

# Promoting Information and Communication Technology in Online Service Delivery in Vietnam

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**Abstract.** Applying Information and Communication Technology (ICT) to public service delivery contributes to transparency, accountability, and cost-saving to improve administrative efficiency. This application has become an inevitable trend for administrative reform worldwide. This paper examines the policy of promoting ICT in public service delivery and its implementation in Vietnam. Recently, the Vietnamese government has created a thoroughly legal foundation to develop information infrastructure for public service delivery. However, online public service delivery results are still lower than expected, and the online service index in Vietnam has just reached the average level of the world. Therefore, to encourage citizens to use online public services, the government should improve the personal identification data system and promote propagating and popularize online public services. The government also should protect personal data and administrative system security to ensure organizational system safety and efficiency.

**Keywords:** Information and communication technology, Vietnam government, Online public service

## 1. Introduction

Applying ICT to government functions and procedures is essential in electronic government (e-government) policy implementation to increase efficiency, transparency, and citizen participation. Developing public service on Internet can facilitate citizens and business operations and lighten the pressure of paperwork for state management officials. This development helps individuals and enterprises save effort and working time while using public services. Instead of going to government agencies, people can directly access the administrative procedures and payment on the website with a computer connected to the Internet, then receive the results through the postal service.

According to the 2020 United Nations report, the world average online service index increased from 0.4178 in 2010 to 0.562. This index illustrates an uptrend in using online public services globally. The report also shows that the majority of local government portals can be accessed via mobile devices to raise the local governments' awareness of the importance of mobile technologies in multichannel service delivery. Especially in the COVID-19 pandemic, online public services are essential for communication, leadership, and collaboration between policymakers and society. However, the world average online service index in 2020 (0.562) is still less than expected. It implies that most local government portals are substandard (such as information provision but undersized or no services provision) and need to upgrade [1].

In Vietnam, the government issued a long-term plan for using ICT in public services for citizens and businesses in 2010. This strategy makes the online service index of Vietnam improved from 0.30476 in 2010 to 0.6529 in 2019 and was higher than the world average online service index (0.562 in 2020) [1]. However, in the government's report in 2018, the number of online filings was low. In the first quarter of 2018, this number accounted for 24.24% of the total public services provided by the central authorities and 9.69% by the local ones [2].

This paper aims to evaluate the ICT application in public service delivery implementation in Vietnam, show the advantages and disadvantages, and propose some strategies to boost ICT to increase the high quality of public services. The structure of the paper includes (i) Literature review on the importance and requirements of applying ICT in public service delivery towards higher effectiveness and efficiency in governmental tasks; (ii) Applying ICT in public service delivery in Vietnam; (iii) Proposals to develop ICT in public service delivery in Vietnam.

## 2. Literature review

By the beginning of the twenty-first century, due to a new e-government trend, many studies have

analyzed ICT applications in public service delivery.

Many authors agree that online public service significantly benefits economic development in both developing and developed countries. Applying ICT in public service delivery has offered ample benefits for citizens and the government in most developed countries. For example, in the EU countries, the increasing application of information technology brings the government closer to its citizens [3, 4]. Therefore, e-government continuously becomes a foundation for modern administration systems [5]. According to the 2020 United Nations' E-Government Survey, in developing countries and underdeveloped countries, more and more countries and municipalities are pursuing digital government strategies, some radically different from those guiding earlier e-government initiatives. The data from this report also shows that the global provision of online government services has improved significantly. More than 84% of worldwide countries now offer at least one online transactional service [6] Information and communication technology can improve transparency by providing information access and increasing accountability by closely monitoring government activities [7, 8].

Besides, many studies show the influencing factors to the online public services development in different countries. These researches analyze three groups of factors that are (i) economic factors, (ii) social factors, and (iii) institutional factors.

