ISSN: 2688-9323

Digital Technology Reshapes the Tax Collection and Administration System: Impacts, Challenges and Future Prospects

Yueying He

UNSW Business School, Sydney, NSW 2052, Australia

Abstract

With the rapid development of digital technologies, their profound impact on the global economy and social structure has become increasingly evident, and the tax collection and administration system is no exception. This paper aims to comprehensively examine how digital technologies reshape the tax collection and administration system, deeply analyze their far-reaching effects on collection efficiency, tax compliance, and tax services, and reveal the challenges encountered in the process as well as potential solutions. Firstly, the paper outlines the basic principles and characteristics of digital technologies such as big data, artificial intelligence, and blockchain, and showcases their widespread applications and achievements in the field of tax collection and administration through domestic and international practical cases. Subsequently, the paper delves into the multidimensional impacts of digital technologies on the tax collection and administration system. On the one hand, they drive innovation in collection models, facilitating the transition from traditional to modern and manual to intelligent approaches. On the other hand, by optimizing data collection, processing, and analysis processes, digital technologies significantly enhance collection efficiency. Additionally, they strengthen the transparency of tax policies and regulatory efforts, thereby promoting taxpayer compliance. Furthermore, the application of digital technologies enriches tax service channels, elevates service quality, and better satisfies taxpayers' diverse and personalized needs. However, the advancement of digital tax collection and administration also confronts numerous challenges, including technical issues such as data security, technical compatibility, and privacy protection; legal and institutional challenges related to adaptability and systemic barriers; as well as societal acceptance challenges concerning cognitive and attitudinal changes among taxpayers and tax officials. In response to these challenges, this paper proposes specific strategies such as strengthening technological innovation, improving laws and regulations, and enhancing social awareness and training, aiming to provide robust support for the sustainable development of digital tax collection and administration. Looking ahead, as big data, artificial intelligence, blockchain, and other technologies continue to mature and expand their applications, the tax collection and administration system will undergo even more profound transformations. The paper predicts the future development trends of these technologies and envisions their enormous potential in enhancing tax collection efficiency, promoting tax fairness and transparency, and strengthening international cooperation and exchanges. Finally, the paper summarizes the research findings, emphasizes the theoretical and practical value of the study, and proposes issues and areas worthy of further exploration in the field of digital tax collection and administration.

Keywords

Digital Technologies; Tax Collection & Administration; Impact & Challenges; Solutions & Strategies; Future Trends.

ISSN: 2688-9323

1. Introduction

Amidst the global wave of digitization, the rapid advancement of information technology is reshaping every corner of the economic and social landscape with unprecedented depth and breadth[1]. The emergence of cutting-edge technologies such as big data[2], artificial intelligence, and blockchain has not only driven industrial upgrading and model innovation but also profoundly transformed the approach and efficiency of government governance. As a vital component of national governance, the tax collection and administration system has inevitably been deeply impacted by digital technologies. This system, being instrumental in ensuring national fiscal revenue, maintaining economic order, and promoting social equity, its efficiency and fairness are directly linked to the modernization level of national governance. Consequently, delving into how digital technologies reshape the tax collection and administration system not only serves as a crucial response to current practices but also represents an active exploration of future pathways towards modernizing tax governance.

This paper aims to provide an in-depth analysis of the comprehensive impact of digital technologies on the tax collection and administration system, encompassing enhanced efficiency, strengthened tax compliance, and optimized tax services. Furthermore, it will unveil the myriad challenges confronted in advancing digital tax administration, encompassing technical hurdles like data security, technological compatibility, and privacy protection, as well as socio-legal challenges associated with legal and regulatory adaptability, institutional barriers, and societal acceptance. By reviewing domestic and international research findings on the application of digital technologies in the tax realm, this paper endeavors to summarize existing contributions and shortcomings, proposing practical solutions and strategies to support the sustainable development of digital tax administration.

