and is a process in which each enterprise solves problems related to risk associated with its activities in an organized manner in such a way that these activities in individual areas are treated as continuous and bring lasting benefits. Risk management means identifying potential events or situations, estimating their effects and the likelihood of their occurrence, determining and applying appropriate response methods and monitoring risk. Its overriding goal is to ensure the achievement of the objectives set by an enterprise (Korombel, 2013, p. 43).

Enterprise risk management is decision-making and implementation of activities aimed at achieving an acceptable level of risk (Jajuga, 2005, p. 15). The main objective of risk management is to improve the financial results of an enterprise and to ensure that it does not suffer greater losses than assumed. Management concerns the identification of the type of risk that a given enterprise may face, its measurement and control (Kaczmarek, 2008, p. 95). It should be emphasised that risk management is not a one-off project, but a process that a given enterprise should systematically manage (Jajuga, 2009, p. 26).

Risk analysis and assessment increasingly results from standardised norms implemented in enterprises that require business operation risk assessment. Risk management is therefore not only a tool for identifying threats and opportunities, but above all, for making conscious decisions. In the ISO 9000:2015 standard, the concept of prevention is already treated as part of the process related to enterprise management, which consists in prior identification of threats and taking preventive or mitigating measures. In the management system, preventive action is therefore an element of risk management.

According to the resource-based view, resources are one of the most important factors affecting the flexibility of an enterprise, and the excess of resources determines the use of opportunities, which is of particular importance in the process of cooperation and coopetition. The aim of a manager's activity in risk management is to implement such methods that ensure transparency of operation, allow for the detection and elimination of irregularities, identify weaknesses and strengths, and improve processes – i.e. increase the efficiency of an enterprise's operation and prepare it for the adoption of unpredictable internal and external factors.

Coopetition is an entrepreneurial process that involves coping with uncertainty, risk-taking behaviour, exploring and exploiting opportunities, and developing innovative solutions (Galkina, & Lundgren-

-Henriksson, 2017, pp. 158-173). First, before beginning interaction in a coopetition relationship, it is necessary to assess whether the coopetition relation meets the required conditions for interaction to take place. Second, firms should make provision against members of both organizations making the relationship vulnerable to acts of opportunism (de Araujo, & Franco, 2017, pp. 378-394). Collaboration and coopetition between alliances of retailers and third-party logistics providers can be considered across a range of risk behaviours, demand uncertainty, and environmental considerations (Fallahi et al., 2023, pp. 5597-5633). However, coopetition is fraught with threats arising mainly from both the coexistence and interaction of streams of cooperation and competition between competitors (disadvantages), such as leaks of sensitive private knowledge about companies' production processes (Chávez-Bustamante, & Troncoso-Valverde, 2023, pp. 2589-2603) or coopetition in a failed merger project (Thelisson, 2023, pp. 44-49). The areas of coopetition that are most exposed to risk are sales and distribution, logistics and finance (Cygler, & Sroka, 2017, pp. 494-504), hence the purpose is to build control mechanisms. The interaction between leadership, communication and trust is crucial to building control mechanisms (Chai, & Yang, 2011, pp. 29-39). The sources of nonalignment are an overly ambitious and loosely defined value proposition, a value distribution risk, and inconsistencies in the institutional context (Malherbe, & Tellier, 2022). It is necessary for firms to mix knowledge creation and transfer strategies with knowledge protection practices (Salvetat et al., 2013, pp. 265--277). Yet, firms achieve advantages on innovation and internationalisation also via inter-cooperation: shared R&D units, joint sales offices, joint after-sale services, knowledge exchange and relocation of key R&D technicians and managers (Basterretxea et al., 2019, pp. 1223-1235). The cornerstone of a successful collaboration is information sharing (Raweewan, & Ferrell, 2018, pp. 269-281).

To sum up, risk management in an enterprise is a system aimed at identifying and assessing risks related to various aspects of an enterprise's operations. The integrated risk management system in an enterprise usually takes the form of a process consisting of many stages. One should start with outlining the general objectives that an enterprise wants to achieve by applying this type of management system and defining the so-called risk threshold, i.e. a given enterprise's individual relationship to the level of risk. The next stage of the cycle is to identify the sources of potential hazards and assess risks associated with them, then create procedures and plan actions that must be taken in the event of the emergence of specific events. The final stage is the control of the entire system, which should be comprehensive and continuous, carried out by internal and external units. All employees operating at different levels of management in all departments of an enterprise should be involved in the risk management system. Risk management applies to all organizations operating on the free market on a global scale, including those in competitive cooperation, and the risk arising there results from macro or micro-economic specificities, which derive from one constant feature of the economy – volatility.

