International Journal of Commerce and Management Research
www.managejournal.com
ISSN: 2455-1627
Received: 21-08-2026, Accepted: 20-09-2026, Published: 05-10-2026
Volume 12, Issue 4, 2026, Page No. 37-45

The role of digital governance in promoting the use of electronic auditing: An analytical study in The Basra Education Directorate

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DOI: https://doi.org/10.66856/ijcmr.2026.12.4.12286

Abstract
This study was targeting towards the need of adopting the digital governance principles in Government institutions and understanding its role in promotion of electronic auditing. A descriptive-analytical method was adopted and the data was quantitative that was collected with questionnaires to identify the perception of respondents, and all staff of the Audit Department in General Directorate of Education in Basra Governorate (30 staff). SPSS (Statistical Package for the Social Sciences) Version 27 software was used for statistical analysis. The findings showed that level of digital governance is moderate (overall mean score 3.44) and the level of electronic auditing is high (overall mean score 3.83). Moreover, the results showed a high and positive correlation between digital governance (its dimensions) and electronic auditing. The results of multiple linear regression analysis showed that the digital governance variable had an influence on electronic auditing in the Directorate, the correlation coefficient obtained at that stage was R=0.881 and R^2=0.777 which showed that the deviation of electronic auditing from digital governance was 77.7%, and the value R>0.05 showed that the level of credibility for the influence of digital governance on electronic auditing reached the influential category level. The study provides the recommendations to the Directorate of Education of Basra that it needs to establish higher level of digital governance at all its aspects with special focus on digital accountability and digital participation within the Audit Department. Also, recommends implementing effective electronic auditing practices in the department to maintain a better performance level.

Keywords: Digital Governance, Digital Participation, Digital Accountability, Digital Oversight, E-Audit

Introduction

Digital Transformation is transforming the public sector and how public services are provided, shared, decision-making, and accountability. Digital governance creates connections between transparency, participation, accountability and oversight and allows decisions to be made by public bodies on the basis of reliable information digitally and shared responsibility [1].In public institutions, integrated digital systems involve more availability of information, better traceability and timeliness of reporting, enhancing internal control and better managerial decisions and practices to render them more accountable [2]. Digital transformation also enhances the scope of auditing as it enables auditors to review huge transactions, identify trends, assess controls, and provide timely evidence to improve governance [3]. However, an effective electronic audit needs to have confident information, secure states, interoperable platforms, expert training, and organizational behaves to transform technological developed into credible audit results routinely [4].

Digital governance refers to the use of information and communication technologies in order to make the governance operations more transparent, participative, responsive, quality focused and to make institutions more efficient [5, 7]. Especially in public institutions where extensive transaction management and regulatory and financial control needs exist. Auditing has also evolved from manual to technology based audit. Electronic auditing involves the collection of evidence, testing of controls, subsequently analyzing transactions and timely reporting through the application of computer systems, information technologies and data analytics. It can enhance audit speed, audit accuracy, detection of fraud and the reliability of financial information [8, 10]. The performance of electronic auditing, however, relies on the institutional framework in which it is working, comprising of data integrity, cybersecurity, regulatory integration, digital infrastructure and organizational readiness [11, 12].

The relevance of this relationship is expressed particularly in an Iraq in which public institutions are seeking to be digital, while simultaneously dealing with scarcity of resources, lack of infrastructure, changing legislation, and a lack of administrative capabilities. Experiences from more stable institutional arrangements cannot be simply applied in Iraq without an empirical analysis. Less is known on interaction between the two reforms in resource constrained public-school education institutions operating in Iraq. In these environments, electronic auditing is not just a signpost for what was previously done on paper, but integral to its capacity to produce good information, assign accountability, preserve records, manage risk, and report to stakeholders. It is essential to consider these conditions together to obtain a realistic picture of digital transformation in the public sector.

