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THE DIGITAL SIGNIFICANCE OF THE ECONOMIC AND DEVELOPMENT OF THE CONSTRUCTION INDUSTRY

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Abstract
This article analyzes the possibilities and prospects of digitalization of the construction industry in modern economic conditions, and identifies the main problems and prospects of the development of digital construction.

Keywords: construction industry, digitization, technologies, innovative development, competitiveness, costs, modernization.

Introduction

Development _ present stage our country economy in the composition important place occupied construction in industry digital technologies use complaints important is considered Construction field Digitization technological innovation current to do accelerator of transformation driver is considered

Construction in the field labor productivity different in countries different does _ China and South Africa labor productivity fast growth shows Brazil _ and Saudi in Arabia while labor productivity lower .

Some countries (Australia , Belgium and Israel) work productivity high level holding stand up and his intensive to growth are achieving [1]. McKinsey experts said construction productivity slowly increased is going , so for digital technologies and new materials productivity growth - ni which accelerates is a tool .

Literature analysis . S last researchs shows that digital environment social development change moving - living to the power rotation main mechanics a person of activity all area - ri and in networks integration , effective - lik and innovations is strengthening [16]. Also , O. V. Syuntyurenko digital of technologies society of activity all on the fronts fast spreading their benefits wide scale done being increased and their to society indirectly effect almost innumerable that shows , however digital of the environment current to be done to the following help gives : add of the system development _ of society electron connections ; row new technologies work exit and current achievement is also separate technologies clusters integration [16]. N. O. Punchenko digital the economy new scientific directions formation , scientific studies potential raise , their the results the world to the community deliver processes as shows [15].

O. N. Yanitsky digital the economy knowledge public property conversion , innovation current achievement , innovation and knowledge distribution pace ku - to chew and condition - conditions simplification , information inequality reduce and information obstacles eliminate reach that pointed

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out [17]. Digital in space priority new social - economic format - information society demand doing convergent integration processes belongs to

M. A. Nikitenkova's information economy in the definition so it is said : " Information economy - production issuer of forces development stage being a society in his life information and of knowledge role increase , information and data share increase with is described . gross internal in the product communication technologies , information products and services , global information space create people efficient information cooperation provide , their the world information resources entry and information products and services social and personal needs to satisfy provides " [20].

Victor Mikhailovich Glushkov made a great contribution to the use of computers in enterprises. He was the initiator and main ideologist of the development and creation of the National automated accounting and information processing system designed for the automated management of the economy [18] . In the future , computers and digital technologies were introduced in places where there were large-scale calculations, primarily in economic calculations.

Later, A.A. Gusakov's main research direction was identified: construction systems engineering, as a science of creating complex automated technical systems in construction, as the application of a systematic approach to construction objects [19].

Research Methodology

At least subject construction industry in enterprises digital technologies application verb issues dedicated being , first of all , the subject debt based on this industry according to foreign and local scientists work studied . In the article theory observation , system approach , observation , generalization , analysis , synthesis like methods applied .

Analysis and Results

T' emphasis well , it's today in the day construction in the field one row digital tools and technologies already is being used . Most the most popular are PLM systems (product lifecycle management) - of the product vital cycle manage and BPM systems (business process management) - business processes management [2].

Within these systems, the following systems are supported, for example:

ERP systems (Enterprise Resource Planning - corporate resources planning). This all main business processes to design , to consider get , control to do and ta hlil to do and construction of the enterprise business problems solution to do process _ _ automation information sistemisa - naladi . System of the enterprise all departments and functions one to the system to combine help gives , that's it with together all departments the only one data base with works and they are each other _ with different different information exchange makes it easier . The rule as ERP systems enterprise - of all departments and all necessary functions _ _ of divisions current needs _ _ satisfying the only one computer to the system combined way done is increased [4]. That's it with together with the ERP system physical of individuals common work for responsibility - ni increases and to ERP mobile access current of reaching main operational motivation expenses is to reduce .