3. Research methods

With the aim of this article in mind, the authors considered the following research questions:

1. What are the specificities of competitive ties in Polish companies in the TSL sector?
2. What are the barriers, motives and conditions in the environment that significantly influence the risk process in competitive enterprise processes?
3. What are the sources and types of risk in the competition of enterprises in order to increase management security and at the same time reduce risk in the cooperation processes of logistics enterprises?

In the risk management process, the basic and also the most important activity is the correct detection of risk sources, i.e. events that are a potential threat to a logistics enterprise. It should be emphasised that the completeness and correctness of activities at this stage determines the accuracy of further measurements and the effectiveness of the developed procedures limiting risk in coopetition.

Following the above, at the stage of designing empirical research, and on the basis of literature studies and direct interviews with entrepreneurs, as well as the authors' own observations (the authors participated in selected companies following the logistics processes carried out by the employees), 49 enterprises from the TSL sector were taken for risk analysis to identify the largest possible number of risk sources occurring in the market economy in coopetition processes. The purpose of selecting a significant group of events threatening the functioning of logistics enterprises was the need to take into account their specificity with a similar subject of activity, size and strategy of operation – namely from the area of the supply chain. Further on, the risk factors of cooperation were separated from the risk of general business activity, creating a list of events of a very diverse nature, occurring as part of coopetition between enterprises.

The conducted empirical research was based on both quantitative methods (within which in-depth survey research was carried out) and qualitative methods (including direct interviews and participant observation in selected enterprises). The authors studied the selected companies by conducting an observation of the logistics processes carried out by employees, which consisted in the researcher entering a specific environment (here a company) and observing this collective from the inside – as one of its members – participating in the daily tasks of the employees. Using a questionnaire, an analysis of 49 enterprises located mostly in the Wielkopolska Region and operating in the market for more than three years was carried out. These were medium and large companies, with 50 or more employees, with Polish capital, and mostly limited liability companies. Enterprises were qualified for research using a method of non-random, deliberate selection of typical units. Qualitative research methods such as literature analysis and critique, logical analysis and construction, CATI and CAWI survey methods were used in the study. CATI is a computer-assisted telephone interviewing technique, where the interviewer uses a system that guides them through the entire interview, records respondents' answers and manages the sample. CAWI is a research technique using online surveys, in which the respondents receive a link to the survey and answer the questions themselves. Conducting research in this way allowed to identify scientific problems to the greatest extent and to test the research hypothesis.

At this point, however, it should be noted that due to the large number of identified risks, in order to maintain the transparency of research, it was necessary to build an appropriate theoretical framework enabling easy and clear interpretation of the obtained results. In line with the above, and based on the approach by T. Frąś (2020, p. 179), the process of coopetition by enterprises was divided into four consecutive phases presented in Figure 1. These include:

1. Determining the requirements profile and selecting a coopetition partner. At the beginning, an analysis of key competencies and resources offered by potential partners and verification of the compliance of the objectives are carried out. In order to ensure optimal results, it is necessary to use various methods of searching for information from many different sources. Then the most suitable of the available coopetitors is selected.
2. Development of coopetition. At this stage, there is a considerable intensification of cooperation, manifested, among others, in the rapid conversion of cash between coopetitors, or the development of a range of assets included in the coopetition process. There is a high involvement of employees at all levels in coopetitors' enterprises. Through the development of relationships, enterprises strive to achieve stability, maintain internal stocks and strategic resources, allowing coopetitors to survive in threatening and critical situations.
3. Dissolution of coopetition. In this phase, coopetition between partners is terminated. The reason for the decision in this respect may be both the achievement of previously assumed cooperation objectives, lack of further interest in cooperation, and the occurrence of conflict between coopetitors.

