THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON TAXATION IN LAO PDR

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Abstract: ***This study focuses on the use of ICT in tax administrations and how to effectively apply it in tax administration. It is not simply a matter of specific individuals (tax administrators) using their knowledge of ICT or the common practice of people's knowledge. The study addresses the implementation of the tax development plan from the past 3 years (2021-2023) and the modernization of the tax revenue collection system aimed at improving the revenue collection mechanism. It is suggested that the government should place significant emphasis on digital tax through good governance practices in ICT, employing a comprehensive accounting platform. This approach would enhance the productivity of assigned tax authorities in a more accurate, effective, and accountable manner.***

• Keywords: *ICT, tax management, tax development, revenue mechanism.*

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Tóm tắt: *Nghiên cứu này tập trung vào việc ứng dụng CNTT trong quản lý thuế và cách áp dụng nó một cách hiệu quả trong quản lý thuế. Đó không chỉ đơn giản là vấn đề các cá nhân cụ thể (các nhà quản lý thuế) sử dụng kiến thức về CNTT của họ hay thực tiễn phổ biến về kiến thức của người dân. Nghiên cứu đề cập đến việc thực hiện kế hoạch phát triển thuế trong 3 năm qua (2021-2023) và hiện đại hóa hệ thống thu thuế nhằm cải tiến cơ chế thu. Có ý kiến đề xuất rằng chính phủ nên đặc biệt chú trọng đến thuế kỹ thuật số thông qua các biện pháp quản trị tốt trong lĩnh vực CNTT, sử dụng nền tảng kế toán toàn diện. Cách tiếp cận này sẽ nâng cao năng suất của cơ quan thuế được phân công một cách chính xác, hiệu quả và có trách nhiệm hơn.*

• Từ khóa: *ICT, quản lý thuế, phát triển thuế, cơ chế thu.*

1. Introduction

According to the analysis of the economic situation as outlined in the resolution of the 11th Congress of the Party, it indicates that the economy of the Lao PDR has faced numerous challenges, which have been affected by both internal and external factors. External factors have been influenced by competition, trade and investment barriers, fluctuations in the global capital market, and political unrest in some countries. These factors have had an impact on the economic situation in many countries, including the Lao PDR. Due to this situation, the government considers the resolution of economic and financial difficulties as necessary and urgent tasks, and it has prioritized them on the national agenda to implement solutions during the period 2021-2023. These solutions include effectively managing revenue collection into the state budget, preventing revenue leakage, and transitioning public financial management into a digital model.

Taxation is well-defined as the obligation imposed by the government on individuals and private organizations regarding their income, property, transactions, and commodities. Its primary purpose is to raise revenue for the execution and realization of government expenditures. Taxation serves various purposes such as employment generation, economic growth, infrastructure development, support for neglected areas, economic stability, and price stability.

Governments and organizations worldwide are increasingly recognizing the necessity to enhance access to community services through information exchange using ICT. The role of ICT has been expanding in the social and economic realms in the 21st century. It has become a tangible reality, as evidenced by developments in many countries showing that ICT significantly contributes to a country's GDP. Moreover, ICT has led to improvements in a country's

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market competitiveness in terms of products, output, and services (Uvaneswaran & Mellese, 2016). ICT can have a positive impact on governance and various aspects of the economy. It can effectively elevate living standards, promote global economic integration, bridge the digital divide, and enhance management and biodiversity utilization. According to Adamu (2001), ICT has played crucial roles in national growth and development.

The impact of ICT efforts can be observed in numerous ways, such as the reduced necessity for personnel, decreased costs of tax compliance, saved administrative time for taxpayers due to transparency in assessment and faster processing of collection and related procedures. Additionally, there are reduced costs of communication and swift access to information, ultimately leading to improvements in revenue collections and efficiency, including the prevention of revenue loss.

Currently, in Lao PDR, there is modernization in tax collection through the Tax Revenue Information System (TaxRis) and the Center for display and management, monitoring the Tax Revenue Information System (TaxRis Dashboard Monitoring). This system showcases tax revenue declarations, tax payments through banks, and manages databases in other related systems. There are also sub-systems such as Land Tax, Road Tax, Easy Tax, and others aimed at enhancing tax revenue management efficiency and effectiveness. Additionally, to prevent misunderstandings and ensure compliance with tax regulations, the government has mandated standards for all entrepreneurs, including individuals and legal entities residing in Lao PDR, to adopt the modern system. This move encourages taxpayers to adhere to discipline, follow the rules of modernized tax revenue management, and facilitate online tax payments from anywhere and at any time.