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CRM- system (Customer Relationship Management) - customer needs blood is open for intended , customer and contract - what between mutually relationships is a model . CRM _ create and current from doing main goal in the enterprise sell size promotion , marketing activities optimization and to customers service show quality from raising consists of Concept of CRM the client to the organization integration make , customers and their needs about possible as long as more information get enable gives and that's it basically of business all to the fronts effect doer organizational strategy yara - tadi : work production , marketing , sales , services , and _ _ others _

Most famous CRM systems [4]:

1) SAP system – CAD/3 system separately module . Customer with directly cooperation doer enterprise departments (trade departments , websites , online stores , marketing _ _ _ b death , service show departments , subscriber services , call centers) work simplifies .

2) Oracle.CRM-Oracle sales , service to show management , different marketing campaigns transfer , virtual calls center organize to do enable gives _ Chief _ things in line , Oracle. CRM-Oracle is very strong integrated analytical to tools have _

3) MicrosoftDynamicsCRM – organization from him outside of employees efficiency increases , as well as sales , marketing and to customers service show groups between cooperation make it easier system .

BIM- technology (BuildingInformationModelling) - construction on the field all processes automates it _ not only in 3D, but also in 5-7D too design enable gives _

So in the article take went analysis showed that the construction digitization entrepreneurship activity and construction resources manage tool as seeing output need _

However , digital technologies current reach with connected q one row problems mav - jud :

1) information in the environment efficient information to exchange hindrance who does compliance problem _ Compatibility – i nterfaces completely open products or of systems access and to apply without limitation another products or systems with mutually effect to do ability means [5];

2) construction in the field digital from technologies effective use for necessary to competencies has specialists lack of the problem ;

3) construction industry in the participants digital of technologies advantages about of awareness lack of Under construction digital from technologies in use serious to problems take coming row to shortcomings despite being studied so now digitization development the most important promising directions separate show required :

1. Press 3 and 5D release _ The same at the time load cars based on brick buildings and head _ objects (for example , from concrete pressing output) « print to achieve _ There are " printers " that provide Most promising direction - k capacity construction .

2. BIM technology apply _ This all necessary coordinated to information have of the building computer is modeled . One parameter when changing , others with too the same so will be Such the project create through of the building internal and external appearance what do you want? and construction for how much money , materials and work should , how tool - equipment use , construction process how organize done to understand possible will be

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3.3D glasses using visualization , that 's it to you increased going reality the effect create and that's it with planned projects to see enable gives _
4. Construction state , energy efficiency and infrastructure networks monitoring to do possible giver integrated building condition sensor systems current verb _
5. Extensive use of robotics.
Innovations economic benefit came - radi and customers requirements maximum efficiency with done increases . B u systems to competitiveness reach and support _ _ provider technologies that is called This in the profile specialists , engineers _ _ and work to the exits need increased is going Digital mud i - halash and modeling in the direction of design and construction of buildings (structures) . and exploitation used in making to knowledge based on materials , constructions , physical and mechanical _ _ of processes complicated mathematician models is used .
Construction in the field digitization doi - miy variable economic in conditions [6] qu - yidi from technologies used without done is increased . Digital Twins (DT) are digital twins almost all " digital " technologies for unifying element as separate stands _ User for the product apply and him regularly support , updates _ _ _ get and constant brand new demand and to the conditions adaptation necessary _ Customers physical and virtual products between « digital the need for communication they understand . Digital twin is _ real of the object performance about data with to be filled and real time mode his functional situation showing technologies development main stage (BIM model based on). U of the object environment _ _ _ with mutually effect model create for intended (BIM only digital the model create for is used).
Model materials , design features , done operations , tests that 's right information collects the shortcomings to determine and repair done oshi - rish , of the object situation prophecy to do and in the future work modes (of systems safety and efficiency increase , decrease work release cycles) about _ _ _ decision acceptance to do enable gives _ DT _ create a lot level goals and resource limitations (temporary , financial , technological , production release and h . k .) matrix work exit own into takes , he of life all stages himself real object like high level adequacy with holds _ real physical to object (material objects with expensive scientific studies , natural tests need not).
Virtual copies users for comfortable it happened to DT access constant respectively real object with is synchronized _ construction their work perform options _ _ analysis make , their efficiency , price evaluation and the most good solutions _ _ choose enable gives _ Digital a twin construction of the object life rotation in the process precious from mistakes escape and construction industry competitiveness to increase help gives _ of the application pending results of business priority directions _ _ with connected q is strategic _ to goals based on : international in the markets share increase _ construction price and the time reduce _
Being created object availability of DT for of the project all participants efficiency increase provides (production outgoing high good quality the system faster _ _ creates defects _ eliminate reach the time shortens and customer risks reducing caution with corrected the system gets).
There are the following problems in implementing the technology:
- Observable processes every always too completely account not taken ;

