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The impact of digitalization of the tax system on improving tax resources in the Republic of Yemen

Saleem Hussein Al-Akari[1], Mareb Ahmed Al-Mehgani [2],Ali Hazim Alyamoor3
1Assistant Professor of Audit and Accounting, Department of Accounting and Auditing, Faculty of Commerce and Economics, University of Amran,
2 Assistant Professor of Audit and Accounting, Department of Accounting and Auditing, Faculty of Commerce and Economics, University of Amran, Yemen.
3- Assistant Professor, Department of Accounting, administration and Economics college, University of Mosul, Iraq
ali.alyamoor@uomosul.edu.iq

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Corresponding author:
Name: Ali Hazim Alyamoor
Affiliation : University of Mosul, Iraq
Email: *ali.alyamoor@uomosul.edu.iq*

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A B S T R A C T

The main objective of this research is to analyze the impact of the digitalization of the tax system on improving tax resources in the Republic of Yemen, using digital transformation technologies. The research highlights the importance of adopting digital transformation technologies to address various shortcomings in traditional tax systems, such as the increase in tax arrears for some taxpayers, the increase in tax evasion cases, the long duration of tax audits and the complexity of their procedures.

SPSS statistical software was used to conduct the necessary analyses, using a number of descriptive and inferential statistical measures, as well as tests appropriate to the study's hypotheses and objectives. A paper questionnaire was distributed to employees of the tax administration in the capital, Sana'a.

This research has led to several findings, the main ones being the following: the digitalization of the tax system has a positive and statistically significant impact on increasing tax revenues, limiting tax evasion, and reducing expenses, time, and effort. Despite these positive effects, the digital transformation of the tax system in Yemen faces several structural challenges, including: the lack of qualified human resources, insufficient digital infrastructure, the absence of a clear and favorable legal framework and a weak digital culture within the tax administration



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1- Introduction

Since the beginning of the third millennium, the global economy has been undergoing radical changes and rapid advances, due to the considerable technological developments in the era of the digital revolution. Among these changes is the phenomenon of digital transformation, which refers to the transition from a traditional model to a digital model, through the use of technologies such as the Internet, cloud computing, big data analysis, artificial intelligence, as well as the ability to produce enormous amounts of new data. These tools aim to improve the transfer of information and knowledge, strengthen production and facilitate innovation.

The digital transformation of tax systems is one of the key strategies for improving the State's financial resources and meeting the growing needs of its activity. It can be defined, according to Triangle Innovation Hub (2021), through the following dimensions:

- **Productivity or financial efficiency**: A good tax system must provide the State with a sufficient quantity of resources enabling it to carry out its missions in terms of social well-being and sustainable development.
- **Flexibility:** A sufficiently flexible tax system allows tax revenues to increase in parallel with the growth of national income.
- **Diversity:** The tax system should be diversified and include a wide and varied range of taxes.
- **Improving income distribution**: A good tax system is a lever for reducing social inequalities.
- **Guarantee of economic stability**: Economic fluctuations represent a major challenge for many countries, which the tax system must help to mitigate.

1.1 Research Problem

In many developing countries, low tax-to-income ratios prevent the financing of large-scale public programs (Aizer, Hoynes & Lleras-Muney, 2022). Therefore, tax policies seek to increase national revenues and improve the delivery of public services. However, excessive increases in the tax burden can have a disincentive to economic growth, particularly due to the distortive effects of certain taxes (Di-Nunzio, 2022). Due to the rapid changes brought about by digitalization in economic, social, and other fields, many countries have chosen to allocate part of their budgets to investment in information and communication technologies, in order to digitalize their tax systems. This approach aims to develop and implement their public policies, particularly financial policies, with the aim of improving the quality of services and supporting and developing the applications of artificial intelligence and digital technologies (OECD, 2018). Automation helps reduce processing times, minimize errors, and increase overall efficiency (Jahirul, 2021). Furthermore, it reduces operational costs and enables optimal resource allocation (Gupta, 2022).(.

Thus, tax digitalization has become a topical issue, and it has become necessary to take advantage of this modern technology in various fields, especially to strengthen the control of tax resources. Therefore, the problem of this research can be summarized in the following main question:

What is the impact of digitalization of the tax system on strengthening tax resources in the Republic of Yemen?

From this main question, several secondary questions can be asked, which this study will attempt to answer:

- What is the impact of digitalization of the tax system on increasing tax resources?
- What is the impact of digitalization of the tax system on reducing tax expenditures?
- What is the impact of digitalization of the tax system on limiting tax evasion?
- What are the main challenges facing the digitalization of the tax system?

1.2 Research objectives

The main objective of this research is to identify the impact of the digitalization of the tax system on strengthening tax resources, and to exploit it as an innovation resulting from the technological revolution, aiming to modernize the tax system in terms of saving time, effort and costs. It also aims to accelerate the processes of tax collection, monitoring and control, while producing accurate and high-quality financial information.

From this main objective arise several specific objectives:

- Analyze the impact of digitalization of the tax system on strengthening tax resources.
- Study the impact of digitalization of the tax system on reducing tax expenditures.
- Assess the impact of digitalization of the tax system on limiting tax evasion.
- Identify the main challenges related to the digitalization of the tax system.

1.3 Research Hypotheses

Based on the research objectives and questions, hypotheses can be formulated as follows:

Main hypothesis:

H0: There is a statistically significant impact of digitalization of the tax system on strengthening tax resources in the Republic of Yemen.

Secondary hypotheses:

H01: There is a statistically significant impact of the digitalization of the tax system on increasing tax revenues.

H02: There is a statistically significant impact of the digitalization of the tax system on the reduction of tax expenditures.

H03: There is a statistically significant impact of the digitalization of the tax system on limiting tax evasion.

H04: There are obstacles and difficulties that hinder the digitalization of the tax system.

