Algorithm of entrepreneurial risk management at the enterprises of information technologies: The Russian experience

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Abstract. This article identifies the peculiarities of the risk management at the Russian enterprises of information technologies. During my investigation, I analyzed the Vladivostok market of computer and information technologies and identified endogenous risks of the company. Also this article justifies management methods connected with the specific features of the company activity. The results suggests risk management algorithm which can be used at the analogous enterprise.

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Introduction

In our everyday lives we regularly face different types of risks. We use risk management methods by effectively observing such rules as traffic rules, fire safety rules, applying for the insurance companies assistance etc. “Western” entrepreneurs noticed that by excluding risk deals or handing the risk over to the partner who is more experienced in risk management can significantly decrease financial losses and increase profit. However Russian entrepreneurs are in no haste to adopt the experience of their “western” colleagues. Russian entrepreneurial risk management is often spontaneous, intuitive process.

Many of the managerial decisions appear under the risk conditions [1]. That is because of the lack of complete information, presence of contending tendencies, elements of contingency, flexibility of goals etc. Ambiguity and uncertainty in obtaining the eventual outcome arises under these conditions. Probability of additional expenditures and losses is increasing. Therefore such system characteristics of economic solutions as maneuverability, flexibility, sustainability, elasticity and reliability which are closely connected with the economic risk are more often used in the economic theory.

Entrepreneurial risks are associated with such concepts as danger, failure, possibility of accidental undesired losses measured in money equivalent [2]. Reducing losses relates to the risk realization appears in the process of making managerial decisions which optimizes the influence of unfavorable factors.

The purpose of this article is to discuss the algorithm of the entrepreneurial risk management (the case of the company “Altius” LtD, from Vladivostok city dealing with information technologies). To achieve the purpose the following tasks should be solved

- to identify the peculiarities of risk management at the enterprises of information technologies (IT enterprises);
- to analyze the computer and information technologies market of Vladivostok;
- to identify risks and to substantiate methods for their management taking into consideration the specific activity of enterprise;
- to suggest the algorithm of risk management.

As a result of the decision of tasks, summarizes the features of IT, as market product, and offered a unique algorithm of risk management and carried out expert evaluation of internal risk factors at the IT enterprise.

2. Preconditions and methods

2.1. Preconditions

During the development of program of entrepreneurial risk management it is important to realize that such program should be particularly flexible, and therefore allow changes, to accommodate additions and exclusions of elements that could assure its universality. The program shall be applied systematically and constantly (initial information monitoring) in the framework of the general management of the company since only in such case we would be able to receive maximum economic effect.

During the development of the risk management system it is necessary to take into consideration the features of the Russian market as a whole and those of the enterprise in particular. The peculiarities of the enterprise dealing with services in computers and information technologies may be considered to be the following:

- High level of competition;
- Dynamically developing market;

- Dependence from the level of antivirus safety;
- Dependence on the modern innovative products and technologies.

Information technology products are different from the common commodities on the customers' market, having the following features [3]:

- These products are always the result of intellectual labor (the costs of scientific research are high and they are exponentially growing with time) therefore "Copyright and Related Rights" Law or any patent law protects such products. It defines a special form of the existence of scientific and technical products market in the form of licenses (copyright registration), patents, and know- how.
- Lack of the average costs because of the product uniqueness. Definition of the profit of scientific and technical products replication is a separate issue.
- Occurrence of special tasks for marketing research arising from the necessity in mutual adjustment of the innovation and the environment of its practice.
- Uniqueness of the transfer process of the software products to the customer who is not always mediated by the act of purchase and sale. The product goes to the buyer but doesn't disappear from the seller. The life cycle of the innovation process which has several stages can be nominally divided into two blocks: research and practical (industrial) use. These blocks can be separated in the time aspect. Hence both the information containing new knowledge and the new product are in fact the innovation process outcome.
- Lack or very slight physical depreciation of a product with very rapid obsolescence.
- Strict requirements for the product quality, especially for critical use, such as cosmic technologies, aviation, nuclear energy etc.

Price discrimination, that is charging different prices for the same product for different categories of buyers, is quite justified and even desirable if initial costs of creating the product are commensurable with total costs. This is exactly the cost structure in the process of production and distribution of information technology products. The effect of using such products by different categories of buyers is often different. Besides, prices of maintenance services may vary for different customers.