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- the client does not evaluate the economic efficiency of DT . The assessment should take into account the initial investment and operating costs (staff, software, hardware upgrades, etc.);
- the complexity of the created models;

DT in the enterprise ;

- changes of influence reverse sequence (DT development _ release status about initial information to be needed).

DT _ done increase for demand to be done Aspects :

- project indicators work get out and himself his mind duration account received in case budget formation ;
- functionality done increase and next support _ _ for responsible personal appointment _
- compact disk creation ;
- DT current reach processes stan - darts work output ;
- first to DT , then while construction to the platform changes input ;
- control of the use of regulatory documents throughout the life of the object [7].

Chet elda DT west Shell Polyethylene in Pennsylvania work release for many p billion dollar chemistry factory to build of the project one part as used [8] . 3D data project from 500 across more than last users 10 combined _ _ _ of the company customer and contractors between cooperation to simplify - tirdi . Digital a twin objects construction monitoring provided , to the surface coming possible has been problems early stage to determine enable gave , from resources foy - to reap control to do and extraordinary to situations answer to give systems bo sh - to get old made it easier .

Digital twin construction in the field work optimization for effective (construction industry see , fruitful of time approximately 25% is unnecessary movement and materials _ _ again to work is spent) [9].

Equipment and of materials of use automated monitoring which provides data center technology , waste observation , construction platform across workers moving resources _ more efficient other - rish , emergency situations rescue from groups use enable gives _ Me h - nat statistics bureau information according to 2008-2012 Joint States - in construction from 4000 in the fields more than construction workers death was _ Digital from the data use dry - lish works safety provides - from the virtual world used without real in the world life save remains [10].

Steelcase Workplace Advisor and Find Space mobile from SteelcaseAzure Digital Twins application create for business to the leaders empty from the place how being used to see and new work places in creating help gave _ Steelcase is a customer with work example brings fast developing company , u employees placing for work the place organize to do to the problem face came _ Thanks to the optimization project, it was found that the utilization rate of the workplace in the company was only 35%. The use of data and analysis for space reconfiguration allowed to increase this coefficient to 51% in a short period of time [11].

Cloud computing (Cloud Computing) is used to explain the hosting and processing of data located on multiple servers in the Internet cloud. As defined by the US National Institute of Standards and Technology, "...Cloud computing is a model for providing ubiquitous and convenient network access on

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demand to a common pool (R ool) of configurable computing resources (data networks, servers, data storage devices) . Applications and IT services can be provided and issued quickly with minimal cost and (or) calls to the provider together and separately" [12].

We list the advantages of cloud-based technologies widely used in construction: high mobility; unlimited amount of data in the cloud; quick access to information of project participants; the ability to control the management of several construction objects; reduce the cost of large offices; maximum data protection . Global technologies allow solving problems from the first stages of design to the commissioning of the facility. By minimizing possible delays in the work process, higher performance is achieved and leads to an overall increase in construction efficiency.

Enterprises that use cloud solutions can reduce the construction time by two times and ensure the standard safety of construction documents [13].

" Internet of Things , IoT " - a collection of executive devices ("smart" objects) with built-in sensors that communicate through certain communication channels with the help of software (" things", devices and communication channels, platforms). It also enables the use of cloud technologies designed for data collection, transmission and processing, and decision-making based on their analysis. The official definition of the Internet of Things is given in the recommendation of the International Telecommunication Union , according to which the Internet of Things , IoT is a global infrastructure of the information society that provides advanced services by establishing communication between things (physical or virtual).

