

Ensuring adequate supplier selection

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Description <p>Nowadays many companies start to realize the importance of dealing with reliable suppliers: selection of a right supplier contributes to the quality of a product/service, affecting the reputation of a buyer company.</p> <p>Current study was assigned by subsidiary organization of XXX company, based in Saint Petersburg, Russia. The main objectives of the study were both to identify selection criteria for potential suppliers the company could rely on also in the future and choose the most suitable supplier at the current tendering in accordance with the detected requirements.</p> <p>The study was based on the desk and qualitative research methods. Final supplier selection was made based on the SWOT analysis together with the supplier's criteria hierarchy pyramid.</p> <p>The individual requirements for the subsidiary organization of XXX Company were set: supplier's product specification was identified as the most important criterion as the company's business (oil and gas industry) requires unique high-tech raw material – even little discrepancy in physical/chemical properties can lead to a damage of the complete items (pipes).</p> <p>In accordance with this core factor four potential supplier companies were chosen for further research: company A (material MA), company B (material MB); company C (material MC), company D (material MD). The second two most important factors for the company are supplier's production capacity and supplier's reliability. Final selection – company A (material MA) - this supplier got the biggest amount of scores for the three core criteria mentioned above.</p> <p>As a result, the subsidiary organization of XXX has received individual range of requirements for a selection process of the most suitable supplier, which can be utilized also in the future. In addition, a new supplier of pipe isolation was identified, and suggestions for further supplier-buyer relationship development were proposed.</p>		
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Miscellaneous		

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Abbreviations

CJSC - Closed Joint Stock Company

COGS – Cost of Goods Sold

CSR - Corporate Social Responsibility

ERP - Enterprise Resource Planning

EU – European Union

ISI - Import Substitution Industrialization

JSC - Joint Stock Company

KPI - Key Performance Indicators

MRP - Material Requirements Planning

RFI - Request for Information

RFP - Request for Proposal

RFQ - Request for Quotation

RONA - Return on Net Assets

SCM - Supply Chain Management

SWOT analysis - Strengths, Weaknesses, Opportunities, and Threats analysis

1 Introduction

1.1 Motivation

The following study is assigned by the subsidiary organization of XXX Company, based in Saint Petersburg region in Russia. The company mainly operates in the piping technology field and provides further assistance in repairs.

The tasks and the directions of this research comply with my previous working experience and competences, and it is definitely a great opportunity to apply my knowledge and skills, gained during my studies and previous practical trainings, to a new challenging task.

The outcome of the thesis will be an efficient solution for the current matters of the company: choosing the most suitable supplier in accordance with the identified range of requirements. In addition, the company will be able to rely on this effective tool also in the future for conducting tendering and identifying the most appropriate suppliers, which will lead to the substantial decrease in transportation lead time and total costs of the company; and finally making a significant contribution to the performance of the organization.

1.2 Research objectives and questions

Nowadays there are substantial tensions in relationships between the host company and their current foreign supplier: the insight on them will be provided further in this study. In order to stabilize the performance of the company and to comply with rapid changes in economic situation in Russia, the company made a decision to terminate a contract with the current supplier and to conduct a tendering within the local market.

Thus, the main purpose of the study is to carry out an investigation and define unique range of requirements for the competent selection of new potential suppliers and pipe isolation raw materials in accordance with the company's operations, financial position, core values and strategies. These specifications will be utilized by the company both in the future and in the current case, described in this study.

Besides, a selection of the most suitable supplier in accordance with identified selection criteria and possible suggestions on further buyer-supplier relationship will be among of the outcomes of this thesis.

This way the following research questions were identified:

- How to define right specifications to ensure adequate supplier selection?
- What are the main selection criteria for new raw materials and potential suppliers the company could rely on also in the future when conducting tendering?
- What is the most suitable supplier at the current tendering in accordance with detected requirements, and what should be considered next to ensure successful development of the buyer-supplier relationship?

1.3 Importance of the thesis

The topic of the thesis is definitely of a current interest, as more and more companies start to realize the importance of dealing with reliable suppliers and their impact on businesses of the buyer companies. A selection of a right supplier have a substantial influence on the sustainability of the company as it brings a value to a company and also contributes to the quality of a product/service, affecting the reputation of a buyer company. In addition, effective purchasing is able to improve a financial position of a company through efficient sourcing and supplier relationship management.

Furthermore, one of the outcomes of this case study – substitution the current foreign supplier for a local one - can be also identified as a solution of import substitution industrialization for the company: nowadays ISI (Import Substitution Industrialization) tendency is becoming an ubiquitous matter in Russia due to the current economic situation, including consequences of the economic sanctions between EU (European Union) and Russian Federation. For instance, the companies dealing with local suppliers have much more possibilities to be chosen at the tenders for profitable state projects rather than the companies, whose businesses are oriented towards the foreign ones. Thus, many companies have to complete

reorganization, search for new partners and consider further ways of development. (Ромашева, Шадрина 2014, 294.)

To sum up, through the research and outcomes of this case study the host company will have an opportunity to conduct a beneficial enhancement and become more resistant to the current challenging economic situation. In addition, the company will be able to utilize this accomplished material also in the future when conducting a tendering and evaluation of the suppliers.

1.4 Limitations

The research of this case study is carried out within the Russian local chemical industry market and focused exclusively on primary stages of the procurement process – defining needs of the company, setting up selection criteria for the raw materials, identifying potential supplier selection criteria, tendering process, making a selection in accordance with detected requirements. Suggestions on what should be considered next will be added as supplements in this study. However, the study does not cover such further stages as contracting, stock level follow up, transportation, supplier evaluation in details.

The host company also requires certain confidence regarding the names of their current supplier company and potential suppliers in accordance with non-disclosure agreement.

2 Methodology

The following thesis is identified as a case study, as it is based on real life matters and requires a solution, which can be applied practically. For the most efficient outcome the study relies on several research methods: desk research methods, qualitative research methods (mainly interviews and negotiations) and SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats analysis).

The desk research methods generate the foundation of this study, providing theoretical basis and ensuring the right direction of the research. Qualitative research methods help to obtain a deeper understanding on the current situation

and acquire information on business values, strengths and weaknesses of potential suppliers, which are required for definition of supplier selection criteria. In addition, all the data acquired by the qualitative analysis is an essential component of the further SWOT analysis. SWOT matrix method supports the evaluation process of all suppliers and contributed to the final decision making.

