

# Financial Instruments of Investment in Education in the Field of Civil Engineering

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**Abstract.** For the purpose of development of the financial instruments of investment in education in civil engineering the author has formulated and justified the concept of a learning organization. The article proposes the actual instruments of activation of extra budgetary funding sources in civil engineering such as maintenance loans, and the programs of personnel development in universities and learning organizations. The implementation of the proposed instruments will allow providing a multi-channel financing of education in civil engineering, while ensuring a number of benefits for all entities interested in learning, such as construction companies, future professionals and the state.

## 1 Introduction

The main global trend of civil engineering is the switch from the resource and industrial economy to a post-industrial one, based on intellectual resources, science-based and information technologies, resulting in a change in the system of civil engineering education [1]. Currently, civil engineering undergoes transformation in parallel with the changes in the employment structure. While the workforce does not receive new training, new education, there is a threat of a situation in which jobs remain without skilled workers.

Education allows leveraging a number of positive factors in the whole reproduction process, as educated people use the assets more effectively, that results in their greater productivity. The people are also prone to innovations, to invention of new, more advanced forms of production. As a result, the development of human assets leads to an increase in the performance of all factors of production in civil engineering [2].

The priority of science and education is a factor of dynamic development both of a separate enterprise and the entire civil engineering in general. The introduction of the science-based technologies in the construction industry is a key task that, if resolved, will help Russian civil engineering to take leading positions in the world.

Today, when public funding of education is being significantly reduced, in civil engineering arises the need to solve the issue of insufficient funding of the education system, development of new financing facilities, evaluating their effectiveness and identifying ways of their introduction.

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## 2 Methods

During various transformations of the Russian economy the market mechanism has lost two key factors of effective demand - the consumer, and the investment demand. Current very low level of income of the mainstream population, conditional, to a large extent, upon a lack of knowledge and professional skills necessary for the market economy is the main factor constraining investments and especially revitalization of the investment process in the field of education. The government of the Russian Federation is aware of the role of education as a key factor of the civil engineering competitiveness, its economic growth, and the future stability and prosperity. [3]

The author of the article proposes to focus the main efforts on making the education in civil engineering the industry attractive for investors, including entities and individuals. In order to attract additional investments in the civil engineering education it is advisable to consider the introduction of preferential tax treatment of private investments, including tax exemption from charitable donations, and to allow to the construction companies, investing in education, to incorporate the cost of personnel training and retraining in production costs.

Maintenance loans, and the programs of personnel development in universities and learning organizations may become the tools of activation of extra budgetary funding sources in civil engineering.

Through student loans, the state can pursue several goals, such as:

- Provision for the sustainable level and proportions of higher education in civil engineering through the adjustment of the number of training spaces funded;
- Distribution of financial resources between the universities in accordance with the public interest, requests of students and employers;
- Provision of availability of higher education in civil engineering for all social groups of population.

The system of higher education in civil engineering with a well-established scheme of provision of maintenance loans has a number of obvious advantages for each of its participants in the process of student loans provision.

For students:

- The choice of higher educational institutions is expanding, despite such significant limitation as the cost of education;
- Payment for educational services will make it possible to increase the requirements for the process of education.

For higher education institutions:

- The return of the educational process is enhanced through the personal interest of students in gaining knowledge in civil engineering for subsequent employment, which will allow for a timely returning of the loan;
- There appears an effective instrument of influence on the students, and their motivation to learning increases;
- Paid educational services allow universities to receive money on their own, independently of budget allocations;
- The inverse relationship appears between the university and the labor market, allowing quickly and effectively develop new skills and expertise, really popular in the civil engineering.

For banks:

- Expansion of the client base of individuals, especially in the long run;
- Gaining a positive reputation;
- Possibility to offer additional services for individuals;

- In case of strengthening the state's role in the student loans system, in particular, in the provision of state guarantees for loans, the strengthening of the bank's stability takes place.

Russian construction companies have come to realize that the effective learning should become a permanent and stable process [4]. The effectively learning organizations are the societies that support learning process in all fields.

The author has formulated five criteria which the learning organization in civil engineering must meet, namely:

1. The interest of the organization's leadership in the work success.
2. Developing the policy of work with human resources and creating the special HR service engaged in the development, implementation, operation and continuous improvement of the future personnel development management sub-systems.
3. Diagnosis of the organization's ability to learn using rapid methods known in the literature with the adjustments of these methods based on the specific business conduct of Russian companies.
4. Use of a special methods and technologies.
5. Involvement of management and organizational development process consultants.

The learning organization management provides for the following functional subsystems:

- The planning and recruitment subsystem, the system of professional selection and formation of the external personnel reserve;
- The subsystem of personnel traffic record, professional adaptation of newly hired employees, and those transferred to another office for the effective performance of their professional duties;
- Subsystems of continuous improvement of professional and qualification level of personnel training;
- Subsystem of estimating the efficiency of execution by the personnel of its duties, planning of professional development and career, formation of internal personnel reserve;
- Personnel motivation and social development subsystems;
- Personnel development financing subsystems.

### **3 Results**

Thus, maintenance loans and personnel management programs in learning organizations can become the instruments of activation of extra-budgetary sources of multi-channel financing of civil engineering education.

The definition of the learning organization in the field of civil engineering was given as a result of the financing instruments and criteria stated for its evaluation proposed by the author. An organization that creates conditions for education and development of all its employees in the process of continuous improvement and implementation of new, and innovative construction technologies, thus changing its environment, should be considered as the learning organization in the field of civil engineering.

### **4 Discussion**

The issue of financing of higher education in civil engineering has long been widely and actively discussed. Financial resources and the nature or structure of the educational institution are closely linked. The author thinks that the costs of higher education in civil engineering should be entrusted to those who need it. In recent years, universities seek to cooperate with private enterprises, while making an emphasis on individuality and

innovation, through the development under the laws of the market economy [5, 7, 10]. In this situation, commercial enterprises will consider higher education as a worthwhile investment, and the liability for its payment will be charged to those who directly enjoy the knowledge, skills and experience. In addition to that, the current pace of the civil construction development lays down new requirements as to the meaningful aspect of education [6, 9]. By providing such an expensive, complex and long-term service like professional training in civil engineering, the universities are obliged to ensure that the trained professionals were in demand [8]. They should study the actual demand for personnel in the labor market, analyze the employers' requirements as to knowledge and skills of professionals in civil engineering. Also, the commercial banks shall provide for the financing of citizens for educational purposes. However, the bank is entitled to demand from the citizen the loan repayment guarantee (surety, deposit), and the loan provision, in turn, should serve as the basis for the bank's receipt of tax benefits comparable to those that apply to charitable activities. The load on the state budget does not increase in case of bank financing. However, all financing transactions under consideration should not be provided for a limited number of authorized banks. As experience shows, the competition allows significantly reducing the cost of loans, and they become more accessible to the public.

## 5 Conclusion

It should be mentioned, that the state plays a very important role in education. Because, whereas the private construction companies and individuals will determine the extent and nature of the development of higher education based on their current interests, it could lead to a system that does not meet long-term needs of civil engineering and cause financial starvation of universities. A system of state-supported student loans must be developed to prevent such a situation. The essence of this system is as follows: a special type of a loan - the student loan - will be provided to the citizens wishing to obtain professional education in civil engineering, to improve their skills or to retrain, and part of the state budget funds allocated for higher education, will be allocated for educational loans. It is obvious that in a very short time the civil engineering demand for personnel will become the dominant regulator of the scope and structure of higher education in this field.

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