Firstly, the economic factor includes technology and the level of economic development. Accordingly, technology has changed the methods of communication of people, leading people to require more precise information from the government. Therefore, the high technology creates more pressure on traditional administration systems to deliver transparent and efficient public service and avoid corruption [9]. Economic development also strongly influences online public services delivery. Studies show that online public services are more common in developed countries than in developing countries. Especially in developing and undeveloped countries, they have many financial, technological, and even cognitive challenges to improve online public services. For example, African countries have failed to develop online services because of the political, economic environment, and civil recognition [10].

Secondly, the social factor involves awareness of the network, gender, interests, age, education, and digital gap. In undeveloped and developing countries, the government and citizens have a limited understanding of applying technology to slow down online public services development. Besides, the digital gap (called digital knowledge) is also a factor leading to the failure to develop online public services in undeveloped countries. The larger the digital gap is, the slower the development of online public services is [11]. In addition, the adaptation or acceptance of using online public services also depends on people's preferences [12], gender, age, education, income, and understanding of the Internet [13]. However, undeveloped countries will overcome challenges to develop online public services in the long-time, regardless of their skills or sophisticated use. Therefore, some authors argue that undeveloped countries should invest in education to improve citizens' online public service use before investing in information and communication technology systems[14].

Thirdly, institutional factors are reflected through the national policies and legal system for online public services. The evidence provided by Igari's study (2014) shows that although Japan ranks first in broadband infrastructure quality, price, and speed, the percentage of Japanese citizens using online public services is less than in Denmark, where there is lower infrastructure [15]. It is because Denmark's government has successfully implemented (i) the national strategy on ICT application, (ii) the mechanism to promote ICT application, and (iii) the personal identification and digital signatures system toward user-oriented services. Therefore, Tangi et al. (2021) suggest that the government replace all traditional public services delivery, such as via telephone or the front desk, and develop the only online method. If the government provides both online and conventional administration systems, the e-government development may be slower. The traditional techniques are familiar to many citizens; thus, they often prefer the former [16]. For instance, in Netherland, formal administration is still preferred to online administration despite increasing the online transaction channel [17]. However, in the undeveloped country where many poor people do not know how to use technology and have very little opportunity to use technology, they will be restricted to using public services if the government only provides online public services.

#### ***Evaluating existing studies***

Recently, e-government has been very prevalent. Many studies analyze the e-government and its contribution to economic development and the factors affecting e-government in both developed and developing countries. Although economic, social, and institutional factors influence the government's attempt to apply ICT in public service delivery, few studies appreciate the role of state management as an

influencing factor to online public service. Specifically, in developing countries where online public service is still new and unpopular, a state plays a vital role in popularizing the new form.

Reviewing the literature leads to the question: how should the government promote ICT in public service delivery? Therefore, this article examines the government's policy of applying ICT for providing public service and its implementation in Vietnam. This paper aims to show the advantages and disadvantages of this implementation and propose suggestions to promote online public services for Vietnamese.

### **3. Methodology and materials**

This paper uses the comparative method successfully applied in Igari's studies in 2014 [15]. This method is helpful to analyze changes in the Vietnamese government's policy on using information technology to provide online public services in the two periods - 2010 to 2019 and 2019 to 2020. The advantages and disadvantages are shown to contribute to online public works management changes, especially in the COVID-19 pandemic context in Vietnam.

The paper uses secondary data of the online services index and the telecommunication infrastructure index collected by the United Nations. This data is input to analyze the effectiveness of government policy on providing online public services in Vietnam. In addition, the public administration performance index (PAPI) and provincial competitiveness index (PCI) are also used to illustrate the opinions of businesses and servants on the changes in public service delivery in Vietnam.

## **4. The application of information and communication technology to online public service in Vietnam**

### **4.1. State's policy on applying information and communication technology to public services in Vietnam**

#### ***From 2011 to 2019***

In 2010, the Vietnamese government issued a plan to apply information technology in state agencies, a significant change in the administrative reform process, and establish ICT in public services delivery. Accordingly, state officials promulgate many legal regulations on digital signatures, online security, and digital documents. For example, Decision No. 28/2018/QĐ-TTg in 2018 on sending and receiving digital documents between state officials marked the critical step in administration system innovation. It is because that the legality of digital documents is recognized by the government and allowed to interchange between different state agencies simultaneously. As a result, state agencies saved a lot of time and costs, creating the first premise in using ICT to improve the efficiency of public administration work.

