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The role of modern technologies in reducing tax evasion by individuals, taking into account tax awareness: A field study in the general authority for taxes in Iraq

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Abstract
The research aims to highlight modern technologies and their role in reducing tax evasion by examining the correlational and causal relationships between the independent variable (modern technologies) represented by hardware and physical components, software, networks, databases, human resources, and the activation of laws and regulations, and the dependent variable (tax evasion) represented by individuals and companies.

In alignment with the study's objectives, which seek to identify and analyze the modern technologies used to uncover the causes of tax evasion and examine the financial, economic, and social impacts of tax evasion on the Iraqi economy, the main research hypothesis was formulated: There is a statistically significant correlation between the variables of modern technologies and the reduction of tax evasion.

Keywords: Modern technologies, tax evasion, tax administration, modern financial theories

Introduction

Tax revenues are one of the critical economic resources that the state relies on to cover public expenditures included in the general budget. This resource diminishes as tax evasion increases within society, necessitating attention to the issue of tax evasion, which is inherently linked to taxation systems and is a challenge faced by many countries. Its significance stems not only from its role as a financial tool but also from the substantial positive outcomes it offers in supporting the general budget as one of the vital instruments of the state's economic policy, alongside the objectives it achieves across various sectors.

It is essential to devise new methods to reduce this phenomenon and minimize fraudulent practices that enable taxpayers to evade taxes. In the pursuit of identifying effective approaches to combat tax evasion, it is necessary to first understand the concept of tax evasion, identify its underlying causes, and clarify the severe risks (and impacts) it imposes on the country's economy.

Given that the core focus of this study is the phenomenon of tax evasion and the examination of modern technologies that influence this phenomenon, the chapter has been divided into three sections. The first section addresses the theoretical framework of taxation and tax evasion. The second section discusses the economic and social impacts of tax evasion and the approaches to addressing them. Finally, the third section explores modern technologies as a tool to mitigate tax evasion.

Section One: Research Methodology
1. Research Problem
The issue of tax evasion and the underlying motives behind its prevalence in Iraq highlight several factors that cannot be solely attributed to the lack of development in the tax administration system. These include diagnosing systemic inefficiencies, addressing major deficiencies in tax legislation, as well as other causes such as wars, occupation that devastated the economic infrastructure, and the emergence of administrative and financial corruption. These factors weakened cultural awareness, including tax awareness, in addition to a lack of qualified personnel with the necessary scientific and practical expertise to

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manage electronic systems.

In response, the Iraqi government is striving to adopt electronic administration for tax collection and other fees as a mechanism to modernize public services and improve their efficiency. This approach aims to address the shortcomings and inefficiencies of traditional (paper-based) administration, combat these issues by various means, monitor their causes and manifestations, and mitigate their negative effects. This, in turn, impacts economic, social, political, and administrative activities, particularly those directly linked to generating significant financial revenues.

The solutions to this problem can be explored by answering the following research questions:

1. Do modern technologies play a role in reducing tax evasion?
2. What are the most critical dimensions of modern technologies that effectively contribute to reducing tax evasion?
3. Is there a deployment of modern technologies to reduce tax evasion in the Iraqi context?

Second: Data Collection Methods
The researcher utilized several methods to gather data and information relevant to the research topic, aiming to achieve the study's objectives on one hand and to diversify the sources of data and information on the other. These methods include the following:

1. Theoretical Framework
The researcher relied on a desk review to cover the theoretical aspects of the study, utilizing various Arabic and foreign sources, including books, master's theses, dissertations, research papers, and periodicals available on the Internet, in addition to legislative texts and laws related to the study topic.

2. Practical and Applied Framework
Data was collected using a questionnaire designed based on a five-point Likert scale, which was distributed to 60 employees of the General Tax Authority who are directly involved in tax-related activities. Additionally, statistical methods appropriate to the nature of the research hypotheses and objectives were employed. The researcher used the PLS (Partial Least Squares) statistical software and Microsoft Excel to calculate ratios and values related to the research variables, paving the way for analyzing the statistical relationships among them.

Third: Research Scope
1. Temporal Scope
The study focuses on the period from 2022 to 2023.

