Development of digital economy in Irkutsk region

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Abstract. For several years, the digital economy has been implemented into the economic system of Russia. The group of promising digitalization areas are as follows: transport, housing and utilities, banking, education, healthcare, etc. Currently, the digital economy is a project aimed at improving the efficiency of the regional policies. Implementation of new nanotechnologies makes it possible to implement the “smart city” or “digital region” system. The regional authorities are solving the problems of implementation of new and unknown technologies that can reduce costs without increasing the unemployment level. The government is ready to support all projects aimed at changing social spheres. For successful implementation of digital technology projects, it is necessary to analyze all sectors that need special attention. The development of the region will depend on the solution of these tasks. Today, Irkutsk region is ready to perform priority tasks set by the President of the Russian Federation in the economic and social spheres (industry, agriculture, construction, urban economy, transport and energy infrastructure, financial services). For this purpose, they are implementing digital technologies and platform solutions.

1 Introduction

Each region, including Irkutsk oblast, has its own software know-how used to create its digital economy and new companies, not to use similar products or
services imported from neighboring states. In Irkutsk region, digitalization of the economy can increase the budget revenues. Information and communication technologies have been intensively implemented in the public sector during the last few decades.

Public organizations use information and communication technologies to store, process, transmit, and distribute important information. The use of information and communication technologies by the governments has many advantages; service delivery improvement; efficiency improvement; interactivity facilitation; decentralization and transparency; corruption prevention. [1] [2] [3]

Institutions and organizations use information and communication technologies for cost reduction and rapid customer service. The regions use information and communication technologies for similar reasons; to improve the efficiency of their services and reduce bureaucratic obstacles by providing services directly to citizens. A significant obstacle is cash money. Every year, financial transfers are made in cash. The government pay salaries, medical benefits, pensions, and provide financial support. In this case, financial transfers should be transparent. Fortunately, technological innovation allows the regions to make payment through secure, transparent and convenient digital channels. The transfer reaches the intended recipient or returns to the state treasury.

In the information society, there are socio-cultural, economic, technological, educational, biomedical and other segments. Being dynamic and complex, the digital economy can be the most significant transformation driver in the globalized society.

2 Materials and Methods

Digital technology should allow for production of more goods and services with less labor costs which can cause unemployment or salary reduction. However, higher productivity increases prices, creates new products and enhances demand, creates new jobs and increases salaries which compensates for initial failures.

Timing makes this process challenging for policy makers and workers: the labor-saving effect influences the employment level, but new employment opportunities are emerging slowly. It is necessary to create new markets, transfer assets from one sector to another one, develop business know-how and new skills. In order to create new jobs, one should invest in data and digital infrastructure. Implementation of advanced digital technologies can be more ambitious. Many companies have web pages, but few ones use advanced information and communication technology applications, such as software for enterprise resource planning, e-commerce, cloud computing, etc.
In addition, new jobs supported by digital technologies require different skills. Some of these skills are engineering (software development, web management, etc.), but others have little to do with technology. For example, more frequent distribution of digital information requires better planning and faster response, closer cooperation between teams, as well as stronger leadership. Marketing and sales through social networks require different skills than those used in personal sales.

Digital technologies are changing business models and company organization. Information processing, self-management, problem solving and communication are becoming more important. However, many people do not possess skills required in the digital world.

The impact of digital technology goes beyond employment and skills and extends to the work organization allowing companies to re-segment tasks and expand the use of temporary labor. Thanks to innovative online platforms, new intermediary companies connect individual suppliers with individual customers (often in different places), turning some permanent, long-term jobs into on-demand tasks. This trend will change traditional relations between the employer and the worker which will have significant implications for labor market policies and a social dialogue.

Digital online services can coordinate supply and demand in nearby regions in a wider range of tasks: from low-skilled tasks (data entry or administrative support) to highly qualified ones (programming, legal advice or business consulting).

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In fact, in collaboration with social partners, they should track emerging labor market trends and explore ways for developing labor market programs and social protection systems in order to ensure inclusive growth and quality of jobs in the digital economy.

“Digital Factory” is a method for combining business processes, a digital platform that generates high-tech solutions for short-term designing of competitive products of a new generation. This is the first step in the production of the future, where all production processes, from designing to virtual testing, are "digital".

Regional policies must be ready for challenges inherent in the digital economy and the growing public fear that accompanies it. By encouraging investing in information and communication technologies, we contribute to sustainable innovation development, productivity growth and employment. By encouraging market competition, creating an environment for entrepreneurship and supporting the development of new products and services provided by information and communication technologies along with the development of skills, we contribute to the growth of new markets and strengthen public confidence. By supporting workers mastering new skills, we reduce social costs. Active labor market policies, income
support, lifelong learning and more responsive education systems are crucial for the
digital economy. It is necessary to coordinate the training personnel system and
economic needs. The system should be more flexible and practice-oriented.