1.4 Importance of research

The importance of this research lies in the essential role that taxes play in supporting the local economy, being one of the main sources of financing the general state budget in developing countries, including the Republic of Yemen. This study also derives its importance from the timeliness and relevance of its theme: the analysis of the transition of the tax system from the traditional model to a digital model, as well as the fundamental impact of information technologies in strengthening the effectiveness of tax systems in controlling resources and expenditures.

2. Previous Studies

Al-Ainin (2023), examined the impact of digital transformation on improving the efficiency of the Egyptian tax system and reducing tax evasion in alignment with Egypt Vision 2030. The study employed a contemporary methodological approach combining inductive and deductive reasoning. Data were collected using a questionnaire distributed to a sample of 195 participants, including university faculty members, Sadat Academy staff, and employees of the Egyptian Tax Authority. The findings indicated a statistically significant relationship between digital transformation and the efficiency of the Egyptian tax system. The results also confirmed that digital transformation within the Tax Authority significantly contributes to reducing tax evasion in the Egyptian context.

Hassan (2023), investigated the effect of digital transformation in accounting systems on the volume of tax revenues from the perspective of employees in the Cairo Tax Authority (Nasr City branch). The study adopted a descriptive-analytical approach and used a questionnaire as the primary data collection tool. A total of 140 questionnaires were distributed, and 101 valid responses were used for analysis. The results revealed a significant positive relationship between digital transformation in accounting systems and increased tax revenues. However, the effect was mainly attributed to digital transformation in operational processes, while the dimensions related to technology, data, and human resources were not statistically significant in explaining tax revenue growth.

Atiyah (2023), explored the impact of digital transformation applications on the efficiency of tax auditors and voluntary tax compliance in the Egyptian business environment. The study relied on survey data collected from four categories of employees within the Egyptian Tax Authority, including tax audit managers, tax auditors, taxpayer service staff, and IT/digital transformation staff. The findings showed that digital transformation applications positively influence both tax auditor efficiency and voluntary compliance.

From a broader regional perspective, Bassongui (2023), conducted a systematic review to evaluate the impacts of tax digitalization on tax revenues in Sub-Saharan Africa. The study concluded that tax compliance, tax collection efficiency, and e-governance represent key mechanisms through which tax digitalization contributes to revenue growth. The review further reported that tax digitalization significantly improves tax revenues across Sub-Saharan African countries.

Similarly, **Oyibi-Ghana (2022),** examined the role of digitalization in enhancing the performance of tax administration in Morocco, focusing specifically on tax revenue mobilization. The study found that dematerialization of tax services contributes to expanding the tax base and facilitates the collection of public treasury debts. Moreover, digitalization supports risk-based tax control, strengthens access to rich taxpayer databases, and enables the identification of tax gaps, ultimately increasing tax revenue collection.

Ettahiri (2022), analyzed the effects of digitalization on tax revenue mobilization in Sub-Saharan Africa using longitudinal data from 2002 to 2021. The study included a dataset covering 54 countries, of which 42 were selected for analysis. The results revealed a statistically significant positive relationship between digitalization and tax revenue mobilization. The study recommended that policymakers prioritize digitalization as a strategic approach to strengthening tax revenue performance.

Khalifa (2022), addressed the digital transformation of the Egyptian tax accounting system within the framework of Egypt's Strategy and Vision 2030. The study concluded that digital transformation contributes to building an integrated tax system through legal reforms, unifying tax procedures, improving the working environment, and enhancing administrative efficiency, which ultimately supports increased tax revenues

Verhoef (2021), emphasized that successful digital transformation depends on several essential elements. First, organizations must establish a clear digital business strategy that defines operational workflows and ensures internal alignment across stakeholders. Second, effective communication and engagement with beneficiaries must be developed through diverse channels, including social media platforms and AI-based interaction tools. Third, organizations should foster a creativity culture by developing employees' capabilities, as human resources are critical to sustaining digital transformation and enabling data-driven decision-making. Fourth, modern technology must be adopted to reduce physical barriers and enable scalable digital interaction. Finally,

continuous data management and analytics are required to support forecasting, decision-making, corrective actions, and long-term sustainability.

Munirathinam et al. (2022), proposed key pillars for implementing digital transformation in business organizations. These include assessing material needs such as computers, communication networks, software systems, and cybersecurity tools; training and qualifying users; testing the organizational environment and evaluating performance at each stage of implementation; and continuously developing digital operating environments to maintain compatibility with evolving IT requirements and user needs.

3. Literature review and development of hypotheses

Digital transformation is one of the main challenges facing most businesses in the current era, due to its direct and rapid impact on their sustainability and market presence, in the face of changes brought about by the technological revolution. This transformation requires these businesses to integrate digital technologies and their use in order to promote their success and create a competitive advantage, particularly in the area of tax system development. The digitalization of the tax system contributes, in one way or another, to increasing efficiency and performance by strengthening fiscal control of public resources, with minimal effort and time. Tax collection represents an essential component for the viability of all nations, whether advanced or developing. Indeed, governments rely heavily on taxation, whose mandatory and continuous nature guarantees a stable and predictable flow of revenue (Caselli, 2023; Zhao, 2023).

Taxation helps meet social expectations by ensuring the financing of public goods and services. It is essential to enable states to invest in fundamental sectors such as national defense and justice, with the aim of preserving security and equity within society (Alam, Fawzi, Islam & Said, 2022).

A prominent institutional source in this domain is the Arab Monetary Fund (AMF), whose analyses provide a comprehensive overview of the effects of digitalization on tax systems in the Arab region.

In its 2021 report, Digitizing Tax Collection in Arab Countries, the AMF highlighted that the implementation of digital tax collection systems has significantly improved the efficiency of tax administration. According to the report, countries that adopted electronic filing, online payment, and integrated data management platforms experienced faster and more accurate tax collection processes, contributing to enhanced compliance and reduced administrative burdens. The study also found that digital tools help in expanding the tax base by facilitating the inclusion of previously untaxed economic activities, and in reducing tax evasion by improving data transparency and traceability (Arab Monetary Fund, 2021).