2. Spatial Scope
The research is limited to the General Tax Authority and its branches across Iraq.

Fourth: Research Variables
1. Independent Variable
2. Dependent Variable
3. Moderating Variable

Fifth: Research Importance
The importance of this study stems from diagnosing the reasons and motives that play a fundamental role in increasing the scale of tax evasion in the economy in general and in Iraq in particular. It also highlights the potential of modern technologies in reducing tax evasion, as well as identifying the methods and techniques employed by individuals to evade taxes. Furthermore, the study explores the necessary measures and strategies to combat tax evasion by introducing strict and deterrent laws and regulations to address this phenomenon effectively.

Sixth: Research Objectives
The study aims to identify modern technologies that help uncover and analyze the causes of tax evasion and assess the financial, economic, and social impacts of this phenomenon on the Iraqi economy. It seeks to propose solutions to mitigate the severity of tax evasion and draw attention to the risks of financial and administrative corruption within government institutions, particularly the Income and Sales Tax Department in Iraq.

The key objectives of the research include
1. Understanding the nature of modern technologies and their role in reducing tax evasion, including causes and impacts.
2. Highlighting the importance of tax awareness among individual taxpayers in reducing tax evasion.
3. Exploring the most effective global methods and techniques used to combat tax evasion.

Chapter Two: The Theoretical Framework
1. The Concept of Taxation
Scholars, thinkers, and economists have differed in their definitions of taxation due to the evolution of economic, social, and political thought. Taxation has been defined as:

- A financial deduction from individuals' wealth, imposed by the state through coercion, without granting any specific benefit to the taxpayer, aiming to achieve a general public goal (Abu Hashish, 2004: 14) [2].
- A mandatory levy that the taxpayer is obligated to pay to the financial authority of the state based on their ability to pay, without compensation or concern for the direct benefits the taxpayer may receive. This levy serves to cover public expenditures in support of state-provided services (Rasheed, 2002: 2) [9].
- A monetary deduction imposed by public authorities on natural and legal persons according to their taxable capacity, in a final manner and without compensation, with the purpose of covering the state's public expenses and enabling its intervention (Al-Khatib & Tafesh, 2008: 18) [7].
- Modernly defined as a fundamental source of public revenue for the state, collected in the form of a monetary amount paid compulsorily and definitively by taxpayers from their income and profits, regardless of the direct benefits they may receive in return (Al-Jundi, 2006: 14) [3].
- Economically, taxation represents the difference between the selling price of goods and services and the cost of purchasing the materials and production inputs used in manufacturing those goods or providing the service. In other words, it is the value added to a good or service as a result of its transformation into another product or its resale at various stages of distribution (e.g., wholesale to retail) (Khasawneh, 2010: 95) [6].

Researcher's Perspective

Based on the aforementioned definitions, the researcher concludes that taxation is a monetary amount imposed by the state through the financial authority (the General Tax Authority) in accordance with tax laws and regulations. It is levied on taxpayers (both natural and legal persons) without compensation. This allows the state to cover public expenses, fulfill its obligations, and achieve economic, political, social, and financial objectives.

Second: Characteristics of Taxation

It is essential to highlight the specific characteristics that distinguish taxation from other sources of revenue. The literature on taxation frequently references these unique traits to differentiate it from other revenue sources. The most important characteristics are as follows (Al-Qatawneh & Afaneh, 2008: 17) [11]:

1. Taxation as a Monetary Obligation

Taxation represents a monetary amount that individuals pay to the state. This modern concept arose after a long historical evolution during which taxes were often paid in the form of services or goods. However, with societal advancement and the evolution of economic and social systems, it has become more practical and just for states to collect taxes in monetary form. In the contemporary era, in-kind tax collection is deemed unsuitable due to its high administrative costs, lack of fairness, and inefficiency in meeting public financing needs, particularly in a monetary-based economy.

2. Taxation is Mandatory

Taxes are compulsory payments governed by a legal framework that specifies the taxable amount and payment mechanisms. Taxes are imposed by law and are mandatory for taxpayers, who have no discretion over their payment or timing (Al-Qaisi, 1998: 129) [13].

3. Taxation is Imposed by the State

Taxes can only be introduced, amended, or abolished through legislation. Tax administration authorities, acting on behalf of the state, are limited to collecting and enforcing taxes authorized by the relevant legislative bodies. The state, as the executive authority (i.e., the government), imposes taxes with the approval of the legislative authority. This includes institutions with public authority, such as municipal administrations.

