Experience from the United Kingdom's digital transformation policy and lessons for Vietnam

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Abstract: ***In the current context of digital transformation, Vietnam should develop a comprehensive and synchronized digital transformation policy involving both the public and private sectors. This policy should align with a strategy for training high-quality human resources and building robust technological infrastructure to drive the development of digital economy, digital society, and digital government in the future. One of the key highlights of the United Kingdom's digital transformation policy is the establishment of the Government Digital Service (GDS), which facilitates the development of platforms and tools to support online public services. Additionally, the United Kingdom emphasizes improving digital skills for its civil servants and citizens through training and development programs. A significant lesson Vietnam can learn from the United Kingdom is creating a flexible policy framework that can adapt to technological advancements and practical needs. Furthermore, fostering a legal environment and mechanisms that encourage innovation in digital technology, such as implementing regulations on open data and cybersecurity, will contribute significantly to the success of digital transformation.***

Keywords: *Digital transformation; digital transformation policy; public sector; the United Kingdom; open data; digital technology; lessons learned; Vietnam.*

1. Introduction

In the context of digital transformation becoming a global trend and a driving force for socio-economic development, it is crucial to study and learn from the experience of advanced nations. The United Kingdom (the UK), as one of the leading countries in designing and implementing digital transformation policies, has achieved significant milestones in developing digital government, digital economy, and digital society. Lessons learned from the UK's policies not only enhance public governance efficiency but also foster innovation and strengthen national competitiveness.

However, applying that experience to the realities of each country, particularly such developing ones as Vietnam, requires flexibility and alignment with their respective economic, social, and institutional contexts. This article analyzes the UK's policy experience in digital

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transformation and accordingly proposes practical lessons for Vietnam to facilitate a sustainable and effective digital transformation progress.

2. Digital transformation policies

Digital transformation integrates digital technology into all aspects of life, encompassing economic, social, and state management activities. This process involves reshaping how businesses and government agencies operate and organize themselves to generate new values, enhance user experience, and improve efficiency.

Digital transformation policies are crucial for modern economic and social development, enabling nations and organizations to adapt to global technological trends. They can be thus understood as state-directed strategies and solutions to promote application of digital technologies in economic, social, and administrative activities. The goal is to improve operational efficiency, enhance service quality, foster innovation, and increase competitiveness while ensuring sustainability and inclusivity during development. However, implementing and managing these policies require careful consideration of infrastructure, legal frameworks, security, and social factors to ensure their success and sustainability.

These policies are vital in shaping the methods and roadmaps for digital transformation across government agencies, businesses, and society as a whole (including such measures as establishing proper legal frameworks, providing financial support, investing in technological infrastructure, and improving digital skills among citizens).

• *Economic impacts:* Digital transformation policies can boost labor productivity, create new business opportunities and promote innovation, contributing to economic growth.

• *Social impacts:* Such policies improve the quality of public services, further connect with and empower citizens, particularly in healthcare, education, and urban management sectors.

• *Governmental impacts:* Digital transformation policies enhance governmental operational efficiency, streamline administrative procedures and promote transparency, fostering greater public participation in decision-making processes.

In sum, digital transformation policies are indispensable for guiding and supporting governments, businesses, and societies' transition to a more digitally integrated and efficient future.

3. Digital transformation policies of the United Kingdom and key insights

3.1. Digital transformation policies of the United Kingdom

The Industrial Revolution 4.0 has profoundly impacted the structure and relationships within the global economy. This revolution is structurally transforming almost all industries worldwide, signaling a systematic shift in production, management, and governance systems. Accordingly, automation is replacing manual labor; intellectual capital is being replaced with knowledge and data; and intermediaries are being eliminated in favor of direct connections between governments, citizens and economic stakeholders. Furthermore, it is totally reshaping consumption habits and social behaviors. Its influences have intensified the push for digital transformation across industries to keep pace with technological advancements.

In this context, the United Kingdom has promptly devised comprehensive digital transformation policies, emphasizing integrating digital technologies across all sectors, including government, businesses, and the public. These policies aim to digitize the economy, focusing on seven key objectives:

First, building world-class digital infrastructure

The government must provide favourable conditions and establish frameworks for widespread and advanced infrastructure investments that support business growth, of

which digital infrastructure is a vital component. Digital connectivity has become an essential utility that is indispensable in modern life. It drives productivity, creativity, and innovation while serving as the foundational element of a digital nation. Efforts in this area focus on providing broadband connectivity for businesses, creating business connection forums, and helping enterprises, local governments, and service providers resolve issues related to high-speed broadband access that is reliable, affordable, and widely available.