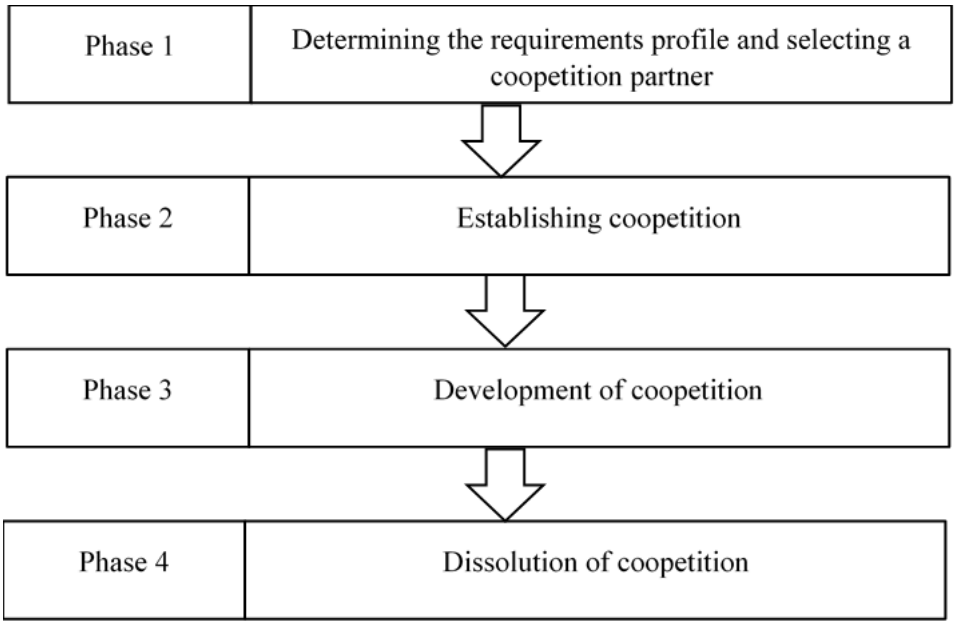

Fig. 1. Coopetition process between enterprises in a market economy

Source: own development based on (Frąś, 2020).

The next stage was to classify the previously identified sources and types of risk in relation to the phase of the competitive cooperation process in which they occurred. According to the assumptions of the classification, each of the events could be assigned to only one group. At this point, however, it should be noted that the effects of some isolated events may manifest themselves at different stages of the coopetition process, e.g. the effects of an event that occurred during the selection of a partner may appear only at the stage of the development of coopetitive relations. In such situations, the probability criterion and the consequences of its occurrence were used to assign a given source of risk to a specific phase of the interorganizational cooperation process in the coopetition between enterprises. Therefore, the event was classified into a phase in which the chances and effects of the occurrence of a given event are the highest. This stage of research was based primarily on literature studies and expert opinions obtained during direct interviews and participant observation in selected logistics enterprises operating in the area of the supply chain in coopetition relations.

4. Research results – identification of the sources and types of coopetition risks of the surveyed companies in logistics

As part of the research on risk sources manifested at the stage of determining the requirements for cooperation and selection of partners, a number of factors were distinguished, as presented in Figure 2. One should consider that the isolated events relate primarily to the analysis carried out by enterprises of their own expectations towards future coopetitors, the competencies of potential partners, as well as the compliance of the objectives of competitive cooperation.

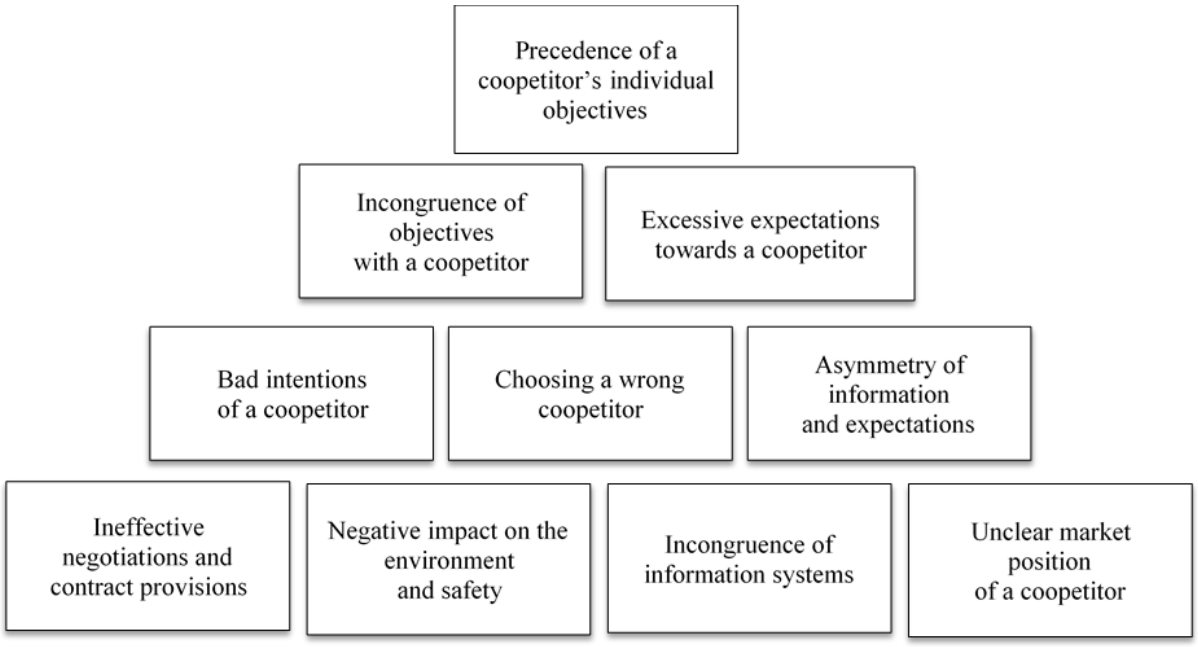

Fig. 2. Pyramid of risk sources occurring at the stage of determining prerequisites and selecting coopetitors

Source: own development based on data obtained from direct interviews and participant observation in selected logistics enterprises (Frąś, 2020).