4. Taxation is a Final Payment

Taxpayers cannot expect to reclaim the taxes they have paid, as taxation represents a definitive transfer of monetary resources to the state. As long as the taxes are collected within the bounds of the law, taxpayers have no right to request reimbursement of the amounts paid (Shehab, 2011: 305) [1].

Third: Types of Taxes

Nations and governments impose taxes in accordance with their specific economic, social, and political conditions. Researchers in the field of taxation typically classify taxes based on three fundamental criteria. The following classification is based on the criterion of tax multiplicity (Al-Qatawneh & Afaneh, 2008: 16) [11]:

1. Single Tax

In this system, the state imposes only one type of tax to achieve its fiscal and economic objectives. For example, a single sales tax might be applied at a fixed percentage on purchases made by all citizens and residents, without introducing any additional specific types of taxes.

2. Multiple Taxes

Under this system, various types of taxes are imposed simultaneously. For instance, governments may levy a sales tax on company and institutional sales, an income tax on profits derived from investments, and a property tax on buildings and land.

Based on Existence and Application
1. Direct Taxes

Direct taxes are imposed directly on the individual or entity that bears their burden. The taxpayer cannot shift the tax burden to another party, as they are the intended subject of the legislation. An example of a direct tax is income tax on salaries and wages, which is applied only when income is earned, and the taxpayer cannot transfer the burden to someone else.

2. Indirect Taxes

Indirect taxes are those where the taxpayer can shift the tax burden to another party. In such cases, the legislator may intend the ultimate bearer of the tax to be someone other than the initial payer. An example of an indirect tax is sales tax, which is initially paid by the seller but is ultimately passed on to the consumer.

Fourth: Tax Objectives
1. Financial Objectives of Taxes

Taxes are considered one of the most important sources of financing public expenditures for the state. Due to their financial importance, many economists have focused on taxes, rejecting their involvement in other economic or social fields. According to (Storn), the tax should not be a means to strengthen morality or to protect, but rather it should be solely for financing the treasury. For the state to fulfill its social and economic role, it must engage in public spending to achieve these goals, and it must provide the necessary funds to cover them without resorting to loans, especially foreign loans. This is because the benefit of loans is limited due to the consumption and interest they generate. Therefore, the only option left for the state is to impose taxes on all citizens equally and fairly. Hence, tax legislation should be acceptable to citizens and characterized by clarity and stability (Al-Khatib, 2009:10) [8].

2. Social Objectives of Taxes

The social objectives of taxes are numerous and varied, especially after the emergence of the concept of social justice and modern trends toward equitable income distribution, including:

• Redistribution of income and wealth, preventing the concentration of wealth in the hands of a few members of society.
• Reducing negative social phenomena: Some goods may be incompatible with societal customs and traditions or may have negative social impacts. In such cases, the state attempts to limit their spread or even combat them.

- Solving housing issues: This can be achieved by encouraging investment in the housing sector by granting tax exemptions to investors in order to provide housing for citizens.

3. Economic Objectives of Taxes

Governments use taxes to direct their economic policies and address crises that may occur. This is done by encouraging essential branches of production, addressing cycles of recession and stagnation, and combating monopolies and concentration in certain production sectors. Thus, taxes play an important role in the economy, and this role can be either general or specific (Farhat, 1997:25) [12].

Chapter 3: Practical Aspect
First: Results of Hypothesis Testing and Analysis of the Correlation and Impact Relationship Between Study Variables

The first step to understand the relationship between variables is to identify the study variables and the nature of the relationship between them. The independent variable is accompanied by another variable called the dependent variable, which, in this study, is represented by tax evasion (Y). The dependent variable (Y) is affected by the independent variable and is represented by reducing tax evasion among individuals.

In line with the research methodology and to assess the validity of the proposed correlation hypothesis, the correlation coefficient was used to determine the nature and level of the relationship between the main research variables. This was done by finding the correlation relationships between the current variables of the study, relying on the ready statistical program (PLS). The statistical analysis showed that the average variance extracted (AVE) is greater than 0.5. Additionally, the squared correlation of each construct is not higher than the correlation of that construct with others, indicating "independence" between the constructs. Thus, the validity of the discriminant validity was also confirmed.