Digital transparency helps make information more available and more timely; digital participation offers opportunities to share and to engage in feedback; digital accountability connects information with accountability; and digital oversight helps provide monitoring and corrective action. All these features may decrease the asymmetries in information and help audit professionals get reliable electronic evidence. If within one capability, the electronic system is not strong, it does not mean that the audit practice is better. The education field is an especially apt arena in which to complete this analysis. Education directorates have many employees and a lot of repetitive administrative procedures, as well as several layers of reporting and supervision. Consequently, they have to be both service

oriented and financially prudent and hold to public accountability. The Audit Division gives the research perspective on digital governance as the quality of information and speed of internal control go to the heart of administrative decision making and resource usage and are directly linked to institutional trust.

The demand for good financial control and institutional accountability has grown as a result of the Digital Transformations. Proteus will play an important role in helping the audit department of these public entities have timely access to reliable electronic records, evaluate electronic controls, identify risks and report exceptions as the public organizations transition to interconnected digital systems. These requirements are difficult to implement in Iraq due to the series of infrastructural constraints, changing regulations, shortage of resources and partitioned administrative capacities. While the Basra Directorate of Education has some influences on administrative and financial aspects, there is little evidence of how digital governance contributes to electronic auditing. Hence the study is about a conceptual relationship of digital governance and electronic auditing with transparency, participation, accountability, and oversight as key concepts. The study seeks to study the role of digital governance in encouraging the use of electronic auditing in Basra Directorate of Education. Specifically, it aims at evaluating the level of digital governance and each of its four components, testing the association between digital governance and electronic auditing, and estimating the effect of as a whole digital governance and these four components on the electronic auditing.

Methodology

1. Research design and setting

This study adopted a quantitative and descriptive-analytical approach to analyze the relationships between digital governance and electronic auditing. The study was done at the Al-Qurna Education department (Audit Division) of the General directing of education in Basra Governorate in Iraq. The division was chosen because it is directly involved in audit and accounting activities, and therefore in an organizational context suitable for the evaluation of practices in governance and audit enabled by technology.

2. Population, sampling, and data collection

The study population was made up of all the staff of Audit Division. There were 30 employees, who were mostly accountants, auditors and administrative staff. A census rather than sample-selection procedure was employed in the study, as the population was small and specialized (all of the population was asked to participate). We distributed the questionnaire electronically for one week in September 2026 which resulted in all 30 questionnaires being returned and usable. There was no need to exclude any employee from this specialized division as this would have lessened the coverage of the study in the relevant work environment; the census design was an appropriate one to choose. Respondents were directly engaged in audit and accounting or other productive related administrative functions and thus could gauge not only the governance environment under which their work was performed, but also the level of usage of electronic audit tools. The study environment only concerned with the Audit Division and not as representing the entirety of the entire Directorate.

3. Hypotheses

The study has two primary hypotheses and four sub hypotheses. The hypothesis H1 suggests that there is a positive relationship between Digital Governance and Electronic Auditing in Basra Directorate of Education. H2 suggests that statistically speaking, digital governance positively influences electronic auditing. To study the role of its individual components, H2a is suggested that digital transparency is significantly influencing electronic Auditing, H2b is suggested that digital participation is significantly influencing electronic Auditing, H2c is suggested that digital accountability is significantly influencing electronic Auditing and H2d is suggested that digital oversight is significantly influencing electronic auditing.

4. Measures

Demographic and 30 measurement items were included in the questionnaire. Digital governance was assessed using four dimensions: digital transparency (6), digital participation (5), digital accountability (6) and digital oversight (5). Electronic auditing measured by 8 items about use, reliance, productivity, and data accuracy and oversight were included. An array of 5 levels was used for each response (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree). Means of 1.00–2.33 were interpreted as low, 2.34–3.66 as moderate, and 3.67–5.00 as high. The measures were modified from previous research [10, 13, 14]. Digital governance items measured if the Directorate had information available, updated digital systems, if it allowed participation, if it protected shared information, if it accepted complaints and recommendations and if it monitored resources – and if it took care of the risk in the use of digital tools and services. Electronic auditing was assessed using electronic auditing items to measure the following: Frequency of using and perceived impact on productivity and data accuracy; and extent to which the electronic auditing aids oversight throughout the activities across the Directorate. This provided a connection between the independent and dependent variables and observed practice than to general attitudes toward technology. The structure of the questionnaire has been highlighted in (Table 1) while operationalization of the study constructs is evident. It lists four dimensions for digital-governance and the electronic-auditing measure, as well as the quantity and substance of the items in the analysis.