Therefore, in the study on 'The effect of ICT on taxation in the Lao People's Democratic Republic, one can observe the significance and importance of tax administration encompassing both theoretical understanding and practical implementation. This study aims to propose measures addressing various outstanding issues, intending to enhance tax administration by ensuring strictness and transparency, thereby progressing towards a modernized system across the country.

2. The theoretical basis of taxation and the use of ICT in tax administration

2.1. Taxation and tax administration

Gaston Jèze (1936) defined tax as 'a monetary deduction contributed by individual citizens through the power of the state, is mandatory and has no counterpart to cover the needs of the public spending demand'. According to Makkollhell and Bruy (1993), 'Tax is a mandatory transfer of money (or transfer of goods and services) from companies and households to the Government, wherein they do not directly receive any goods or services; that payment is not a fine imposed by the court for violating the law.' In general, it can be understood that 'Tax is a mandatory contribution from individuals and legal entities to the State according to the level and time limit prescribed by law for public purposes'.

The above concepts illustrate that taxes possess the following basic characteristics:

(i) Compulsory: To cater to public spending needs, the State employs its political power to compel taxpayers to transfer a portion of their income to the state budget in the form of taxes. When transferring income, taxpayers do not specifically benefit from the transferred income in the form of taxes. Additionally, no one voluntarily pays for consuming public goods and services. Therefore, the mandatory nature of the tax income transfer is objectively inevitable.

(ii) Non-price comparison, not direct refund: Public goods and services are provided by the state to everyone based on common interests, community benefits, and national interests, without consideration for each individual's interests or needs. Taxpayers use public goods and services to varying degrees regardless of the amount paid in taxes. This implies that the tax amount paid does not correspond to the respective interests and needs of each individual or organization, which constitutes non-price comparison. Prior to tax payment, no public goods or services are provided by the state. After tax payment, the state does not offer any direct compensation to taxpayers. Instead, they indirectly receive compensation through public services provided by the state, such as security, social order, and public welfare. Therefore, tax is not directly reimbursable.

(iii) High legality: The political power of the state is manifested through laws established by the state. Joseph E. Stiglitz mentioned about the forced income transfer from taxpayers to the state: 'This forced transfer is akin to theft, with the only significant difference being that while both transfers are not voluntary, the transfer to the Government carries the cloak of legitimacy and respect bestowed by political processes.' The relationship between tax collection and payment by the government and the populace must be conducted based on legality, which is tax law. Thus, taxes are upheld by law; in other words, taxes are highly legal.

Although the concept of administration encompasses different aspects, the underlying concepts are all consistent with common administration principles:

(i) Administration is an organized and planned activity that is oriented toward a defined goal.

(ii) Within administration activities, there are always two basic groups: the group of administration subjects and management objects. If there is only one group, administration does not exist. The administration subject is always the group that has the right to give orders, while the administration object is the group that has the obligation to obey the administration subject's orders.

(iii) Control is an indispensable activity in the administration process.

Tax administration is a specific field of management, representing a form of state economic management associated with state power. It is a specialized management activity within the field of state administrative management. State administrative management refers to state management in the executive field, conducted by at least one party with state administrative authority in executive and administrative relationships.

According to the Tax Management textbook of the Academy of Finance, tax administration is the impact and management activity of the state on the fulfillment of tax obligations (declaration, tax calculation, tax payment) by taxpayers. Some scholars opine that tax administration is the directional influence of tax authorities and officials on taxpayers, using methods and tools prescribed by law to achieve management goals. Another viewpoint describes tax administration as a process of organizing and implementing tax policy by influencing government agencies, organizations, and citizens to ensure and enhance full and automatic compliance with tax obligations.

From the above concepts, the connotation of tax administration includes:

Firstly, the institution of tax administration is the State, encompassing:

(i) The legislature, responsible for building and installing the tax legal system (National Assembly).

(ii) Executive agencies managing tax collection (Government).

(iii) Specialized agencies assisting the executive agency (Ministry of Finance, Tax and Customs Agency) acting on behalf of the State, directly tasked by the government to organize and implement tax administration.

