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**DIGITAL EDUCATION TO PROVIDE INVESTMENT AND
CONSTRUCTION SECTORS WITH HUMAN RESOURCES**

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Abstract

The construction sector is currently a progressive sector that contributes to the development of the economy and consequently to the improvement of the living standards of the population. The digital economy allows construction companies to participate in project financing and gain an innovative competitive edge. The relevance of the article stems from the need and demand for research into the formation and functioning of modern human resources in construction companies. The innovative laboratories and technology provide the construction company with the means to improve its management strategies as a whole. Thus, corporate governance tools form a value-based digital system for construction companies, enabling them to define their goals and measure their performance to ensure effective operations. The article analyses digital education, which is currently gaining experience and systemic direction through modern methods, directions, rules and standards for the functioning of the higher education system. The emphasis is on the need of the construction sector for highly qualified, modern human resources. That is why many Russian universities have changed education policy. The authors examine the experience of developing Bachelor's and Master's degree programmes and the creation of favourable conditions for the functioning of a Master's degree programme in distance education to provide the investment and construction sector with modern personnel in the Russian Federation. The higher education system and some higher education institutions have probably never faced such extreme conditions before.

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1. Introduction

The move to online learning was the most obvious response to the new challenges of Russian universities. From this point of view, the Russian experience is comparable to that of universities around the world. However, on the other hand, this most obvious response has highlighted the challenges of digitalization and the readiness of not only countries but also individual regions to operate regional higher education systems exclusively in distance mode (Akhmetova & Shigapova, 2015). To cope with external challenges, universities needed to ensure not only the technical component of the educational process (equipment availability, quality of communication), but also the methodological work online (teachers' ability and motivation to prepare methodological materials appropriate to online education, ensuring and quality control in midterm or final examinations or in defending a new project diploma), and to analyse the possibilities for students to study from home (availability and quality of internet connection) and meet the new challenges of universities.

2. Problem Statement

After three and a half months of distance learning, there is a reflection from both teachers and students, which is not always positive and highlights the problems that still need to be solved. For example, in a collective letter from HSE students, they outlined a whole list of disadvantages of distance learning (from the inability to listen to lectures online in dormitories since not all nonresident students live alone, but usually with three or four roommates, each has their own lectures and plan for the day, to apathy and physical discomfort after several hours spent in an online lecture or seminar). But on the other hand, the decisions made by the national office and universities to conduct final examinations, diploma projects and dissertations and to issue diplomas online, which are significant for 2020 graduates, are worthy of respect (Gstou, 2019). Over the past few months, this situation has become accepted as a situation of uncertainty, beyond which experts expect a more challenging period of recovery and adaptation to a new post-pandemic environment. This statement is also relevant to higher education in Russia in general and the level of the Master's programme in particular.

3. Research Questions

The changes affected all levels of higher education as all programmes from Bachelor's degree to PhD had to switch rapidly to online education.

The monitoring of relevant changes in the activities of Russian HEIs based on the information available on HEIs websites and their social media pages allowed us to highlight some practices of Russian universities that are specifically relevant to the changes related to Master's programmes. However, it is premature to say that these practices will continue beyond the end of the pandemic.

Today we can talk about some set of management decisions by the national Ministry of Higher Education and Research, the practices of Russian universities that have enabled a smooth educational process, including for students in Master's programmes; and some experience of support for Master's programmes by foundations and the corporate sector. It is important to record the achievements of

Russian universities to draw further conclusions and identify tools that may be useful to adopt and use regardless of the external environment.

To systematize Russian university practices on the development of Master's programmes during the pandemic, it is useful to identify the practices related to the development of the institutional environment, those related directly to Master's programmes as a product, and those related to external support of the institution of Master's programmes by partners and foundations.

The identification and systematization of Russian practices are based on the monitoring of open sources (university websites, portals, social networks).

The core of the universities samples consists of Russian universities - members of the Global Universities Association (The Association members ...), representing a cohort of the country's leading universities participating in the 5–100 project to improve the competitiveness of Russian higher education.

The choice of these universities to analyse the practices of Master's degree development under conditions of uncertainty is clear: it was the leading HEIs in the country that took on the mission to work out the best solutions for overcoming the crisis and to share their practices with other participants of the national higher education space.

The whole experience of leading Russian HEIs in developing and supporting Master's programmes can be roughly divided into three sets of practices:

- relevant to the support of teachers and personnel;
- aimed at the development of educational programmes;
- aimed at creating an enabling environment for the Master's programme to function in a time of uncertainty.

A separate focus is on the efforts of Russian foundations and other organizations to support the institution of the Master's programme.

Following a review of the most notable practices for the development and support of Master's programmes in a pandemic context, we conclude on the tools and practices that can take root in universities after the crisis.

In 2019, the Mastery 5.0 project identified the "People" category for detailed analysis, which at the start of the project combined the characteristics of university lecturers and/or researchers necessary and sufficient for the creation of new educational programmes:

- motivation to turn knowledge into a marketable product;
- knowledge and awareness of the ways and means to implement this.