Specific activities include:

(1) *Establishing effective policy frameworks:* Regulations have been developed to encourage digital infrastructure investments, such as enabling service providers to access the physical infrastructure of other providers under reasonable terms and conditions (House of Commons Committee, 2023).

(2) *Improving connectivity for all:* The Universal Service Obligation (USO) was introduced in 2020, which grants every individual, business, and government agency the right to request high-speed broadband access at reasonable costs.

(3) *Digital economy legislation:* The law is binding to ensure mobile service providers guarantee network coverage. The government also considers frequency spectrum auction conditions that include mandatory network coverage and reliability commitments.

(4) *Empowering users:* Users are allowed to share data on network coverage and performance allow them to choose the best networks and foster market competition.

(5) *Expanding free public wi-fi:* Increased free wi-fi coverage on transport networks enables various applications such as real-time traffic updates and connecting autonomous vehicles and smart roads (Alphabeta, 2019).

(6) *Investing in a new digital infrastructure investment fund:* This government fund is a market catalyst, ensuring providers can access financial resources to expand broadband services.

(7) *Developing a 5G strategy:* The strategy is aimed at three primary objectives: conducting a Future Telecommunications Infrastructure Review to assess whether policy interventions are necessary to facilitate long-term investments in world-class digital connectivity; establishing an inter-disciplinary task force to address specific challenges related to the deployment of telecommunications infrastructure; and collaborating with local authorities to facilitate infrastructure deployment and provide connectivity levels tailored to local needs (Thang, 2022).

Second, equipping everyone with essential digital skills

Boosting labor productivity is crucial to enhancing shared prosperity, higher incomes, and more significant opportunities for younger generations. In a digital economy, this means ensuring everyone possesses necessary skills to thrive, leaving no one behind. Support must be provided to help individuals develop the skills required to participate in the digital economy and to enable businesses to fully leverage the benefits of digital innovation.

Research identifies four main barriers affecting individuals' ability to use digital services. The UK government has collaborated with industries and voluntary organizations to improve access for those who have yet to engage with digital services and individuals who lack the confidence or knowledge to maximize their use. Examples of initiatives include: (1) Increased funding for basic digital skills training through the "Future Digital Inclusion Programme"; (2) Free wi-fi in all public libraries across England, facilitated by the Arts Council England; (3) Establishing a Essential Digital Skills Framework to ensure the government can efficiently provide necessary assistance, such as training of basic digital skills or supporting use of online government services, targeting citizens lacking the skills, confidence, or access to utilize these services effectively.

Third, making the UK the best place to start and grow a digital business

The digital economy is integral to innovation, creation, and providing the most advanced technology-based content and services. The UK aims to become the best place globally to start and grow a digital business. Accordingly, its government has fostered robust ecosystems and technological hubs nationwide to achieve this. By 2014, there had been nearly 200,000 digital businesses in the UK providing 1.4 million jobs nationwide. Regional digital hubs have been developed across the country.

To facilitate this development, regulatory agencies have been encouraged to design innovation-friendly regulations, creating a positive environment for adopting new technologies. The UK government announced an additional £4.7 billion investment in Research and Development (R&D) for 2020-2021, marking the most significant increase in R&D funding since 1979. This investment ensured that UK businesses remain at the forefront of scientific and technological advancements. The UK Industrial Strategy Green Paper has identified priority challenges for a newly-established Industrial Strategy Challenge Fund (ISCF), which allow the UK to capitalize on its strengths in science and innovation fields such as robotics, clean energy, and biotechnology.

Fourth, helping all UK businesses become digital businesses

Businesses' global competitiveness depends not only on the rapidly growing digital sector but also on their ability to adopt the best digital technologies and data to enhance productivity and innovation. Adopting digital technologies is crucial for improving productivity and competitiveness across all businesses.