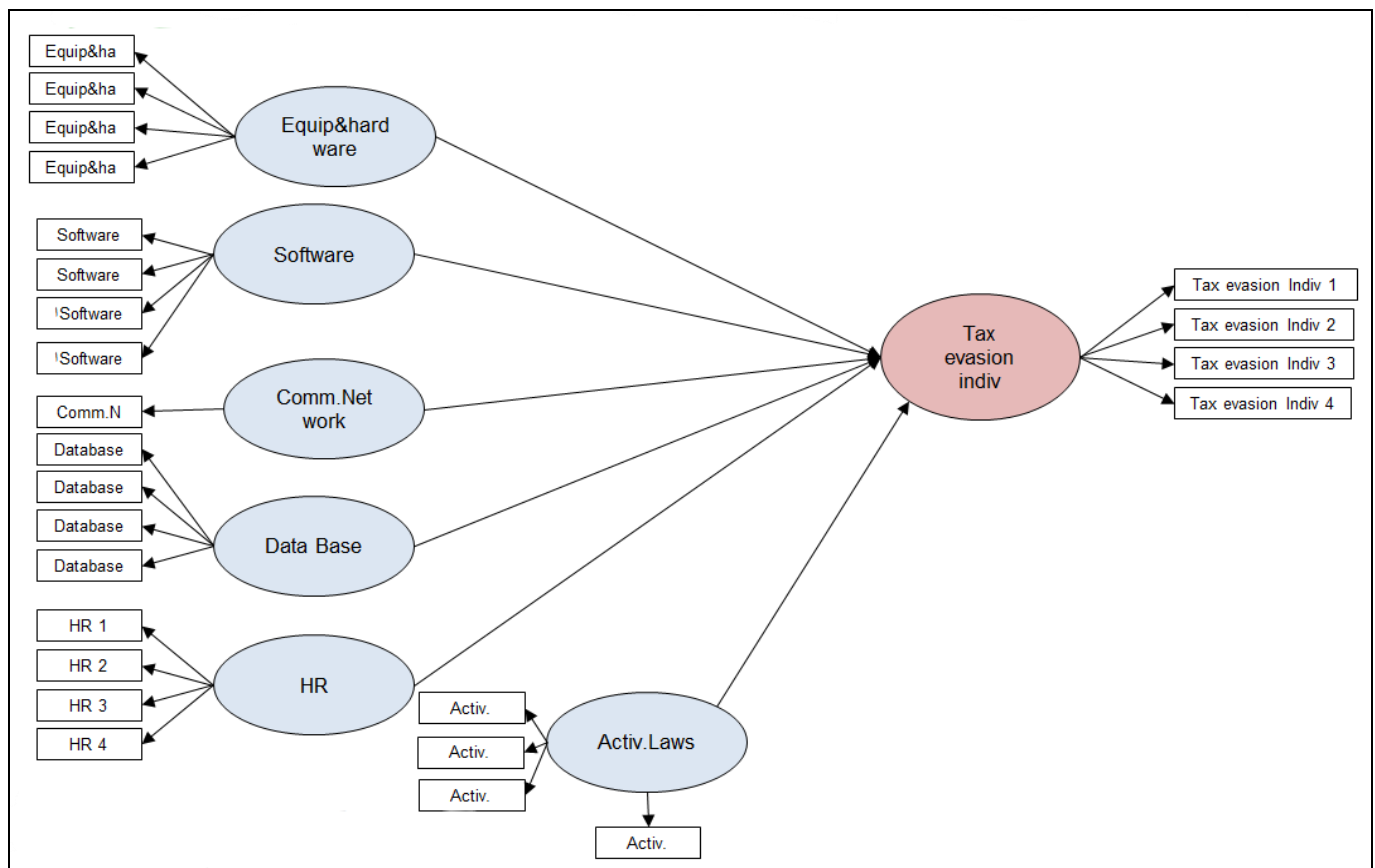## 1. Testing the First Model for Individuals (Y1) Without Considering Tax Awareness

Fig 1: Testing the First Model for Individuals Without Tax Awareness

	GoF
Absolute	0,5070
Relative	0,6333
Outer model	0,9817
nner model	0,6451

Value absolute > 0.36
fit of the overall model is high
(Tenehaus et esposito-Vinzi, 2005) [15]