Desk research

Desk research is one of the most common preliminary methods of any phenomenon research. The key feature of this method is acquisition of data from available resources with an easy access.

There are two main types of desk research:

- Internal research is the starting point of research for any needs of an organization. The most general sources of information are annual reports, technical documentation on properties of the products, statistics on the interruptions in the production process, etc. The main advantages of this research are an easy access to the resources of the information, high pace of processing the data, relatively low costs and a high rate of reliability.
- External research is acquisition of data from various sources outside an organization: for instance, from the Internet, mass media, scientific publications and literature, reports of the statistics and state agencies.

To sum up, desk research methods provide mainly with general information, therefore further investigation is required. It is also important to mention, that even if this kind of research is characterized by low costs and a high data collection rate, some sources, especially external ones, might be out of date or include controversial judgments. (Kazakov 2010.)

Qualitative research

Qualitative analysis does not focus on statistics or numeric data, but mainly relies on interpretation of empirical data, providing clear understanding on a phenomenon and explanation on further ways of its development. The following methods are also able to define the reasons, attitudes, preferences, values, satisfaction rate of the

product, service or any phenomenon. In addition, qualitative methods can be effectively applied in any cases, when there is a necessity to study the decision-making process in purchasing; to provide an in-depth evaluation on the current situation; to set strategies and their implementation plan; to select the most effective concepts. (Ticehurst, Veal 2000, 94.)

The most widely used methods of qualitative research are listed below:

- interviews
- formal and semi-formal negotiations
- group discussions
- experiments
- simulations and role-plays
- observations

In this case study the interview and negotiations research methods have the biggest impact on the final outcome, as they are responsible for the exclusive data acquisition: for instance, production capabilities of potential supplier companies and their further business proposals towards the buyer company. This data is necessary for the supplier selection criteria definition and further decision-making process. (Simons 2009, 43.)

SWOT analysis

The performance of any company depends on how efficiently it is able to respond to external impacts, and SWOT analysis is one of the most common methods which is able to estimate both internal and external factors.

SWOT analysis is an essential element of research, it helps to estimate strengths and capabilities, to determine precisely what points require more attention, and what factors can be leaved behind. In addition, this method is able to identify whether any critical factors can be controlled by the company. (SWOT-анализ: правила и примеры составления [SWOT analysis: specification and examples], 2008.)

In other words, the SWOT analysis is an analysis of the strengths and weaknesses of an organization as well as the opportunities and threats from the external environment. Figure 1 illustrates a basic SWOT matrix table which helps to sort out the data necessary for the further research.

Strengths (positive)	Weaknesses (negative)
- - -	- - -
Opportunities (positive)	Threats (negative)
- - - -	- - -

Figure 1. SWOT matrix (adapted from Фатхутдинов 2008, 105.)

After the strengths, weaknesses, threats and opportunities are found out, they have to be rated in accordance with a scale, which commonly evaluate the phase or probability of the event. Evaluation scale can vary depending on the company's business field and set goals of the research. (SWOT-анализ: правила и примеры составления [SWOT analysis: specification and examples], 2008.)

3 Theoretical basis

3.1 Purchasing as one of the key activities of a company

3.1.1 Purchasing VS Procurement

Nowadays utilization of equivalent words is a widely spread tendency in various business sectors, and supply chain management is not an exception. (Закупки VS Покупки: в чем разница? [Procurement VS Purchasing: what is the difference?] 2017.)

Procurement and purchasing are ones of the key activities in the supply chain flow. However, wrong interpretations of these terms still occur within the organizations: many people assume that “procurement” and “purchasing” are the same functions, as both of them are tightly related to a buying process.

D. Waters defines purchasing process as the function responsible for buying any materials and goods needed by an organization, while procurement is responsible for acquiring any materials needed by an organization. (Waters 2009, 304.)

The key point of purchasing management is defining the best solutions and conditions of dealing with external resources of a company, so all goods, services and knowledge could be able to bring a value to a company, support and secure all internal operations, and contribute to the overall performance of a company. In other words, purchasing involves all activities, which are followed by the invoices from the external parties, and the final outcome of any purchasing process can be identified as an actual buying. (Weele 2014, 3.)

Procurement is a term of a broader meaning, which suggests a wider range of activities, required for obtaining a product from a supplier company to its final spot. In addition, procurement describes various kinds of acquisition: purchasing, renting, contractual arrangement, borrowing, exchange. (Waters 2009, 304.)

The figure 2 provides a clear understanding on the whole purchasing process model and the key activities in the network between the internal customer (a buyer company) and a supplier. Purchasing and procurement activities are tightly interrelated; however, such functions as management of the inventory, quality control, scheduling and planning of the material are not included into the responsibility of the purchasing function. Procurement, as being a more general term, comprises all activities of the purchasing function together with storing, forwarding activities, customs documentation flow operations, further inspections and assurances. (Weele 2014, 10.)

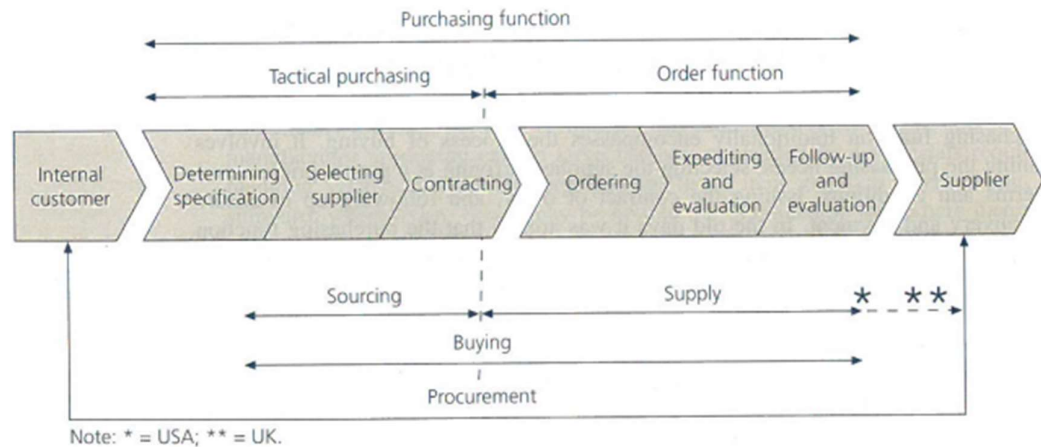


Figure 2. Purchasing process model and some related concepts (Weele 2014, 8.)