Moreover, the AMF's Unified Arab Economic Report 2024 emphasized the broader strategic importance of digital transformation as a catalyst for improving public finance systems, including tax systems. The report stressed that strengthening digital infrastructure, improving tax information systems, and adopting real-time data analytics are essential for increasing tax revenues and enhancing fiscal policy effectiveness. The report indicated that digital transformation not only improves operational efficiency but also supports more responsive and evidence-based tax policymaking (Arab Monetary Fund, 2025).

Overall, these reports suggest that tax digitalization can lead to better compliance, lower administrative costs, and higher revenue mobilization. The improvements stem from more accessible and user-friendly tax services, reduced opportunities for manual errors or fraudulent practices, and enhanced capabilities for tax authorities to monitor economic activities.

3.1. Concept of digitalization of the tax system

Digitization is defined as a system for converting data and information from analog to digital format (Hamidouche Ali, 2020). The concept of digital transformation refers to the use of digital technologies and developments associated with the industrial revolution, through artificial intelligence, big data analysis, cloud computing, and the Internet of Things. This has paved the way for the emergence of new business models, such as digital platforms (Mekkaoui, 2019).

Digitization is also a process of converting information sources from their traditional form to a digital form, with the aim of preserving as many information resources as possible in the long term, while making them accessible to a wider audience (Nacir, 2021). Furthermore, digitization represents the transition of institutions from a traditional economic model to another, relying on digital technologies to innovate in products and services, as well as in marketing methods, while creating new revenue channels through the development of a digital strategy. This transformation can only be achieved through an assessment of digital capabilities, a study of digital investment requirements within digital marketing activities.

3.2. The benefits of digital transformation

Digital transformation has brought several notable benefits, one of the main benefits being improved operational efficiency: digital systems automate repetitive tasks, reduce reliance on paper documents, and streamline processes. This allows for more efficient allocation of resources and refocusing on high-priority areas (Blau, 2021).

Automation helps reduce processing times, minimize errors, and increase overall efficiency (Jahirul, 2021). Furthermore, it reduces operational costs and enables optimal resource allocation (Gupta, 2022).
Furthermore, increased transparency is another significant benefit. Digital systems simplify tax filing and payment processes, thereby promoting taxpayer confidence and encouraging voluntary compliance (Fishbein and Ajzen, 2021). Within the framework of these reforms of the tax linkage system, several benefits are expected for the tax administration and tax systems, summarized as follows (Estevão, 2021):

-Tax administration decisions will be strengthened by artificial intelligence, with the need for continuous monitoring of the system to detect errors.

-Tax administrations will be able to become larger reservoirs of government data, giving them a central role in economic policymaking, with greater capacity for predictive analysis of economic transactions..

-The tax system will become more user-friendly, with pre-filled returns, direct access to tax information, and data sharing with banks to speed up credit applications.

-The tax administration will simplify relations between taxpayers and tax agents, including by connecting companies' accounting software to tax platforms for electronic reporting and payment.

3.3. Requirements for Tax Digitalization in Arab Countries

A. Technical Infrastructure

The primary requirement for digitalization is the existence of a robust technical infrastructure, including high-speed communication networks and centralized computing systems for tax data management and analysis, alongside fully integrated user interfaces for taxpayers and government entities (Mansour, 2023; Nasir, 2023).

The Federal Tax Authority in the United Arab Emirates provides a notable example. It implemented the “Emarat Tax” digital platform, which supports registration, filing, payment, and electronic refunds, enhancing efficiency and simplifying digital procedures.

B. Legal Framework and Legislation

Digital transformation requires clear legal frameworks mandating the use of digital signatures, regulating data handling, and updating tax laws to include electronic invoicing and digital obligations. Some countries, such as the UAE, have updated their Value-Added Tax and other tax laws to accommodate e-invoicing requirements.

C. Human Capacity and Training

Training staff within tax authorities and taxpayers on information systems and digital compliance management is essential for successful digitalization, as it directly affects data quality and compliance procedures.

D. User Culture and Trust

The success of tax digitalization also depends on taxpayer trust in digital systems, which encourages electronic filing and payment, demonstrating its impact on improving compliance and reducing tax evasion. According to Ibrahim (2021), the requirements of digital transformation can be broadly summarized as follows:

- **The fundamental aspects**: including e-business infrastructure, digital innovations and core technologies.
- **The information and digital technology sectors**: such as digital platforms, mobile applications and electronic payment services.
- **Applied digital sectors**: which encompass increasingly used digital products and services, such as e-commerce.

3.4. Requirements for Tax Digitalization in the Yemeni Context

The tax administration of the Republic of Yemen remains heavily influenced by traditional management. It suffers from multiple shortcomings and challenges, including: a high volume of tax arrears among some taxpayers; the proliferation of tax evasion; the absence of a comprehensive database of taxpayers; the slowness and complexity of administrative procedures; the workload

of tax officials; the difficulty of carrying out tax audit missions; and the low level of taxpayer compliance. The main requirements of this operation can be summarized as follows:

A. Available Digital Services

The Yemeni Tax and Customs Authority provides electronic tax services, including tax filing, registration, and electronic payment, via a digital services platform, aiming to simplify procedures and enhance voluntary compliance.

In 2023, the Authority launched an Electronic Tax Filing Service to improve transparency and facilitate communication between taxpayers and the tax administration, representing a significant step toward digital transformation in Yemen.

Additionally, a 100% electronic payment system has been implemented through applications such as Mobile Money, enabling payments without paper-based transactions.