Table 1: Structure of the questionnaire and measurement domains

Part	Dimension	Items
Digital governance	Digital transparency	The directorate provides information fully. The directorate provides information quickly when requested by all its subordinate departments. The directorate allows free circulation of information among its departments and units. The directorate continuously updates data on the website. The directorate makes information available to everyone according to the administrative hierarchy. The directorate's management is characterized by transparency and clarity in all activities and practices of the system.

Digital governance	Digital participation	The directorate ensures that the work system in use is updated periodically. The directorate has an official responsible for implementing the digital participation strategy among employees. The directorate has sufficient human and technical resources to carry out digital participation activities. The directorate continuously develops digital participation activities to improve the quality of services provided to beneficiaries. The directorate has strong protection systems to preserve the privacy and security of information shared by beneficiaries.
Digital governance	Digital accountability	The directorate provides digital procedures and tools that help it evaluate employee performance and then hold them accountable. The directorate has laws and regulations that keep pace with digital developments and transformations. The directorate provides a digital system that allows receiving beneficiaries' suggestions and complaints. The directorate provides digital information, allows disclosure of it, and facilitates access to it. The directorate uses digital tools to monitor the optimal use of its resources. The directorate provides digital means that enable employees and beneficiaries to hold it accountable.
Digital governance	Digital oversight	The directorate possesses a general framework for digital oversight that aligns with its strategic plans. The directorate takes the necessary measures to confront all types of digital risks. The directorate conducts periodic assessments of the efficiency of digital oversight systems to identify their deviations. The directorate prohibits employees from sharing or exchanging any confidential documents or records via social media. The directorate ensures, before delivering services, that they comply with objective standards.
Digital governance	Total	22
Electronic auditing	Electronic auditing	I use electronic auditing extensively. I spend most of my daily time using electronic auditing for work purposes. I heavily rely on the use of electronic auditing I believe that electronic auditing can improve the operational performance of the internal audit department. I believe that the use of electronic auditing can increase the productivity of the internal audit department. I believe that the use of electronic auditing can provide us with more accurate data. Using electronic auditing leads to achieving oversight over all the directorate's activities. The use of electronic auditing helps conduct tests on contingent liabilities.
Electronic auditing	Total	8
Questionnaire total	Questionnaire total	30

Note: Source: author's compilation based on previous studies.

The internal-reliability results for study measures are presented (Table 2). Cronbach's alpha coefficients are used to characterize the internal consistency of the dimensions and demonstrate the items were reliably measured.

Table 2: Reliability of the study measures (n = 30)

Domain	Items	Cronbach's alpha coefficient
Digital transparency	6	0.910
Digital participation	5	0.915
Digital accountability	6	0.922
Digital oversight	5	0.932
Digital governance variable	22	0.897
Electronic auditing variable	8	0.862

Note: Source: author's analysis based on SPSS results.

5. Data analysis and quality checks

Descriptive statistics, Cronbach's alpha, Pearson correlations and linear regression were applied using SPSS version 27. Internal consistency, normality, and multicollinearity diagnostics were used to assess the quality of data. Reliability coefficients for all were above the acceptable guideline of 0.60. Correlations between items and domains were all positive and statistically significant. The skewness and kurtosis values were within the specified acceptable range, and multicollinearity was not identified as a concern through the following diagnostics: tolerance, variance inflation factor, and intercorrelation. Four steps were carried out when analysis was performed. Frequencies and percentages were used to describe the respondent's characteristics in the first place. Secondly, means and SDs were computed to measure the level of implementation of each construct. Third, Cronbach's alpha and item–domain Pearson correlations were used to assess reliability and internal consistency. Finally the hypotheses were tested by using Pearson correlation and simple and multiple linear regression models. However, statistical significance was determined at an α of 0.05 for the regression effects and 0.01 as indicated for the correlation tests. Internal consistency of the items is assessed by item–domain Pearson correlations which are given in (Table 3). All the positive and statistically significant coefficients suggest that all the items are consistent with the domains they are meant to measure.