3.1.2 Role of purchasing in a business of a company

Nowadays as business becoming more and more rival, many companies are looking for the most efficient solutions, which could correspond to the tough competitive environment. And more and more companies start to realize that efficient purchasing and SCM (Supply Chain Management) are those key factors, which drive the whole business and make a substantial contribution to the both bottom and top lines of a company. (Weele 2014, 3.)

The structural research of cost shares within various industries helped to find out that the biggest share of the COGS or sales revenues belongs to the services or materials, purchased by a company. In many manufacturing companies the average share of purchasing costs can comprise up to 50% of the turnover. Thus, constructive purchasing management is able to bring in an enormous potential to the business of a company. (Weele 2014, 12.)

Reasonable purchasing solutions are able to make a positive contribution to the financial position of a company in terms of RONA. For example, there are many possibilities to improve sales margin of a company by reduction of materials costs through assuring effective tendering, decreasing the amount of the suppliers, searching for substitute services and products. (Weele 2014, 13)

Quality of a product or a service is also under impact of purchasing. Nowadays many companies are trying to concentrate on their primary specialization, increasing the

amount of outsourced components and services. In many cases supplied products are a base of the buyer company's final production/service outcome, and poor quality of supplier materials affects the reputation of a buyer company. The purchasing activities are able to ensure the most suitable suppliers and further sustainable relationship between all parties involved. (Monczka, Handfield, Giunipero, Patterson 2009, 7.)

Purchasing is able to bring a significant add value to a company and improve designs of products or processes trough organizing cooperation between suppliers and engineers at the early stages of production process. It was investigated that companies, in which suppliers are involved at the development stages, gain up to 20% reduction in time, needed for a product development, and 20% reduction in costs of materials. (Monczka, Handfield, Giunipero, Patterson 2009, 7.)

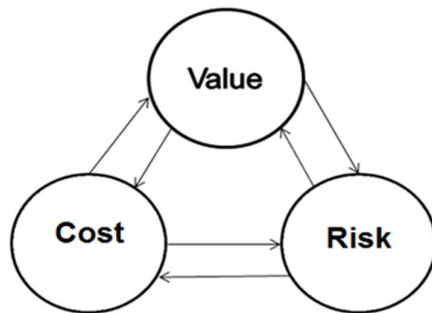


Figure 3. Managing the purchasing agenda: balancing cost-risk-value (adapted from Weele 2014, 55.)

Figure 3 shows that cost, risk and value are tightly related in the business of any company, and efficient balancing of these factors is a major function of the purchasing process. When a company is making a decision regarding any purchases or cooperation with new suppliers, it has to answer several questions in order to take further steps and ensure successful purchasing:

- How much a required product/service valuable for the company (what its position at the company's business hierarchy; what value will the acquisition of a product/service bring to the buyer company?)

- Does the cost comply with the potential value of this product/ service for the company and possible risks?
- What kind of risks may (design faults, capacity planning, material acquisition, delays in production, compliance with the law & customs, etc) and how they respond to the value and cost of a product/service? (Weele 2014, 55.)

To sum up, effective purchasing activities are able to maintain a long-term competitiveness and stable financial position of a company: sustainable development of a company contributes to the reputation and brand recognition. Purchasing strategies help to define new ways for development and ensure high quality of products/service and the most reasonable delivery and payment conditions. Purchasing expands the network of internal and external parties (various stakeholders, customers, suppliers) by uncovering new potential market niches and sources. (Inman, N.d.)

In addition to the mentioned above statements, efficient purchasing activities are able to:

- utilize sources in a most effective way
- stimulate product consumption
- set the reasonable costs and lead time
- control supply chain and logistics activities
- estimate possible risks and create strategies for their prevention (Inman, N.d.)

3.1.3 Purchasing process

The purchasing process (together with some procurement aspects) consists mainly of the following stages:

- Determination of the material needs and further purchasing specifications
- Selection of suppliers
- Processing orders; order follow up
- Receiving materials/services

- Invoicing (payment terms vary: for example, in case of advance payment term the invoice is sent before the material leaves the supplier's site)
- Further supplier-buyer relationship management and regular supplier evaluation and quality control

In a more detailed perspective these steps of purchasing procedure also include some sub activities: for instance, supplier evaluation and checking the references; ensuring the absence of monopoly; contracting; establishing long-term motivation for the partner companies; preparation of additional documents (Certificate of Origin, Compliance Certificate). (Weele 2014, 57.)

Determination of the material needs and further purchasing specifications

These activities are commonly based on MRP (Material Requirements Planning), when the requirements for the materials or services are defined in terms of necessary quantity and quality. This process may slightly vary depending on the following criteria:

- Stock fulfillment or rebuy (a buyer company have already been dealing with current supplier and its products/services)
- Modified purchase (a buyer company is familiar either with a supplier or its product/service)
- New purchase (a buyer company has never been dealing with a supplier and has never acquired its products/services) (Бизнес-процесс закупки [Purchasing business process] N.d.)

Current study focuses more on the acquisition of a new material from a totally new supplier, thus the further description of the purchasing process includes stages which are valid for a totally new purchase.

At this stage an application for a material is executed in accordance with the required material specifications. An application for the material can be defined as an internal message to the purchasing department, which specifies data on required group of materials, quantity and possible terms of delivery. Commonly a contractor, who prepared and issued the application for the material, coordinates its content with the

head of the functional department. If the application requires changes, further modifications, registration and approval of the application for the material are conducted. (Бизнес-процесс закупки [Purchasing business process] N.d.)

Selection of suppliers

Selection of the suppliers commonly consists of the following main stages:

- Tendering announcement
- Commercial offers acquisition from potential suppliers
- Scanning the received proposals
- Selection of the most suitable suppliers

When a company defines a necessity of certain material or service, it starts a sourcing process. Sourcing processes can vary depending on the company's needs and current business state. The most common practice is making a RFP (RFQ - Request for Quotation): a company announces that it is eager to purchase a material or a service. In this case a company specifies concrete criteria for a required product/service in order to make the selection process more smooth and competitive. In some cases, when a buyer company has already identified potential suppliers, RFI (RFI - Request for Information) is usually made: defined suppliers are invited to provide any information on their products and services (price, availability at stock, delivery lead time), financial stability, business core values and strategy. (Weele 2014, 11.)