Specifically, the paper will systematically organize the fundamental principles and characteristics of digital technologies, integrating practical cases of digital transformation in tax collection and administration both domestically and internationally, to deeply analyze the multi-dimensional impact of digital technologies on the tax system. Simultaneously, from technological, legal, and societal perspectives, it will comprehensively dissect the challenges faced by digital tax administration and offer corresponding strategies. Finally, the paper will envision the future trends of digital tax administration, exploring its immense potential in enhancing efficiency, fostering tax fairness and transparency, and strengthening international cooperation and exchange, thereby providing valuable insights and references for the modernization of future tax governance.

2. Current Application Status of Digital Technologies in Tax Collection and Administration

2.1. Overview of Digital Technologies

Before delving into the current application status of digital technologies in tax collection and administration, it is imperative to provide a brief overview of the key technologies involved. Big data[3], with its massive volume, high velocity, and variety, offers an unprecedented foundation of data resources for tax collection and administration, enabling tax authorities to gain a more comprehensive understanding of the true nature of economic activities. Artificial intelligence[4], leveraging its formidable data processing and learning capabilities, facilitates the intelligent transformation of tax collection and administration by utilizing algorithmic models to predict tax risks and assist in decision-making. Meanwhile, blockchain[5] technology, with its decentralized and immutable nature, robustly safeguards the authenticity, integrity, and security of tax data, thereby enhancing the credibility of tax collection and administration.

ISSN: 2688-9323

2.2. Practical Cases of Digital Transformation in Tax Collection and Administration

In recent years, tax collection and administration agencies both domestically and internationally have actively explored the application paths of digital technologies, resulting in a series of representative practical cases. In the lrish, the popularization of e-tax bureaus has significantly facilitated taxpayers' tax-related procedures, realizing the online and convenient delivery of tax services[6]. Concurrently, the application of intelligent tax audit systems has leveraged big data analytics to identify potential tax risks, achieving precision and efficiency in audit work[7]. Overseas, some developed countries have deeply integrated digital technologies into their tax collection and administration systems. For instance, they employ artificial intelligence for automated tax reviews and leverage blockchain technology to achieve transparent sharing of tax information. These practical cases have provided invaluable experience for the global digital transformation of tax collection and administration.

2.3. Analysis of Application Effectiveness

The application of digital technologies in the field of tax collection and administration has achieved remarkable results. Firstly, by optimizing data collection, processing, and analysis processes, tax authorities can more quickly and accurately grasp the business status of taxpayers, thereby significantly improving the efficiency of tax collection and administration[8]. Secondly, the application of digital technologies has enhanced the transparency and supervision of tax policies, helping to reduce tax loopholes and improve taxpayers' compliance with tax laws[9]. Furthermore, digital technologies have enriched tax service channels and improved service quality. For instance, the online consultation and appointment tax services provided by e-tax bureaus better meet the diverse and personalized needs of taxpayers. In summary, digital technologies have become an important driving force for promoting the modernization and transformation of tax collection and administration.

3. The Impact of Digital Technology on the Tax Collection and Administration System

3.1. Innovation in the Collection and Administration Model

The introduction of digital technologies has profoundly driven the innovation and transformation of tax collection and administration models. The traditional labor-intensive administration model is gradually being replaced by a modern intelligent administration model centered on big data and artificial intelligence. Through automated data processing and analysis, tax authorities can achieve real-time monitoring and precise evaluation of taxpayers' business activities, thereby improving the accuracy and timeliness of administration work[10]. Furthermore, the application of blockchain technology has brought revolutionary changes to the tax collection and administration model. Its decentralized and immutable nature ensures the authenticity and security of tax information, providing technical support for building a more transparent and fair tax environment.