The technological ecosystem known as the "Internet of Things" combines hardware, software, communication infrastructure, as well as "connected" devices that work in the process of data exchange. To implement this technology, devices and connected systems are used for data collection: geolocation modules, vibration, motion, pressure sensors, cameras, radars, gyroscopes, barometers, magnetometers, etc. Thanks to various sensors on the construction site, project management becomes more efficient and safer. . According to experts, the Internet will be under construction by 2024 of Things , IoT market share reaches 16.8 billion dollars.

Construction companies often build facilities in different locations. Sensors collect data that is processed by software at the construction site and provides information to the contractor about the work status . This technology helps manage large projects, reduces the time and costs of solving problems. Currently, the number of objects that can be included in the IoT is much more than the number of people. According to the real- time Internet of Everything Connection Counter (CiscoSystem 's Internet of Everything Connections Counter) , the number of installed devices connected to the Internet was 14.7 billion at the beginning of 2015, and by 2020, there will be 14.7 billion devices . number may increase to 50 billion units [14].

Information modeling of buildings and structures (Building Information Modeling) is based on the joint creation, completion and use of information about the model , which is the basis for decision-making during the entire life cycle of the object . Technology represents the physical and functional characteristics of an object digitally. Building with BIM takes a 3D model and a database of technical, technological, economic, engineering and construction solutions. At all stages of the design, the clay is

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developed in one information model. Architects create a 3D model, in which designers make calculations for each part of the project and hand them over to architects for correction.

Conclusions and recommendations . Despite positive global trends, a number of factors affect the process of digital transformation of the construction industry and complicate this process:

• acute lack of qualified personnel to work with new equipment and digital solutions, including BIM software;

• the period of restructuring of production and business processes, which is complicated by lack of clear understanding of economic effects in long-term planning ;

• lack of universally recognized standards for the use of digital solutions and their low compatibility with the existing fleet of machines and equipment;

• the difficulty of combining information models created by several teams using different software tools (this is partially solved within the OpenBIM concept, which includes the interaction of large teams without being tied to a specific software);

• The complexity of coordinating various participants in complex projects of creating CIM , filling data layers, developing mechanisms for their exchange (data market);

• different levels of digital maturity of large construction companies, subcontracting SMEs.

Localized small and medium-sized enterprises dominate regional markets in the field of construction in our country. Due to the lack of investment resources, qualified personnel and direct incentives to provide resources, most of them are actually low-tech.

In conclusion, considering the prospects of digitalization of construction, it should be noted that digitalization helps to make management decisions based on reliable and accurate information. As a result, it is possible to monitor the real state of construction projects, analyze critical details and check the implementation of technology.

At the same time, digitization is not only a goal of development of the construction industry , but also a means of increasing the quality of the objects under construction and the profitability of the construction process.

related to digitalization of the construction industry shows that this process is inevitable and reasonable for construction organizations in the context of the widespread integration of modern technologies into business.

Digitization in the construction industry will evolve in response to today's market demands, as construction efficiency and cost reduction become a constant challenge. That's why construction is "smart" not only in computer design, but also in the direct process of creating an object. Digital technologies have a significant impact on the benefit of the construction industry, which is aimed at optimizing and increasing the efficiency of the implementation of project stages, from engineering studies to the use of the built object.

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Manba va foidalanilgan adabiyotlar r ўyhati:

1. Platonova O. The task of overtaking your own productivity. –Access mode : http://atomicexpertm.com/page1771354.html.
2. Kupriyanovsky V.P. Application of combined BIM-GIS technologies in the construction industry for various categories of stakeholders / V.P. Kupriyanovsky, S.A. Sinyakov, P.A. Tishchenko // Review of the state of the world: A rcReview No2 (73), 2015.
3. Dobrynin A.P. Digital economy: various ways to the effective use of technologies / A.P. Dobrynin, K.Yu. Chernikh, V.P. Kupriyanovsky // International Journal of Open Information Technologies . – 2016. — No. 1 (4). pp. 4-10.
4. Sagynbekova A.S. Digital economy: concept, prospects, development trends in Russia / A.S. Sagynbekova // International scientific and technical journal “Theory. Practice. Innovation. –2018. – 4(28) –p. 255-267.