Trust and business risk in a research institute’s operations

Abstract: The objective of the study is to put forward proposals for limiting the negative effects of business risk by establishing relations with contracting parties not only on the basis of formalized contracts delineating the terms and conditions of cooperation but also, and most importantly, on trust development. The recommendations are preceded by a synthetic presentation of the issue of trust in relations with contracting parties and an outline of a selection of elements of the process of risk identification and analysis in the research institute’s business operations.

Keywords: trust, relations with contracting parties, risk, risk management

Introduction

Modern organizations more and more often take advantage of the opportunities given by properly established and well maintained relations with stakeholders, including business partners. The focus on building relations with surroundings and developing trust in inter-organizational relationships responds to the need to improve contemporary organizations’ operations in increasingly complex environments, constitutes a chance to increase the likelihood of the attainment of composite goals, and provides an opportunity to gain competitive advantage. Even though relations with the environment add more areas and types of risk to organizations’ operations\(^1\), they may also be a source of opportunities and success, if developed correctly.

The objective of the study is to put forward proposals for limiting the negative effects of business risk by establishing relations with contracting parties not only on the basis of formalized contracts setting forth the terms and conditions of cooperation but, first and foremost, on trust development in relationships with contracting parties. The recommendations are preceded by a synthetic presentation of the issue of trust in relations with contracting parties and an introduction to the process of risk identification and analysis in the research institute’s business operations. These considerations are a part of a more extensive research regarding the implementation of the process of a risk management in an organization. Moreover, they are a result of the process of a risk management system creation in an organization whose

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underlying activities (research and implementation) require operations and various forms of cooperation with industrial operators.

**Relationships of trust**

Building a relationship capital based on investment in partner relations with the environment and reinforcement of loyalty relationships is one of the present-day sources of value of an organization and an opportunity for long-term growth. The analysis of literature and practical business experience demonstrates that it is the proper use and management of tangible and intangible sources of value which determine the success of organizations operating in increasingly competitive environments.

Trust is a key attribute of relations and a basic component determining the success of various forms of cooperation between companies. It is a bet regarding uncertain, future actions of other people, a bet involving an evaluation of reliability in a situation of interdependence and risk. It is an expectation of a given environment of an honest, mutual, and reproducible behaviour based on commonly accepted norms.

The role of trust as a vital stimulant of social and business interactions was much appreciated by the science of management, which resulted in extensive literature regarding trust in intra-organizational relations. With time, there were more and more considerations involving trust in the relationships of organizations with their environments, including business partner relations. There was more and more emphasis on the differences between interpersonal and organizational trust, given the fact that the source of interpersonal trust were emotions, whereas the source of organizational (inter-organizational) trust – rationality. Without contradicting the essence of the rule, it should be noted that emotions might also be one the sources of inter-organizational trust.

Trust is not a necessity and sufficiency to establish and develop relationships. Nevertheless, it is vital for the likelihood of taking advantages of inter-

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organizational relations. Said advantages include but are not limited to reducing opportunistic behaviour, cutting transaction-related costs, streamlining decision-making processes, increasing intensity of cooperation, sharing information and knowledge, and reducing risk and uncertainty.

The issue of reducing transaction costs and streamlining contract performance processes is quite extensively covered in subject literature. Among the studies, particular attention should be drawn to the four-level model of maturity of trust (Figure 1). As the relations between contracting parties/partners move up to the next level, the effectiveness of cooperation rises, whereas opportunism and specific risk decline (Figure 2). The authors highlight the trust leverage effect and the influence of establishing relationships with business partners on the increase of confidence (minimization of risk) in relations with contracting parties. The trust leverage modified the general profile of business risk.

The review of literature regarding trust and risk allows us to conclude that an important role in the process of contractor relationship risk management is played by intentional, successive establishment of trust based on cooperation. Trust building is a cyclical process involving negotiations, partner engagement in the achievement of intended objectives of cooperation and mutual fulfillment of pre-agreed terms. Thus created trust is a long-term stabilizing factor for company operations. However, this does not mean that we should reject all formal mechanisms of contract coordination. An optimum and natural solution is the right balance between formal and informal mechanisms.

The role of trust in relationships with business partners and in reducing transaction risk depends, among other things, on the intensity of changes (turbulence) in the environment and the complexity of goods and services. A clash of the two criteria constitutes the foundation of the model of the importance of trust for inter-organizational relations (Figure 3).