Table 3: Item–domain correlations for internal consistency (n = 30)

Domain	Item code	Correlation relationship	Domain	Item code	Correlation relationship
Digital participation	DT1	0.784**	Digital oversight	DC1	0.764**
	DT2	0.879**	Digital oversight	DC2	0.793**
	DT3	0.837**	Digital oversight	DC3	0.843**
	DT4	0.830**	Digital oversight	DC4	0.772**

	DT5	0.913**	Digital oversight	DC5	0.718**
	DT6	0.805**	Electronic auditing	EA1	0.783**
	DP1	0.884**	Electronic auditing	EA2	0.754**
	DP2	0.882**	Electronic auditing	EA3	0.611**
	DP3	0.873**	Electronic auditing	EA4	0.810**
	DP4	0.840**	Electronic auditing	EA5	0.713**
	DP5	0.851**	Electronic auditing	EA6	0.655**
Digital accountability	DA1	0.906**	Electronic auditing	EA7	0.707**
	DA2	0.767**	Electronic auditing	EA8	0.827**
	DA3	0.893**	//	//	//
	DA4	0.740**	//	//	//
	DA5	0.917**	//	//	//
	DA6	0.860**	//	//	//

Note: ** Correlation is significant at $\alpha \leq 0.01$. Source: author's analysis based on SPSS results.

The skewness and kurtosis values for each of the study variables are presented in (Table 4) to determine whether they are normally distributed. All values reported have been within the accepted range and parametric analyses has been used.

Table 4: Normality diagnostics (n = 30)

Domain	Skewness coefficient	Kurtosis coefficient
Digital transparency	-0.515	0.973
Digital participation	0.531	0.042
Digital accountability	-0.913	1.274
Digital oversight	-0.384	0.544
Digital governance variable	-0.259	-0.379
Electronic auditing variable	-0.019	-0.132

Note: Source: author's analysis based on SPSS results.

Multicollinearity diagnostics for dimensions of the independent variable are shown in (Table 5). To check if too much overlap among the predictors may create a misleading set of regression estimates, the variance inflation factor, tolerance, and Pearson-correlation results are examined.

Table 5: Multicollinearity diagnostics (n = 30)

Domain	Variance inflation factor (VIF)	Permissible variance factor	Pearson correlation coefficient	Pearson correlation coefficient	Pearson correlation coefficient	Pearson correlation coefficient
Domain	Variance inflation factor (VIF)	Permissible variance factor	1	2	3	4
Digital transparency	1.425	0.702	1			
Digital participation	1.085	0.922	0.129	1		
Digital accountability	1.501	0.666	0.347	0.008	1	
Digital oversight	1.948	0.513	0.544**	0.236	0.561**	1

Note: ** Correlation is significant at $\alpha \leq 0.01$. Source: author's analysis based on SPSS results.

Results

1. Sample profile

There were more males (28, 93.3%) than females in the sample. Seventy percent of the respondents (18) had a bachelor's degree, 23.3% (7) had a diploma or lower, and 16.7% (5) had a master's degree. Accountants (13, 43.3%) and auditors (11, 36.7%) had the highest number of enumerated persons in the group. Experience level was varied, 14 respondents (46.7%) indicated 5 years or less experience, and the rest were split among the years of experience. Respondents were also distributed across the major age and experience groups, and the results not limited to the perspectives of one group of seniors. The population size imposed some requirements on the sample size, but they increased the representativeness of the results for the entire population of this organizational unit. Respondents' demographic and occupational characteristics are outlined in (Table 6). The frequencies and percentages reflect the makeup of the census population and help in comprehending the survey results.

