

## DIGITAL TRANSFORMATION AND SUSTAINABLE DEVELOPMENT: THE ROLE AND CHALLENGES OF BUSINESSES IN CA MAU

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**Abstract:** Digital transformation is becoming an inevitable trend, having a far-reaching impact on socio-economic development in Vietnam in general and Ca Mau province in particular. With more than 5,000 enterprises, of which 98% are small and medium enterprises, Ca Mau has advantages in marine economy, fisheries, and renewable energy, and faces many challenges in infrastructure, human resources, and investment capital for digital transformation. Recently, the provincial government has issued action plans, coordinated with major technology corporations, and encouraged enterprises to apply e-commerce, management software, and traceability systems. However, the digital divide between large and small enterprises, limitations in access to finance, and the fear of change still exist. The article focuses on analyzing the current situation, challenges, and issues in Ca Mau's digital transformation process.

**Keywords:** Digital transformation, Ca Mau's businesses, sustainable development, digital infrastructure, digital human resources.

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### Introduction

In the context of globalization and the Fourth Industrial Revolution, digital transformation has become an inevitable trend, having a profound impact on all fields of the economy, society, and state governance. Not only is it a tool to improve productivity and efficiency, but digital transformation also contributes to restructuring the development model, promoting innovation, and creating new value for businesses, authorities, and people. In Vietnam, Resolution No. 52-NQ/TW (2019) of the Politburo identified digital transformation as a key task to realize the goal of rapid and sustainable development, associated with building a digital economy, digital society, and digital government. Ca Mau, as the southernmost province in the country, has advantages in marine economy, agriculture, and fisheries, and also faces many challenges in terms of infrastructure, human resources, and enterprise size. Currently, more than 98% of businesses in Ca Mau belong to the small and medium group, of which many units still operate according to the traditional model, limiting access to digital technology. In that context, digital transformation is not only a solution for businesses to improve their competitiveness, but also an opportunity for Ca Mau to break through and take advantage of the fisheries industry, renewable energy, and commercial services, contributing to the realization of sustainable socio-economic development goals. Recognizing this importance, the government of Ca Mau province has proactively issued many programs and action plans, and organized forums and conferences to connect businesses with large technology corporations, seeking solutions

suitable to local characteristics. The close coordination between the State – Enterprises – Science and Technology has opened a new direction for the digital transformation process. However, the reality also shows that there are many obstacles: a lack of synchronous digital infrastructure, unresponsive information technology human resources, the level of application is still different between industries, along with the fear of change in many small and medium enterprises. Therefore, the study of the situation, analysis of difficulties, and proposed solutions to promote digital transformation in Ca Mau has profound theoretical and practical significance.

### Research Questions

- **Question 1:** What are the requirements and policies, strategic directions, as well as the level of business participation in Ca Mau in the current digital transformation process?
- **Question 2:** What is the basic problem in the current digital transformation process in Ca Mau?

### Objectives

The purpose of the article is to go into the analysis to clarify the basic content related to digital transformation and sustainable development: the role and challenges of businesses in Ca Mau.

## Content

### *Basic theoretical framework*

First of all, digital transformation is not only the process of applying digital technology to production and business activities, but also implies a comprehensive change in thinking, management methods, and development models. The OECD (2020) argues that digital transformation is a determinant of national competitiveness in the context of globalization, as added value is increasingly associated with data, automation, and intelligent connectivity. Second, the Digital Economy is considered a key driver of growth. A World Bank report (2021) indicates that countries that make good use of digital technology can achieve an additional GDP growth of 1-2% per year. In Vietnam, according to the National Digital Transformation Program (Decision 749/QĐ-TTg, 2020), the goal is that by 2025, the digital economy accounts for 20% of GDP, in which digital transformation of enterprises and public governance play a central role. Third, the concept of sustainable development, affirmed by the United Nations in the 2030 Agenda, includes three pillars: economic, social, and environmental. In the context of digital transformation, sustainable development is not only about balancing growth and environmental protection, but also associated with ensuring inclusiveness, reducing digital inequalities, and improving people's quality of life. Applied to Ca Mau province, this theoretical framework allows considering the dialectical relationship between digital transformation – enterprise competitiveness – local sustainable development. Digital transformation helps businesses optimize value chains (especially in fisheries, high-tech agriculture, and renewable energy) while improving the public governance capacity of the government. At the same time, it poses new requirements on digital human resources, technological infrastructure, legal framework, and adaptability of communities. From this theoretical background, the study can approach Ca Mau as a typical case, where the digital transformation process has both common characteristics of Vietnam and shows the unique problems of a coastal province where the economy still has many difficulties, but great potential for sustainable development.