4. Purpose of the Study

This article aims to understand how the pandemic has affected the authors, developers and administrators of Master's degree programmes and what practices HEIs adopt here during the 2020 pandemic. The basic thesis is that the pandemic has made significant adjustments to the work of personnel developing and implementing master's programmes. Since 23 March 2020, the Recommendations of the Ministry of Higher Education and Science of the Russian Federation translated the educational process of higher and supplementary vocational education programmes to an online and

distance learning format. Master teachers were recommended to promptly translate and implement all further interaction with students in an online format (lectures, seminars, consultations on coursework and thesis projects). The agency has set up temporary working groups to determine the direction of the operational education policy. In particular, there was a Working Group on Organizing Educational Activities to Prevent the Spread of COVID-19 Infection in the Russian Federation. They began to make recommendations on the organization of the online education process and made new decisions, in particular regarding state final examinations, diploma and coursework defence (IA REGNUM, 2020). As a result of swift decisions, universities have gone online, some through the introduction of online and distance learning technologies into traditional full-time and part-time educational programmes, some through the opening up of educational programmes whose design entirely involves online learning. After time and testing both approaches it will need assessment of their effectiveness and impact on the educational outcomes of the Master's degree students. To date, it is possible to talk about student and teacher satisfaction measurements, conducted in higher education institutions by university services. This information is used for official purposes and is hardly advertised. One of the few exceptions was a survey conducted by the Russian Ministry of Higher Education and Science with the Institute of Social Analysis and Forecasting of the Russian Academy of National Economy and Public Administration in April 2020. Its results were published and disseminated in the Russian media. The study surveyed teachers at Russian universities (about 15 % of all university teachers in Russia) and assessed their attitudes towards the transition to exclusively distance working. The results of the survey showed low teacher satisfaction with the move online, many teachers reported an increased workload, reduced free time, lack of confidence in the quality of learning outcomes, discomfort and technical problems associated with delivering lectures at home. On the whole, the experts are confident that over time, universities will be able to smooth over the initial difficulties and build an effective online learning system, not replacing traditional forms but, on the contrary, supporting and qualitatively enriching them. In times of pandemic and forced online work, some universities organize psychological support for teachers and personnel.

5. Research Methods

The pandemic and the forced online work, despite its limitations and not always comfortable working conditions, became a real impetus for the development of the education programme in general, and the Master's programme as a special product in particular.

Equally important is the decision to run admission campaigns online. This situation has pushed higher education institutions into competition for content and online space, something previously not seen as a major problem or threat. Time changes everything and today, quality marketing of Master's programmes and individual educational programmes of this level of higher education, in general, in the Network becomes the key to new success, symbolizing flexibility, readiness to change without changing the quality of education.

To support the development of modern work formats, including online, multimedia, and the transformation of universities into new spaces of innovative development, leading universities are launching new infrastructure projects or continuing to develop those already launched. Obviously, realising that changes in the educational process must go along with strong infrastructural support,

leading to transformation not only internally, but also externally. Projects such as Teachers 2035 and Researchers 2035, which aim to involve young employees more actively. The Gstou has practices that regulate and stimulate the improvement of the quality of research. It has developed and implemented an effective contract on R&D allowances (Gstou, 2019).

And they are also bringing all levels of education programmes to an online format. In terms of creating a favourable environment for the development of Master's programmes during the pandemic, it is interesting to note the experience of Russian universities in introducing procedures and techniques of proctoring for interim and final attestations, entrance exams for Master's and PhD programmes, conducting state final attestations in electronic and online modes, including using proctoring procedures, organizing access to the online resources of Master's programmes through university educational process management systems.

In general, we can say that almost all Russian universities organized the learning process online; students had the opportunity both to take state exams and to defend themselves online.

It is worth mentioning separately the tools to support Master's students, which are specially developed by some Russian universities.

ITMO University has launched a range of projects aimed at supporting Master's students. We can mark ITMO as a generator of innovative ideas and approaches to attract and retain its pool of Master's degree students and nurture its teaching and research personnel. The project is implemented on a competitive basis. The successful candidate gets the opportunity to hone their teaching skills and get paid for it. The project envisages preparing the best participants in the programme, together with the faculties, for serious teaching work and for competitive selection to the faculty of ITMO University upon graduation from the Master's programme.

Another project focused on creating a favourable institutional environment for the development of graduate studies is the ITMO.FUTURES project, which provides interested students with the opportunity to participate in real research and development work, earning money without distracting them from their studies. Students are employed by the university for the duration of the research and receive a salary from the faculty. The 2019/2020 academic year saw the allocation of 188.1 million roubles for R&D with Masters and PhD students and the opening of 24 new projects.

There is also an interesting experience of Russian universities to create university digital environments for the comfortable and effective interaction of teachers and students. We cannot say that this practice is entirely new for Russian universities.

Most of Russia's leading universities have been working on this cooperation mechanism for the last five to ten years. The pandemic allowed for the finalization and fine-tuning of the individual processes of organizing online interaction within universities. The extreme conditions prevailing during the pandemic and the lockdown provided the impetus for further development in this direction.