Table 6: Demographic and occupational characteristics of respondents (n = 30)

Variable	Category	Frequency	Percentages
Gender	Male	28	93.3%
	Female	2	6.7%
Age	From 25 years to 30 years	5	16.7%
	From 31 years to 35 years	10	33.3%

	From 36 years to 40 years	7	23.3%
	From 41 years to 45 years	--	--
	From 46 years to 50 years	3	10.0%
	51 years and above	5	16.7%
Educational qualification	Diploma or less	7	23.3%
	Bachelor's degree	18	60.0%
	Master's degree	5	16.7%
	Doctorate (PhD)	--	--
Years of experience	5 years or less	14	46.7%
	From 5 years to 10 years	5	16.7%
	From 11 years to 15 years	6	20.0%
	From 16 years to 20 years	3	10.0%
	From 21 years to 25 years	1	3.3%
	26 years and above	1	3.3%
Job title	Accounts Manager	1	3.3%
	Assistant Accounts Manager	2	6.7%
	Audit Manager	2	6.7%
	Assistant Audit Manager	1	3.3%
	Auditor	11	36.7%
	Accountant	13	43.3%

Note: Source: author's analysis based on SPSS results.

2. Descriptive statistics

The level of digital governance was (M = 3.44) moderate. Digital transparency was set high (M = 4.04) as well as digital oversight (M = 3.91), digital accountability (M = 3.31) and digital participation (M = 2.50) were set moderate. This was high with regard to electronic auditing (M = 3.83). Standard deviations of < 1 mean relatively concentrated responses. It's the pattern across dimensions that is substantively important. The respondents believed information transparency and formal mechanisms of oversight to be more developed as opposed to participatory and accountability starting points. The Directorate thus seems to have further developed its use of digital tools to communicate information and evaluate activity levels than the generation of formal pathways to challenge decisions and/or make the organization directly responsible to employees and beneficiaries. This is an important fact to consider when interpreting the regression results. The means and standard deviations of digital governance, its dimensions and electronic auditing are presented in (Table 7). The results are based on the proportion of respondents who expressed each level of implementation for each construct and are used for the description interpretation of this section.

Table 7: Descriptive statistics for the study variables (n = 30)

Domain	Mean	Standard deviation	Rank	Score
Digital governance variable	Digital governance variable	Digital governance variable	Digital governance variable	Digital governance variable
Digital transparency	4.04	0.58	1	High
Digital participation	2.50	0.82	4	Medium
Digital accountability	3.31	0.84	3	Medium
Digital oversight	3.91	0.58	2	High
Overall mean	3.44	0.48	--	Medium
Electronic auditing variable	Electronic auditing variable	Electronic auditing variable	Electronic auditing variable	Electronic auditing variable
Overall mean	3.83	0.56	--	High

Note: Source: author's analysis based on SPSS results.

3. Hypothesis testing

Pearson correlations revealed that electronic auditing (eA) had positive and significant relationships with digital transparency (r = 0.722), digital accountability (r = 0.562), digital oversight (r = 0.805) and the overall digital governance construct (r = 0.771). The correlation coefficient between the two variables of digital participation and the free-worry-questionnaires was weak, non-significant (r = 0.143). These findings uphold H1 and imply a differential contribution of the dimensions of governance. (Table 8) below shows the Pearson's correlation between governance dimensions and electronic auditing. These coefficients offer for the first time direct tests of the co-movement of these variables and constitute the evidence upon which tests of H1 are based.

Table 8: Pearson correlations among the study variables (n = 30)

Domain	Electronic auditing variable
Digital transparency	0.722**
Digital participation	0.143
Digital accountability	0.562**
Digital oversight	0.805**
Digital governance variable	0.771**

Note: ** Correlation is significant at $\alpha \leq 0.01$. Source: author's analysis based on SPSS results.

Multiple regression model was statistically significant (F = 21.741, p≤0.05). Digital governance had a high positive correlation with electronic auditing (R = 0.881) and accounted for 77.7% of its variance (R^2 = 0.777). Digital transparency (β = 0.397) and digital oversight (β = 0.523) had significant influence in the combined model, while digital participation and digital accountability did not have significant incremental influence. H2 is thus facilitated. It is important to note the difference between bivariate and combined versus. Digital accountability was significantly correlated with electronic auditing and was significant in the simple regression model but it was not significant in the multiple regression model when all four dimensions of governance were added. This could be due to overlaps between the dimensions, a lack of size of the sample, or because accountability practices are mediated by the information and monitoring systems that transparency and oversight entail. The outcome should not, therefore, be viewed as proof that accountability doesn't matter, but rather as proof that it's hard to differentiate the unique impact of accountability in the collective model. In (Table 9) the multiple-regression model considering all 4 dimensions of digital governance is reported. The model statistics are the ones that represent the overall explanatory power of the model, and the coefficient represent the unique contribution of each dimension to electronic auditing.

