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PROMOTING DIGITAL TRANSFORMATION OF NATURAL RESOURCE AND ENVIRONMENT INDUSTRY IN VIETNAM IN THE AGE OF THE 4TH INDUSTRIAL REVOLUTION

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Abstract: **Digital transformation opens up opportunities for all countries. Developing countries can even take advantage of the opportunity for faster digital transformation. It is an opportunity for Vietnam to surpass and change the national ranking. Digital transformation is one of the keys to the success of all professions in all areas of life and society, including natural resources and the environment. With the transformation of the economic development model in depth in the development orientation, the digital economy is a driving force and a solution for the natural resources and environment industry, helping reduce natural resources use.**

Keywords: **Digital transformation, natural resources, environment, Industrial revolution 4.0.**

I. INTRODUCTION

Digital transformation is one of the top concerns in the technology field in Vietnam. The Vietnamese government also pays special attention to digital transformation in the 4.0 industrial revolution. It assigned the Ministry of Information and Communications to construct a National Digital Transformation Project and submit it to the Prime Minister in 2019.

On March 10, 2021, the Ministry of Natural Resources and Environment (MNRE) issued Decision 417/QD-BTNMT approving the Program of Digital Transformation of Natural Resources and Environment by 2025, with orientation to 2030. Accordingly, the MNRE sets several goals to develop digital government, improve operational efficiency and effectiveness by 2025, with orientation to 2030.

II. CONTENT

1. Concept and role of digital transformation

There are many definitions of digital transformation that have been given in the world and Vietnam. These definitions may differ in terms of approach, but basically, digital transformation definitions refer to the application of technologies to solve production and business activities and enterprise administration and management

According to Gartner - the world's leading information technology research and consulting company, "the digital transformation is the use of digital technologies to change business models, create new opportunities, revenue and value [8].

Microsoft argued that "Digital transformation is about rethinking to the way that organizations rally people, data, and processes to create new value" [8]

According to the Tech Republic - An online magazine on the social community for IT professionals, “digital transformation is a way of using technology to realize the processes again to be more efficient." [9]

The FSI – the leading digital transformation enterprise in Vietnam confirmed that “Digital transformation is the process of changing from a traditional model to a digital enterprise, by applying new technologies such as Cloud computing, Big data, Internet of things (IoT), ... changing operating methods, leadership, working processes, company culture…" [9]

For each business, operation method, and organizational model, the definition of digital transformation is also different. But in general, transformation can be broadly understood as "reshaping industries by restructuring the existing business and operating models."

On the social level, it can be confirmed that digital transformation is the integration of digital technologies into all areas of social activities, taking advantage of technologies to change the way of operation fundamentally and provide new values to the people. Digital transformation is also a change in the culture of the state apparatus, which requires constant change, experimentation with new things. It plays an important role in various social and political fields such as government, mass media, medicine, science, etc.

Digital transformation is how to exploit the data obtained from the digitization process and then apply technologies to analyze, transform that data, and create new values. It is different from digitization that is the process of modernization, converting conventional systems to digital systems. Digitalization can be viewed as part of the digital transformation process.

Digital transformation brings many benefits to all aspects of social life, changing how we live, working, and transacting with each other. The use of data and digital technology transforms the user experience with State services, business processes, the model, and the mode of operation of state management agencies. Digital transformation also contributes to increasing labor productivity. Research by Microsoft showed that, in 2017, the impact of digital transformation on labor productivity growth is about 15% by 2020. This figure will be 21% [4; p27].

There is a growing awareness among leaders who determine the direction and success of an organization's transformation and the importance of digital transformation. After realizing the importance of digital transformation in increasing operational efficiency and ensuring national security, the government apparatus of many countries immediately entered a new "race" in the application of digital transformation. The impact ability of digital transformation on GDP growth is enormous.

2. Development reality of digital transformation in the natural resources and environment industry

Currently, in Vietnam, digital transformation models are also creating valuable services for the people and effectively utilizing the idle resources of the society. However, It also creates contradictions and fundamental changes with the traditional service model. In the current digital transformation context, traditional agencies, organizations, businesses, and services must make drastic changes to improve work efficiency in the era of the 4.0 technology revolution.