### *Overview of the current situation of digital transformation in Ca Mau*

#### *Context and requirements*

Ca Mau is the southernmost province of the country, strategically located in terms of marine economy, fisheries, and renewable energy. With a population of more than 1.2 million people and over 5,000 businesses, Ca Mau's economy is mainly based on the exploitation and processing of aquatic products, agriculture, and commercial services. However, the size of small and medium enterprises accounts for 98%, with limited resources, uneven management, so the access to digital technology is still modest. In the context of international integration and fierce competition, digital transformation has become an urgent requirement to increase competitiveness, expand export markets, and improve the efficiency of state governance. Resolution No. 04-NQ/TU of the Ca Mau Provincial Party Committee (2021) has identified digital transformation as one of the strategic breakthroughs, associated with building e-government, developing the digital economy, and improving the quality of people's lives. This is an important first step in shaping policy and orienting local businesses to participate in the digitalization process.

#### *Regarding policy, strategic direction, and the level of the enterprise's participation*

The provincial government has issued a Digital Transformation Plan for the period 2021-2025, with a vision to 2030, focusing on three pillars: digital government, digital economy, and digital society. The province prioritizes the implementation of shared data infrastructure, online public service applications, and, at the same time, supports businesses in building smart production and business models. In the past period, Ca Mau has promoted cooperation with telecommunications and technology corporations such as VNPT, Viettel, FPT to provide digital infrastructure solutions, cloud computing, electronic payment systems, and e-commerce platforms for businesses. In addition, departments, agencies, and branches have organized many digital skills training programs, e-commerce training for cooperatives, business households, and small and medium enterprises. Businesses in Ca Mau have begun to make changes in their awareness of digital transformation. In Ca Mau, many large aquaculture units in the province have applied an electronic traceability system, managed production with ERP software, and connected the market through e-commerce platforms. Some energy and logistics enterprises implement digital management solutions to optimize operations. However, most small businesses are still at the beginning stage: using email, social media, or simplifying the accounting process, not reaching the level of automation or big data mining. The difference between large and small enterprises is quite clear, creating a digital gap within the province. However, despite many difficulties, the digital transformation process in Ca Mau has achieved remarkable initial results such as: The rate of online public services at level 4 has increased rapidly, creating favorable conditions for businesses and people; many seafood enterprises have digitized the production management process, traceability and e-commerce promotion, helping to improve the reputation of export goods; agricultural cooperatives have initially used output management software, connecting consumption through e-commerce platforms, expanding markets inside and outside the province; awareness of the role of digital transformation in sustainable development has spread, forming a cohesive movement between the government – businesses – people.

#### *Issues raised*

In the implementation process, Ca Mau benefits from the national digital transformation strategy (Decision 749/QĐ-TTg, 2020), which emphasizes the development of the digital economy and digital government as the two main pillars. These guidelines provide a legal foundation and orientation for localities to develop appropriate action plans. Despite the advantages, Ca Mau still faces many barriers, such as inconsistent digital infrastructure: In remote and coastal areas, network speed is still weak, a lack of data centers and cloud computing services in the province. This directly affects the ability to deploy digital applications. High-quality human resources are limited: The majority of workers in Ca Mau are in the field of agriculture and fisheries, with few digital skills. The on-site IT human resource training system has not been developed, leading to dependence on human resources from large cities. So what are the problems facing Ca Mau in the current digital transformation process? From our point of view, we focus on the following basic contents:

#### *Firstly, how to link digital transformation with sustainable development and narrow the digital gap between businesses*

Ca Mau needs to ensure that the digitalization process not only serves economic growth, but also contributes to the goal of reducing digital inequalities, protecting the marine ecological

environment, and mangroves. Closing the digital divide between businesses is also an issue of concern. While some large seafood enterprises have adopted ERP, blockchain traceability, many small businesses still only use social networks. This gap, if not narrowed, can increase inequality within the local economy.