Table 9: Multiple regression of digital governance on electronic auditing (n = 30)

Linear regression model	Correlation coefficient R	Explained variance coefficient R2	F value	Model function	Model function
Linear regression model	0.881	0.777	21.741	0.000*	0.000*
Independent variable	Unstandardized coefficients	Unstandardized coefficients	Standardized coefficients	t-test	t-test
Independent variable	b value	Standard error	Beta (β) value	t value	Function
Constant (a)	0.083	0.424	--	0.195	0.847*
Digital transparency	0.384	0.109	0.397	3.518	0.002*
Digital participation	-0.022	0.067	-0.033	-0.333	0.742
Digital accountability	0.087	0.077	0.131	1.130	0.269
Digital oversight	0.503	0.127	0.523	3.968	0.001*

Note: * Effect is significant at α ≤ 0.05. Source: author's analysis based on SPSS results.

Further, a simple regression analysis indicated that digital transparency was significantly predicted by electronic auditing (F = 30.567, R = 0.722, R^2 = 0.522, β = 0.722), hence proving the H2a. Digital participation did not significantly impact (F = 0.585) which resulted in the rejection of H2b. Digital accountability had a significant moderate effect (F = 12.922, R = 0.562, R^2 = 0.316, β = 0.562), supporting H2c. Digital oversight had a significant strong effect (F = 51.469, R = 0.805, R^2 = 0.648, β = 0.805), supporting H2d. (Table 10) shows the result from simple regression test on the influence of digital transparency to electronic auditing. It reflects the power, explanatory and statistical significance of this dimension analyzed in isolation.

Table 10: Simple regression: digital transparency and electronic auditing (n = 30)

Linear regression model	Correlation coefficient R	Explained variance coefficient R2	F value	Model function	Model function
Linear regression model	0.722	0.522	30.567	0.000*	0.000*
Independent variable	Unstandardized coefficients	Unstandardized coefficients	Standardized coefficients	t-test	t-test
Independent variable	b value	Standard error	Beta (β) value	t value	Function
Constant (a)	1.007	0.516	--	1.950	0.061
Digital transparency	0.699	0.126	0.722	5.529	0.000*

Note: * Effect is significant at α ≤ 0.05. Source: author's analysis based on SPSS results.

Simple-regression test of the effect of digital participation on electronic auditing is shown in (Table 11). The model shows whether participation is a statistically important explanation of electronic-auditing use within the model without its inclusion in the model.

Table 11: Simple regression: digital participation and electronic auditing (n = 30)

Linear regression model	Correlation coefficient R	Explained variance coefficient R2	F value	Model function	Model function
Linear regression model	0.143	0.020	0.585	0.451	0.451
Independent variable	Unstandardized coefficients	Unstandardized coefficients	Standardized coefficients	t-test	t-test
Independent variable	b value	Standard error	Beta (β) value	t value	Function
Constant (a)	3.588	0.336	--	10.674	0.000*
Digital participation	0.098	0.128	0.143	0.765	0.451

Note: * Effect is significant at α ≤ 0.05. Source: author's analysis based on SPSS results.

The results of simple-regression test for effect of digital accountability on electronic auditing are as shown in (Table 12). The reported coefficient indicates the magnitude of the relationship, its direction, and forms evidence of evaluating H2c

Table 12: Simple regression: digital accountability and electronic auditing (n = 30)

Linear Regression Model	Correlation coefficient R	Explained variance coefficient R2	F value	Model Function	Model Function
Linear Regression Model	0.562	0.316	12.922	0.000*	0.000*
Independent Variable	Unstandardized Coefficients	Unstandardized Coefficients	Standardized Coefficients	t-test	t-test
Independent Variable	B Value	Standard Error	Beta (β) Value	t-value	Function
Constant (a)	2.599	0.354	--	7.346	0.000*
Digital accountability	0.372	0.104	0.562	3.595	0.001*

Note: * Effect is significant at $\alpha \leq 0.05$. Source: author's analysis based on SPSS results.