RFI is commonly followed by RFQ: selected suppliers make more detailed proposals, when all the specifications are already identified. At this stage commercial proposal usually includes desired financial terms and conditions, and the price can be defined as a main criterion for further selection. (Monczka, Handfield, Giunipero, Patterson 2009, 55.)

Afterwards the most suitable suppliers are selected. The decisions are based on the evaluation criteria. These criteria can slightly vary within different industries, however, the core ones are quality, price, financial stability, innovation and CSR

(Corporate Social Responsibility). (Monczka, Handfield, Giunipero, Patterson 2009, 246.)

Processing orders; order follow up

Nowadays many manufacturing companies utilize ERP (Enterprise Resource Planning) systems, which simplify an ordering process significantly. Though order processes still vary within the industries, depending on what kind of service or product is required, what kind of contract is between the parties involved, how often the orders should be placed. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

General order process is the following:

- Order preparation
- Check for long-term contracts with the supplier
- Execution or renewal of the contract with the supplier
- Placing an order
- Sending an order to the selected supplier
- Order follow up
- Registration of the sending of the order

When stocks are reviewed and a need for a product/service is defined, order preparation activities take place. First of all, an electronic application for a product/service acquisition is made. An application should include data on an identification number of the order; the date the order was sent; brief description of the ordered material/service; preferred delivery terms, conditions and timeframe. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

In addition, it is essential to ensure the compliance of all activities with the terms of the existing contracts. In case of the upcoming expiration of the contract validity, the procedure of extension (or termination) takes place. After an order is registered, it is sent to a supplier. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

When a supplier company receives an order, it prepares and sends an invoice to a buyer company. An invoice determines the terms of a contract and purchasing procedure contains the following data: identification number of the invoice; date of the invoice dispatch; specifications on ordered material/service; amount of the material; terms of payment in accordance with the contract; account details; currency details. As soon as all payment obligations are fulfilled by a buyer company, a supplier receives a receipt of a notice. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

Receiving materials/services

At this stage the material is shipped from the supplier's warehouse. In accordance with the terms of delivery under the contract, the company accepts the cargo (material) as it enters the place specified in the contract. When material is received, the customer checks the quantity and quality of the goods. In case of loss or wrong/damaged material received, the customer has to make a request to the supplier company and to start a claim procedure. (Бузукова 2009, 43.)

Invoicing

At this stage, financial operations are checked and fulfilled in accordance with the contract. Tax deductions, customs duties and other costs related to this business process are estimated. The invoicing process may vary depending on the payment term in the contract. For example, in case of advance payment the customer has to pay before the goods are shipped; in case of bank guarantee or cash against documents terms of payment the sub supplier have to prepare necessary documents (commercial invoice, shipping invoice) and send them to the customer's bank: the order will be shipped only after the customer receives the documents at the bank and pays the invoice. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

Further regular supplier evaluation and quality control are required to ensure the supplier-buyer relationship development. (Бизнес-процесс закупки [Purchasing business process]. N.d.)

3.1.4 Trends in purchasing

Globalization and rapid development of information technology have led to changes in purchasing practices. Organizations continue reducing amount of staff and hierarchical structures, so nowadays a purchasing manager has constantly to obtain new skills as the field of work expands. In addition, technical knowledge matters significantly in procurement. In high-tech companies a good technical background is required from a purchasing manager; for example, a drug manufacturer may require from procurement professionals also some knowledge of such fields as biology, medicine or chemistry. (Перспективные тренды в управлении закупками [New trends in procurement management] 2013.)

The rest most significant tendencies are listed below.

1. Growing attention to managing the overall quality and customer satisfaction
Procurement professionals are responsible for quality management and meeting the needs of the organization's customers to ensure the quality of goods and services.

2. Purchase of systems, services and products
More and more suppliers start to offer additional services, for example, storage, accounting, disposal, thus their activities are not limited to production only. This increases the value of the supplier and attracts new customers.

3. Strategic costs management
Cost management starts with the involvement of a supplier in early design activities and continues throughout the analysis of cost factors and overall cost reduction strategy within supply chain. Such actions require cross-functional support, the involvement of suppliers and professional cost management specialists who are able to lead the implementation of the initiatives.

4. Design engineers, procurement specialists and suppliers win if they combine their efforts
Workers of these fields start to understand the value of their early stage partnership; they develop communication and collaboration strategies, so that together they receive the maximum outcome.

5. Long-term contracts

The average validity of many contracts increases to 5, 10, 15 years or even more in some cases.

6. New technologies

Handling orders, planning, scheduling, developing new products – nowadays all activities are done with support of various application tools and systems, which are constantly being improved.

7. Global Supply Management

Purchasing managers have obtained global approach when looking for new sources and supplies. Additional reduction or total removal of trade barriers contributes to the globalization of all industries. (Перспективные тренды в управлении закупками [New trends in procurement management] 2013.)

8. Maintenance and repair operations are handled by a third party

Purchase of goods for maintenance and repair involves the implementation of a large number of transactions, although final value is commonly small and it is very difficult to achieve any higher values. The contractor can deal with those tasks efficiently increasing the workload of purchasing team at the same time.

9. Proactive sourcing of fully finished goods and services

In the past sourcing activities were carried out mainly to ensure short-term satisfaction of the business needs. Now many companies have become more active in acquiring goods and services, for example, legal advice services, professional training of personnel, internal audit. Successful implementation of outsourcing helps the companies to gain a competitive advantage.

10. Focus on closer relationships with suppliers within local area

Even though global sourcing is still a leading tendency, many companies start to gain advantages of dealing with suppliers within local area: such cooperation guarantee low cost transition costs. In addition, it is one of the most efficient ways to support local business.

11. Involvement of supply services in non-traditional purchases.

Nowadays the companies have begun to understand how useful it is to involve experienced procurement specialists in such uncommon areas as insurance, marketing expenses, business trips, real estate transactions, hiring temporary labor and salary planning: procurement professionals are able to ensure the cost-value balance in expenses and find new ways for development.