B. Planning and Implementation Requirements

-Legal Framework Updates

Yemen's tax system requires updates to tax legislation to incorporate digital requirements, such as electronic signatures and data protection, as the current legal framework needs to adapt to modern technological changes.

-Technical Infrastructure Development

Digital transformation requires reliable IT networks, servers, and secure applications, which demand stronger technical and financial support to ensure uninterrupted system functionality.

-Training and Capacity Building

Transferring knowledge and providing professional training for authority staff is one of the key implementation requirements.

3.5. Challenges of digital transformation

The digital transformation process faces many obstacles that can compromise the achievement of the desired objectives. Some of the main challenges include:

- The lack of qualified skills and capabilities capable of driving change and leading digital transformation programs.
- Insufficient budgets allocated to digital transformation, which may limit the achievement of expected results.
- Information security risks due to the use of technologies and the need for appropriate management of information and communication technologies.
- The threat to privacy and cybercrime, exacerbated by the lack of a comprehensive digital strategy.

3.6. The impact of digitalization of the tax system on strengthening tax resources

Digital transformation contributes to the efficient collection of state duties and optimal use of financial resources, which helps maximize public resources, improve their management, and increase the efficiency of financial performance. The contribution of digital technologies in tax revenue management is increasingly recognized. These technologies help improve tax compliance, detect fraud, and reduce corruption risks (Mascagni, Mengistu & Woldeyes, 2021). By simplifying tax filing and payment processes, digital systems increase transparency, boost taxpayer confidence, and promote greater voluntary compliance (Fishbein & Ajzen, 2021).

Digital transformation has had a significant impact on tax revenue collection, improving both the efficiency and accuracy of administrative processes. Automating tax procedures helps reduce processing times, minimize human errors, and, consequently, increase the overall efficiency of tax administration (Jahirul, 2021).

Digital tools also facilitate better taxpayer compliance, thanks to more rigorous monitoring of declarations and a significant reduction in the risk of fraud (Geetha & Sekar, 2023). In addition, the adoption of digital technologies contributes to the reduction of operational costs, while optimizing resource allocation. This results in more efficient and transparent management of tax revenues (Gupta, 2022).

Furthermore, digital systems enhance transparency and reduce opportunities for corruption, which provides an additional lever for improving administrative efficiency as a whole (Jayakumar & Nagalakshmi, 2006). Thus, it can be stated that digital transformation has many advantages for the development of tax systems, including: increased tax revenues, simplification and unification of tax procedures, better identification of the tax population, and the achievement of tax justice.

4. Research methodology

This research will be based on inductive and deductive methods, recognized among the scientific approaches used in the social sciences, to examine the impact of digital transformation on the strengthening of fiscal resources. This will be done through academic research, specialized journals and scientific dissertations, in order to build the theoretical framework and achieve the objectives of the study.

4.1 Research population

The population of this study consists of financial managers, internal auditors and accountants working at the Tax Administration, as they are the most qualified to answer the questions in the questionnaire due to their in-depth knowledge of the subject of tax revenue.

4.2 Study sample

Thirty (30) employees were selected from the entire research population, and questionnaires were distributed. Twenty-five (25) questionnaires were returned, with a return rate of 83%, as shown in Table (1).

Table (1) Research sample

Sample	Questionnaires distributed	Refundable questionnaires	Recovery rate	Questionnaires not suitable for analysis	Questionnaires valid for analysis
30	30	25	83%	0	25

4.3 Data collection method

A questionnaire was developed to meet the study's requirements. It was designed to collect data from employees of the General Tax Administration, with the aim of assessing the impact of tax digitalization on strengthening tax resources. The questionnaire was distributed manually to administration officials, and then the responses were analyzed using appropriate statistical tests to extract significant and relevant indicators for the research topic.

4.4 Statistical methods used

To answer the research questions and test the hypotheses, SPSS (Statistical Package for the Social Sciences) software was used to analyze the data. The following statistical methods were applied:

- **Skewness & Kurtosis Test**: to check the normality of the distribution of the variables and dimensions of the questionnaire.
- **Pearson correlation**: to test construct validity and internal consistency.
- **Cronbach's Alpha**: to measure the reliability of the research tool and the consistency of participants' responses across different dimensions.
- **Frequencies and percentages**: to analyze the sociodemographic data of the participants.
- **Means and standard deviations**: to assess general trends in responses and dispersion around the mean.
- **Independent Samples T Test**: to detect differences between two groups (e.g. sex).
- **Analysis of variance (ANOVA)**: to test differences between several groups (e.g. age, specialization, position, years of experience).

4.5. Normality test

To ensure that the variables and dimensions of the questionnaire follow a normal distribution, the normality test was applied by calculating the values of skewness and kurtosis. The results of this test are presented in Table 2.

Table (2): Test of normal distribution of data

Questionnaire axes	Coefficient (Skewness)	Coefficient (Kurtosis)
The impact of digitalization of the tax system on increasing tax revenues	0.832	0.210

The impact of digitalization of the tax system on reducing expenditure	0.845	0.161
The impact of digitalization of the tax system on reducing tax evasion	0.783	0.207
The challenges of digitalizing the tax system	0.899	0.147

It is evident from Table (2), that all the values of asymmetry (Skewness) for the different dimensions and axes of the study vary between 0.783 and 0.899, while the values of kurtosis are between 0.147 and 0.210.
These values, being between –1 and +1, indicate that all the variables and dimensions of the questionnaire follow a normal distribution. Therefore, the sample used for the collection of primary data can be considered representative of the target population of the study.

4.6. Testing the validity and reliability of the research tool

The validity of the data collection tool was established using the following approaches:

a) External validityThe research tool, in its preliminary version, was presented to a group of specialists and experts in the field of accounting and auditing, in order to assess its relevance and clarity.

b) Internal validityThe internal consistency of the questionnaire was measured using the Pearson correlation coefficient (r) between each item and the axis to which it belongs, and this for all the items of the questionnaire. The results of these tests are presented below in table (3).