The following were identified as sources of risk occurring at the first stage of the coopetition process:

1. Treating one's individual goals by a potential partner as superior to coopetitive goals. Note that building long-term and stable interorganizational relations on such a foundation is not possible, because a coopetitor putting self-interest above common interest is a source of serious risk, e.g. in the event of an opportunity for above-average profit, he/she may shift his/her resources involved in cooperation towards a more profitable undertaking.
2. The occurrence of an incongruence of objectives with a coopetitor, which in the future will prevent the creation of a close relation, the basis of which should be common objectives, motivating for cooperation, as well as building trust. The selection of a coopetitor whose basic objectives are incongruent with common objectives may result in a conflict at a later stage of coopetition, or even the breakdown of competitive cooperation relations.
3. Having excessive expectations towards a coopetitor, as a result of which the value of a relationship may be reviewed and both tangible and intangible resources may be excessively involved in cooperation.
4. A coopetitor is guided by dishonest intentions, which at the early stage of organizing cooperation are primarily related to concealing goals and the desire to achieve individual benefits at the expense of other participants in the coopetition chain.
5. Choosing a wrong coopetitor as a result of an incorrect analysis of his/her abilities, competencies or capabilities. The consequence of such an event may be not only the involvement of significant resources in the cooperation relations, within which it will not be possible to achieve the set objectives, but even the loss of resources.
6. The occurrence of contradictory information, i.e. a situation in which a potential coopetitor has more or less information regarding the planned coopetition. As a result, ineffective decisions based on incomplete information may be made.
7. Conducting ineffective negotiations, as a result of which there will be no win-win effect. As a consequence, it is possible that all enterprises involved in the coopetition process will not benefit equally from cooperation and work together to achieve common goals. It should be emphasised that partners who are treated as unequal will not involve their key competencies in coopetition.

8. Choosing a coopetitor that has a negative impact on the environment. It should be noted that ecology-minded organizations should assess not only their activities, but also activities of all coopetitors in the context of ecosystem protection. In addition, establishing cooperation with irresponsible coopetitors in this respect may incur significant costs and loss of image of not just one enterprise, but all enterprises in the logistics chain in which they cooperate.
9. The occurrence of incongruences in the absence of compatibility of IT systems. In the case of designing long-term close cooperation, this is a factor that may cause misinformation in communication and unnecessary expenditure in the future.

The early phase of the coopetition process, during which potential partners establish cooperation, have to adapt to each other and build future relations, is associated with certain specific threats presented in Figure 3. At this stage, there are a number of differences in the approach to conducting business and methods of achieving its goals. It should also be emphasized that enterprises in the course of establishing coopetitive relations are particularly susceptible to broadly interpreted fraud and dishonesty on the part of participants in competitive cooperation seeking to maximise their own benefits at the expense of other participants in the logistics chain.

The following events were classified as the most important risk sources occurring at the stage of starting competitive interorganizational cooperation:

1. The modification of facts by a coopetitor, which is of particular importance in the context of providing information on production/service capabilities and sharing all kinds of financial results. Modification of facts by a coopetitor in this respect threatens, among others, making incorrect decisions based on incomplete information, entrusting a coopetitor with overly responsible tasks, which may not be realised , and ultimately even the dissolution of coopetition.
2. Withholding information by a coopetitor, which may be motivated by a desire to establish a highly profitable relation or an attempt to achieve one's own hidden goals. As in the case of modifying facts, this may escalate, among others, into making ineffective decisions and entrusting coopetition participants with inappropriate tasks.