Secondly, the subjects of tax administration are taxpayers, including organizations and individuals with tax payment obligations.

Thirdly, the system of judicial agencies (People's Courts, People's Procuracy) assumes the role of judging and handling acts that constitute crimes related to tax laws committed under tax administration.

Fourthly, tax administration is organized into a unified system among state administration agencies, comprising tax lawmaking advisory agencies and tax administration organizations.

Fifthly, the overarching goal of tax administration is to ensure compliance with tax laws by both tax administration agencies and taxpayers in an ever-changing environment. Tax administration can have multiple goals, contingent on the will, perspective, and requirements of tax administration in each period.

Hence, tax administration is the process through which the state organizes the implementation of tax policy, primarily by influencing government agencies using the content, methods, and techniques of tax administration according to tax regulations. This ensures and enhances compliance with tax obligations by organizations and citizens, who are taxpayers.

2.2. Using ICT in tax administration

ICT is defined as computer-based tools adopted to work by people with the communication and information processing requests of an organization. It incorporates the network, computer software and hardware, and numerous other devices (such as photography, video, camera, audio) that translate information text, sound, images, and motion into digital form. According to Mary and Cox (2007), electronic and computerized devices associated with human interactive materials permit the user to use them for numerous deliveries of service and in addition to private use. ICT comprises devices, tools, and resources adopted to communicate, create, share, manage, and circulate information. These include hardware such as modems, cell phones, computers, software like computer programs, applications in mobile phones, and networks such as the Internet and wireless communications. They are principally concerned with processing, collecting, storing, and transmitting relevant information to aid the operations of management in an organization (Adewoye & Olaoye, 2014). This clearly suggests that ICT encompasses the involvement of electronic tools and devices that require command and input to operate. This also yields the advantages of delivering information through technological means. Collins (2005) defined ICT as equally a submission of applied science to commerce, technical method, industry, knowledge, and skills.

Assessing tax compliance risks of taxpayers as a basis for grouping taxpayers, classifying risks, and applying appropriate management measures according to the tax compliance model... it is necessary to apply ICT to support the process of collecting, processing, analyzing, and evaluating information. Processing vast amounts of data combined with a system of criteria and indicators to assess risks and classify tax compliance levels of taxpayers, the application of ICT can be said to be an objective reality and an indispensable requirement for achieving efficiency in tax administration. ICT application refers to the use of ICT in the field of socio-economics to improve the productivity, quality, and efficiency of these activities. Experts from the International Monetary Fund (IMF) have pointed out that a synchronized ICT system supporting tax administration according to each function is an important feature of tax system modernization.

To effectively apply ICT in tax administration, it is not merely a matter of specific individuals (tax administrators) utilizing their knowledge of ICT or the common practice of people's knowledge. The utilization of information technology by individuals in performing assigned tasks in tax administration must encompass the establishment and operation of a synchronized tax administration information system encompassing all basic tax administration functions. These functions include planning, organizing, leading, coordinating, controlling, and implementing specific measures to best achieve the purposes and requirements of tax administration. The study suggests that building a tax administration information system must meet several fundamental requirements:

Firstly, a strictly structured tax administration information system: In principle, any information system must maintain a strict structure, and the tax administration information system is no exception. However, due to the specific characteristics of tax administration, which experience frequent changes in administration requirements due to policy and cultural shifts, the need for a strict structure goes beyond ordinary requirements. The necessity for a strict structure is demonstrated through the establishment of clear, highly independent functional units (modules) and their ability to interconnect within the system.

Secondly, an open tax management information system: If an information system in general, or specifically a tax administration information system, can ensure a high level of structure as mentioned above, the study argues that a broader sense of structure encompasses flexible system operation. This flexibility means that the tax administration information system can be easily adjusted or modified in response to tax administration requirements without significantly impacting the system's operation. This adaptability enables the tax administration information system to accommodate changes in tax administration law, and this is what is meant by the system's openness.

The requirements of strict structure and openness in tax administration information systems are particularly crucial because the system's operation necessitates continuity and cannot afford interruptions. For instance, when there is a change in the tax declaration form or the addition of criteria for information about taxpayers, the entire system cannot pause to accommodate these changes.