The digital signature is also one of the essential issues in online public services because of its security. In 2017, the Vietnamese government issued regulations on using digital signatures in Circular No. 41/2017/TT-BTTTT. Digital signatures have shortened time to approve and send documents for state agencies, saving much time requesting records for citizens. It is a turning point in online public service delivery in Vietnam.

The government's regulations on online public service delivery are implemented in all state offices in the whole country. For instance, Decree 43/2011/ND-CP in 2011 required all local and central officials to deliver public services on the state websites following the government's instructions. The Circular 10/2016/TT-BTTTT issued in 2016 was a national technical regulation on identifiers structure and packet data format for connection of document management systems.

#### ***From 2019 to 3/2021***

The Covid-19 pandemic broke out worldwide, becoming a remarkable fact that negatively impacts all countries, including Vietnam. International governments must use social distancing measures to prevent its spread, leading to a global decline in economy, trade, and investment. Working online to maintain economic activity is the only method for all countries during the pandemic. Although the disaster came from the pandemic, countries have golden opportunities to promote online public services. The Vietnamese government has accelerated the application of information technology in state agencies to improve the quality of public service delivery. Accordingly, the government issued many legal and guiding documents for central and local agencies to switch to online public service delivery quickly.

Firstly, the government creates a unique system of digital transaction portal which would help citizens and public managers doing works easier. The traditional paper-text connection was replaced by the online-text connection system, including text connection between government to government (G-to-G), government to an individual (G-to-I), and government to business (G-to-B). It became essential in online

public service delivery, as state officials in any place can get the most updated text information with the fastest speed by online sharing. Similarly, businesses and citizens can easily access the central or local website addresses to get administrative procedures and data instead of state officials. It saves a lot of costs and time for people to have more time to focus on their professional tasks.

Besides, the government issued the important Project of National Document Linking Axis, No. 626/QĐ-VPCP approved on August 1<sup>st</sup>, 2019, and operated the national public service portal via the website link [dichvucong.gov.vn](http://dichvucong.gov.vn), which notice one of the significant steps in providing online public services in the country. The national public service portal is a tool for government, ministries, and localities to evaluate and supervise the administrative procedures and improve transparency in the implementing administrative process, leading to avoiding corruption. In addition, The National Document Linking Axis saves time papers cost and reduces working time in state offices, contributing to speeding up administrative procedures reform.

In 2020, the government issued Decree No. 20/2020/ND-CP on digital identifiers for state officials to quickly share data between central and local agencies. Digital identifiers help agencies and citizens can easily search for personal identification on the website. Therefore, the government can promote the implementation of identification codes to citizens through chip-based ID cards, leading to manage population data easily.

The government also improved the infrastructure quality of public services delivery. Building a good infrastructure system for developing online public services is necessary for e-government, but costly to the state budget. The government significantly invested in infrastructure development by upgrading the Digital Government Architecture Framework (the document No. 11757/VPCP-KSTT version 2 in 2019).

Furthermore, the government also established the Digital Task Force, which vigorously promoted e-government strategies. Digital Task Force created the spider network, including horizontal and vertical connections among the central government, regions, and municipalities. This network could be cooperated with private-sector companies in necessary cases and encouraged all entities to coordinate and involve in e-government.

Generally, from 2011, the Vietnamese government actively issued legal conditions for online service provision. However, in 2011-2019, there were no detailed documents on applying ICT in public service delivery, except some regulations on digital signatures and documents. Since 2019, the government has promoted online service provision and launched the national public service portal. The government has also heavily invested in developing information technology infrastructure through Vietnam E-Government Architecture Framework.