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**Figure 1. Maturity of trust model**


**Figure 2. Trust/Risk dependence**

According to the author of the model\textsuperscript{14}, in order to take advantage of inter-organizational relations in the sectors which operate under highly turbulent conditions and feature highly complex goods and services, trust based on expectation and benefit identification is a prerequisite. It is trust developed by the efficient understanding and appreciation of the expectations of the parties to a transaction in such a way that the parties may cooperate effectively. Participants in a transaction identify opportunities their cooperation provides, which is a much better explication of cooperative behaviour than is the self-interest approach.

### Business risk in a research institute’s operations

Trust develops with time on the basis of communication between the partners to a relationship, diminishing uncertainty and increasing the likelihood of success. Basing business risk management on trust in relations with contracting parties requires precise identification of the risk factors of a given activity involving broad business relationships, their ranking, and determination of the method of dealing with risk. The above described process is only one of the many stages of the risk management process.

Managing an entity’s risk consists in taking decisions and performing actions which aim at the attainment of a risk level acceptable by said entity\textsuperscript{15}. The essence

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3}
\caption{Model of importance of trust for inter-organizational relations}
\end{figure}

\textsuperscript{14} Dziurski P., Zaufanie a osiąganie korzyści z relacji międzyorganizacyjnych, [in:] S. Lachiewicz, A. Zakrzewska-Bielawska (ed.), Organizacja w sieci relacji, Monografia Politechniki Łódzkiej, Łódź 2017, p. 106.

and underlying objective of the system of risk management is to strengthen the resilience of organizations with regards to newly emerging threats (risk factors) and, simultaneously, to undertake anticipative actions allowing an optimum use of the resources available and of emerging opportunities for development. This risk management means both the elimination of threats and their consequences, and the good use of opportunities.

Risk management in the form of a formalized system, based on adopted policies and procedures of risk management, is currently pursued by more than just big corporations or entities obliged to it by the law – the advantages of risk management are noted also by research institutes. The research institute wherein the risk analysis presented below was conducted decided to introduce the rule of threat (risk factors) analysis in connection with the implementation of the policy of impartiality in the field of assessing goods compliance and other\textsuperscript{16}. What is more, it was the direct reason behind building a formalized system of risk management in the Institute\textsuperscript{17}.

The key activity of the Institute is its basic activity, i.e. research and development\textsuperscript{18}. It is an activity related basically to research regarding implementation. Implementation obliges research institutes to function surrounded by industrial operators in various forms of cooperation, e.g. civil - law contracts, consortia, clusters. As a consequence, there are relations with contracting parties and business risk related thereto. Business risk is associated with the basic activity of the Institute and is generated by certain decisions regarding the choice of business partners, the shape of the product and services offered, prices and the choice of financing sources\textsuperscript{19}.

Business risk assessment with respect to the basic activities of the Institute is a part of a comprehensive risk assessment carried out for the purpose of developing a risk management system. This stage required adequate preparation of the tools of risk identification and analysis for, in an organization that implements risk management processes, there are no registers of numerical data allowing one to apply qualitative methods of assessment. Given the above circumstances, a detailed risk assessment has been a considerable challenge.

The objective of risk identification is to develop a list of key factors affecting, either positively or negatively, the attainment of organizational goals\textsuperscript{20}. However, at

\textsuperscript{16} The Institute is a body carrying out certification processes based on the rules set forth in the following standard: PN-EN ISO /IEC 17065:2012, the Act of 17 November 2006 on the system of evaluation of compliance of goods developed for the purpose of national safety and defense (J. of Laws 235, Item 1700), as amended, and on the documents of the JCW quality system.

\textsuperscript{17} Simiński P., Domańska-Szaruga B., Identyfikacja i analiza ryzyka operacyjnego w procesie planowania systemu zarządzania ryzykiem na przykładzie instytutu badawczego, [in:] T. Wawak (ed.), Zarządzanie w szkołach wyższych i innowacje w gospodarce, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2016, pp. 71-81.

\textsuperscript{18} The basic activities of the Institute are as follows: 1) Research and development; 2) Adapting the results of research and development activities to the needs of practical applications; 3) Implementing the outcomes of research and development (the Act of 30 April 2010 on research institutes, J. of Laws 2010 No 96, Item 618).

\textsuperscript{19} B. Domańska-Szaruga, P. Simiński, Ryzyko i zaufanie…, op. cit., p. 133.