Thirdly, requirements for the technical infrastructure of the tax administration information system: An information system can only be deemed effective when there is synchronization between administration application software and hardware infrastructure (information transmission network system, operating servers, and workstations). These two components constitute the technical infrastructure of the management information system. The tax administration information system must ensure this synchronization to be considered proficient in terms of technical infrastructure.

Fourthly, information security requirements of the tax administration information system: Information security involves organizing the processing, storage, and exchange of information in a way that guarantees confidentiality, integrity, availability, and reliability to the fullest extent. In the context of administrative information systems in general, and tax administration information systems in particular, with the aim of information security, the study suggests that aside from ensuring the design and physical technical infrastructure of hardware, tax management information system software needs to be designed and structured to enable clear and strict decentralization between required levels and administration needs. At the conceptual framework level, the study suggests the right decentralization to ensure information security, including: (i) System administration rights; (ii) Right to operate the system; (iii) Right to exploit system information.

Fifthly, human resource requirements for applying the tax administration information system: Regardless of how advanced the technical infrastructure of an administrative information system, especially a tax administration information system, is, without human influence, it remains inert. This system can only operate effectively when there are appropriate human resources fulfilling each requirement for administration, operation, and exploitation. Each requirement demands human resources with varying levels of ICT application. According to the ideology and viewpoints within this context: (i) For system administration requirements: individuals with comprehensive IT expertise are needed to ensure the physical operation of the system, including network administration and facility directory information management; (ii) For system operation requirements: Individuals are needed with a basic understanding of IT, especially in information technology application software and network communications, as they deal with common input information within the tax administration system; (iii) For system exploitation requirements: Individuals with a basic understanding of application exploitation are required, mainly focusing on office information exploitation levels and application software, as they handle information objects decentralized according to management functions.

3. Implementation of tax administration and tax administrative modernization in Lao PDR (2021-2023)

3.1. Tax administration

The implementation of the tax development plan in the past three years (2021-2023) aimed at aligning tax revenue collection with the economic and budget plans for each period. Simultaneously, a strategic plan has been outlined for the next five years (2021-2025). This plan involves the creation and enhancement of legislation, including two additional laws and several subordinate legislations, forming a robust foundation for taxation reform. Additionally, a focus on improving the organizational structure of the tax sector, enhancing the administration mechanism and taxpayer services for high efficiency, effective business management, and facilitating convenient, prompt, accurate, and fair taxpayer services. Awareness campaigns for taxpayers have been conducted to help them understand their obligations to comply with the law and establish a sustainable income base.

Efforts to improve taxation include personnel enhancements in both quantity and quality by utilizing modern tools in revenue collection, contributing significantly to economic and social development and fostering continuous growth. However, the taxation development plan for 2021-2025 faces various challenges. These challenges stem from global economic growth, domestic economic uncertainties, fluctuations in oil prices, exchange rates, and the impact of natural disasters. Particularly, the COVID-19 outbreak poses a substantial challenge. The government has responded by creating favorable conditions and offering preferential tariffs to businesses affected during the pandemic, especially in 2021. Nonetheless, the tax sector has also taken measures to ensure achieving revenue collection expectations.

During 2021-2023, there has been an increasing trend in tax income collection:

- In 2021: 11,290.6 billion kip was collected, representing 93.22% of the 2021 plan, a 14.5% increase compared to the previous year.

- In 2022: 14,031.47 billion kip was collected, equal to 97.3% of the annual plan, a 24.3% increase compared to the same period last year.

- In 2023: By April 30, tax income reached 5,258.9 billion kip, equal to 30.3% of the annual plan, a 29.3% increase compared to the same period last year.

Starting from 2022, the Tax Department began revenue collection from the state property and state-owned enterprise sectors, witnessing an increase in revenue. For instance:

- Property revenue collected 4,977.90 billion kip, equal to 128.1% of the annual plan.

- Revenue from the state enterprise sector totaled 1,850.07 billion kip, equal to 122.4% of the annual plan.

- By April 30, 2023, property income collected 1,878.3 billion kip, equal to 43.5% of the annual plan, showing a 116.4% increase compared to the previous year.

- State enterprise income collected 332.4 billion kip, equal to 28.4% of the annual plan, a 14.8% increase compared to the same period last year.

The tax sector development plan for 2021-2025 is a crucial foundation supporting and implementing the mission of tax revenue collection to ensure accurate and complete revenue collection into the budget, promoting the nation's development and economic growth.