12. Environmental aspects of supply chain

Many companies demand compliance with environmental standards and strategies for sustainable development from potential suppliers. (Перспективные тренды в управлении закупками [New trends in procurement management] 2013.)

3.2 Supplier selection

3.2.1 Supplier company definition and its impact on the buyer company business

A supplier, also called a vendor, is a person or any legal entity (organization, enterprise, institution) which provides goods and service to customers. All activities conducted by a supplier company should comply with the terms of the contract.

Certain knowledge, consultations, any managerial services, raw materials, spare parts, workforce, etc. are usually suggested under goods and services. (Supplier, N.d.)

In many cases suppliers have a huge impact on buyer companies, even making buyer companies totally dependent on supplier's services and products. Therefore, when choosing suppliers, it is important to study their business activities and overall potential in depth: this would allow building such cooperation with suppliers, which would benefit the organization at most. (Бузюкова 2009, 89)

The examples listed below illustrate the roles of suppliers in a business of buyer companies:

1. The industry consumes a significant part of the products produced by the suppliers and therefore any change in prices for this product affects the final cost of the product.

2. The supplied products play an important role in the final product manufactured by the consumer. This circumstance strengthens the dependence of the consumer on the supplier: in case of any delays/poor quality of supplied goods/services the reputation of the buyer company would be damaged.

3. Lack of effective substitutes for the supplied products decreases the level of requirements for the required products criteria: otherwise a buyer company would face difficulties in finding suppliers. (Бузукова 2009, 93.)

3.2.2 Supplier selection criteria

As it was mentioned above, in many cases suppliers are critical to the business of a buyer company. In order to find the most suitable suppliers, selection criteria should be established depending on the buyer company's needs and priorities. (Бузукова 2009, 105.)

There are core things that need to be done in order to choose a good supplier:

1. Estimate supplier's opportunities and reliability

First of all, a buyer company should identify its needs (how many products per day \ week \ month \ year are required). Then it is necessary to make sure that the supplier the buyer company is considering can meet these needs.

In addition, the buyer has to find out the reliability of the vendor. Visits to the potential supplier's site are able to provide the customer with in-sight understanding how the business is done. Other best ways to do this are to obtain a financial report form potential supplier and get feedback from other companies dealing with this supplier.

In some cases (for example, in pharmaceutical industry) certifications that confirm the compliance of the goods with international standards should be requested. Potential customer has a right to ask a potential supplier to provide samples of material for conducting tests. (Бузукова 2009, 110.)

2. Evaluate the quality of a product/service

Quality of a product/service produced/provided by different suppliers can vary significantly. It goes without saying that the quality affects final profit and reputation of the company significantly. Before making an agreement, it is reasonable to ask a supplier for product samples and get familiar with the service. If samples can't be obtained, a small trial amount of products (or short-term service) should be acquired: this would help to understand if the products/ services meet the expectations of a buyer company. (Бузюкова 2009, 111.)

3. Define payment terms and price suitability

Significant price doesn't guarantee the excellence of the products/services received as well as very cheap price can't be promising due to the potential delays and poor quality. Thus, it is essential to understand what is behind the price and never make final choice relying only on very low price.

Different providers offer different payment terms. Therefore, before signing a contract, the terms of payments have to be defined: they can vary depending on the company's financial reputation, quantity of acquired goods/services, regularity of purchase orders, supplier-buyer relationship duration. (Бузюкова 2009, 112.)

4. Check warranty issues with a potential supplier

Various warranty subjects have to be discussed carefully before making a deal with a potential supplier: it can be the questions related to the return/replacement of goods, penalty payments in case of late deliveries or poor quality of a service, time for the processing claims, etc.

5. Consider the most reasonable price

It goes without saying that cheap purchase price is always attractive. However, it is important to define the most advantageous combination of price and quality and to estimate the risks and warranty included into this price.

In addition, various discounts can be negotiated: many suppliers are ready to offer a discount in case of significant volumes of goods ordered from them.

6. Evaluate a supplier's location

A supplier's location can be crucial in many cases: it affects the speed of deliveries and shipping costs. However, many supplier companies own (or rent) warehousing facilities indifferent regions of a country, where ready material can be stored and later delivered straightly to a customer when the order is made. (Бузюкова 2009, 113.)

Table 1 summarizes the aspects mentioned above. The following options discussed during negotiations with a potential supplier help to define the suitability of a potential supplier in a most precise way.

Table 1. Summary of supplier selection criteria

the mission and vision of the company and of a potential supplier
a brief overview of the current business situation
a supplier's experience and background (verification of it should be conducted also afterwards)
requirements of the service needed and a clear specification of the goals which need to be achieved
preferred timeframe for the desired results
what a supplier is capable to offer and how it is responding to changes
key activities to contribute to the goal, possible strategies and their implementation
responsibilities, rights, obligations of both parties involved (Service level agreement)
the way the information flow and interactions channels will be established
metrics of the supplier performance evaluation (KPI); how often the assessments will be held
qualifications and skills of the supplier company's employees who will deal directly with the task

price and payment terms
duration of the possible contract
legal aspects (incl. intellectual property law regarding a trade secret)
possible risks and the ways to manage them
warranty conditions and penalty clauses.

4 XXX company and current situation analysis

The subsidiary company of XXX organization confronted the first challenges when the first mutual economic sanctions were introduced by the government of Russian Federation and European Union in 2014-2017. This happening had a significant negative influence on the considerable amount of companies and organizations, both international and domestic ones. It especially affected the medium- and large-sized manufacturing enterprises, which operations also included export and import activities. (Экономические санкции против России: причины, анализ, списки, последствия [Economic sanctions against Russia: causes, analysis, consequences] 2014.)

The host company provides its services and products both in Russia and abroad, and it has a large network of stakeholders. In addition, suppliers of major services and materials for the host company are of foreign origin, and their production sites are located beyond Russian Federation. Thus, the company had to take on new challenges when the economic sanctions were introduced. Through the interviews with the employees and observing financial reports of the company, the key obstacles and their negative consequences were defined:

- Delivery delays due to the more detailed verifications at the border: the border control was enhanced to prevent penetration of “under sanctions” goods to Russia (Безгин, Бугаев, Морозова 2014.)