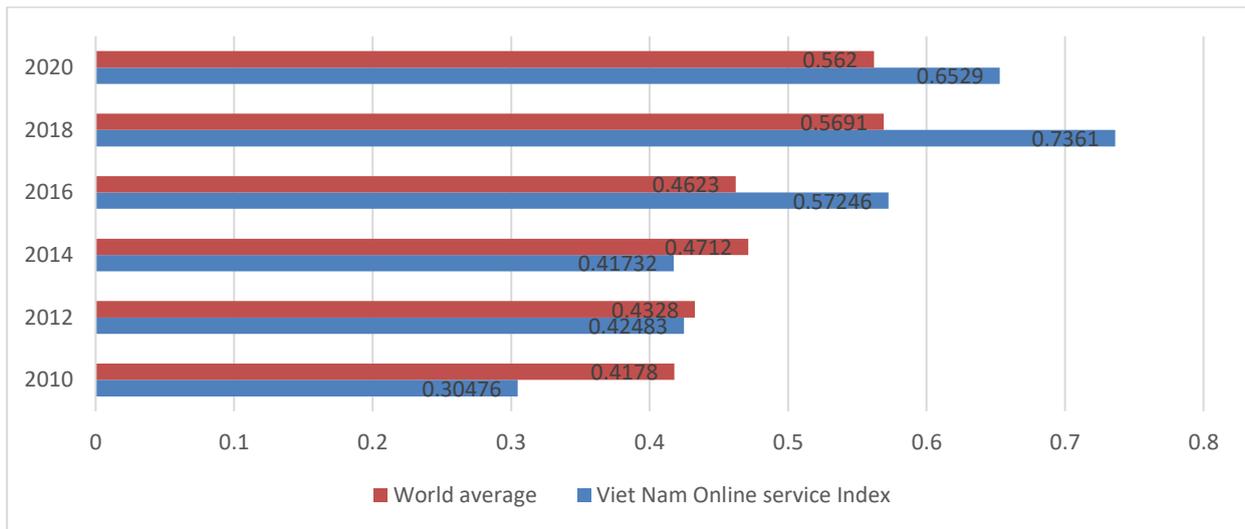
#### 4.2. The results of applying ICT in online public services in Vietnam

In 2010, Vietnam’s Online Service Index was only 0.30476, much lower than the world average of 0.4178. There was because of two following reasons. First, the economy was influenced by the 2008 world final crisis, causing the state’s financial setbacks in 2010, while improving ICT infrastructure required a large budget. Second, using new technology in administrative procedures was not preferred by state officials familiar with traditional methods, which means that public servants could not immediately adapt to working condition changes.

**Tab. 1.** Vietnam Online Service Index in the period of 2010-2020.

| Year                | 2010    | 2012    | 2014    | 2016    | 2018    | 2020    |
|---------------------|---------|---------|---------|---------|---------|---------|
| Vietnam’s OSI       | 0.30476 | 0.42483 | 0.41732 | 0.57246 | 0.73610 | 0.65290 |
| World’s average OSI | 0.4178  | 0.4328  | 0.4712  | 0.4623  | 0.5691  | 0.5620  |

Table 1 shows that Vietnam’s online service index increased from 0.30476 to 0.42483 from 2010 to 2012 but slightly decreased in 2014. From 2010 to 2014, although the online service index rose, this was still lower than the world’s average index. However, both the index of Vietnam and the world recorded a decrease in 2016. It was because that there was a change in the calculation method by the United Nations. From 2016 to 2020, Vietnam’s online service index became higher than that of the world. (Vietnam’s online service index was 0.57246 in 2016, while the world’s average index was only 0.4623). In 2018, Vietnam’s online service index reached the highest rate, at 0.73610, higher than the international index of 0.5691. In 2020, the world’s online service index slightly increased from 0.5691 to 0.5620 while the index of Vietnam little decreased (from 0.73610 to 0.65290) [1].