Table (3): Internal consistency of the study items

The impact of digitalization of the tax system on increasing tax revenues			**The impact of digitalization of the tax system on reducing expenditure**		
Paragraph number	**Correlation coefficient**	**Significance level (p)**	**Paragraph number**	**Correlation coefficient**	**Significance level (p)**
1	.814**	.000	1	.828**	.000
2	.899**	.000	2	.910**	. .000
3	.677**	.001	3	.803**	.000
4	.750**	.000	4	.817**	.000
5	.828**	.000	5	.881**	.000
6	.777**	.000	6	.733**	.000
7	.846**	.000	\\\\\\\\	\\\\\\\\	\\\\\\\\
8	.899**	.000	\\\\\\\\	\\\\\\\\\	\\\\\\\\
9	.651**	.001	\\\\\\\\\	\\\\\\\\\	\\\\\\\\\
10	.782**	.000	\\\\\\\\\	\\\\\\\\\	\\\\\\\\
The impact of digitalization of the tax system on reducing tax evasion			**Challenges of digitalizing the tax system**		
Paragraph number	**Correlation coefficient**	**Significance level (p)**	**Paragraph number**	**Correlation coefficient**	**Significance level (p)**
1	.791**	.000	1	.529*	.014
2	.782**	.000	2	.815**	.000
3	.865**	.000	3	.735**	.000
4	.837**	.000	4	.732**	.000
5	.535*	.013	5	.672**	.001
6	.827**	.000	6	.679**	.001
7	.847**	.000	7	.796**	.000
8	.665**	.001	8	.854**	.000
9	.772**	.000	9	.564**	.008
\\\\\\\\\	\\\\\\\\	\\\\\\\\\	10	.861**	.000

*** Significant correlation at the p level≤0.05**
**** Significant correlation at the p level≤0.01**

It appears from table (3), that the items relating to the impact of the digitalization of the tax system on the increase in tax revenues present positive and significant correlations ($p \leq 0.01$), with coefficients varying from 0.651 to 0.899.

Similarly, items measuring the impact on reducing tax expenditures show positive and significant correlations between 0.733 and 0.910. Items related to reducing tax evasion also show significant correlations, between 0.535 (at the $p \leq 0.05$ level for item 5) and 0.865 ($p \leq 0.01$).

Finally, the digitalization challenges items reveal significant positive correlations, from 0.529 to 0.861, with item 1 being significant at the $p \leq 0.05$ level. These results confirm the internal validity and consistency of the items used in this study.

4.7. Evaluation of the reliability of the tool

The reliability of a measurement tool means that it gives the same results if it is redistributed under similar conditions. To check the reliability of the study variables and the credibility of the sample's responses, the Cronbach's Alpha test was used. This test is widely used due to its simplicity and clear interpretation. It indicates internal reliability and positive correlation between questionnaire items. The results of Cronbach's Alpha are presented in Table (4).

Table (4): Results of Cronbach's Alpha test for the study tool

Questionnaire dimensions	Number of paragraphs	Cronbach's Alpha	Degree of credibility
Impact on increasing tax revenues	10	0.932	0.965
Impact on the reduction of tax expenditures	6	0.903	0.950
Impact on reducing tax evasion	9	0,900	0.948
Challenges of digitalizing the tax system	10	0.892	0.944
Total (all items, n=35)	35	0.965	0.982

From table (4):

Cronbach's Alpha coefficients are high, ranging from 0.892 to 0.932 for the different dimensions, indicating a high level of internal reliability. The degree of credibility (validity) ranges from 0.944 to 0.965, confirming the robustness of the measurement tool. Overall, the total Alpha is 0.965, with a degree of validity of 0.982, attesting that the questionnaire is reliable, consistent and appropriate for this study, thus allowing the results to be generalized to the target population with confidence.

5. Data Results and Hypothesis Testing

5.1 Results of the study

Table (5):Descriptive analysis of "sex"

Sex	Fresequence	Percentage
Men	19	%90.5
women	2	9.5%
Total	21	100%

Table (5) shows that, the majority of the sample members are male, with 19 individuals representing 90.5% of the sample, while females constitute 9.5% (2 individuals).

Table (6): Descriptive analysis of age

Age group	Fresequence	Percentage
Under 25 years old	2	9.5%
From 25 to 35 years old	12	57.1%

From 36 to 50 years old	7	33.3%
Total	21	100%

Table (6) shows that, the majority of the sample (57.1%) falls into the 25-35 age group, followed by the 36-50 age group with 33.3%. These two groups together represent 90.4% of the sample. The under-25 age group represents 9.5%.

Table (7): Descriptive analysis of academic qualification

Academic qualification	Fresequence	Percentage
Accounting	18	85.7%
Business management	1	4.8%
Public administration	1	4.8%
Other specializations	1	4.8%
Total	21	**100%**

Table (7) shows that, the majority of respondents (85.7%) hold a degree in accounting. Other specialties are equally represented (4.8% each).

Table (8): Descriptive analysis of the position occupied

Job	Fresequence	Percentage
Tax officer	8	38.1%
An accountant	5	23.8%
General manager	4	19%
Other jobs	3	14.3%
Account Manager	1	4.8%
Total	21	100%

Table (8) shows that, the tax officer position is the most represented (38.1%), followed by accountants (23.8%) and general managers (19%). Other positions and account managers constitute 14.3% and 4.8% respectively.

Table (9): Descriptive analysis of years of experience

Years of experience	Fresequence	Percentage
Less than 3 years old	3	14.3%
From 3 to 6 years old	8	38.1%
From 7 to 10 years old	5	23.8%
From 11 to 15 years old	3	14.3%
16 years and older	2	9.5%
Total	21	100%

Table (9) shows that, the majority of respondents (38.1%) have between 3 and 6 years of professional experience. The other categories are distributed in decreasing order, with 23.8% having 7 to 10 years, 14.3% having less than 3 years and 11 to 15 years, and finally 9.5% having more than 16 years of experience.