Simple-regression test of effect of Digital Oversight to Electronic Auditing is shown below in (Table 13). The set of model results implies how much oversight predicts the use of electronic auditing, and the evidence that is used to assess H2d.

Table 13: Simple regression: digital oversight and electronic auditing (n = 30)

Linear Regression Model	Correlation Coefficient R	Coefficient of Determination (R2)	F Value	Model Function	Model Function
Linear Regression Model	0.805	0.648	51.469	0.000*	0.000*
Independent Variable	Unstandardized Coefficients	Unstandardized Coefficients	Standardized Coefficients	t-test	t-test
Independent Variable	B Value	Standard Error	Beta (β) Value	t-value	Function
Constant (a)	0.809	0.426	--	1.898	0.068
Digital oversight	0.773	0.108	0.805	7.174	0.000*

Note: * Effect is significant at $\alpha \leq 0.05$. Source: author's analysis based on SPSS results.

Discussion

The results suggest that electronic auditing is moderately developed despite the fact that the degree of digital governance is moderate in general. Transparency and oversight yielded the most significant statistical effects and were the strongest conditions of governance. This trend implies that electronic auditing is enabler by readily available information and formal digital control promptly. In contrast, digital participation had the smallest mean and no significant impact, which means that digital transformation has oriented more on internal control and provision of information than on the mechanisms of participation. The net effect is in line with the perception that electronic auditing is not a standalone accounting innovation [15]. It exists within a wider architecture of governance that defines availability of records, ability to trace transactions, identify risks and act on audit evidence [16]. This is supported by the fact that the overall relationship between digital governance and electronic auditing (R = 0.881) is high. The explanatory power of high ($R^2 = 0.777$) is especially significant in the given context as it indicates that any enhancement in the practices associated with good governance and a significant shift in perception of the use of electronic auditing can be linked even when the concerned institution experiences the limitations of the resources.

The high average score of digital transparency (M = 4.04) and its prominent influence (0.397) also shows that access to information and its dissemination are core pillars of technology-enabled auditing. Testing controls and assessing transactions is neither efficient nor can the auditors test incomplete, delayed, or information that is stored in disconnected systems [17]. More pragmatically, transparency thus must be comprehended not merely as the open access, but the internal access, consistency, and timeliness of administrative data, as well as financial data. This observation aligns with the literature that attributes digital governance to access to information, quality of services, and transparency of institutions [5, 6, 18]. In the multiple regression model, digital oversight was observed to have the second-best average (M = 3.91) and the vigorous independent impact (β = 0.523). This finding suggests that it is monitoring, risk detection, compliance checks and fast-tracked deviations detection that the usage of electronic auditing is particularly relevant. Electronic systems become value generating when linked to an oversight process that evaluates exceptions and delegates responsibility to take corrective action. The result also indicates that the Directorate might be benefiting more of control and monitoring with digital tools which do not rule out the possibility of the former contributing to the reason why overseers had a greater influence compared to participants. This definition is aligned with studies that characterize electronic auditing to be an element of unrelenting surveillance and enhanced fraud-identifying potential [10, 12, 19].

The outcome of digitally being accountable is more subtle. It was positively correlated with electronic auditing (r = 0.562) and it had a significant impact in the simple regression model with 31.6 percent of the variance explained. Nevertheless, its incremental impact was not so high when the other dimensions of governance were simultaneously entered. This distinction might be due to the fact that accountability in part is manifested in the form of transparency and oversight: institutions report, track their performance, and place responsibility on the same digital records [20]. It can also indicate the low statistical power of a sample of 30 people as well as the conceptual overlap of the four dimensions. Based on this, the marginal coefficient of accountability in the combined model cannot be assumed that the accountability does not matter at all; it reflects that its independent contribution needs additional research. The mean of digital participation was the lowest (M = 2.50) and has a weak and non-significant relationship with electronic auditing (r = 0.143). This finding is of theoretical and practical significance. A governmental agency can also computerize files, controls, and audit practices without establishing efficient mechanisms on how the employees or benefactors of the services can get involved in decision-

making [21]. It makes sense that participation is a more challenging type of digital governance: it involves feedback mechanisms, responsiveness, trust, digital skills, and evidence that suggestions matter to organizational action [22]. The outcome indicates that the digital transformation of the Directorate is, so far, more administrative, and control-related than participatory. Increasing engagement can enhance the usefulness and legitimacy of electronic systems although it may have minimal immediate impact on audit statistics.