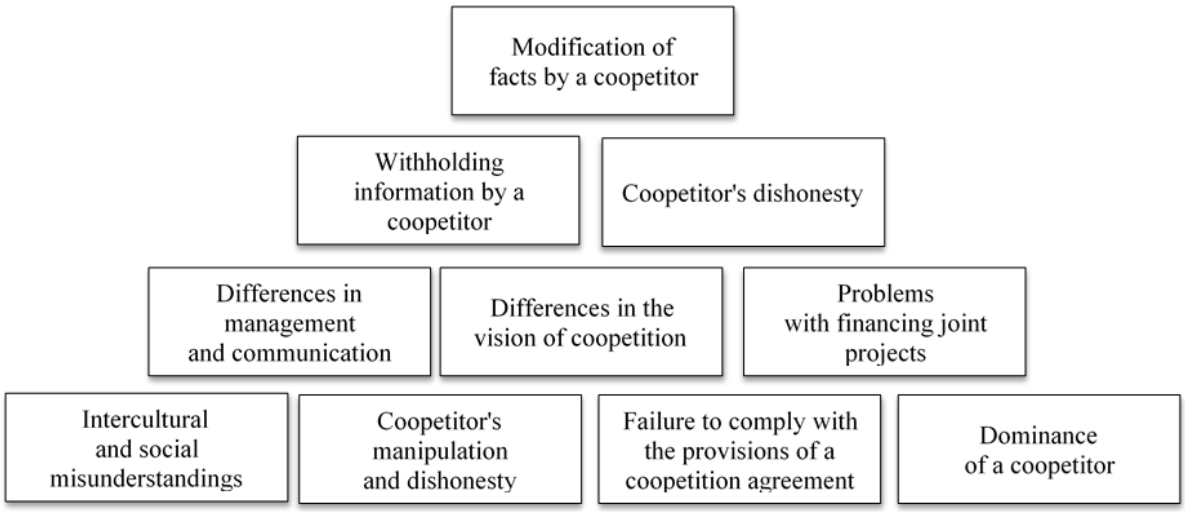

Fig. 3. Pyramid of risk sources occurring at the stage of establishing coopetition

Source: own development based on data obtained from direct interviews and participant observation in selected logistics enterprises (Frąś, 2020).

3. Establishing cooperation with dishonest coopetition participants, which may result in the loss of funds, materials, employees or know-how. It should be noted that cooperation with an unreliable coopetitor is very dangerous, especially in the case of small and medium-sized enterprises because it can even lead to the loss of financial liquidity and, as a consequence, bankruptcy.

4. Differences in the style and content of communication, revealed at the stage of establishing cooperation, can effectively limit the flow of information between coopetitors and even cause conflicts in the future. This phenomenon takes on significant importance in the context of international activity, in various cultural and social circles.
5. The occurrence of incongruences in the vision of coopetition. Coopetitors may not agree on methods and ways to achieve strategic goals.
6. The occurrence of problems with the financing of joint research and development (R&D) projects, which includes both difficulties in obtaining sources of financing and problems with the fair distribution of liabilities between coopetitors.
7. The emergence of intercultural and social misunderstandings, which takes on particular importance along with the progressive development of the global market and the phenomenon of progressive globalisation. These conflicts may affect the exchange and flow of information between coopetitors.
8. A coopetitor's manipulation and dishonesty aimed at achieving individual, hidden goals and own benefits at the expense of other participants in coopetition.

The largest number of threats of various nature was distinguished at the stage of coopetition development (Figure 4). This is a fundamental stage of competitive cooperation, because coopetition, the development and achievement of strategic goals depend on it. Such a large number of the revealed risk sources is primarily related to the increasing activity of partners growing with the expansion of interorganizational ties, as well as the frequently increasing level of assets involved in competitive cooperation.