The development plan for the tax sector for 2021-2025 revolves around five main development goals: (1) improving legislation, (2) enhancing taxpayer services, (3) effective taxpayer administration, (4) modernizing tax revenue administration, and (5) developing the capacity of officials and organizations.

3.2. Modernization of tax administrative reform

Another critical priority for the tax sector is the modernization framework, demanding serious attention to the financial strategic development plan aimed at reforming financial administration. Specifically, the modernization of the tax revenue collection system aims to enhance the efficiency, transparency, timeliness, and compliance with the law, creating more convenience for tax administration and those fulfilling obligations.

The implementation of TaxRIS is set to be completed nationwide, including in 12 special economic zones by 2023. Additionally, a mechanism is being developed to connect the TaxRIS system with the Automated System for Customs Data (ASYCUDA) to gather import data and monitor business unit activities. This involves connecting data from several ministries such as the Ministry of Interior, Ministry of Labor and Social Welfare, Ministry of Energy and Mines, Ministry of Natural Resources and Environment, Ministry of Planning and Investment, Ministry of Peace and Security, etc.

The government of the Lao PDR has outlined a goal to increase the utilization of electronic services. To achieve this, two overarching strategies, namely the master plan for digital transformation and the master plan for the digital economy, have been established. The Tax Department will continue its development to align with these services. Under the government's strategies, initiatives have been undertaken, such as the development of digital payment systems for micro-enterprise income tax to enhance convenience for businesses, avoiding the necessity of tax officials collecting taxes on behalf of taxpayers.

For individuals earning from freelance work or online shopping, the Tax Department has established the issuance of personal identification numbers through the PTIN system. This facilitates public requests for identification numbers and notification of their obligations through a mobile application. Additionally, the development of a system for collecting fees and service charges via IPOS equipment has been completed and officially launched at three points: Postal Department, Immigration Police Department, and Labor Recruitment Service Center. Recently, the development of the road toll collection system was completed and is being expanded locally.

The payment channel has collaborated to develop the M-money system as another channel for micro-enterprise income tax. Moreover, plans are in place to improve payments to the state budget through the central bank in 2023, acting as the central point for all banks to settle their obligations.

Recently, the Department of Financial Information Technology and Tax Department (Ministry of Finance) have concentrated on modernizing tax administration, developing ICT systems to serve effective tax administration and taxpayer services, aiming to increase tax compliance. Key efforts include:

** Establishing a centralized payment system for taxes, fees, and charges (FINLINK) through banks and mobile phones:*

- As a central system connected with the Bank of the Lao PDR's payment system.

- Signing a partnership agreement on October 6, 2022, between the Department of Financial Information Technology, Ministry of Finance, and the Department of Management of the Payment System, Bank of Lao PDR, to modernize revenue collection and disbursement through the FINLINK system.

- Issuance of agreement No. 3912/MOF, dated December 12, 2022, by the Ministry of Finance concerning the administration and use of the modern tax payment system, fees, and charges (FINLINK).

- Completing the consolidation of the tax sector's payment center (Easy Tax) into a unified channel supporting the payment of all revenue obligations.

* *Lao Financial Integrated Database and Analysis System:* The design and development are completed. Currently, the system is fully connected to databases within the Ministry of Finance, such as the ASYCUDA database, TaxRIS system, AMIS system, GFIS system. Additionally, a dashboard has been developed for statistical reports and income collection summaries, including imports and exports.

* *Tax Revenue Information System (TaxRIS):* Expansion of the TaxRIS system: Presently, there are 94 points operational (including Tax Departments, Vientiane Capital, 17 provinces, 3 cities, and 72 districts). Expansion plans include adding 54 cities and 6 special economic zones by the beginning of 2023. Among the 135,789 total business units in the country, 119,046 (87.7%) are registered in TaxRIS, with 64,563 units (47.6%) having submitted tax declarations through this system, totaling 12,224 billion kips, accounting for 67.9% of the capital.

* *Connection to the land management system:* The API creation for direct connection to the LaoLandReg V6 and V7 databases is complete. Efforts are underway to expand the payment channel at the village level, consulting with the Land Department and the developer company to create a system for collecting land taxes, transfer-related taxes (2%), fees, and other charges, payable through the FINLINK system.