5.2. Discussion and testing of hypotheses

To test the hypotheses of this study, several statistical methods were used, including:

1- Simple Linear Regression to assess the direct impact of digitalization of the tax system on strengthening tax resources and its dimensions.
2- The Independent Samples T-Test is used to examine differences in participants' opinions based on certain sociodemographic variables.
3- One-way analysis of variance (One-Way ANOVA) to test differences in opinions between multiple groups.

5.2.1. Test of the main hypothesis

Assumption:

There is a statistically significant impact of digitalization of the tax system on strengthening tax resources in the Republic of Yemen.

Table (10) Results of the test of the main hypothesis

Indicator	Value

Correlation coefficient (R)	0.862
Coefficient of determination (R^2)	0.743
Coefficient β	0.753
F-test (overall significance)	66.476 (p = 0.000)
t-test (partial significance)	9.158 (p = 0.000)

From Table (10) above, the analysis reveals a strong positive correlation (R = 0.862) between the digitalization of the tax system and the strengthening of tax resources. The model explains about 74.3% of the observed variance (R^2 = 0.743), and the F and t tests confirm the statistical significance of this relationship at the 5% level (p < 0.001). These results validate the main hypothesis of the study, indicating that digitalization has a positive and significant effect on the strengthening of tax resources.

5.2.2. Test of secondary hypothesis 1

This hypothesis states that: There is a statistically significant impact of the digitalization of the tax system on the increase in tax revenues.

To test this hypothesis, we used the simple linear regression test, and Table (11) shows the results of this test.

Table (11): Results of testing secondary hypothesis 1

Indicator	Value
Correlation coefficient (R)	0.740
Coefficient of determination (R^2)	0.548
Coefficient β	0.511
F-test (overall significance)	27.872 (p = 0.000)
t-test (partial significance)	5.279 (p = 0.000)

From Table (11) above, the positive correlation is confirmed (R = 0.740) with very high statistical significance (p < 0.001). This demonstrates that digitalization indeed contributes to the increase in tax revenue.
Considering the correlation coefficient between the two variables (R), the coefficient of determination (R^2), the value (F) and the significance level, it can be said that the null hypothesis, which states that there is a statistically significant impact of the digitalization of the tax system on the increase in tax revenue, is accepted, while the alternative hypothesis, which states that there is no statistically significant effect of the digitalization of the tax system on the increase in tax revenue, is rejected.

5.2.3. Test of secondary hypothesis 2

This hypothesis states that: There is a statistically significant impact of the digitalization of the tax system on reducing expenditure. To test this hypothesis, we used the simple linear regression test, and Table (12) presents the results of this test.

Table (12): Results of testing secondary hypothesis 2

Indicator	Value
Correlation coefficient (R)	0.630
Coefficient of determination (R^2)	0.397
Coefficient β	0.512
F-test (overall significance)	15.168 (p = 0.000)
t-test (partial significance)	3.895 (p = 0.001)

The analysis indicates a significant positive correlation between digitalization and reduction of tax expenditures, confirming the hypothesis.
Accordingly, based on the correlation coefficient between the two variables (R), the coefficient of determination (R^2), the value (F) and the significance level, the null hypothesis, which states that there is a statistically significant impact of the digitalization of the tax system on the reduction of tax expenditures, is accepted, while the alternative hypothesis, which states that there is no statistically significant effect of the digitalization of the tax system on the reduction of tax expenditures, is rejected.

5.2.4. Test of secondary hypothesis 3

This hypothesis states that: There is a statistically significant impact of digitizing the tax system on reducing tax evasion. To test this hypothesis, we used the simple linear regression test, and Table 13 presents the results of this test.

Table (13): Results of testing secondary hypothesis 3

Indicator	Value
Correlation coefficient (R)	0.765
Coefficient of determination (R^2)	0.585
Coefficient β	0.290
F-test (overall significance)	32.467 (p = 0.000)
t-test (partial significance)	5.698 (p = 0.000)

From Table (13) above, the results of the analysis of the relationship between the independent variable (digitization of the tax system) and the dependent variable (reduction of tax evasion) showed a correlation coefficient of (R = 0.765), which indicates a strong positive relationship and a statistically significant relationship, with a significance level of (0.000). The coefficient of determination (R^2) is (0.585), which means that there is agreement among the respondents regarding the impact of digitalization on reducing tax evasion.

This is also confirmed by the calculated significant value of F, which is (32.467) with a significance level of (0.000), lower than the significance level (0.05).

Accordingly, based on the correlation coefficient between the two variables (R), the coefficient of determination (R^2), the value (F) and the significance level, the null hypothesis, which states that there is a statistically significant impact of the digitalization of the tax system on the reduction of tax evasion, is accepted, and the alternative hypothesis, which states that there is no statistically significant impact of the digitalization of the tax system on the reduction of tax evasion, is rejected.

5.2.5. Testing the secondary hypothesis4

This hypothesis states that: There are difficulties and obstacles that limit the digitalization of the tax system. To test this hypothesis, we used the simple linear regression test, and Table 14 presents the results of this test.

Table (14): Results of testing secondary hypothesis 4

Indicator	Value
Correlation coefficient (R)	0.652
Coefficient of determination (R^2)	0.425
Coefficient β	0.449
F-test (overall significance)	16.981 (p = 0.000)
t-test (partial significance)	4.121 (p = 0.000)

From Table (14) above, the results of the analysis showed a statistically significant relationship between the two variables. The correlation coefficient (R = 0.652) is a positive correlation coefficient and indicates a strong and significant relationship, with a significance level of (0.000). The coefficient of determination (R^2 = 0.425) means that 42.5% of the variables that limit the development of the digitalization of the tax system are mainly due to the presence of several difficulties and obstacles. The significance of this impact is confirmed by the calculated F value, which is (16.981) with a significance level of (0.000), lower than the significance threshold (0.05).
The results confirm that barriers to digitalization are significant and represent a significant part of the variables influencing the development of the digital tax system.