With more than 98 million people, Viet Nam is one of the fastest-growing economies in the region. With a dynamic young population and the ability to quickly access high technology, experts assess that Vietnam has great potential in digital transformation. These are good opportunities for agencies and businesses in Vietnam to create breakthroughs thanks to digital transformation, including the natural resources and environment sector.

To successfully implement the digital transformation in natural resources and the environment, the MNRE created favorable conditions for economic sectors, communities, and individuals to invest, research, build products, digital technology services, and contribute to the digital transformation of natural resources and environment industry. At the same time, promote the implementation of mechanisms and policies on service hire, cooperation in public-private partnerships, and investment under the State regulations.

The MNRE has deployed and operated an electronic document management system, connecting directly with the national document communication axis to send and receive electronic documents with outside units. It also connects and integrates with other shared information systems of the MNRE to serve the direction, administration, assignment, processing of incoming and outgoing documents and electronic records. Until now, the MNRE and its affiliated units have sent and received digitally signed electronic documents (except for secret documents), reaching over 98% [2; p.53].

In addition, the MNRE has implemented online working and meeting methods, operating an online meeting system in the context of the COVID-19 epidemic, ensuring timely information to serve the leadership, direction, and administration in State management effectively.

The Department of Information Technology and Data for National Resources and Environment has coordinated with the General Department of Land Management and relevant agencies to prepare information technology infrastructure and deploy the connection, integration platform, sharing national data for the national land database to operate before July 2021.

The MNRE has provided level 3 and 4 public services for 100% of administrative procedures; completed and put into operation 107 online public services on the MNRE's online public service portal, in which 50.9% of the procedures at level 4 exceeded the governmental requirements. The MNRE is highly appreciated for its achievements, ranked 4th among ministries and branches, contributing to bringing the MNRE's Par Index (administrative reform index) in 2019 to 7th, up to two places than 2018 [2; p.76]. The MNRE is building a vast resource, which is a digital resource for the fields of natural resource and environmental management. When these plans are completed, the natural resources and environment will become a digital economic industry because this industry is valuable for all aspects of social management.

Regarding the application of information technology, deploying the e-Government at Departments of Natural Resources and Environment (DNREs) according to the Decree No.73/2019/ND-CP of the Government, 38/63 DNRE have built and submitted to the People's Committees for the promulgation of the regulations on the collection, management, exploitation, sharing and use of natural resource and environmental information and data. In 2020, 12 provinces issued a plan to investigate, collect data on natural resources and the environment. There are also 17 provinces and cities built and compiled a natural resource and environmental data list. It is published on the electronic information Website/Gateway of the Provincial People's Committee and the DNREs for searching, providing and using [2; p.102].

Regarding the implementation of e-Government, the DNREs have popularly applied management systems for check-in and check-out documents, work records. According to the local commission, the online public service system, one-door electronic service, electronic mail, and software to support the management and administrative work have contributed to implementing the administrative reform, reducing paperwork, improving labor productivity, direction, administration efficiency.

Regarding the building of databases on natural resources and environment, the Departments have built specialized databases and put them into use mainly with the following contents: land database, geological - mineral database, water resource database, environment database, natural resources, and environment monitoring database, sea - island database, and digital archive database. However, there are many difficulties in building legal documents, standards, and regulations on information technology in the digital transformation of natural resources and environment and deploying digital infrastructure, information systems, databases, digital platforms, applications, and shared digital services. Human resources in the industry and people still face many obstacles in using and accessing digital skills, data analysis, and processing skills. Especially, people do not have the habit of using technology in handling administrative procedures, especially in rural areas.