3.2. Enhancement of Administration Efficiency

The significant advantages of digital technologies in data collection, processing, and analysis have greatly improved the efficiency of tax collection and administration. On the one hand, through the widespread application of big data technology, tax authorities can quickly acquire and integrate massive data resources, achieving a comprehensive understanding of taxpayers' business status. On the other hand, the application of artificial intelligence algorithms enables tax authorities to automate data cleaning, comparison, analysis, and other tasks, effectively reducing manual intervention and error rates. This efficient data processing capability not only

ISSN: 2688-9323

shortens the administration cycle but also improves the precision and relevance of administration work, providing a strong guarantee for the stable growth of tax revenue[11].

3.3. Enhancement of Compliance

Digital technologies have significantly promoted taxpayers' compliance with tax laws by improving the transparency of tax policies and strengthening supervision. On the one hand, tax authorities utilize digital platforms to disclose information about tax policies, tax procedures, and other matters, enhancing taxpayers' right to know and sense of participation, thereby reducing the risk of tax non-compliance due to information asymmetry[12]. On the other hand, through the application of intelligent tax audit systems, tax authorities can create precise profiles and conduct risk assessments of taxpayers, promptly detect and correct tax violations, effectively deterring potential tax evasion behaviors[13]. This all-round, multi-level supervision system not only enhances the deterrent effect of tax collection and administration but also strengthens taxpayers' awareness of tax compliance.

3.4. Optimization of Taxpayer Services

The application of digital technology has also significantly enriched tax service channels and improved service quality. The introduction of online service platforms such as e-tax bureaus and mobile tax apps has broken the constraints of time and space, providing taxpayers with a more convenient and efficient tax experience[14]. Additionally, through the application of technologies like AI customer service and intelligent voice navigation, tax authorities can answer taxpayers' inquiries and questions in real-time, realizing personalized and intelligent tax services. This taxpayer-centric service philosophy not only meets taxpayers' diverse and individualized needs but also enhances their satisfaction and loyalty, laying a solid foundation for building a harmonious taxpayer-collector relationship.

4. Challenges and Solutions in Digital Tax Collection and Administration

4.1. Technical Challenges

In the process of advancing digital tax collection and administration, technical challenges cannot be overlooked. Firstly, data security is a primary concern. With the centralized processing and transmission of large amounts of sensitive data, ensuring the security of data during collection, storage, transmission, and use, and preventing data leaks and misuse, has become an urgent issue to be resolved[15]. Secondly, technical compatibility poses a significant obstacle. Inconsistent data formats and interface standards among different systems lead to information silos, affecting the effective integration and utilization of data. Lastly, privacy protection is also a serious issue错误!未找到引用源。. How to enhance the efficiency of administration while safeguarding taxpayers' personal privacy rights and avoiding infringement of their legitimate rights is an ethical and legal issue that must be addressed at the technical level.

4.2. Legal and Institutional Challenges

Digital tax collection and administration also faces legal and institutional challenges. On the one hand, existing laws and regulations often lag behind technological advancements, making it difficult to comprehensively cover new situations and issues in digital tax collection and administration, such as taxation of digital currencies and regulation of cross-border data flows[17]. Legislative bodies need to accelerate legal revisions and improvements. On the other hand, institutional barriers also limit the promotion and implementation of digital tax collection and administration, such as inadequate information sharing mechanisms between departments and the mismatch between tax collection and administration processes and digital technologies, which require institutional innovation and optimization to address.

ISSN: 2688-9323

4.3. Social Acceptance Challenges

The issue of social acceptance of digital tax collection and administration is also worthy of attention. The cognition, attitudes, and behavioral changes of stakeholders such as taxpayers and tax officials directly affect the implementation effect of digital tax collection and administration[18]. Some taxpayers may resist due to unfamiliarity or distrust of new technologies, affecting tax compliance. Tax officials may struggle to adapt to new administration models due to inadequate skills or lagging conceptual changes. Therefore, enhancing social awareness and training, and fostering stakeholder recognition and participation in digital tax collection and administration, are crucial to overcoming social acceptance challenges.