According to the “Concept of regional informatization”, “Development strategy of
the Russian IT industry for 2014-2020 and until 2025”, creation and development of
modern information systems and tools to improve the level of training and support for
managing the socio-economic development of regions is an important task.

3 Results

According to the recommendations, the regional program is a component of the
national program “Digital Economy of the Russian Federation”. It consists of
projects that are in compliance with the following federal projects: “Regulatory
regulation of the digital environment”, “Information infrastructure”, “Personnel
for the digital economy”, "Information Security", "Digital Technologies", and
"Digital Government Management". The projects have to take into account the
nature of regional development.

The regional program may include a separate section containing regional projects
aimed at transforming the priority sectors of the economy and the social sphere,
including industry, agriculture, construction, urban economy, transport and energy
infrastructure, financial services, through the implementation of digital technologies
and platform solutions. Objectives and indicators of the regional program should be in
compliance with the goals and indicators of the national program “Digital Economy of
the Russian Federation”; results of the regional program implementation should be
specified. At this stage, the main sections of the program are development of regional
telecommunications infrastructure, implementation of new decision-making support
technologies, development of recommendations for higher education institutions,
interaction with companies which are experts in the digital economy, development of
environmental projects, including the “Digital Baikal” project.

The “Personnel for the Digital Economy” project aims to train highly
qualified workers for the digital economy by increasing the share of professional
training, retraining and advanced training programs by 2024.

According to the “Digital Public Administration” project, by 2024, the share
of digital interaction between citizens and commercial organizations and
government authorities and public institutions will have been 20-70%. For the
territory of advanced development, a system of advanced education is required.
It is obligatory to involve employers in the educational process and focus on
business in order to train specialists demanded in the labor market.
4 Discussion

The digital economy is a key factor of production based on the use of digital data contributing to an information space accounting for the need in high-quality and reliable information, information infrastructure, information and telecommunication technologies and a new technological basis for the socio-economic sphere. The digital economy includes the following levels: markets and economic sectors, platforms and technologies for developing competencies for markets and industries, the environment for developing digital platforms and technologies, regulatory control and effective interaction of economic sectors, information infrastructure, personnel and information security.

Development of the digital economy in remote regions is impossible without information infrastructure. However, its creation and maintenance in regions with harsh climatic conditions, vast areas and a small number of the population are very expensive. Operators cannot develop networks in these conditions. To solve this problem, mobile operators, large companies and the government need to cooperate. Irkutsk region is a huge and heterogeneous region in terms of the information infrastructure. Meanwhile, the modern information infrastructure involves the mobile Internet rather than voice communication. It is a platform for developing the Internet of things, implementing “smart” solutions in various sectors – energy, utilities, transport etc.

Implementation of Internet technologies in remote small settlements is often unprofitable for the mobile operator. Operating and maintenance costs are often higher than construction ones. A public-private partnership mechanism could contribute to the telecom infrastructure in the remote areas of Irkutsk region.

Development of the digital economy plays an important role in improving living standards. These efforts will help incorporate elements of the digital economy into the daily routine.

5 Conclusion

Information storage technologies have been developing (high-performance and fault-tolerant information infrastructure called data centers has replaced petroglyphs, punched cards, streamers, and diskettes). In recent years, informatization has been especially intensive. In this regard, information as an extremely capacious concept encompassing all aspects of life is connected with the concept of security. Security of individuals, society, and the state is determined by the extent to which information, information technology,
information resources, and information interests are protected and how society can protect itself from harmful, destructive information impacts.

The article discussed the fundamentals of the digital economy infrastructure in Irkutsk region where digital data are an essential factor in socio-economic activities, improving living standards and enhancing awareness of the population and availability of public services. The use of components of research and information infrastructures of the digital economy will improve the efficiency of decisions, allow for prompt evaluation of various management methods, calculation of the volume of resources needed to achieve the goals, ensure sustainable development of the economy of Irkutsk region, monitor the “Strategies of social and economic development of Irkutsk region for the period up to 2030” project.

The novelty of measures aimed at creating a digital platform for managing the socio-economic development of territories is due to the application of the original technology for creating service-oriented information and analytical systems for processing large volumes of spatial data in the form of specifications that generate a software code implementing the IAS subsystems, including a Web-based user interface, data presentation formats, information exchange protocols, aggregation and data analysis environments generated reports.

Financial operations, investment, production processes are determined by advanced technologies, in particular digital ones. The successfully developing modern economy is a system of business projects which are based on high-performance management platforms.

Implementation of the large-scale “Digital Economy” project depends on effective solutions to the tasks of rapid development of information technologies and legislation. Given that legislative activities are carried out in the legal field, information technologies are complementary and interdependent in their relations with other technologies.

Currently, digital transformation of Irkutsk region is an intensive process. “Digital economy is not a separate sector. It is a basis for creation of new business, trade, logistics and production models. It changes education, healthcare, public administration, communication between people. Therefore, it determines a new development paradigm for the government, economy and society”.

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