R²	F	Pr > F
0,3695	5,1771	0,0003

(Chin, 1998)
. R^2 =0.67 Strong predictive power
R^2 = 0.33 Moderate predictive power
R^2 =0.19 Low predictive power

- It can be observed from the statistical work that the explanatory power of the independent variables (R^2) represents 36.95% of the tested model, which indicates a medium statistical relationship that can be relied upon in analyzing the results.
- The absolute value < 0.36 indicates that the overall model is high. (Tenehaus et Esposito-Vinzi, 2005) [15]

Table 1: Tax Evasion for Individuals without Tax Awareness

Latent variable	Value	Standard error	T	Pr> |t|	f²
Equip Hard	0,4561	0,1612	2,8304	0,0066	0,1512
Software	-0,2061	0,2325	-0,8865	0,3794	0,0148
Comm Network	-0,2974	0,1524	-1,9512	0,0563	0,0718
Data base	0,5045	0,2399	2,1032	0,0402	0,0835
HR	-0,2867	0,2275	-1,2601	0,2132	0,0300
Active Laws	0,3441	0,2034	1,6922	0,0965	0,0540

Taxe Evasion Indiv = 0,45614 Equip & Hard-0,20613 Software-0,29738 Comm network + 0,50453 Data base-0,28672 HR + 0,3441 Active Laws

Significativité
$p<0.01$
$p< 0.05$ ou $t > 1.96$
$p< 0.1$

Discriminant validity (Squared correlations< AVE)

	Equip & hard	Software	Com network	Data base	HR	Activlaws	Taxevasionindiv	Mean Communalities (AVE)
Equip & hard	1	0,4996	0,2811	0,3365	0,3834	0,3313	0,2172	0,7261
Software	0,4996	1	0,3906	0,6731	0,5994	0,4911	0,1322	0,7905
Comm network	0,2811	0,3906	1	0,3709	0,1877	0,2758	0,0322	
Data base	0,3365	0,6731	0,3709	1	0,6423	0,2363	0,2124	0,7022
HR	0,3834	0,5994	0,1877	0,6423	1	0,3894	0,1496	0,7554
Activlaws	0,3313	0,4911	0,2758	0,2363	0,3894	1	0,2259	0,5988
Taxevasionindiv	0,2172	0,1322	0,0322	0,2124	0,1496	0,2259	1	0,6005
Mean Communalities (AVE)	0,7261	0,7905		0,7022	0,7554	0,5988	0,6005	0

The Average Variance Extracted (AVE) is greater than 0.5. Moreover, the squared correlation of each construct is not higher in another construct than in the one it is associated with. This indicates "independence" among the constructs. Discriminant validity is also confirmed accordingly.

The model equation highlights the explanatory variables across four levels in the following order:

- **Equip & Hard:** This variable is highly significant (t = 0.0066). It is considered important, as the equipment and tools used by the General Tax Authority directly help in reducing tax evasion. This result aligns with the survey findings, where employees of the authority confirm that the equipment used is among the best and most advanced technologies available. This also corresponds to the Conflict of Interest Theory, which states that the mechanisms and equipment used can limit tax evasion. Utilizing these tools and technologies in auditing contributes to improving trust between the General Tax Authority and taxpayers. These tools help ensure the fair application of taxes and enhance the quality of financial and tax information provided by taxpayers.

- **Data base:** This variable is highly significant (t = 0.0402), indicating that the database relied upon by the Tax Authority plays an effective role in storing and auditing information related to individuals across all provinces of Iraq. To emphasize the importance of the database in reducing tax evasion, employees of the authority confirm that the database is continuously updated in the headquarters and its branches. Additionally, all branches of the authority are equipped with computers connected to databases, ensuring the necessary tools are available when providing services to taxpayers. As highlighted by the Conflict of Interest Theory, non-financial auditing tools such as electronic auditing and data verification are used as mechanisms.

Databases and information systems for companies and individuals are examined to ensure compliance with tax obligations.