\textsuperscript{20} When applying the Pareto principle to risk management, it can be assumed that in every organization about 20% of key risk factors is responsible for 80% of potential losses or for the failure to use 80% of opportunities. Therefore, in the case of risk identification we can suppose that one tries to draft a list of 20% of key factors positively or negatively affecting the performance of 80% of organizations’ goals.
the stage of risk factor identification, it is recommended that the largest number of factors possible is isolated and that they are analyzed in terms of direct and indirect mutual effects (e.g. with the use of cognitive maps). This allows one to distinguish the key risk factors and to avoid any potential erroneous decisions in the future. Risk factors (sources of threats) are all elements (environmental conditions, situations, characteristics and individual variables) increasing the risk of problematic situations (threatening regular company operations, relating to the attainment of organizations’ objectives) and related losses. Bearing in mind the neutral concept of risk, the elements positively affecting realization of organizations’ objectives should also be classified as such factors.

In the process of risk identification and analysis, expert methods were applied. Risk assessment was conducted in the following subsequent stages:\n
I. Defining (in relation to operational goals) the areas of activity of the Institute and the types of risk (strategic, operational, business risk) on the basis of a focused group interview.

II. Identifying the sources of threats (risk factors) and their impact on the goals of organizations and creating a list of the types of risk (along with descriptions of their reasons and consequences) with the use of a brainstorming technique, moderated workshops and interviews, and a list of potential threats.

III. Risk analysis – estimating the so-called risk significance by determining the likelihood of risk and its possible consequences (impact) with the use of the Delphi method.

IV. Constructing a matrix of risk illustrating the risk profile for every type of activity. The risk profile is the basis for undertaking certain actions in the field of risk management.

As the Institute had no developed and implemented risk management process, the works began with adopting a risk identification criterion. It was assumed that the most natural criterion of risk identification would be the types of activities conducted by the Institute. By joining various activities to form areas (Table 1), we simplified the process of risk identification and analysis, without fear for the effects of the process.

Strategic, operational and business risks were distinguished. For every risk type, threat areas, and within their framework – threat types, were identified. Consequently, quite an extensive list of risk factors was compiled, which was further analyzed on the basis of evaluation of significance coefficients (with respect to business risk for the basic activity – research and development – 24 types of threats were identified). The criteria of significance evaluation were defined in accordance with a 5-point scale, risk matrices were constructed, and the level of acceptable risk/risk appetite was specified. Table 2 shows the types of threats in the area of business risk with a significance coefficient higher than the risk appetite set by the Institute. These are the threats requiring risk management actions throughout the basic activity of the Institute.

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21 B. Domańska-Szaruga, P. Simiński, Rzzyko i zaufanie..., op. cit., p. 134.

Table 1. Classification of the Institute’s activities as the basis for risk identification

<table>
<thead>
<tr>
<th>Area of activity</th>
<th>Type of activity</th>
</tr>
</thead>
</table>
| Research and development              | Theoretical research and experimental studies  
|                                       | Adaptation of the results of research and development activities to the needs of practical applications  
|                                       | Implementation of results in practice  
|                                       | Dissemination of the results of research and development activities  
|                                       | Preparation of expert opinions and analyses  
|                                       | Development of database and scientific information.                                                                                          |
| Conducting standardization works      | Development of norms/standards and standardization manuals  
|                                       | Comments on standards  
|                                       | Update of standardization documents  
|                                       | Operation of standardization subcommittees                                                                                                    |
| Conducting certification and approval activities | Operation of a certification body  
|                                       | Issuance of certificates  
|                                       | Maintenance of a compliance regime required for certification  
|                                       | Audits                                                                                                                                          |
| Post-graduate university courses and doctoral studies, courses related to research conducted by the Institute | Organization of training and university courses  
|                                       | Organization of specialist courses                                                                                                             |
| Economic activities                    | Execution of customers’ orders  
|                                       | Provision of services to customers                                                                                                             
|                                       | Infrastructure and equipment rental                                                                                                             |

Source: Own research.

Table 2. Most significant threats in the area of business risk in a research institute’s operations

<table>
<thead>
<tr>
<th>Area of threat</th>
<th>Type of threat (risk factor)</th>
<th>Significance coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/service</td>
<td>Erroneous technical and economic assumptions</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Design, material, implementation errors</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Service (research) quality risk</td>
<td>6</td>
</tr>
<tr>
<td>Demand</td>
<td>Changes in demand, seasonality</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Additional regulations within the sector</td>
<td>6</td>
</tr>
<tr>
<td>Contracting parties</td>
<td>Low reliability</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Forcing actions on the users</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Pressure on results and time</td>
<td>10</td>
</tr>
<tr>
<td>Prices</td>
<td>Erroneous price calculations</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Increase in the cost of materials</td>
<td>6</td>
</tr>
<tr>
<td>Sources of financing</td>
<td>Availability of the sources of financing</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Complicated procedures of acquiring funds</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Own research.