- Supplier services and raw materials costs were doubled due to the euro/ruble currency difference (Mirzayev 2015.)
- Inventory was increased
- Interruptions occurred in production
- Drastic drop in demand was defined
- The company had to increase the costs of their final goods and services
- Contracts with some major clients were terminated
- Amount of employees were reduced
- Due to the impaired position within the market and more efficient competitors, the company could not take the lead in the state tendering

After careful consideration the host company made a decision to conduct a tendering process and find out a new supplier company for one of the major raw materials in order to improve its performance and become more competitive. It was agreed to focus on the local market, so the host company could balance the costs in more positive way and take part in profitable state projects.

5 Research and results

5.1 Defining suppliers and material

As a result of conducted research, the following companies were identified as the most appropriate ones in accordance with the primary criteria:

Table 2. Potential supplier companies, their products and contact details

Product	Manufacturing	Website	Contact person	E-mail
material MA	company A	X	X	X
material MB	company B	X	X	X

material MC	company C	X	X	X
material MD	company D	X	X	X

All further data on chemical and physical specifications of the products, production capacities, material compliance with Russian and European standards, financial performance were acquired during negotiations with the potential supplier companies.

Company A: material MA

Table 3. Company A: material MA

Primary location	Dealer	Website	Contact information
X	X	X	X

Material MA is physically cross-linked closed-cell foam produced by continuous process in 4 stages: mixing, extrusion, crosslinking and vertical foaming. Physically cross-linked foam has very smooth surface, great thermal stability, durability and improved mechanical properties. Thermal conductivity factor is 0,036 W/m°C at density 33 kg/m³, and material's water absorption is equal to zero. Material MA is resistant to many major chemicals including oil, petrol, solvents etc. Its service life time is more than 30 years. Material MA can be in contact with human skin and food according to Russian state hygienic standards.

Material MA is available as rolls (thickness 0.8 – 15mm, width 0.8 – 1.5m, length up to 600m) and sheets (thickness 15 – 50 mm, width 1m and 1.4m, length 2m).

However, material of any thickness and width can be produced.

Table 4. Physical properties of material MA

Density	29 ... 200 kg/m ³					
Thickness	0.5 ... 5.5 mm (single layer); multi-layer 50 mm (layers of any thickness can be produced)					
Width	2000 mm (negotiable)					
Temperature range	-60°C...+100°C					
Colors	red, blue, green, yellow, orange, khaki, dark-grey etc					
Tensile strength, MPa						
Lengthwise	1.90	0.90	0.65	0.53	0.33	0.30
Crosswise	1.30	0.74	0.47	0.36	0.21	0.20
Tensile elongation, %						
Lengthwise	250	220	190	160	130	125
Crosswise	210	170	150	130	100	100
Shrinkage under heating (70°C, 22h), %						
Lengthwise	0.54	0.83	1.03	1.43	1.45	-
Crosswise	0.10	0.20	0.30	0.40	0.40	-
Compressive strength (deflection 25%), MPa	0.33	0.064	0.06	0.054	0.035	0.032
Thermal conductivity λ_0 , W/(m*°C)	-	-	0.038	-	0.036	-
Water absorption (96 h)	<1% by volume					
Water Vapor diffusion factor, mg/(m*h*Pa)	-	-	-	-	0.001	0.001
Dynamic modulus of elasticity, MPa						
at load 2000 KPa	-	-	-	-	0.036	-
at load 5000 KPa	-	-	-	-	0.063	-

The following material options are available on customer request:

- Surface decoration (marking)
- Flame resistant cover
- Special chemical composition for adhesive coating

Company B: material MB

Table 5. Company B: material «MB

Primary location	Dealer	Website	Contact information
X	X	X	X

Material MB - is a material based on a gray foam polyethylene with closed cell structure (physically cross-linked). This material complies with the following international certifications standards: ISO 9001:2000 (2005), ISO 9001:2008 (2014).

Table 6. Physical properties of material MB

Density	25 kg/m ³
Thermal conductivity λ_0 , W/(m*°C)	0.039 / 0.041
Temperature range	from -40°C to +95°C
Water vapor permeability coefficient	0.001
Tensile strength at break, MPa	length / width of 0.20 / 0.10
Lifetime	not less than 20-25 years
Thickness, mm	10, 13, 15 (rolls of limited thickness can be produced)
Width, mm	1200
Color	Gray

Company C: material MC

Table 7. Company C: material MC

Primary location	Dealer	Website	Contact information
X	X	X	X

International certifications standards: ISO 9001 – 2011 (ISO 9001:2008); the products meet the standard which complies with European standard EN 14313 «Thermal insulation products for building equipment and industrial installation – Factory made polyethylene foam (PEF) products – Specification». In addition, this material complies with Russian quality standard GOST R EN 1609, GOST 7076, TR (technical regulations) No. 123-FZ (Federal Law) dated 22.07.2009, GOST 30244

Material MC is a closed cellular structure material. Material MC rolls are characterized by low heat conductivity, high moisture and vapor protection, flexibility and surface durability, high energy efficiency, durability, sanitary, ecological safety and high resistance to aggressive construction materials – cement, concrete, gypsum, and lime. The rest physical properties are mentioned in table 8.

Table 8. Physical properties of material MC

Density	30 – 35 kg/m ³		
Thickness	up to 0,2m		
Colors	material of any color can be produced		
Maximum temperature, °C	+95		
Thermal Conductivity, λ W/(m·°C)	at 20°C	at 30°C	at 40°C
	0.039	0.041	0.043
Water vapor diffusion resistance, μ	$\geq 3\ 000$		
Water absorption, kg/m ²	0.095		

Company D : material MD

Table 9. Company D: material MD

Primary location	Dealer	Website	Contact information
X	X	X	X

Material MD – material based on extruded polyethylene foam (non-cross-linked), just produced as white rolls (thickness 1-10mm, width from 1.05m, length 10-100m) and duplicated mats (thickness up to 60mm and length 2m); its density 20-25 kg/m³.

Table 10 contains information on basic properties of this material.

The material is made according to Russian quality standard TY 5767-002-72474985-2004 and its compliance certificates are № POCC RU.AГ39.H01033 certificate and Sanitary Epidemiological Service expert report № 1078 from 04.07.2013.