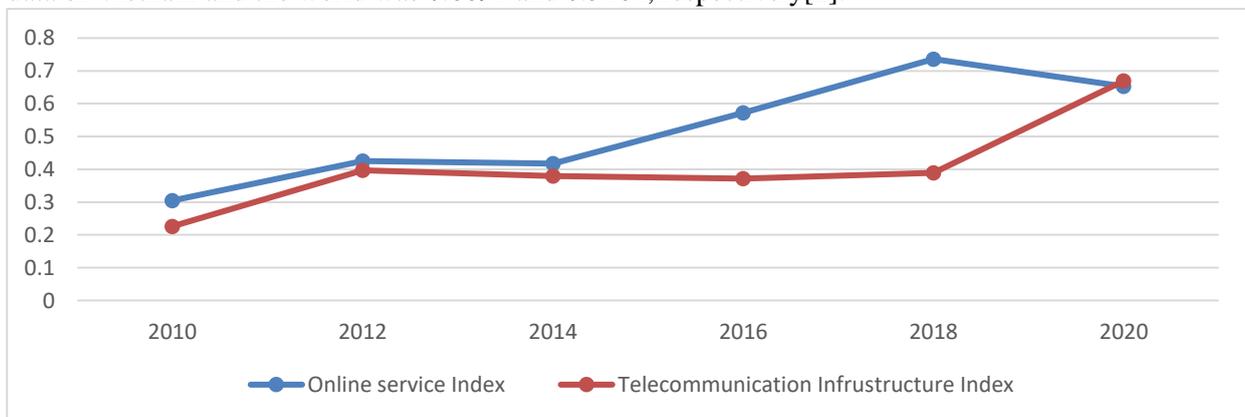
**Fig. 1.** Vietnam Online Service Index in the period of 2010-2020.

Fig. 1 illustrates the online service index between Vietnam and the world from 2010-2020. In general, there was an upward trend of the online service index of both. Vietnam’s index raised from 0.30476 in 2010 to 0.6529 in 2020, while the world’s index improved from 0.4178 in 2010 to 0.562 in 2020[1]. This figure also shows the Vietnamese online public service improvement between 2014 and 2016, as the index came from 0.41732 to 0.57246, respectively. In contrast, the world’s index fell 0.0089 points, from 0.4712 in 2014 to 0.4623 in 2016. This improvement in public service delivery in Vietnam resulted from Resolution 36a/NQ-CP in 2015 on e-government by the Vietnamese government. Accordingly, the government designed clear objectives and implementation solutions to promote ICT in public service delivery.

**Tab. 2.** Vietnam Telecommunication Infrastructure Index in the period 2010-2020.

| Year   | 2010    | 2012    | 2014    | 2016    | 2018    | 2020    |
|--|---------|---------|---------|---------|---------|---------|
| Vietnam Telecommunication Infrastructure Index | 0.22606 | 0.39689 | 0.37923 | 0.37145 | 0.38900 | 0.66940 |
| World average                                  | 0.232   | 0.3245  | 0.365   | 0.3711  | 0.4155  | 0.5464  |

Providing online public services requires good information infrastructure and high-quality human resources to use the Internet to perform their work proficiently. Since the ICT plan for online public service has been approved, the government has spent its budget improving information and communication infrastructure. Table 2 indicates the fluctuation of the telecommunication infrastructure index in Vietnam. The index of Vietnam showed an upward trend in infrastructure from 0.22606 in 2010 to 0.66940 in 2020. Compared to the world’s index, Vietnam’s index has consistently recorded a higher level in the whole period 2010-2020. Especially in 2020, Vietnam’s index was more significant than the world average. This data of Vietnam and the world was 0.6694 and 0.5464, respectively[2].