23 The Significance coefficient is a product of the likelihood of risk and its impact, calculated on the basis of the methods adopted by the Institute.
In addition to actions regarding risk management at the level of the Institute, in the case of every conducted research and development work, the centre responsible for the project (an organizational unit or a project team) is obliged to analyze risk related to the project and to present a plan of actions aimed at risk reduction.

**Reducing the negative effects of business risk in the Institute with the use of relation capital development**

One of the effects of risk analysis is a determination of the types of threats regarding business risk in the basic activity of the Institute, the significance coefficient of which is more than the value of risk appetite set by the Institute. These threats should be subject to a specific analysis and special risk reaction plans should be developed.

With respect to every significant risk, we need to specify actions to be taken to reduce a given risk to an acceptable level:

- in the event of a low significance risk (low likelihood and low impact), no actions to reduce a given risk to an acceptable level are taken, the risk is at an acceptable level;
- in the event of a high significance risk, actions to reduce a given risk to an acceptable level should be defined and taken (e.g. moving the risk, taking actions to minimize the risk, withdrawing from a risky activity).

Planning a risk reaction involves developing a risk factor emergency plan. The plan should consist of an outline of actions aiming at reducing the frequency of threats and minimizing their consequences for undertakings, while also maximizing the positive effects. In addition, it ought to distribute roles and assign responsibilities regarding the performance of actions related to responding to threats.

Business risk is risk with somewhat different characteristics than strategic or operational risks. Here, we deal with both the negative and neutral dimension of risk (risk is a threat and an opportunity at the same time). This risk comes from outside the organization (systematic risk) and it is a specific risk originating from within the organization (non-systematic risk). The multidimensional nature of business risk is an indicator of suitable proceedings:

- systematic risk – prevention of the negative effects of systematic risk, and limiting its effects, if any;
- non-systematic risk – limiting threats and taking advantage of opportunities.

Risk is embedded in the nature of the basic activity of the Institute. Relationships with business partners generate several significant threats, which may not be eliminated. Therefore, their negative effects should be limited and emerging opportunities should be used. The trust/risk/transaction costs dependency authorizes one to assume that the chances to reduce the negative effects of business risk factors should, in many cases, be sought in relation building and in cooperation with contracting parties. Development of the relation capital and strengthening cooperation favour the atmosphere of trust and diminish risk. Guided by the assumptions of the model of trust maturity and the model of the meaning of trust in inter-organizational relations, actions regarding business risk reduction in the Institute were suggested. While planning the actions, we included those business risk factors the significance coefficient of which was above the level of the set risk appetite.
These actions involve both activities related to the formal side of business contracts, and actions aimed at trust building based on relationships and cooperation.

Table 3. Proposals for actions reducing the negative effects of business risk in the Institute