Table 10. Physical properties of material MD

Density	20 - 25 kg / m ³
Water absorption,% by volume	less than 1%
Color	White

5.2 Selection criteria definition

Figure 4 illustrates main selection criteria for new raw materials and potential suppliers the company could rely on also in the future when conducting tendering. The most important selection criteria are located at the bottom of the pyramid, while the least substantial – in the upper section.

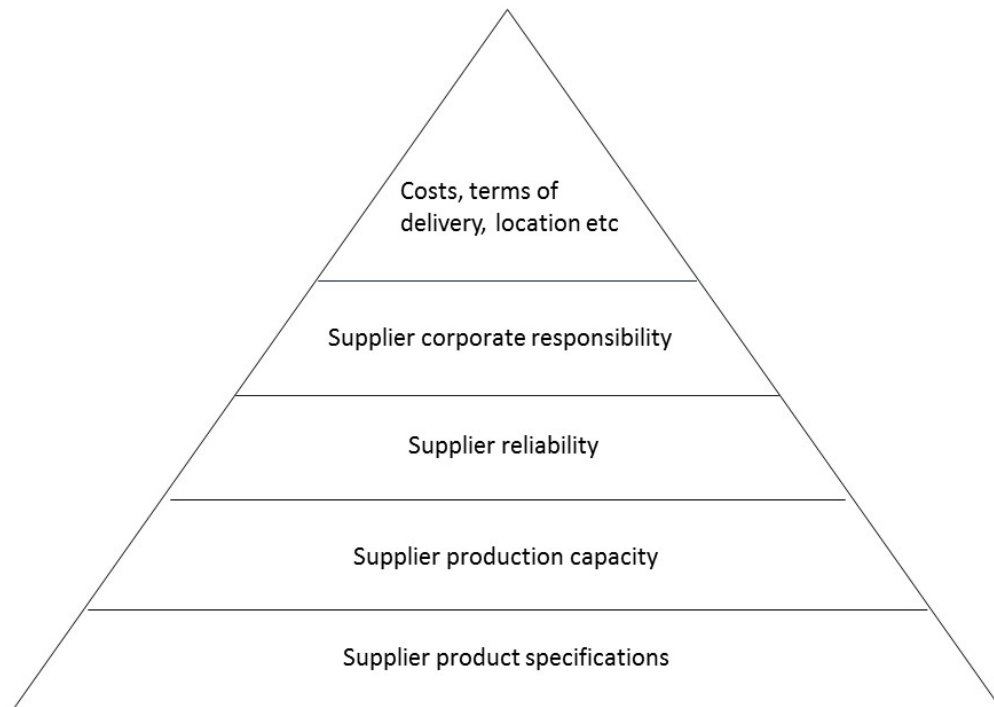


Figure 4. Supplier selection criteria for the host company

The structure of the following figure is based on Maslow's hierarchy of needs – American psychologist A. Maslow sorted all humans' needs in accordance with their importance and finalized them as a pyramid structure. Maslow provided this explanation of the pyramid construction: a person can't satisfy the needs of upper level if more fundamental needs (located at the bottom of the pyramid) are not covered yet. (Maslow's hierarchy of needs. 2010.)

This kind of structure is suitable for the current case as it helps to organize all supplier criteria from most fundamental to less significant in accordance with the needs of the buyer company.

The keys selection criteria for the company – the bottom level of the pyramid – is product specifications: if the material offered by a supplier company does not have necessary chemical and physical features, the host company will not be able to use it in own production.

The second important issue is the supplier's production capacity – the host company requires unique measures and significant amounts of materials, thus, a supplier

company should have a big potential for expanding production. Due to the intense competition at the Russian market a potential supplier should be able to establish a reasonable production plan which could be implemented within a reasonable timeframe and be flexible to the market changes.

Besides, a reliability factor needs to be considered. If any failures occur, the host company reputation might be harmed and the consumers' satisfaction might deteriorate. It might even lead to a certain financial loss. That is the reason why a supplier should have a clear positive background (which can be explored through the analysis of the supplier's portfolio, references, corporate social responsibility policies, financial position).

One of the key selection criteria regarding this case is the corporate responsibility of a supplier company; the way a supplier's vision complies with the mission and vision of the host company. Understanding the buyer company's business and values is one of the core issues for a supplier when finding out and offering the most optimal solution/service. It has also a significant impact on maintaining efficient relationship and collaboration between both parties which are important for the long-term competence, innovation and profitability.

In addition, the price is one of the driving aspects for making a final decision, and a properly made contract can definitely bring a significant value to the company. However, the lowest price does not often suggest the best service, so the price factor should be taken into account in combination with the possible value for the company and all the criteria mentioned above. The host company is a company of a stable financial position, thus, it always initially focuses on the quality of service/material offered, not a price.

5.3 SWOT analysis of potential supplier companies

The listed below SWOT analysis (tables 11-14) of the potential supplier companies focuses on strengths, weaknesses, opportunities and threats in terms of suitability of these companies' raw materials, production capacity, values, financial stability towards the host buyer company and in perspective of possible partnership advantages for both parties.

Table 11. SWOT analysis of company A

Company A: material MA	
Strengths	Weaknesses
<ul style="list-style-type: none"> - material MA is physically cross-linked (PEX) material - large-sized company with enormous operational spaces - the company operates for many decades and has a considerable experience in production - the company has reliable references from current and previous customers - the company has many big distribution centers in different regions of Russia, including Saint Petersburg (thus the host company would need to organize transportation just from a distributor center in Saint Petersburg to the own factory in Saint Petersburg region) - material is available in various colors and thicknesses (in addition, some extra services for material's surface are available) 	<ul style="list-style-type: none"> - the primary factory location is in Izhevsk, Russia, which is far away from the factory of the subsidiary company of XXX - according to the commercial offer of the company costs are high; further discounts are available only in case of production volume increase of the host company - company A as a large sized company has a significant amount of major clients with bigger production capacities, thus it would take time for the host company to become one of major customers
Opportunities	Threats
<ul style="list-style-type: none"> - together with the host company some of the core values of the company A are 	<ul style="list-style-type: none"> - the host company requires rolls of various thicknesses; even if the

<p>constant innovations in production technologies and ecological awareness: thus, both companies could bring in something new each other's business</p> <ul style="list-style-type: none"> - the host company regularly takes part in profitable state tenders and projects: this could also contribute to the image of the supplier company 	<p>production facilities have a big potential, unique measures are arranged only in case of high stable volumes as it takes certain time and significant expenses: in case of drops in production of the host company, the supplier company will require to pay the penalty</p>
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Table 12. SWOT analysis of company D