Occurrence of substitute products (commodities) on any market usually increases competition, puts a downward pressure prices and decreases in profits. It's quite different situation on the market of high technologies. The appearance of a new product often creates a new market. Penetration to the already occupied market by means of fractional displacement of any common product is extremely challenging as the customer would rather buy a new version of the traditional product than absolutely new product.

It is important to note that specific trait of intellectual products is low costs for circulating of final product in contrast with the costs for its development, maintenance, advertising and sale.

2.2. Methods

The minimum of risk management methods includes the following ones:

- ✓ control of management process by the authorities;
- ✓ risk insurance;
- ✓ risk transfer to the partner/customer who is experienced in the risk management;
- ✓ complete denial of risk (in most cases it means rejection of the project);
- ✓ risk diversification;
- ✓ limitation;
- ✓ reservation;
- ✓ use of freelancers' services.

About 50 IT enterprises of small and medium business are operating on the market of Vladivostok. It should be noted that enterprises which have been operating on the market for more than 6-10 years have not expanded significantly. So even if an entrepreneur gets excess profit he also incurs essential losses due to the fact that trade of software products is the business of the high risk that significantly impacts on the level of profits and losses. "Prevention is better than cure" is the most suitable guidance in this case.

At the enterprise of investigation any risk of non-performance of the obligations by the customer (payment for the service) is fully covered by the user since all the services except PC repairing are prepaid by him/her (usually 50%). So having invested its capital into the service the enterprise will get the guarantee that the maximum loss will be 20% (because 30% of extra charge is imposed for any commodity or service). Therefore the most part of the risk is transferred to the customer. Significant risks of losing profits often occur because of the poor qualification of the employees: the work is not fulfilled or fulfilled with a low quality. In this case the employee who was authorized to perform this service will be responsible for the profit loss.

3.Results

3.1. Block-scheme of entrepreneurial risk management algorithm

To approve the suggested approaches we have analyzed the activity of one of Vladivostok enterprises LLC "Altius" which is operating in the following fields:

- software sale, installation, setting up
- sale, repairing, adjustment, installation of computers and their components.
- video observation (equipment installation and maintenance)
- organization and maintenance of wired and wireless local networks
- maintenance of active network equipment etc.

Entrepreneur risks have not been controlled at LLC "Altius" so far. Algorithm of the systematic risk management at the enterprises of small and medium business in the field of information technologies has been offered to be approved at the enterprise investigation (fig.1,2).

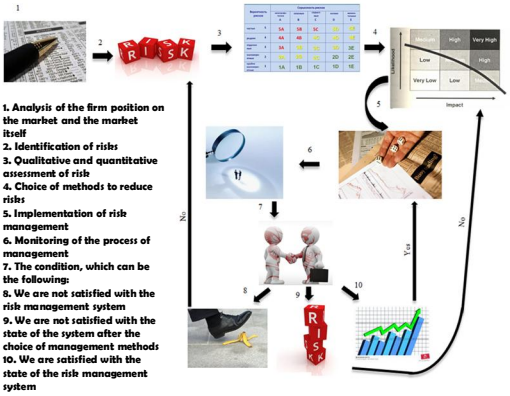

Fig. 1 Block-scheme of entrepreneurial risk management algorithm

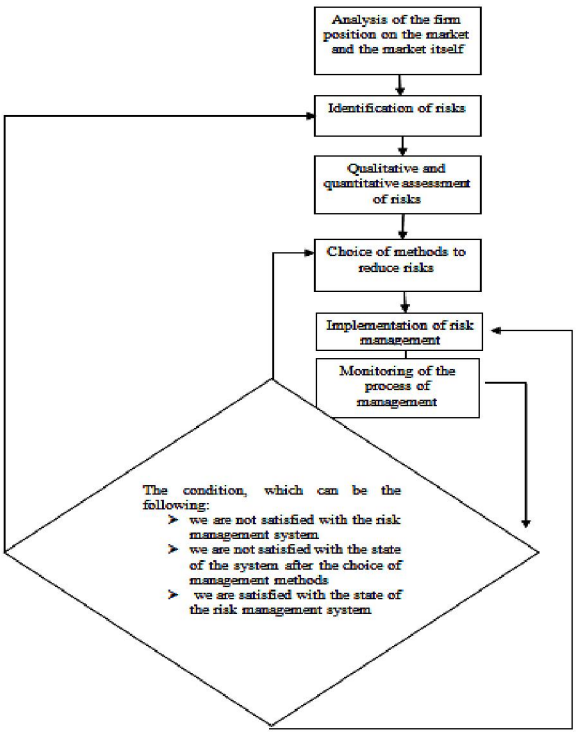

Fig.2 Stages of entrepreneurial risk management algorithm

3.2. Main internal (endogenous) risks

Risk identification is the important step in the risk management. We will give the example of simple record of risks in the table 1.