4.4. Solutions

In response to the above challenges, this paper proposes the following specific solutions: Firstly, strengthen technological innovation to enhance data security protection capabilities, intensify research and development of data privacy protection technologies, and promote the unification and mutual recognition of technical standards[19]. Secondly, improve laws and regulations, accelerate the legislative process, clarify rights and obligations in digital tax collection and administration, and provide legal guarantees for the application of new technologies[20]. Thirdly, enhance social awareness and training through publicity and education, skills training, and other means to improve taxpayers' and tax officials' awareness and acceptance of digital tax collection and administration, promoting the extensive application and deep integration of new technologies in the field of tax collection and administration.

5. Future Prospects of Digital Tax Collection and Administration

5.1. Technological Development Trends

Looking ahead, digital technologies such as big data, artificial intelligence, and blockchain will demonstrate even broader development prospects in the tax field. Big data technology will further deepen its application in tax data analysis, providing more precise data support for the formulation and adjustment of tax policies by mining the potential value in massive amounts of data. Artificial intelligence will play an even more central role in tax collection and administration, extending beyond automated processing and intelligent auditing to include higher-level applications such as risk assessment and predictive analysis, thereby realizing the intelligent upgrade of tax collection and administration. Blockchain technology, with its decentralized and tamper-proof characteristics, is expected to bring unique advantages to cross-border tax management and tax source monitoring, promoting transparency and efficiency in tax governance[21].

5.2. Reform of the Tax Collection and Administration System

With the continued deepening of the application of digital technologies, the tax collection and administration system will undergo unprecedented changes. On the one hand, the collection and administration model will become more intelligent and automated, reducing human intervention and improving efficiency and accuracy. On the other hand, digital technologies will promote the reconstruction and optimization of tax collection and administration processes, realizing refined and personalized management to meet the diverse needs of different taxpayers[22]. Simultaneously, digital technologies will enhance the transparency and enforceability of tax policies, improving taxpayer compliance and satisfaction, and promoting the establishment of a more fair and just tax environment.

ISSN: 2688-9323

5.3. International Cooperation and Exchange

In the context of globalization, cross-border tax issues have become increasingly prominent, and strengthening international cooperation and exchange has become an important way to address cross-border tax challenges. Digital technologies provide new opportunities and platforms for international tax cooperation. By sharing tax data, coordinating tax policies, and strengthening technical cooperation, countries can jointly address issues such as cross-border tax source monitoring, international tax evasion, and tax avoidance, thereby promoting the improvement and development of the global tax governance system. Additionally, strengthening international cooperation and exchange will help promote the unification and mutual recognition of digital tax standards, facilitating the coordination and integration of global tax collection and administration systems.

6. Conclusion

In conclusion, the rapid development of digital technologies is reshaping the global tax collection and administration system with unprecedented intensity, significantly enhancing the efficiency and transparency of tax collection, enriching tax service methods, and promoting tax compliance. However, this process also poses challenges in technology, law, institution, and social acceptance. By strengthening technological innovation, improving laws and regulations, and enhancing social awareness and training, we can effectively address these challenges and push digital tax collection and administration towards a more efficient, fair, and transparent direction. Looking ahead, as big data, artificial intelligence, blockchain, and other technologies continue to mature and expand their applications, the tax collection and administration system will undergo even more profound transformations, providing a powerful impetus for modernizing tax governance and enhancing international cooperation and exchanges.

Acknowledgments

In my acknowledgments, I would like to express my gratitude to the peace of the world.

References

[1] Li G, Wang H, Hardjawana W. New advancement in information technologies for industry 4.0[J]. Enterprise information systems, 2020, 14(4): 402-405.

[2] Shin D H. Demystifying big data: Anatomy of big data developmental process[J]. Telecommunications Policy, 2016, 40(9): 837-854.