Company D: material MD	
Strengths	Weaknesses
<ul style="list-style-type: none"> - the factory is located in Saint Petersburg region (as well as the host company) - the factory offers her storage spaces for free in case of significant orders - the host company would be a major customer for this potential supplier company (thus, the supplier company would be interested in efficient cooperation in order not to lose such a substantial client) - the commercial proposal of the company D is very beneficial from the financial point of view (low prices and advantageous payment conditions) 	<ul style="list-style-type: none"> - the offered material is non cross-linked polyethylene (it can be still used by the host company, but cross-linked material has a longer life cycle) - the company is able to produce material of limited thickness values: in case the host company requires bigger thickness, the supplier company will have to do outsourcing - this material is available only in white color (the host company would prefer to have at least a couple of various colors)
Opportunities	Threats

<p>- potential partnership with the large-sized host company would contribute to the reputation and development of the middle-sized potential supplier company</p> <p>- the host company regularly takes part in profitable state tenders and projects: this could also contribute to the image of the supplier company</p>	<p>- downturns in Russian economics had a negative impact on the financial position of the company: even if there are no significant drops in production, certain recession still can be noticed</p>
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Table 13. SWOT analysis of company B

Company B: material MB	
Strengths	Weaknesses
<p>- material MB is a physically cross-linked material (PEX) – it is a huge advantage as the host company would prefer PEX over PE material due to the longer life cycle of the cross-linked material</p> <p>-this material complies with the following international certifications standards which are highly appreciated by the host company: ISO 9001:2000 (2005), ISO 9001:2008 (2014) – company B is well-known for its corporation culture and environmentally friendly activities</p>	<p>- company B produces rolls up to 15 mm thickness (another thickness should be negotiated)</p> <p>- Rolls MB are available only in gray color (the host company would prefer to have a couple of different colors)</p> <p>- the factory doesn't provide any storage space – ready material has to leave the factory as soon as possible; only the host company would be responsible for any transportation activities</p>
Opportunities	Threats
<p>- potential partnership with the large-sized host company would contribute to</p>	<p>- the supplier would have to conduct a production reorganization in order to meet</p>

the reputation and development of the middle-sized potential supplier company	the requirements of the buyer company (various material thicknesses and volumes): this would be too expensive due to the lack of equipment and workforce
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Table 14. SWOT analysis of company C

Company C: MC	
Strengths	Weaknesses
<ul style="list-style-type: none"> - the factory is able to produce a material of any color - the factory has its representatives and its own warehouse in Saint Petersburg area – this would ease forwarding activities as this warehouse is very close to the buyer’s site - the host company would be a major customer for this potential supplier company (thus, the supplier company would be interested in efficient cooperation in order not to lose such a substantial client) 	<ul style="list-style-type: none"> - the offered material is non cross-linked polyethylene (it can be still used by the host company, but cross-linked material has a longer life cycle) - production capacity of the factory is not big enough to meet requested material volumes and thicknesses
Opportunities	Threats
<ul style="list-style-type: none"> - potential partnership with the large-sized host company would contribute to the reputation and development of the middle-sized potential supplier company 	<ul style="list-style-type: none"> - the company is able to produce material of limited thickness values: in case the host company requires bigger thickness, the supplier company will have to do outsourcing

5.4 Final selection

Table 15. Evaluation on supplier companies according to the selection model

Supplier companies	Company C: Material MC	Company A: Material MA	Company B: Material MB	Company D: Material MD
Supplier selection criteria				
Product compliance	++	+++	+++	+
Production capacity/potential	+	+++	++	+
Supplier reliability	+	+++	++	++
Corporate responsibility	+	+++	+++	++
Costs, location, delivery. etc	++	++	+	+++

Table 15 summarizes the analysis of the potential supplier companies according to the tables of SWOT analyses. In this table the supplier selection criteria refer to the selection criteria model (Figure 4), and the most important criteria go first starting from the product compliance. Markings “+++”, “++”, “+” mean “excellent compliance”, “sufficient compliance” and “poor compliance” respectively.

Material A and material B are physically cross-linked materials (PEX) while material C and material D are not cross-linked (PE), thus the first two materials have the best compliance from the point of view of the product features. Company A can produce material of any thickness; company B produces rolls up to 15 mm thickness (another thickness should be negotiated); company C and company D are able to produce material of limited thickness values: this explains the amount of markings in the production capacity/potential sector.

In accordance with the analyzed data the most suitable supplier for the host company is company A (material MA) as it got the biggest number of scores for the fundamental selection criteria: this supplier company has the most suitable material according to the physical requirements and the biggest production capacity (ability to produce any amount, any color, any thicknesses of material). The second best choice would be company B (material MB); company C (material MC) goes next. The least suitable supplier is company D (material MD).

6 Conclusion

In order to ensure an adequate supplier selection, any company has to set certain requirements for a potential supplier: it can be a supplier's location, reputation, costs, capacity, and financial stability. However, it is also extremely essential for a company to identify what factors are the core ones as those criteria depend on the company's needs and business field.

Current study sets the individual requirements for the subsidiary organization of XXX Company: supplier's product specification was identified as the most important criterion as the company's business (oil and gas industry) requires unique high-tech raw material – even little discrepancy in physical/chemical properties can lead to a damage of the complete items (pipes). In accordance with this core factor four potential supplier companies were chosen for further research: company A (material A), company B (material MB); company C (material MC), company D (material MD). The second two most important factors for the company are supplier's production capacity and supplier's reliability. A final selection – company A (material MA) - was made based on the SWOT analysis together with supplier's criteria pyramid (Figure 4). This supplier got the biggest amount of scores for the three core criteria mentioned above.

To sum up, this study helped the subsidiary organization of XXX Company to receive individual range of requirements for a selection process of the most suitable supplier, which can be utilized also in the future. In addition, a new supplier of pipe isolation was chosen for the current needs of the company.

For the further cooperation development between the host company and chosen supplier is advised to discuss in details mutual tasks, responsibilities and risks; comply with the initial rules and limitations; provide support in problem solving; hold constant evaluation activities on results and strategies.

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