3. Some solutions to improve the efficiency of digital transformation of the Natural Resource and Environment industry

Digital transformation of the Natural Resource and Environment industry in the coming time is inevitable and urgent. For successful digital transformation, it is necessary to have resource investment, determination of all breaches and localities, and specific solution orientations:

- *Transforming awareness*: Regularly innovate in propagating the guidelines and policies of the Party and State on e-Government, Digital Government, and the active participation in the Fourth Industrial Revolution. The heads of agencies and organizations need to increase the responsibility for digital transformation, linking digital transformation goals and tasks with resolutions, strategies, programs, and action plans. Encourage to set an example, inspire, and drastically implementing digital transformation in performing tasks. Innovate the way, working method, building a new office culture in line with the development of the Digital Government. Promote communication, enhancing interaction with people and businesses in the digital transformation process.

- *Building mechanisms, policies, and administrative reform:* Prioritizing the construction and completion of legal documents serving digital transformation into the Ministries' annual program on building legal documents, especially in the MNRE. Closely link administrative procedure reform with the development of e-Government and digital government. Review administrative procedures and professional processes in State agencies towards the thorough application of digital technology and digital data. Consolidate the organization, apparatus, functions, tasks, the organizational structure of specialized information technology units in line with the process and roadmap of digital transformation, digital government, digital economy, digital society, and smart city.

-*International cooperation:* Promote international cooperation, visit, learn from experience, technology, deployment model; organize practical trips, seminars, and international forums in the country and abroad to discuss, exchange, and share the digital transformation of natural resources and environment. Organize deep and comprehensive cooperation with international organizations, non-governmental organizations, and countries worldwide in sponsoring, training, researching, transferring, and testing digital transformation solutions on the resources and environment.

- *Scientific research, technology transfer:* It needs to research, apply, and develop technological solutions of the Fourth Industrial Revolution, creating a foundation for the digital transformation of the natural resource and environment industry in the development process of the digital government, digital economy, digital society, and smart city. Besides, it is necessary to develop and apply automation, digitization, and modeling technologies in data acquisition, investigation, observation, monitoring, forecasting, and warning in the natural resource and environment industry. Propose intelligent technology solutions for management, analysis, processing, exploitation, provision, and use of digital data in the natural resource and environment sector. Promote effective application and transfer of new technologies from advanced partners to collect, manage, analyze and process data to create breakthroughs in the development of digital government in the natural resource and environment industry.

- *Training, fostering digital skills for leaders, and developing human resources:* Training, improving qualifications and awareness of digital transformation for leaders. Organize training of core experts, spread knowledge and skills for digital transformation, digital governmental development in natural resource and environmental industry. Organize training courses to foster digital skills, data analysis, and processing skills for officials, civil servants, and public employees every year to transform the working environment into a digital environment. Attract a force of senior domestic and foreign experts who have the experience to participate in training programs and join a network of experts on digital transformation.

- *Financial mechanism:* Prioritizing the state budget and mobilizing other capital sources to develop the digital government. Strengthen the mobilization of non-state resources and hiring information technology services. Allocate sufficient recurrent funds to maintain and operate the information systems of state agencies serving the e-government and digital government development. Encourage and create conditions for all economic sectors, communities, and individuals to invest, research, build digital technology products and services, contributing to the digital transformation of the resource and environment industry. Promote the implementation of mechanisms and policies on service hire, cooperation in public-private partnerships, and investment following regulations.

III. CONCLUSION

Digital transformation opens up unprecedented opportunities for Vietnam. Digital government operates more efficiently, transparently and reduces corruption. The digital economy promotes innovation to create new values, helping increase labor productivity, making new driving forces for growth, and escaping the middle-income trap. Digital society allows people equal access to services, training, and knowledge, narrowing the development gap and reducing inequality. The industries and fields are optimized towards improving the people's experience and quality of life. In order to well perform the function of state management in the area of natural resources and environment, creating conditions for the release of resources for the State and society in the coming time, the MNRE needs to give priority to quickly implementing the digital transformation in the natural resource and environment industry, constructing, completing, sharing and using the digital data, especially in the management of land resources, geography, water resources, minerals, monitoring, of environmental warning, hydrometeorology, sea and islands, climate change.

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