It is clear that the system of organizing the digital environment in higher education institutions will continue after the pandemic, ensuring the further development of the institute of master's degree both in offline and online modes.

In Russia to date, there are several tools for supporting Master's programmes from the outside, but implemented in cooperation with universities, including Grant competitions and scholarship programmes targeting students or teachers of Master's degree programmes at Russian universities.

As we can see, it is not without adjustments, but the Russian development institutes and their partner universities have adapted to working online and continue to develop projects aimed at supporting Master's programmes in Russia.

6. Findings

As the national Ministry of Higher Education and Research recently pointed out, the Russian higher education system has successfully weathered the stress and generally coped with the limitations of the pandemic. About the Russian magistracy, it is possible to draw a few basic conclusions.

1. During the reviewed period, Russian HEIs actively used the Master's programme in online admission campaigns and noticeably exceeded themselves in their choice of marketing tools. It is no longer just university-wide or departmental admission campaigns; today, more often they have presentations of training programmes, including new master's programmes. Today, the Master's programme looks like a powerful tool for attracting a target audience, and the more precisely defined concept and elements of the educational programmes have more chances of attracting an interesting contingent, thereby ensuring the quality of the training.

2. Master's programmes from leading Russian universities are becoming more client-oriented, usually launched in cooperation with or commissioned by an industrial partner, together with other partner universities or other educational institutions. Such programmes have a concept, structure and curriculum; the requirements for admission, study costs, availability of budget places, employment prospects and demand for programme graduates in the labour market. As a rule, they have their own page on the university's website.

3. Monitoring showed activity with regard to the opening of new Master's programmes. In time for the new academic year, all the analysed universities have announced the launch of new master's programmes. Often it is not just one or two programmes, but a whole range of entirely new programmes in several training programmes.

4. Social media are becoming a space of interaction between HEIs, both with incoming students and prospective applicants. It is interesting that, for example, the promotion of Master's degree programmes tends to use the social network. Nevertheless, all higher education institutions in the country have official public pages. Many of the processes involved in organizing Master's programmes, including marketing, are moving to social media. Open-source monitoring has clearly shown this.

5. On the whole, when comparing the master's degree activities in Russia and abroad during the pandemic, we can conclude that, of course, domestic universities have been more active. It is difficult to assess the reasons, but it is possible to assume that a more centralized approach to managing the higher education system in Russia has proved effective in a crisis.

The national higher education system has managed to hold its own and not fall into the abyss, although of course the problems of losing foreign students, for example, will probably still be felt. There are still needs to find appropriate solutions for the development of a new education policy. But on the

whole, it seems that Russian universities were better prepared organizationally, financially and technically to move most processes online, and have responded well to the challenges of the pandemic.

To date, employers lack information about the new qualifications of future personnel for the investment and construction sector. The development of curricula in accordance with the third-generation FSES for the construction training programme requires a close relationship between higher education systems and the investment and construction industry structures (Cyberleninka, 2019).

In this regard, there is a need for collaboration in the formation of sectoral professional standards (Prihodko, 2012).

Analysis of the composition of the investment and construction sector identifies its three main actors, expressing three different competencies in Table 01.

Table 1. Composition (entities) of the investment and construction sector (Southwest State University)

Structure (elements) of the investment and construction market	Project participants	Competence	Competence goal
Investment and construction sector	Shareholder	Financial	The legislation requires the use of skills in making and developing management decisions, the use of methods and techniques for analysing information from domestic and foreign experience in the investment and construction sector.
	Customer	Management	
Labour market	Contractor	Technical and technological	Researching and justifying scientific and technical information, developing technical specifications and investment development programmes, considering the situation in the investment and construction sector.
	Resources	High-quality land use	
The market of professional and educational services	Research and development centre	Research and development	Skills in monitoring the implementation of investment programmes in construction and housing and communal services.

7. Conclusion

The current era is all about adopting new technologies in construction to function successfully in a digital environment. Many higher education institutions teach information technology in construction, but the lack of competencies of the teachers themselves, as well as unified standards, raises the question of the training quality of the students.

The discussion on training for the investment and construction sector should also address the issue of professional development for university teachers and further education centres, namely:

- more effective using scientific and educational resources in solving socio-economic problems;
- training of intermediate (colleges, technical colleges) and higher (university, postgraduate, doctoral studies) level of investment and construction professionals;
- improving the qualifications, level of competence and professionalism of managers at different levels of investment and construction companies, their mastery of market principles and methods of management, pricing, taxation, financing, banking, psychology of working with personnel, sociology, management and legal regulation;
- organizing internships at advanced investment and construction foreign companies and foreign educational institutions for teachers of educational institutions, entrepreneurs, businessmen, managers, financiers;

- developing research, consultancy, innovation and introduction of new technologies to ensure the reform and sustainable development of the investment and construction sector.

Implementing the measures of the phased introduction of the required competencies will increase the competitiveness of the Russian construction sector, improve the quality of design and construction of facilities, reduce the cost at the design and examination stage of design documentation, and ensure a reduction in the risk of emergencies.

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