Table 1. The example of main internal (endogenous) record of risks

№	Risk description	Risk realization scenario	Consequences (point from 1 up to 5)	Probability (from 0 up to 100%	Final risk assessment (product of col. 4 and col.5	Risk Management strategy
1	2	3	4	5	6	7
1	Withdrawal of key employees (dismissal, illness, death)	Poor organization of the working place, inadequate salaries	5	10	50	Interchangeability of staff , development of effective bonus system
2	Misestimation of strategic potential of the enterprise	Lack of the strategic planning system	3	2	6	Elaboration of the strategic plan for the enterprise development
3	Inefficient management structure, function duplication	Historically constituted organizational structure	2	10	20	Adjustment of the enterprise organizational structure
4	Failures in the system of information processing	Obsolete server and other equipment, poor PC and net channels performance	5	10	50	Equipping with modern computer machinery
5	Leak of confidential information via the corporative net	Internal conflicts, fraud	5	3	15	Establishment of the regulations of access to the information about customers, implementation of the measures for protection from leak of confidential data
6	Lack of marketing or poor marketing	Lack of authentic information about competitors and about potential users of the products	3	5	15	Establishment of marketing service
7	Errors in production costs estimation	Incorrect calculation of the products	2	2	2	Automated monitoring estimation of the product costs
8	Misestimation of the competitive price level for the products	Loss of competitive advantages on the market, loss of customers confidence	4	3	12	Monitoring of prices for the look-alike products
9	Inadequate level of personnel qualification	Substandard maintenance of distribution	5	10	50	Planned improvement of the personnel qualification
10	Errors in the performance standards	Fear of increasing the level of product innovations	3	2	6	Estimation of labor productivity by external experts
11	Poor labor motivation	Idle time at the working place	4	8	32	Control of activities, improvement of the system of moral and material incentive
12	Personnel disloyalty	Disclosure of confidential information	5	2	10	Creation of favorable internal climate in staff
13	Obsolescence of products (services)	Decrease of product profitability	5	12	60	Systematic analysis of market, introduction of innovative products
14	Excess of the level of receivables and payables	Decline in paying capacity and liquidity of the enterprise	3	5	15	Implementation of the system of measures for control and reaction
15	Decline in investment activity	Profit loss	4	3	12	Finance investments into the enterprise development
16	Innovation inadequacy	Lagging behind the competitors on the innovation market	5	10	50	Tracing modern tendencies on the IT market
17	Energy failures	Failures in equipment operations	1	3	3	Installation of uninterruptible power supply devices

Final indicator of risk significance (table 1, col.6- indicators of consequence and probability) will be used for focusing management actions on the risks of the top priority.

The development of program in accordance with suggested algorithm, realization control and adjustment (if needed) are the responsibilities of the risk manager at the enterprise.

In the process of development of the program we should take into account the specific features of the information technologies enterprise. During the realization of the risk management program it is important to use modern information technologies. Software products for risk analyzing and calculating (COMFAR, PROPSPIN, FOCCAL, Alt-Invest, Alt-Expert, Alt-Prognoz, Biz Planner, Investor, Analytic etc) [4, 5, 6, 7, 8, 9,10] are rather universal and expensive. Moreover they don't take into account the specific features of the certain enterprise. In spite of this fact using computer technologies during the analyzing risks will necessarily relieve the entrepreneurs from complicated mathematical calculations. It will increase the reliability and validity of the results and will facilitate the decision making under the risk conditions.

4. Conclusions

Increasing role and importance of risks in the modern society require deep and comprehensive investigations in this field. The necessity qualitative and quantitative assessment of risks at the information technologies enterprises is connected to the Russian economy integration into the world economy, and financial reporting standardization. Investigations and developments performed in this field unfortunately don't answer many urgent practical questions and can not always be an effective tool for the risk assessment and for developing the ways of preventing or decreasing its negative consequences. Technical progress cannot be realized without risks, that defines its probabilistic nature. Therefore information technologies enterprises have to use complex risk management programs in their practical work to achieve more effective results.

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