To ensure businesses have relevant knowledge and resources to access these technologies, the UK government leverages existing initiatives and addresses specific challenges. In addition to improving the set skills and infrastructure, in the Autumn Statement 2016, the government announced a £13 million seed funding to establish a UK Productivity Council led by the private sector. This council aims to promote engagement in improving productivity across the economy, including adopting suitable digital technologies.

Fifth, making the UK the safest place in the world to live and work online

Safety and security in cyberspace are fundamental for an inclusive and prosperous digital economy, ensuring cybersecurity builds public confidence in the digital world and gives the UK a competitive advantage. The National Cyber Security Strategy focuses on protecting against cyber threats, detecting intrusions in cyberspace and supporting the development of the cybersecurity industry.

To protect technologies, data, and networks from various threats, the Government has implemented several measures, including: (1) Enhancing support for the National Cybersecurity Center, developing new approaches, collaborating with Internet Service Providers (ISPs) to deliver new levels of protection for cyberspace, and strengthening training initiatives; (2) Creating a safer online environment for children through filters and age verification controls.

The government also supports businesses and individuals by (1) Establishing two Innovation Centres in London and Cheltenham to assist startups in their early stages with access to high-quality support; (2) Funding early-stage accelerator programs to offer business advice; (3) Helping new cybersecurity businesses grow through best practices sharing and business training; (4) Encouraging the adoption of the Cyber Essentials scheme, which sets basic technical controls for organizations to protect against common cyberattacks; (5) Raising public awareness through campaigns like Cyber Aware; (6) Developing legal frameworks that encourage cybersecurity while avoiding

unnecessary business burdens.

Sixth, maintaining leadership in serving citizens online

From personalized healthcare services and safe home care for the elderly to tailored education and access to cultural and digital tools, technology and innovation provide unprecedented opportunities to improve critical public services. The New Government Transformation Strategy, announced on February 9, 2017, outlined the goal of offering UK citizens and businesses a better, more seamless experience when accessing online public services. This strategy seeks to harness the potential of digital technology to enhance the efficiency of public services. For example, the education sector focuses on addressing barriers faced by schools in areas lacking digital infrastructure and helping teachers and school leaders develop knowledge and understanding of technology. In the transportation sector, the strategy emphasizes building more innovative, accessible, and convenient infrastructure for passengers.

Seventh, unlocking the power of data in the UK economy and increasing public trust in its use

Data is a global commodity, and it is essential that businesses remain competitive and communicate effectively globally. The UK government has implemented the General Data Protection Regulation (GDPR) to maintain its leadership in the data revolution, establishing higher protection standards for consumers and their data. As a dynamic field, data analytics requires necessary safeguards to ensure data is kept secure and used appropriately.

To achieve this, the UK government has undertaken several initiatives: encouraging innovative data use by making it easier to access and utilize data of both Government and businesses (House of Commons Committee, 2023); collaborating with businesses and education providers to enhance data analytics skills (Alphabeta, 2019); creating legal frameworks tailored to new data technologies will support innovative data use in business while protecting privacy rights (Thang, 2022); and, ensuring data is used optimally to deliver and improve public services. Additionally, the UK government is directing the application of digital technologies in public service delivery across various sectors, including healthcare, taxation, education, transportation, energy, policing, social welfare, diplomacy, culture, and local governments.

To achieve the seven digital transformation objectives, the UK has implemented the following policy measures:

(1) *Digital infrastructure:* Regulations on infrastructure access have been introduced, enabling access providers to utilize the physical infrastructure of other providers under reasonable terms and conditions. A new Digital Infrastructure Investment Fund (DIIF) has also been established as a market catalyst, ensuring that service providers can access necessary financial resources for broadband market expansion.

(2) *Digital skills for everyone:* The government created an Essential Digital Skills Framework to provide essential training and support. This initiative ensures the delivery of basic digital skills training and online government service assistance for citizens who lack the skills, confidence, or access needed to engage effectively. Moreover, a Digital Council was established to foster collaboration between the government, private sector, and charitable organizations. It provides initiatives that empower citizens to access the internet and maximize its benefits confidently.

(3) *Supporting digital businesses:* The government has fostered the development of robust ecosystems and technological hubs across the UK, with digital centers established nationwide. It has also allocated £4.7 billion for Research and Development (R&D) during 2020–2021, marking the most significant R&D investment increase since 1979. The Industrial Strategy Challenge Fund is given priority, leveraging the UK's strengths in robotics, clean energy, and biotechnology.