[3] Wu J, Guo S, Li J, et al. Big data meet green challenges: Greening big data[J]. IEEE Systems Journal, 2016, 10(3): 873-887.

[4] Sadok H, Sakka F, El Maknouzi M E H. Artificial intelligence and bank credit analysis: A review[J]. Cogent Economics & Finance, 2022, 10(1): 2023262.

[5] Harris W L, Wonglimpiyarat J. Blockchain platform and future bank competition[J]. Foresight, 2019, 21(6): 625-639.

[6] Robbins G, Mulligan E, Keenan F. e-Government in the Irish Revenue: The Revenue On-Line Service (ROS): A Success Story?[J]. Financial Accountability & Management, 2015, 31(4): 363-394.

[7] Wang Y. Application of big data technology platform based on deep learning in smart tax evaluation system[J]. Soft Computing, 2023: 1-11.

[8] Pan W, Chen L, Zhang R. Automatic recognition of financial instruments based on anisotropic partial differential equations[J]. Advances in Mathematical Physics, 2021, 2021(1): 6529859.

[9] Lo K, Liu F, Huang J. OneFeather mobile wallet: A digital solution for Indigenous peoples in Canada?[J]. Accounting Perspectives, 2021, 20(3): 403-419.

ISSN: 2688-9323

[10] Shim S A, Shim H, Shim T S. Does procedural justice in a tax audit situation affect taxpayers' acceptance of tax audit assessments?[J]. Applied Economics, 2024, 56(22): 2629-2645.

[11] Belahouaoui R, Attak E H. Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior–a systematic literature review using textometry (2016–2023)[J]. Accounting Research Journal, 2024, 37(2): 172-191.

[12] Koivula K, Shamsuzzoha A, Shamsuzzaman M. Application of artificial intelligence as a knowledge creation instrument in tax procedures[J]. Engineering Applications of Artificial Intelligence, 2024, 133: 108417.

[13] Hanfy F, Alakkas A A, Alhumoudi H. Analyzing the role of digitalization and its impact on auditing[J]. Multimedia Tools and Applications, 2024: 1-23.

[14] Li H B. Modeling method of tax management system based on artificial intelligence[J]. International Journal on Artificial Intelligence Tools, 2020, 29(07n08): 2040023.

[15] Königstorfer F, Thalmann S. Applications of Artificial Intelligence in commercial banks–A research agenda for behavioral finance[J]. Journal of behavioral and experimental finance, 2020, 27: 100352.

[16] Rodrigues L F, Oliveira A, Rodrigues H. Technology management has a significant impact on digital transformation in the banking sector[J]. International Review of Economics & Finance, 2023, 88: 1375-1388.

[17] Krasonikolakis I, Tsarbopoulos M, Eng T Y. Are incumbent banks bygones in the face of digital transformation?[J]. Journal of General Management, 2020, 46(1): 60-69.

[18] Silva V. The schumpeterian consensus: The new logic of global social policy to face digital transformation[J]. Journal of Social Policy, 2022: 1-17.

[19] Wang H, Ma S, Dai H N, et al. Blockchain-based data privacy management with nudge theory in open banking[J]. Future Generation Computer Systems, 2020, 110: 812-823.

[20] Bharti S S, Prasad K, Sudha S, et al. Customer acceptability towards AI-enabled digital banking: a PLS-SEM approach[J]. Journal of Financial Services Marketing, 2023, 28(4): 779-793.

[21] Alnaser F M, Rahi S, Alghizzawi M, et al. Does artificial intelligence (AI) boost digital banking user satisfaction? Integration of expectation confirmation model and antecedents of artificial intelligence enabled digital banking[J]. Heliyon, 2023, 9(8).

[22] Bellon M, Dabla-Norris E, Khalid S, et al. Digitalization to improve tax compliance: Evidence from VAT e-Invoicing in Peru[J]. Journal of Public Economics, 2022, 210: 104661.