Main Results of the Study

Based on the statistical analyses conducted using simple linear regression, the Independent Samples T-Test, and One-Way ANOVA, the study reached the following principal findings:

- The results revealed a strong and statistically significant positive impact of tax system digitalization on strengthening tax resources in the Republic of Yemen (R = 0.862, R^2 = 0.743, p < 0.001). The model explains 74.3% of the variance in tax resource enhancement, indicating a high explanatory power. This confirms that digitalization represents a fundamental driver in improving tax resource performance.
- The findings demonstrate a statistically significant positive relationship between tax system digitalization and the increase in tax revenues (R = 0.740, R^2 = 0.548, p < 0.001). The explanatory power of the model (54.8%) suggests that digitalization plays a substantial role in enhancing revenue generation efficiency.
- The results indicate a significant positive effect of digitalization on reducing tax-related expenditures (R = 0.630, R^2 = 0.397, p < 0.01). This suggests that digital transformation contributes to improving operational efficiency and lowering administrative costs associated with traditional tax procedures.

- A strong and statistically significant relationship was found between tax system digitalization and the reduction of tax evasion ($R = 0.765$, $R^2 = 0.585$, $p < 0.001$). The findings confirm that digital systems enhance transparency, monitoring capacity, and compliance control, thereby limiting tax evasion practices.
- The study also confirms the presence of statistically significant obstacles limiting the development and effective implementation of tax system digitalization ($R = 0.652$, $R^2 = 0.425$, $p < 0.001$). These barriers account for 42.5% of the variance affecting digital transformation efforts, highlighting the substantial impact of structural and institutional challenges.

Collectively, the findings provide strong empirical evidence that digitalization of the tax system significantly enhances tax resources by increasing revenues, reducing expenditures, and limiting tax evasion. However, the effectiveness of this transformation is partially constrained by structural, institutional, and infrastructural barriers that require strategic policy intervention.

5. Recommendations

Based on the results obtained in this study, several recommendations are proposed in order to strengthen the positive impact of digitalization on the tax system in the Republic of Yemen:

1. Generalization of digitalization in all financial sectors
2. It is strongly recommended to extend digitalization to all financial sectors, including taxes, customs, and other related administrations. This approach will improve the overall performance of tax audits, simplify tax collection procedures, and reduce the time and costs associated with resolving tax disputes. This recommendation is in line with international good practices highlighted by the OECD (2018), which encourage the integration of digital technologies to improve administrative efficiency.
3. **Strengthening employee training**
4. To ensure an effective digital transition, it is essential to develop the skills of tax administration officials through appropriate continuing education programs. Mastering digital tools and information systems will help optimize the management of tax resources and minimize errors. As several studies indicate (James & Alley, 2008), training is a key lever for successful digital transformation in public administrations.
5. **Development of a centralized and scalable database**
6. The development and regular updating of a robust and integrated database is essential for the effective management of the digitalized tax system. A reliable database facilitates revenue tracking, anomaly detection, and the reduction of tax evasion, in line with the recommendations of Estevão (2021).
7. **Modernization of the tax administration's IT equipment**
8. It is recommended that the tax administration be equipped with modern, high-performance computers capable of supporting advanced tax management and data analysis software. This equipment will facilitate the work of officials and improve the speed and accuracy of information processing.

Suggestions for future research

1. A comparative study of the impact of digitalization on the performance of tax systems in developing countries. Suggested title: “Comparative study of the impact of digitalization on the efficiency of tax systems: the case of Yemen and other developing Arab countries”

2. The use of artificial intelligence to improve tax auditing and detect fraud. Suggested title: “The impact of artificial intelligence on detecting tax fraud and strengthening compliance: a case study of the Yemeni tax administration.”

3. Evaluation of the effectiveness of digital training programs for tax officials. Suggested title: “The effectiveness of digital training for tax staff in a context of digital transformation: the case of Yemen”