(4) *Supporting business productivity:* A Productivity Council led by the private sector has been established to promote engagement in improving productivity across the economy, mainly through adopting suitable digital technologies.

(5) *Digital safety:* The UK government has developed a National Cybersecurity Strategy with the following objectives: protecting against cyber threats; detecting intrusions in cyberspace; and fostering the development of the cybersecurity industry. Additionally, two Innovation Centres have been launched in London and Cheltenham to support startups and entrepreneurs. The government has also introduced filters and issued guidelines to help content providers create safer online environments for children aged under 18. Furthermore, the General Data Protection Regulation (GDPR) has been implemented, ensuring higher protection standards for consumers and their data.

(6) *Online public services (e-government):* The UK government provides various online services to citizens, including GOV.UK Verify that allows individuals to verify their identity online and securely access government services; GOV.UK Pay that offers secure online payment services for public services, reducing transaction time and simplifying transactions; GOV.UK Notify, a communication service that reduces contact center costs, transforms the way citizens communicate with the government and updates information for citizens through messages, emails, and notifications.

The UK benefits significantly from its robust infrastructure, decisive leadership, and active private sector participation. However, to implement digital transformation policies effectively, the nation still has to address challenges such as cybersecurity threats, technological inequality across its regions, and managing societal changes through digitalization.

3.2. Key lessons learned from the United Kingdom's digital transformation policies

Although Vietnam and the UK differ significantly in their level of development of the information and communication technology sector (ICT Development Index), the UK's digital transformation policies offer valuable lessons that can help Vietnam accelerate its digital transformation in the coming years. These lessons include:

Firstly, the focuses of digital transformation should be clearly defined. The UK's digital transformation policies targets three fundamental stakeholders - the government, businesses, and citizens - through six foundational driving elements: (1) institutional frameworks and policies, (2) digital infrastructure, (3) digital government and online public services, (4) digital workforce, (5) digital economy, and (6) cybersecurity.

Secondly, institutional frameworks for digital transformation should be attentively perfected. This critical factor reflects the government's determination and efficiency in promoting digital transformation across economic and social sectors. Appropriate policies eliminate barriers, support innovation and creativity, and serve as the foundation for implementing the other elements of digital transformation.

Thirdly, development of digital infrastructure should be considered a priority. According to the UK, successful digital transformation depends on the growth of digital infrastructure, with the utmost importance placed on data infrastructure (i.e. broadband internet), which in turns is the fundamental building block for the Industrial Revolution 4.0, e-government and digital economy. Development of a data infrastructure is accordingly essential and conducted by every country, though at varying degrees.

Fourthly, the digital workforce should be invested. This is a decisive factor in the digital transformation process. As the Industrial Revolution 4.0 focuses primarily on smart production, a highly skilled workforce plays an increasingly pivotal role in national socio-economic development. Consequently,

national digital strategies all emphasize development of digital human resources.

Fifthly, the digital economy should be promoted through sustainable measures. Recognized as one of the essential pillars of economic growth, driving significant breakthroughs for nations, the digital economy is focally promoted through various solutions that are among the keys of national digital transformation policies worldwide.

Sixthly, cybersecurity should be ensured. The Industrial Revolution 4.0 brings forth new threats to cybersecurity as cyberattacks keep increasing complicatedly. Together with technology advancement, it presents both opportunities and challenges in cybersecurity. With global connectivity, cyber threats spare no nation, making cybersecurity a vital consideration in every digital transformation strategy. This should be taken into account in development of every national cybersecurity strategy.

Digital transformation has become an inevitable trend, impacting all aspects of life and society not only in Vietnam but across the world. Understanding and leveraging the foundational elements of digital transformation in line with Vietnam's socio-economic conditions and global trends is essential to accelerate the digital transformation process in this country.

The UK's experience shows that successful digital transformation requires not only government actions and solutions but also practical efforts from businesses, citizens, and society. These combined efforts will enable Vietnam to achieve its goal of building an advanced, innovative, and dynamic digital economy and society.