**Fig. 2.** Vietnam Telecommunication infrastructure Index and Online service Index.

Fig. 2 indicates the value of Vietnam’s telecommunication infrastructure index and online service index from 2010 to 2020. In general, the changing trend of the two indexes is not the same. From 2010 to 2012, there was an increase in the same direction of both indices. Although the two indices tended to increase, the online service index rose more than the telecommunication infrastructure index. From 2012 to 2018, the telecommunication infrastructure index did not fluctuate much, which was 0.39689 and 0.389 in 2012 and 2018, respectively. While the online service index significantly raised, from 0.42483 in 2012 to 0.7361 in 2018. During 2018-2020, there is an opposite change between these two indexes. The online service index decreased to 0.6529 in 2020, but the telecommunication infrastructure index increased significantly to 0.6694 in 2020 [3]. Thus, this figure demonstrates the improvement of information technology infrastructure, which has not uncertainly increased to contribute to the online public service delivery but sometimes in the opposite direction.

**4.3. The evaluation of applying ICT in online public services in Vietnam**

Tab. 3 indicates the enterprises’ evaluation of online public service delivery by state officials in Vietnam. A few enterprises agreed that applying information technology in business registration procedures at state agencies is good. However, this rate has improved over the years. In 2014, 28.57% of enterprises agreed with the good information technology application of registration procedures. This rate increased to 39% in 2020. Besides, the percentage of enterprises accessing provincial website fluctuated: 64.18% in 2014, increased to 76.84% in 2016, dropped to 65% in 2018 and fell to 53% in 2020 [4]. Generally, it can be seen that the province’s website is not helpful for businesses, thus the percentage of enterprises’ access to provincial websites decreased. Enterprises have not been interested in online public service for administrative procedures.

**Tab. 3.** The Provincial Competitiveness Index in Vietnam.

|      | Registration procedures: information technology application is good (%) | Percentage of firms have accessed provincial websites (%) |
|------|---|---|
| 2014 | 28.57   | 64.18   |
| 2016 | 17.44   | 76.84   |
| 2018 | 36  | 65  |
| 2020 | 39  | 53  |

The enterprise evaluation on the openness and quality of provincial web pages from 2010-2020 is illustrated in Table 4. The score scale ranges from 0 to 100 points. Accordingly, most enterprises believe that the provincial web page is not open and of high quality, and their score is low during the period. However, this figure double increased from 15 in 2010 to 34.5 in 2020, bringing evidence for the government to further improve the information delivery on the local website [5].

**Tab. 4.** Openness and quality of the provincial webpage.

| Year | Openness and quality of the provincial webpage |
|------|--|
| 2010 | 15   |
| 2012 | 14   |
| 2014 | 29   |
| 2016 | 31   |
| 2018 | 35   |
| 2020 | 34.5   |

***The advantages and disadvantages of the ICT application to online public services in Vietnam***

There are some advantages in applying ICT to online public services in Vietnam. First, the government has spent a lot of effort to improve telecommunication infrastructure from 2010-2020 to create convenient conditions for applying ICT to online public services. Second, according to the data of the online service index, the telecommunication infrastructure index, and enterprises’ opinions. It is noticeable that the quality of online public service delivery improved in this period.

However, the rise of the online service index, the telecommunication infrastructure index is uncertain. Therefore, the improvement of information technology infrastructure is not certainly increased, influencing

the quality of online public service delivery. Moreover, the evaluation of enterprises on the provincial web page's quality shows the doubts for information security of administration transactions [6]. Besides, it is difficult for officials when there is a lack of a G-to-G link and population database system.

## 5. Conclusions and suggestions

Delivering online public service is an inevitable trend to enhance transparency and the administration system's efficiency in the process of administrative reform of worldwide countries. Recently, the Vietnamese government has issued and implemented many legal regulations and spent state budget to apply information communication technology to public service delivery. Although online public services have improved, citizens and enterprises were not satisfied and preferred to use online services.

In the context of the COVID-19 pandemic, governments and societies have been forced to promote using digital technologies to respond to the crisis, recover, and resolve socio-economic repercussions toward sustainable development. Therefore, the Government of Vietnam should (i) accomplish the population database system with identifiers, (ii) strengthen wide-spreading using online public service portals for citizens, and (iii) protect the privacy and mitigate the risk of over-surveillance associated with using technology.

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