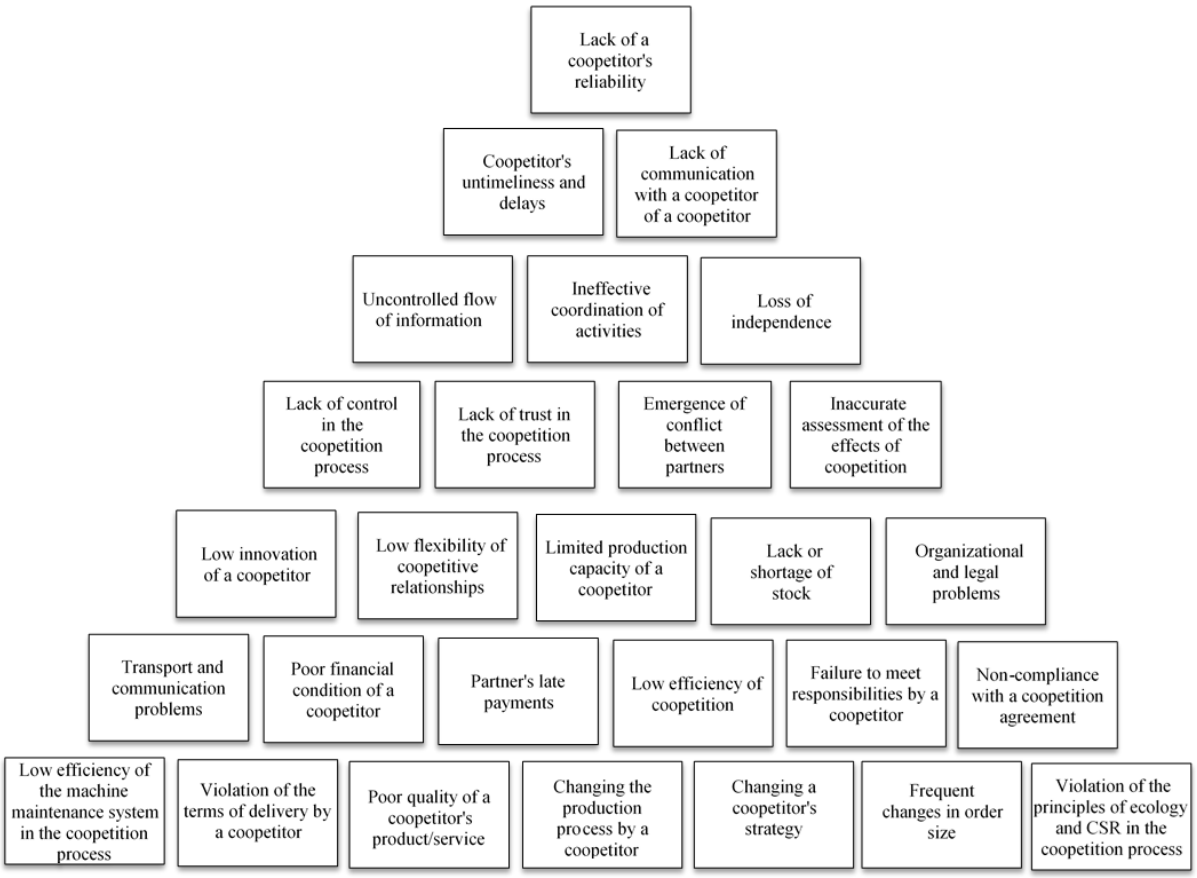

Fig. 4. Pyramid of risk sources occurring at the stage of establishing coopetition

Source: own development based on data obtained from direct interviews and participant observation in selected logistics enterprises (Frąś, 2020).

The problems at this stage result in particular from a participant's unreliability, financial difficulties, low flexibility of relations, organizational and information barriers and fear of losing control and independence. As part of the research and analysis, the following determinants were included among the most important sources of risk at the stage of coopetition development:

1. A coopetitor's unreliability, i.e. such performance of duties that may result in disruptions in coopetition activities, failure to meet specific quality, ecological and information security standards.
2. A coopetitor's untimeliness in the delivery of products or services, which may translate into stock shortages and even delays throughout the value chain. It should be noted that limiting the effects of a coopetitor's untimeliness will most often be associated with the need to maintain a higher level of stock, and this is a factor in increased costs of activity in the coopetition process.
3. Lack of communication with a coopetitor in the context of key aspects of cooperation, which may result in a conflict in the coopetition process.
4. Uncontrolled flow of information, especially in large organizations, where delays and disruptions in the flow of information are a common problem.
5. Ineffective coordination of activities, which significantly hinders the achievement of the intended, common goals by disrupting the processes of planning, organizing, manufacturing, functioning, controlling, and improving.
6. Loss of coopetitors' independence, which is primarily related to the difficulty in developing an appropriate compromise between active and passive coopetitors. Lack of decision-making freedom can have serious consequences in the event of a conflict.
7. Lack of control over processes in coopetition. This risk applies in particular to close forms of cooperation, where the manifestations of an organization's separateness disappear. The problem occurs primarily in the case of small and medium-sized enterprises cooperating with large enterprises, whose bargaining power and position allow for imposing cooperation conditions.
8. Lack of trust, which is essential in the case of coopetition between enterprises. The occurrence of the lack of trust is a particular threat in the case of close forms of cooperation, where enterprises have mutual access to their basic resources, sensitive information and key competencies.
9. The occurrence of a conflict between partners, the causes and effects of which may vary greatly, depending on the specificity of an enterprise and the nature of coopetition. It should be noted that the consequences of a split in coopetition can be huge and even entail the complete dissolution of coopetition.
10. Inaccurate assessment of the effects of coopetition, including both the assessment of the effectiveness, efficiency, usefulness and durability of the results achieved as part of coopetition. Improperly conducted evaluation in this respect may negatively affect a decision related to the further development of cooperation.
11. Low innovation of a coopetitor, which, regarding improvement and modernization, may cause the stagnation/disappearance of procedures for the production of common products and services, as well as the presence of barriers both in the increase of efficiency and production capacity and in the improvement of products and services.
12. Low flexibility of coopetitive relations is necessary for effective operation in view of customer requirements, growing competition, increasing globalisation and a rapidly changing global market (Industry 4.0).
13. Limited production capacity of a coopetitor, which may constitute a significant barrier to future effective coopetition. In the case of designing long-term cooperation, there may be a threat of lack of development over a longer period of time.
14. Lack or shortage of a coopetitor's stock, which may result in the disruption of the production cycle, further delays in the entire supply chain, and even a complete failure to fulfil obligations towards contractors.