4. Advantages and challenges for Vietnam in building and implementing digital transformation policies

4.1. Advantages

Based on the current state of Vietnam's digital transformation, the country is enjoying several advantages in building and implementing its digital transformation policies as follows:

Firstly, there are strong government leadership and transparent commitments. The institutional framework and policies on digital transformation reflect the Government's strong commitment to promoting digital transformation nationwide. These policies set clear goals for 2025 with a vision for 2030, focusing on building digital government, digital economy, and digital society (Decision No. 749/QD-TTg dated June 3, 2020, approving the "National Digital Transformation Program to 2025 with orientation to 2030"). The high-level leadership has been ensuring strong promotion and guidance for digital transformation projects across ministries, sectors, and localities.

Secondly, the technological and digital infrastructures are being improved. Vietnam has made significant strides in developing its information technology infrastructure. The expansion of high-speed internet services, the deployment of 4G networks, and plans to promote 5G create favorable conditions for implementing digital transformation solutions. The development of national databases such as the population one also facilitates online public services and other digital applications.

Thirdly, Vietnam has a young and skilled workforce. Its share of young population and its workforce are ready to adopt digital technologies. This younger workforce will easily adapt to digital work environments and meet the demands of the digital economy. The government is also focusing on enhancing digital skills through training programs and expanding access to digital technologies for its citizens.

Finally, there is a significant potential for digital economic development. The growth of technology industries, especially startups in the information technology and telecommunications sectors, has created an ecosystem that fosters the development of the digital economy. Vietnam is becoming an attractive destination for technology and startup enterprises, contributing to the robust growth of the digital economy.

4.2. Challenges

While Vietnam has several advantages, it is facing significant challenges that could hinder achieving its digital transformation goals. These challenges include:

Firstly, the technological infrastructure remains unevenly distributed. Despite its strong development of technological infrastructure in major cities, rural and remote areas still need help accessing internet and digital services. This disparity creates inequalities in access to and benefits from digital transformation. Expanding 5G networks and online public services across the entire country requires significant time and resources.

Secondly, the workforce needs more digital skills and more awareness. Although Vietnam has a young population, much of its workforce have not been equipped with essential digital skills needed for a digital economy. The fact that many citizens, especially in rural areas and among unskilled workers, need more knowledge and skills for using technology, make it challenging for them to access and utilize digital services.

Thirdly, cybersecurity and data protection need improving. One of Vietnam's significant challenges in digital transformation is ensuring cybersecurity. The risks of cyberattacks, online frauds, and data breaches increase along migration of activities and data to digital platforms. Ensuring information security and building robust security systems are critical, yet Vietnam currently faces difficulties in developing capable policies and measures to effectively counter these threats.

Lastly, coordination needs enhancing among government agencies, businesses, and citizens. Digital transformation requires close collaboration among the government, businesses, and citizens. However, this coordination, particularly between state agencies and businesses, still needs to be improved to deploy online public services or provide technical support. Support policies for small and medium-sized enterprises (SMEs) in their digital transformation processes remain yet inadequate and late.

Addressing these challenges is essential for Vietnam to fully realize the potential of its digital transformation and achieve its long-term goals.

5. Policy recommendations for digital transformation in Vietnam

Based on the UK's digital transformation policies and Vietnam's current digital transformation progress, along with an assessment of its advantages and challenges, the following key solutions are recommended to effectively advance its digital transformation:

Firstly, focusing on strengthening institutional frameworks and policies. Although Vietnam has made significant progress in designing a systematic digital transformation policy framework to meet the demands of the digital age, several challenges and limitations remain to be addressed for optimal efficiency. It is thus crucial to enhance the alignment and coherence between central and local policies, ensure clear guidance, and implement them effectively. Investments in digital infrastructure should be furthered in rural and disadvantaged areas.

Additionally, Vietnam should prioritize developing high-tech human resources, emphasize advanced digital skills education and support businesses in innovation. It should also strengthen the enforcement of cybersecurity measures, protect personal data, and raise public awareness about information security. Addressing these issues will enable Vietnam to successfully implement its digital transformation strategy, thus enhancing its international standing.

Secondly, prioritizing the development of a streamlined and efficient digital government. This involves refining regulations, processes, and administrative procedures to align with digitization efforts in government agencies. It also includes improving the integration of cross-sectoral databases and expanding online public services. Government-provided services

should be made simple, fast, and convenient to reduce barriers for citizens and businesses towards creating a citizen-centered digital society.