References

- Aaron, H. J., & Slemrod, J. (2019). The role of digital technology in tax administration. Journal of Economic Perspectives, 33(3), 55-76
- Arab Monetary Fund. (2021). Digitizing tax collection in Arab countries. Abu Dhabi, UAE: Arab Monetary Fund. https://www.amf.org.ae/sites/default/files/publications/2021-12/digitizing-tax-collection-arab-countries.pdf
- Arab Monetary Fund. (2025). Unified Arab economic report 2024. Abu Dhabi, UAE: Arab Monetary Fund. https://www.amf.org.ae/en/news/17-01-2025/arab-monetary-fund-releases-unified-arab-economic-report-2024
- Aizer, Hoynes, & Lleras-Muney. (2022). Children and the US social safety net: Balancing incentives for adults and benefits for children. Journal of Economic Perspectives, 36(2), 149-74.
- Alam, Fawzi, Islam, & Said. (2022). Impacts of COVID-19 pandemic on national security issues. Security Journal, 35(4), 1067-1086
- Atiyah, M. (2023). The impact of digital transformation applications on tax auditor efficiency and voluntary compliance: Applied evidence from the Egyptian Tax Authority. [Journal/Publisher].
- Barclay, C., & Thompson, G. (2019). Indicators of effective tax revenue collection. Journal of Financial Management, 27(3), 101-118.
- Bassongui, N. (2023). Impacts of tax digitalisation on tax revenues in Sub-Saharan Africa: A systematic review. [Journal/Publisher].Batat, N. (2021). Digitization and its contributions to the modernization of sports administration. Journal of Sports Performance Sciences, 3(1), September.
- Blau, P.M. (2021). The effects of digital transformation on public sector efficiency. Public Management Review, 23(2), 157-173
- Bouzida, H., & Hamidouche, A. (2020). Digital-based business economics: Requirements and returns International experiences. The Global Journal of Future Economics, (8), December.
- Caselli. (2023). Public Finance and Fiscal Policy. Palgrave Macmillan, Cham, pp. 299-324.
- Di-Nunzio. (2022). Evictions for development: Creative destruction, redistribution and the politics of unequal entitlements in inner-city Addis Ababa (Ethiopia). Political Geography, 98, 102671
- Elgendy, AFAT (2016). The economic effects of electronic piracy as one of the cybercrimes in the digital economy and its implications for the film industry and development in Egypt and Lebanon: A comparative study (Doctoral dissertation). Faculty of Commerce, Ain Shams University, Egypt.
- Ettahiri, L. (2022). The effects of digitalization on tax revenue mobilization in Sub-Saharan Africa. [Journal/Publisher].
- Fishbein, M., & Ajzen, I. (2021). Theories of reasoned action and planned behavior. Social Psychology Quarterly, 84(2), 112-129
- Geetha, M., & Sekar, P. (2023). Automation in tax revenue collection: Evidence from India. Asian Journal of Public Affairs, 19(1), 34-49
- Gupta, Jalles, & Liu. (2022). Tax buoyancy in sub-Saharan Africa and its determinants. International Tax and Public Finance, 29(4), 890-921.
- Gupta, M. (2022). Operational efficiency and cost reduction through digital technologies. Journal of Management Information Systems, 39(3), 99-114.
- Hassan, S. (2023). Digital transformation of accounting systems and its impact on tax revenues. [Journal/Publisher].
- Ibrahim, A.A. (2021). The role of digital transformation in supporting tax revenues, with a special reference to the Egyptian economy. Journal of Financial Research, 22(1), January. Faculty of Commerce, Port Said University.
- Jahirul, A. (2021). E-filing adoption and tax revenue collection in developing countries. Journal of Digital Taxation, 12(2), 56-70.- Jahirul, A. (2023). Digital transformation and tax revenue collection in Rwanda. Journal of Economic Development Studies, 22(3), 77-92.
- Jayakumar, K., & Nagalakshmi, S. (2021). Innovations in tax administration: A technological perspective. International Journal of Taxation and Revenue, 15(1), 22-40.
- Kirchler, E. (2018). Technology Acceptance Model in tax compliance studies. Behavioral Public Administration, 5(1), 45-60
- Khalifa, M. Y. A. R. (2022). The impact of digital transformation of the Egyptian tax accounting system in supporting tax revenue collection (in light of Egypt Vision 2030/2020). Scientific Journal of Commercial and Environmental Studies, Suez Canal University, 13(3),
- Kornhauser, M. (2018). Measuring tax collection efficiency: Methods and challenges. Tax Policy Journal, 21(4), 99-115
- Lieberman, J. (2021). Tax administration efficiency: A comparative analysis. International Journal of Tax Policy, 18(3), 145-162.
- Lwati, N.F. (2021). Digital transformation of the tax system: A roadmap for a sustainable economy. Al-Ahram Gate, Egypt.
- Makawy, MARK (2019). Barriers to digital transformation in small and medium enterprises in Egypt: An exploratory study. The 24th Annual Conference of Prof. Dr. Mohamed Rashad El-Hamlawy, Crisis Research Unit, Faculty of Commerce, Ain Shams University, Egypt.
- Mascagni, Mengistu, & Woldeyes. (2021). Can ICTs increase tax compliance? Evidence on taxpayer responses to technological innovation in Ethiopia. Journal of Economic Behavior & Organization, 189, 172-193.
- Mikesell, J.L., & Birskyte, L. (2021). Public sector revenue collection and performance indicators. Public Budgeting and Finance, 41(2), 37-53
- Munirathinam, S., et al. (2022). Enterprise digital transformation: Technology, tools, and use cases (pp. 423–425).

- Nasir, MMS (2021). A proposed model to enhance the role of digital transformation in electronic tax accounting to maximize tax revenue resources: Applied to the Egyptian Tax Authority. The 2nd International Scientific Conference (Digital Transformation and Its Impact on Sustainable Development), Faculty of Management, Economics, and Information Systems, Misr University for Science and Technology.
- OECD. (2019).Tax Administration 2019: *"Comparative Information on OECD and others Advanced and Emerging Economies*". Paris. OECD Publishing
- Okon, U. (2021). The internet and its impact on public administration. Journal of Digital Government, 14(2), 55-70
- Oyibi-Ghana, (2022). La digitalisation au service de la performance de l'administration fiscale au Maroc : cas de la mobilisation des recettes fiscales.
- Rather. (2022). A Note on Conception of Aurangzeb Alamgir Religious Policy. Journal of Psychology and Political Science, 2(04), 15-22
- Redif, MBSL (2022). The necessity of digital transformation in Algeria and its prospects in light of the repercussions of the COVID-19 crisis. Al-Muntada Journal for Economic Studies and Research, 6.
- Shehata, (2020). The role of activating digital transformation mechanisms in improving the Egyptian tax system as a basis for reducing tax evasion in light of Egypt's Vision 2030: Between the necessity of change and the results of implementation. The Scientific Journal for Financial and Administrative Studies and Research, 6(1), May–June. Faculty of Commerce, Sadat City University.
- Skinner, J. (2018). Factors influencing tax collection efficiency. Taxation Review, 22(2), 101-115.
- Vygotsky, L.S. (2020). Digital literacy and cognitive development. Journal of Educational Psychology, 25(3), 90-105
- Young. (2022). Consent or coordination assemblies in early medieval Europe. International Review of Law and Economics, 72, 106096
- Zhao. (2023). Rules of Official Export Credit. Springer, Singapore, pp. 107-140