15. Occurrence of organizational and legal problems, which in this case are most often related to the degree of advancement and complexity of coopetition, a need to coordinate many people involved in cooperation and processes of a diverse nature.
16. Transport and communication problems that will affect the creation of all kinds of delays in various areas of coopetition.
17. Poor financial condition of a coopetitor hindering or making it impossible for a partner to remain in the market, and also reducing credibility and the level of security of cooperation.
18. Late payments pose a particular threat to small and medium-sized enterprises and hinder the further development of an enterprise. It should be emphasised that late payment may result in the loss of financial liquidity and may lead to bankruptcy.
19. Low efficiency of coopetition. Note that despite the initial assumptions and projects of competitive cooperation, there may be a situation in which partners will not be satisfied with the effects of cooperation. The most common consequence of this type of event will be the end of coopetition and a search for a new coopetitor.
20. Failure to comply with obligations by a coopetitor, which takes on significant importance in the context of developing and strengthening cooperation relations. The expansion and intensification of cooperation is most often associated with entrusting coopetitors with increasingly numerous and more responsible tasks. It should be noted that failure to comply with them has consequences of varying nature.
21. A coopetitor's failure to comply with an agreement. The threat has a very broad specificity, depending on the nature of an agreement concluded and the type of coopetition.
22. Low efficiency of the machine maintenance system in the coopetition process, which may result in frequent machine failures and downtime, thus increasing the costs of an enterprise's operations.
23. Violation of the terms of delivery by a coopetitor applies to the place, method and date of delivery. The threat is of particular importance in the case of transporting large quantities of goods as well as international transport.
24. Poor quality of a coopetitor's product, which, above all, may cause difficulties in fulfilling obligations towards other enterprises. The low quality of products and services obtained has a negative impact on the production process as well as adversely affects the provision of further services and coordination of activities in an enterprise.
25. Changing the production process by a coopetitor, which may involve a change in the quality of manufactured products/services, available production capacities, as well as the timeliness of deliveries. They may affect the tightening and development of cooperation, or pose a significant threat to coopetition.
26. Changing a coopetitor's strategy, including his/her basic goals and development directions, which may imply a change in the coopetition profile of an enterprise and the need to revise the existing conditions of cooperation.
27. Changing the order size by a coopetitor, which may result in stock surpluses or difficulties in fulfilling an order due to limited production capacity. Both of these situations are not beneficial for an enterprise as they are often associated with extraordinary costs, which may worsen the effectiveness of cooperation.
28. Violation of the principles of ecology and corporate social responsibility (CSR), which affects an increase in fees, lack of trust, loss of corporate image.

A number of risk sources also occur at the last stage of the coopetition process, during which cooperation between coopetitors is terminated due to the achievement of the goal of coopetition, the lack of further cooperation or the occurrence of a conflict. Based on the conducted research, the threats occurring at the stage of coopetition dissolution are related to the possible loss of valuable resources of an enterprise, including both tangible and intangible goods (Figure 5).

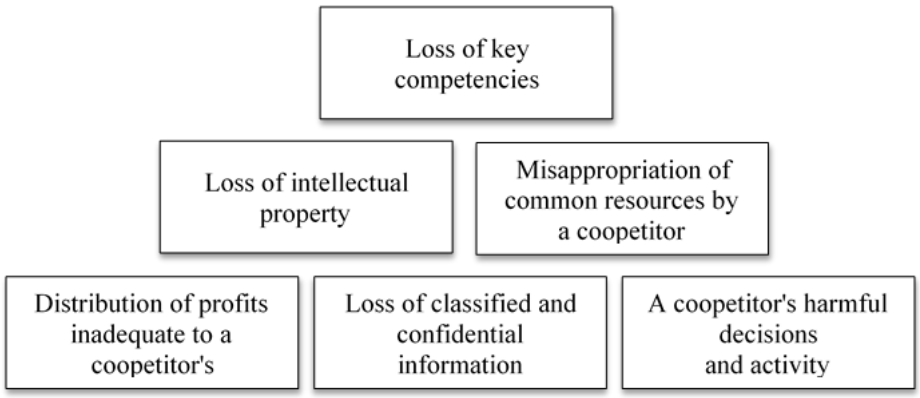

Fig. 5. Pyramid of risk sources occurring at the stage of dissolving coopetition

Source: own development based on data obtained from direct interviews and participant observation in selected logistics enterprises (Frąś, 2020).