To achieve this, a robust legal framework and policies should be established to standardize regulations, processes, documents, and administrative procedures across all levels of government. Furthermore, Vietnam should provide regulations on standardizing the public database on using and sharing open data of the public sector and personal data, and on sharing information across sectors and industries.

Thirdly, enhancing digital skills for the workforce. This is a critical factor for creating a high-quality skilled workforce capable of embracing technological advancements and the trends of the Industrial Revolution 4.0. These skills are also essential for civil servants, public employees, and workers in state agencies, who play a key role in building an effective digital government.

A vital component for development of a digital government, policies should support the training and retraining of digital skills for civil servants, public employees, and workers in state agencies to effectively enhance ICT application in administrative tasks, gradually preparing a workforce with necessary skills. Support to training and retraining digital skills should also be extended to workers and businesses to align the workforce with the demands of current digital transformation trends.

Additionally, contents related to the Industrial Revolution 4.0 and basic digital skills should be incorporated into school curricula, vocational training, and university programs. Training teachers and students in digital skills is crucial to ensuring the readiness and improving the quality of the digital workforce for the future.

Fourthly, developing a modern digital infrastructure. A modern digital infrastructure with high capacity and speed is needed to meet current demands, support the digital economy, and ensure cybersecurity. As digitization permeates daily life, public awareness campaigns should promote understanding of digital transformation across all levels of society as a foundation for building a perfect digital society.

Mechanisms and funding initiatives should be established to expand the broadband infrastructure to remote and innermost areas, upgrade equipment and change operation of telecommunications service points in order to enhance accessibility and bridge the digital divide among citizens.

Fifthly, ensuring cybersecurity. Although Vietnam has enacted the Cybersecurity Law, measures to protect personal data and manage information security still need to be improved. Public and business awareness of information security remains yet limited. A National Cybersecurity Strategy should be developed to create a safe cyberspace, address information security challenges, and raise awareness among organizations, businesses, and citizens about online threats. This strategy should increase public confidence in engaging with the cyberspace.

Sixthly, refining the policy framework and policies for the digital economy. Vietnam should issue new specialized laws and policies on digital economy to clarify concepts and regulations of digital economy management, and address emerging challenges. Specific actions include (1) Establishing clear legal frameworks for data governance, data ownership, and digital platform transactions. The Commerce Law and the Information Technology Law should be revised to align with digital business models. In addition, legal documents related to electronic transactions, cashless payments, and digital signatures should be strengthened; (2) Creating ecosystems and Innovation Centers dedicated to ICT-focused research and development, fostering environments for business collaboration and development; and, (3) Providing financial packages to help enterprises develop their e-business.

Seventhly, raising public and community awareness. Efforts should be made to raise awareness among citizens and businesses about digital transformation, benefits, opportunities and essential skills required for participation in the digital economy and society.

In summary, Vietnam's digital transformation policy represents a strategic and necessary response to the rapid advancements of the Industrial Revolution 4.0. While the country has advantages in infrastructure and human resources, addressing challenges such as uneven technical infrastructure, insufficient digital skills, cybersecurity concerns, and inter-agency coordination is essential for achieving successful digital transformation.

6. Conclusion

The UK's policy experience in digital transformation has demonstrated that combining strategic vision, strong government commitments, and close collaboration among stakeholders is key to success. The UK's achievements, from developing a modern technological infrastructure and implementing digital government to fostering innovation in the digital economy, offer valuable lessons for other nations.

Vietnam possesses significant advantages, including strong government commitments, a young workforce, and substantial potentials for digital economic development. However, it also faces considerable challenges, such as uneven technological infrastructure, a lack of digital skills within the workforce, and cybersecurity issues. Learning from the UK's experience can thus help Vietnam not only shape its digital transformation policies in line with its national context but also maximize its socio-economic potentials. To achieve the desired outcomes, however, Vietnam should adopt a flexible approach, increase investment in its digital infrastructure, enhance human resource capabilities, and strengthen cooperation among the government, businesses, and citizens.

With proper determination and direction, Vietnam can make digital transformation a critical driver for its sustainable development, thereby securing its position during the Industrial Revolution 4.0 and fostering long-term national growth.

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