<table>
<thead>
<tr>
<th>Area of threat</th>
<th>Type of threat (risk factor)</th>
<th>General formula of adopted action methods</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT/SERVICE</td>
<td>Erroneous technical and economic assumptions</td>
<td><strong>Formal actions:</strong> Incorporation into contracts ‘Exclusion of liability’ clauses regarding failure of the object of research. Division of risk - regulating the issues regarding the payment for the costs of work, irrespective of negative outcomes of research. <strong>Developing trust:</strong> Keeping the contracting parties properly informed about any erroneous presumptions found, developing trust based on relations and cooperation, which facilitates negotiations during the process of amending contract terms.</td>
<td>The process of amending contract terms is often very difficult and time-consuming, and it depends on the scale of a given undertaking and the degree of its formality.</td>
</tr>
<tr>
<td></td>
<td>Design, material, implementation errors</td>
<td><strong>Formal actions:</strong> Incorporation into contracts ‘Exclusion of liability’ clauses regarding failure due to design or implementation errors on the part of the producer and the issue regarding the payment for the costs of work, irrespective of negative results. <strong>Developing trust:</strong> Keeping the contracting parties properly informed about any errors found, cooperating in error elimination.</td>
<td>What is problematic and requires expert opinions is the matter of indicating an error in design or implementation.</td>
</tr>
<tr>
<td></td>
<td>Service (research) quality risk</td>
<td><strong>Formal actions:</strong> Monitoring the research process, monitoring the process of service provision by the contractor, appropriate staffing. <strong>Developing trust:</strong> Developing trust in relations with customers in accordance with the principle that 'success depends on cooperation', using resources to implement commitments at the top level.</td>
<td>Monitoring the process of service provision by the contractor may be a factor putting upward pressure on results. That is why, the contract should specify detailed rules of the monitoring.</td>
</tr>
<tr>
<td>DEPARTMENTS</td>
<td>CHANGES</td>
<td>FORMAL ACTIONS</td>
<td>DEVELOPING TRUST</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>DEMAND</td>
<td>Changes in demand, seasonality</td>
<td>Formal actions: Long-term contracts, extending the scope of activities, diversifying activities, flexible forms of employment (balanced, task-based working time). Developing trust: Inter-organizational cooperation, common ventures and projects</td>
<td>In times of economic downturn, own research may be intensified. However, this requires large investment.</td>
</tr>
<tr>
<td></td>
<td>Additional regulations within the sector</td>
<td>Formal actions: Clauses in concluded contracts, fast reaction to change, flexibility in action. Developing trust: Rapid notification about changes, inter-organizational cooperation, shortening the decision-taking paths to speed up the reaction time.</td>
<td>The speed of response to changes is higher in project-oriented, less prioritizing, organizational forms.</td>
</tr>
<tr>
<td>CONTRACTING PARTIES</td>
<td>Low reliability</td>
<td>Formal actions: Advance payments on projects. Developing trust: Basing relations with contracting parties on a long-term cooperation leading to an increase in trust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forcing actions on the users</td>
<td>Formal actions: Choosing the persons responsible for contact and performance monitoring (both parties). Informing customers and stakeholders about performance and conditions affecting a given procedure. Developing trust: Informing customers and stakeholders about performance and conditions affecting a given procedure, developing relations based on trust.</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Results and time pressure</td>
<td>Formal actions: Determining persons responsible for contact and performance monitoring (both parties). Developing trust: Informing customers and stakeholders about performance and conditions affecting a given procedure.</td>
<td>Contracting parties may exert pressure in cooperation with other stakeholders.</td>
</tr>
<tr>
<td>PRICES</td>
<td>Erroneous price calculations</td>
<td>Formal actions: Introducing an algorithm to facilitate price verification. Control. Price lists.</td>
<td>---</td>
</tr>
</tbody>
</table>
**Increase in the cost of materials**

**Formal actions:** Incorporation of clauses specifying the rule of compensating for any increase in the price of materials.

Mostly, in the case of necessary repeat testing.

**Availability of the sources of financing**

**Formal actions:** Maintaining financial liquidity, seeking and evaluating sources of financing.

**Developing trust:** Developing relations with contracting parties, joint project teams, becoming financially reliable.

Good relationships with contracting parties facilitate access to a variety of sources (e.g. local sources).

**Complicated procedures of acquiring funds**

**Formal actions:** Staff training, specialist positions in the structure of the Institute.

**Developing trust:** Developing relations with contracting parties, inter-organizational strategy and joint project teams.

Contracting parties may employ a highly skilled staff and have more extensive knowledge with regards to procedures of acquiring funds for research and development.

Source: Own research: B. Domańska-Szaruga, P. Simiński, Ryzyko i zaufanie…, op. cit., pp. 138-139.

Apart from actions involving risk identification and analysis and activities associated with the selection of methods applicable in the case of the so-called significant risk types, at the stage of risk management system development in the Institute, mechanisms and tools were determined to monitor the implemented solutions and to assess their effectiveness. These include, amongst others, early warning indicators in the form of warning limits for certain types of risk (e.g. warning values of key risk indicators (KRI)) and key indicators to measure performance (based on the confrontation of factual outcomes with intended objectives). Key indicators to measure performance are of particular importance from the point of view of limiting business risk, as they allow to verify the effectiveness of the adopted risk management procedures.

Other vital elements in the process of risk management in the Institute include monitoring and reporting. These actions are constant and allow the Institute’s risk profile observation. It needs to be assumed that they will provide empirical proof of the efficiency of the methods of operation adopted by the Institute with regards to business risk management – methods based on the development of trust and cooperation in customer relations.

**Summary**

From the point of view of the practice of managing risk in the Institute, implementing recommendations regarding actions limiting the negative effects of business risk may largely reduce the consequences of risk in relations with contracting parties. Trust development in relations with contracting parties should be assigned a particular role because trust allows one to coordinate the actions of business partners, reduce transaction costs, and increase the chance of success expressed
by the outcome. However, this does not mean that we should stop using ‘traditional contracting’ – i.e. negotiating, specifying the costs borne by the parties and the terms and conditions of contracts. On the contrary, these elements must be considered necessary as they are the foundation of the ‘atmosphere of security’. Needless to say, they are the indispensable tools of risk reduction. Still, it seems that the methods of reducing risk are limited in their case (limitations related to the formal and legal nature of the contract). Therefore, development of trust based on relations and cooperation seems to serve as an opportunity to increase the effectiveness of risk management.

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