* *Road toll collection system:* Testing is finished for connectivity to the TaxRIS system. Stickers have been printed for cash payments, linked to the RTIS system of the Treasury. Integration with the vehicle management system of the Ministry of Public Works and Transport has also been established.

* *Development of the IPOS fee and service collection system at budget units:* Currently operational in 7 units, including the Consulate General, Ministry of Foreign Affairs, Labor Management Department, Ministry of Labor and Social Welfare, Wat Thai Airport, Friendship Bridge 1, Vehicle Management Department, and Lao Thai Railway Station.

* *Asset Management Information System (AMIS):* Development and training for the system's use among officers and institutions surrounding the Ministry of Finance, as well as other ministries and similar organizations, are completed. The database now includes information on 6614 vehicles from all ministries (5987 with stickers attached), 74 contracts for electricity projects, 240 contracts for minerals, among others. Communication between TaxRIS and AMIS has been successfully established, allowing access to Taxpayer Identification Number (TIN) and electricity number information.

* *Tax payment system through mobile (M-Money):* Development in collaboration with Lao Telecom Corporation has concluded. According to agreement No. 1624/MOF dated June 6, 2022, tax payment through this system has commenced in 9 districts in Vientiane, and it's connected to the National Treasury system.

* *Completion of the display center, management and monitoring of the modern tax management system (TaxRIS Dashboard Monitoring).*

* *With the adoption of the modern system for tax revenue collection in 2022, revenue has increased by 25.30% compared to the previous year, amounting to an increase of 2,856.59 billion kip.*

* *Evaluate the weaknesses and shortcomings of modernizing tax administration*

- The development of the information system within the public financial sector remains scattered and decentralized, posing challenges for coordination in connecting and retrieving information for research and analysis, making it time-consuming.

- The administration system developed for tax revenue collection aims solely at facilitating online reporting and payments by businesses. However, there's a lack of communication with relevant sectors and comprehensive data analysis for effective management of the up-to-date tax revenue base.

- ICT infrastructure development within the financial sector, including database systems, computer equipment, Internet speed signals, and data communication networks, is yet to be centralized, adequately stable, and secure.

- The knowledge of financial sector staff in utilizing ICT tools, particularly at the local level, remains limited. Consequently, the system's usage does not align completely with the intended design and the bank's needs. The development, management, and maintenance of the system require specific knowledge and training to adapt to technological changes, restricting civil servants' deeper understanding of specific subjects as per the situation.

- Despite campaigns urging individuals, legal entities, and organizations to fulfill their self-notification obligations through the TaxRIS system as mandated by law, the actual compliance rate falls short of expectations.

- Moreover, the development and expansion of modern tools for revenue collection management are experiencing delays. Consequently, the implementation of a modern system for revenue base management hasn't covered all areas as intended.

- The overall use of POS sales recorders and services indicates that business units have not fully understood their purpose. Serious cooperation, comparison, and prolonged installation are lacking. Additionally, the system fails to meet the needs of all user business units, leading to a lack of user confidence. Tax officials have yet to master the use of appropriate measures.

4. Proposing Measures to improve tax administration modernization

The expansion of economic transactions amplifies the demands on tax administration. In line with this trend, Laos' tax administration model is gradually transitioning towards a mixed model that combines functional management with object-based management, integrating compliance management. Consequently, assessing and evaluating the risks associated with managed objects serves as a foundation for grouping taxpayers and categorizing risk elements to implement suitable management measures based on the tax compliance model. The utilization of ICT becomes imperative to aid the process of collecting, processing, and analyzing information. Hence, the application of ICT is not just inevitable but also imperative at a profound and extensive level. Extensive application refers to its widespread implementation across all facets of tax administration, while deep application signifies the integration of ICT in each aspect of tax administration. In this context, the study proposes the application of ICT in tax administration, encompassing the following key components:

Increase the use of information technology in the tax administration

The implementation of the TaxRis system marks a significant advancement in ICT applications as it replaces the former discrete applications. However, at its initial stages, TaxRis allows only basic tax information administration, such as lookup functions and support for preparing tax administration reports based on predetermined structures. Although it supports dynamic reporting functions, these functions are limited to a few information items and have restricted customization options for the set of input information fields from taxpayers' tax declaration records. Essentially, TaxRis's current dynamic reporting function is primarily focused on arranging the sequence of information and formatting output data.