At this point, it should be emphasised that the conducted empirical research showed that both the probability and the negative consequences of such events were positively correlated with the level of intensity of competitive cooperation. Note that along with the strengthening of coopetitive ties and an increase in the level of coopetitors' involvement, the risk of losing resources important to an enterprise in the event of the termination of competitive cooperation increases. The most important sources of risk occurring at this stage include:

1. Loss of key competencies of competitive cooperation, which is a particularly dangerous consequence of the breakdown of cooperation for an enterprise. Key competencies are tangible or intangible assets characterised by extremely low substitutability.
2. Loss of intellectual property of an enterprise and employees, i.e. copyrights, inventions, trademarks and utility and industrial models.
3. Misappropriation of common tangible and intangible resources by a coopetitor. It is worth noting that this threat concerns both the funds involved in the initial stages of cooperation and those obtained as part of the implementation of joint ventures as part of cooperation.
4. The inadequate – for the coopetitor system – distribution of profits generated jointly by coopetition partners as a result of involvement in coopetition and achieving the intended goals. It should be noted that fair distribution does not mean equal, but consistent with the previously concluded agreement, because the percentage of profits depends on many different determinants.
5. Loss of secret information. It should be remembered that with the strengthening of coopetition in the interorganizational network, the need for the exchange of information increases. In order to achieve the intended effects of cooperation, enterprises are forced to share sensitive data, the loss of which may have serious consequences for each party.
6. The acquisition of know-how by a coopetitor results in the loss of key solutions and innovations for production processes.

To sum up, it should be stated that on the basis of literature studies, own participatory observations and authors' experiences and direct interviews, a large group of risk sources occurring in the coopetition process between logistics enterprises was distinguished, which were then assessed by respondents in terms of the likelihood and effects of the occurrence as part of empirical research. However, in order to facilitate and structure further analysis leading to the development of the author's methodology for risk management in coopetition cooperation, the sources and types of risk were classified against the four stages of the coopetition process given earlier (Figure 1). Each of the distinguished phases/stages of coopetition was characterised by certain specific types of threats. In addition, it is worth emphasising that the detection of such a large number of potential threats was necessary and intentional. First of all, it was necessary to take into account the specificity of the

activities of logistics enterprises of various sizes, the subject of activity and the strategy of functioning (selection of a target group of enterprises). Hence, at the planning stage of the research on risk management in the process of enterprise cooperation, it was decided to use a non-random, purposive selection method for the group of enterprises), therefore it was possible to use factor analysis in the course of further work, which allowed for the reduction of a large number of primary variables, the importance of which is initially difficult to estimate, to several mega factors that most accurately explain the variability of the studied problem.

5. Conclusions

As a result of the analyses, the characteristics of coopetitive relations in the surveyed enterprises were presented, noting that they took on very diverse forms. When examining their specificity, the focus was primarily on the subject of exchange, the number of permanent coopetitors, the degree of the formalisation of coopetition and the intensity of that relation. The study clearly indicated that enterprises were characterised by a low degree of the formalisation of coopetition. In addition, a number of interesting conclusions were drawn:

- an increase in the size of an enterprise entails to a greater extent an increase in the number of coopetitors,
- an increase in the number of coopetitors is much more related to the stabilisation of cooperation than to its formalisation,
- an increase in the number of coopetitors clearly translates into an increase in the stability of cooperation, which, which interestingly, is associated with a reduction in the degree of the formalisation of coopetition with the recipients.

Based on the literature studies, own observations and experiences and direct interviews with logistics entrepreneurs, the authors distinguished risk sources occurring in the coopetition process between enterprises at the individual stages of cooperation. In order to facilitate and systematise further analyses aimed at identifying the probabilities and consequences of the isolated events, risk sources were classified in relation to the four stages of the coopetition process. It should be also emphasised that the detection of a large number of potential threats was necessary and intentional. First of all, it was necessary to take into account the specificity of the activities of logistics enterprises of various sizes, scope of logistics activities and operating strategies.

The results of the conducted empirical research allowed for a confirmation of the relation formed by logistics enterprises undertaking competitive cooperation in the field of supply and production logistics, which – while increasing their competitive advantage – at the same time exposed them to a greater risk of losing strategic resources, as demonstrated in the analysis.

It should also be noted that this paper featured an analysis of the specificity of coopetitive relations between enterprises and attempts to identify and classify risk sources occurring on the supplier-customer line in competitive cooperation. The obtained research results allowed for the fulfilment of the empirical objective of the work.

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