### **Second, developing on-site digital human resources and ensuring information security and digital trust**

The development of on-site digital human resources is a decisive factor in the digital transformation process. The province needs to have a long-term strategy on training, from popularizing basic digital skills for people to developing specialized human resources for businesses and authorities. Focusing on information security and digital trust is also one of the key issues of Ca Mau today. As businesses and citizens become more involved in e-commerce and online public services, the risk of data leakage and cyberattacks increases. Building an information security infrastructure and legal framework for personal data protection is an urgent requirement.

### **Third, mobilize and allocate financial resources appropriately**

One of the biggest challenges for the digital transformation process in Ca Mau is the issue of financial resources. With limited economic characteristics, the local budget can hardly meet the entire investment demand for digital infrastructure, data platforms, and business support. Therefore, the problem is how to effectively mobilize diverse and properly allocated capital sources to create a sustainable driving force for digital transformation. First of all, it is necessary to diversify capital mobilization channels. In addition to the state budget, Ca Mau needs to promote public-private partnership (PPP) in digital infrastructure projects such as data centers, IoT systems for aquaculture monitoring, or smart renewable energy. At the same time, the province can attract capital from innovation support funds, ODA capital, and especially preferential credit programs of banks for digital transformation enterprises. It is also feasible to create an open mechanism for large enterprises to invest in common digital platforms, then provide services to SMEs. Secondly, in resource allocation, three areas should be prioritized: (i) telecommunications and data infrastructure, ensuring synchronous connectivity from urban to remote areas; (ii) supporting small and medium enterprises to access technology at reasonable costs through preferential credit packages or software cost support; (iii) training digital human resources, considering this a long-term and sustainable investment. Thirdly, there must be a mechanism to monitor and evaluate the efficiency of capital use. Financial resources, if not managed transparently, can easily lead to spread and inefficiency. Therefore, the province needs to develop clear criteria to measure the contribution of each digital transformation project to socio-economic development. Thus, the mobilization and proper allocation of financial resources not only solves immediate difficulties but also shapes the long-term foundation for digital transformation in Ca Mau, helping this process be closely linked to sustainable development goals.

## **Conclusion**

From the perspective of development philosophy, digital transformation can be considered as a "leap" in the socio-economic development of Ca Mau. While in the past, the province mainly relied on fishing and traditional agriculture, now digital technology opens up the ability to optimize the value chain, improve global competitiveness, and ensure sustainable development in three aspects: economic, social, and environmental. However, every step

forward is in a dialectical relationship with intrinsic challenges. The lack of synchronous telecommunications infrastructure, insufficient digital human resources, or the shyness of small businesses are the inhibiting factors. It reminds us that development is never linear, but always requires transcending conflict, adaptation, and creativity. Digital transformation in Ca Mau reflects a process that is both an objective inevitability and local characteristics. Under the lens of social philosophy, this is not just a technological change, but a transformation in labor methods, production relations, and management models. It is associated with the need to build a modern, democratic, and inclusive society, where all sectors – from business, government, to people – benefit from digital value. The initial results in Ca Mau show that the coordination between the State – Enterprises – Science and Technology has opened a feasible path. The government creates a legal framework and policy environment, enterprises boldly innovate the governance model, and scientific organizations play the role of consulting and technology transfer. This is the dialectical relationship that needs to be strengthened. In the near future, if Ca Mau knows how to take advantage of opportunities to mobilize diverse resources, narrow the digital gap between large and small enterprises, and link digital transformation with the goals of ecological protection and social justice, this process will become a sustainable driving force.

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