Moreover, there is a necessity for a strategy to construct a data warehouse serving as an input database for smart data analysis functions. It's important to note that the term 'data warehouse' doesn't solely imply a server with extensive storage capacity for usual data storage purposes. In a broader context, a data warehouse encompasses not only a repository for storing vast amounts of data but also incorporates intelligent tools to transform and load data into the warehouse. Additionally, it involves the application of server and workstation virtualization technology to more efficiently harness system resources.

Increase the use of technology in the service of taxpayers

Tax organizations offer Level 4 online public services to taxpayers. Online public services encompass administrative and state agency services provided to both organizations and individuals within a network environment. There are four levels of online public service provision:

(i) Level 1 online public service: This level ensures complete information provision regarding administrative procedures and related documents governing those procedures.

(ii) Level 2 online public service: Building upon Level 1, this level allows users to download document and declaration forms to fulfill dossier requirements. Completed dossiers are then submitted directly or via post to the respective agency or organization.

(iii) Level 3 online public service: Extending Level 2, users can fill out and submit document forms online to the concerned agencies or organizations. Transactions in the process of document processing and service provision occur within the network environment. Payments (if applicable) and receipt of results take place directly at the agency or organization providing the service.

(iv) Level 4 online public service: Advancing from Level 3, this level enables users to make online fee payments. Results can be obtained online or delivered directly or via mail to the user.

Tax administrative procedures should concentrate on providing and enhancing service quality. This includes support for electronic tax declaration, electronic tax payment, electronic tax refund, and electronic invoices.

Promote the application of electronic invoices with authentication codes from tax authorities

The use of electronic invoices with tax authority authentication codes has become a widespread trend, experiencing rapid growth in numerous countries in recent years. As the pilot phase concludes, it's crucial to focus on addressing limitations and shortcomings early on, aiming to expand the implementation to involve a larger number of participating businesses.

The study highlights that to tackle this issue, one fundamental solution requiring attention is reform in the invoice authentication stage. Presently, invoice authentication is executed by authentication code issuers through two options: (i) a centralized system at the Tax Department or (ii) a dedicated device at the enterprise for issuing authentication codes.

The centralized model at the Tax Department suffers from limitations such as extended waiting times for authentication, which may compromise timeliness and disrupt taxpayer operations-especially in cases where numerous taxpayers issue invoices concurrently or continuously in substantial quantities.

Conversely, the device model for issuing authentication codes specifically at the enterprise demands employees to purchase this device. Notably, the authentication code generated from the device needs synchronization with the Tax Authorities. Any changes in Tax Organization authentication data input standards, be it due to technology upgrades or management requirements, necessitate officials to either replace the equipment entirely or incur additional costs for equipment upgrades from the manufacturer. This obstacle is currently a deterrent for taxpayers interested in authenticated electronic invoices.

Accordingly, instead of using physical authentication devices as currently, we should research towards developing software applications that allow creating authentication codes. Accordingly, this authentication code is of type OTP (One Time Password), which is a one-time password created by the authentication code generation system sent to the taxpayer via an electronic device connected to the internet such as an electronic computer, mobile phone. The taxpayer uses this in combination with the official password to authenticate the issuance of electronic invoices. In fact, OTP is currently widely used in electronic banking payment transactions. The response time of the OTP-type authentication code is very fast, usually only a few seconds after using and requesting a transaction, the authentication code is received from the system to continue completing the transaction.

5. Conclusion

It is concluded that ICT has a significantly positive and statistical impact on tax revenue generation in Lao PDR. The integration of ICT in tax collection has notably enhanced tax revenue in Laos. The increased revenue demonstrates the effectiveness of improved administration, made possible only through the adoption of ICT. According to this study, ICT emerges as a highly effective tool that amplifies tax income collection, effectively addressing revenue loss and boosting the efficiency and performance of tax revenue collections.

Additionally, the economic impact of implementing a digital tax system is considered favorable. It is important to remember that, regardless of the country's level of prosperity, without effective ICT implementation, the revenue obtained from taxation will merely vanish without reflecting in collections, ending up in the wrong hands.

Therefore, it is recommended that the government places significant emphasis on digital tax implementation by promoting good governance practices in ICT. A comprehensive accounting platform is essential to enhance the productivity of assigned tax authorities, enabling them to operate in a more accurate, effective, and accountable manner.

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