- **Activ Laws:** This variable is significant (t = 0.0965). This result is very important in the field of combating tax evasion, as the activation of laws and regulations has a direct impact on taxpayers, encouraging them to fulfill their tax obligations. Taxpayer behavior varies according to the tax policy adopted. On one hand, imposing penalties or additional fees on defaulters motivates them to settle their taxes. On the other hand, incentives provided by the state through the Tax Authority—such as exempting taxpayers from previous dues if they settle the current year's tax and earlier obligations—encourage compliance. This contributes to reducing tax evasion and strengthening the state's general budget revenues.

- **Comm Network:** This variable is significant (t = 0.0563), but unlike the variables analyzed above and their relationship to reducing tax evasion, it is observed that the communication networks within the Tax Authority and its branches play a negative role and may indirectly contribute to tax evasion by taxpayers. This negative outcome requires finding methods and strategies to address the issue. Respondents from the study sample confirm that the communication network between the authority and its branches is not effective, lacks continuous coordination, and fails to enable the tax administration to update and monitor tax evasion procedures. This aligns with the Modern Financial Theory of Conflict of Interest, emphasizing the need for balance between using such tools and respecting taxpayers' rights. These tools must be used legally and effectively, ensuring they do not negatively impact taxpayers' operations or indirectly facilitate tax evasion.

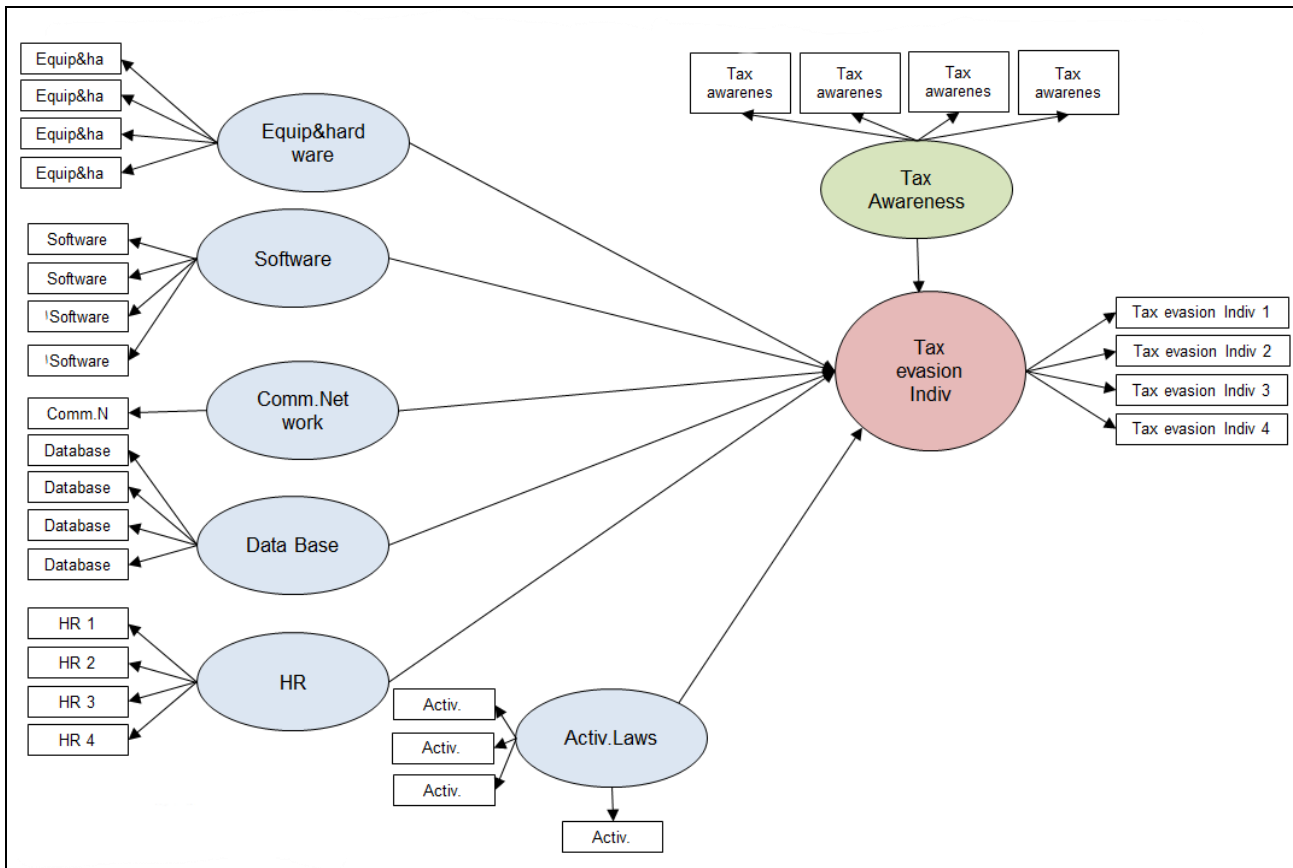## 2. Testing the First Model (Y1) Considering Individuals' Tax Awareness

Fig 2: Testing the Individuals' Model with Tax Awareness Included

	GoF
Absolute	0,5205
Relative	0,6489
Outer model	0,9821
Inner model	0,6607

R²	F	Pr> F
0,4074	5,1078	0,0002

- Through the statistical analysis, it is observed that the explanatory power of the independent variables (R2) accounts for (0.4074) of the tested model. This indicates a high statistical relationship strength, which can be reliably used for analyzing the results.
- An absolute value < 0.36 suggests that the overall model is robust (Tenehaus et Esposito-Vinzi, 2005) [15].

Table 2: Testing the Individuals' Model Considering Tax Awareness

Latent variable	Value	Standard error	t	Pr> |t|	f²
equip hard	0,3621	0,1669	2,1689	0,0347**	0,0905
software	-0,1785	0,2282	-0,7821	0,4377	0,0118
comm network	-0,2986	0,1492	-2,0015	0,0506**	0,0770
data base	0,5070	0,2348	2,1589	0,0355**	0,0896
HR	-0,3832	0,2290	-1,6738	0,1002	0,0539
Activlaws	0,2646	0,2034	1,3009	0,1990	0,0325
taxawareness	0,2875	0,1606	1,7906	0,0792*	0,0617

Tax evasion indiv =0,36210* equip & hard-0,17847* software-0,29865* com network + 0,50701* data base-0,38323* HR + 0,26461* Activ laws + 0,28749* tax awareness

It is observed that the correlation coefficient (R2) increased after including tax awareness as an independent variable. Initially, (R2) was (0.36) and rose to (0.40).

- Equipment, tools, and the database maintain their significance as independent variables contributing to reducing tax evasion. In the same context, communication networks represent an independent variable with a negative impact on reducing tax evasion. However, other independent variables, particularly the activation of laws and regulations, are statistically insignificant.

Based on these findings highlighted by the statistical programs used for data analysis, the study concludes with several key insights and recommendations, the most important of which are:

Conclusions
- The statistical indicators revealed by the research sample indicate that the results of applying components of modern technologies are at a significant level, demonstrating a readiness by the General Tax Authority's administration to adopt these technologies.
- Statistical results showed that the correlation coefficient (R2) represented a value of 0.36% without considering individuals' tax awareness, indicating a moderate statistical relationship. This value increased to 0.40% when individuals' tax awareness was included, representing a strong statistical relationship at a notable level. This suggests that tax awareness has a positive impact on reducing tax evasion.

- There is a limited number of training programs on modern technologies attended by the employees of the General Tax Authority, both domestically and abroad. Furthermore, participation in programs focusing on technical aspects and modern electronic systems, which could improve tax-related work, remains low.
- Tax compliance is closely tied to achieving tax justice and wealth redistribution. Taxpayers who perceive an inequitable system tend to mitigate their sense of injustice by seeking to restore fairness. The greater the inequality, the more likely they are to attempt to restore fairness through tax evasion.

Recommendations

- The tax legislator should work on updating tax laws to align with technological advancements and electronic tax systems. All emerging factors, such as institutional governance, should be considered during any legal amendments, with taxpayers actively involved in the process.
- The General Tax Authority should focus on enhancing taxpayers' tax awareness by organizing campaigns to publicize projects or services funded through tax revenues, leveraging visual and audio media.
- Efforts should be made to develop the infrastructure of tax departments, automate their operations, and establish a distributed database connecting the General Tax Authority and its branches. This database should be integrated with the internet to enhance communication and regularly updated to suit electronic tax systems.
- The researcher recommends addressing weaknesses in modern technology variables with negative impacts, as identified through questionnaire analysis, in a way that contributes to reducing tax evasion effectively.

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