Combined together, the findings suggest that dimensions of digital governance cannot be regarded as being interchangeable [23]. Transparency is the foundation of the information, oversight is the control, accountability is the relationship between performance and accountability, and participation yields responsiveness and engagement of stakeholders. When these dimensions are evolved into a coordinated system, the most effective electronic-auditing environment is therefore likely to be achieved [24]. The findings also justify the need to read the combined model in conjunction with the simple regressions: the simple models demonstrate the overall association of individual dimension with auditing, but the multiple model demonstrates the addition of the individual dimension after a mutual relationship is measured. There are three implications of the results on the management of the public sector. To begin with, reforms of governance should go hand in hand with investments in electronic auditing instead of being considered as an independent software project [25]. Second, the Directorate ought to focus on secure information sharing, combined records, tracking of risks and management dashboards. Third, digital engagement and accountability will need clear processes, officers involved, feedback, and capability building among the staff; the presence of the online systems is insufficient to presuppose its existence. The results also expand the debate on governance and auditing by demonstrating that abstractly, the institutional aspect of digitalization can be more important than the adoption of technology. The speed by which records can be processed on a digital audit platform can be limited by whether the information is full and available, actions can be traced, whether risks are tracked, and whether liability in terms of corrective action is evident [26]. This process perspective of digital transformation is consistent with the strong impacts of transparency and oversight. Meanwhile, the low participation role implies a risk of management: systems might get more efficient without getting inclusive enough or responsive enough [27].

The immediate concern of managers is not to digitalize everything she does and thus initiating a uniform process in all activities, but to seal the identified gaps in governance by the evidence. The Directorate needs to consolidate the integrity and incorporation of the data utilized by auditors initially; formalize digital risk registers, detection of exceptions, and the response of follow-up processes second; and third, define formal avenues of complaints, suggestions, and responses to management. The training must be inclusive of operating software, but also covering electronic evidence, data security, analytical inspection and nature of the responsibilities of digital records. These activities would be bridging the gap between the technical capability of electronic auditing and the organizational capability needed to utilize its outputs. The study is subject to important limitations. A census of just 30 employees was used to represent a single education directorate and the questionnaire was cross-sectional, which restricts the possibility of a causal inference and generalization. The future research must utilize larger samples of Iraqi governorates and ministries, consider the survey data with system-use or audit-performance records, and address the possibility of whether digital trust, leadership, or cybersecurity, or organizational capability are a mediating variable.

Conclusion

The study examined the role of digital governance in supporting electronic auditing at the Basra Directorate of Education. Data were collected from 30 employees in the Audit Division. Digital governance was assessed through transparency, participation, accountability, and oversight. The findings showed that digital governance was applied at a moderate level, with a mean of 3.44, while electronic auditing was applied at a high level, with a mean of 3.83. Digital transparency and oversight achieved high levels, whereas accountability and participation remained moderate. This indicates that the Directorate focuses more on providing information and monitoring activities than on encouraging participation, feedback, and shared digital responsibility. The study also found a strong and statistically significant positive relationship between digital governance and electronic auditing. The correlation coefficient was 0.881, and digital governance explained 77.7% of the variation in electronic auditing. Digital transparency and oversight were the strongest predictors, while accountability had a positive effect but no independent significance when all dimensions were considered. Digital participation had no significant effect, suggesting that digital transformation remains more control-oriented than participatory. The study concludes that effective electronic auditing requires more than purchasing software. It depends on reliable data, clear procedures, risk monitoring, defined responsibilities, employee training, and effective communication channels. Since the study focused on one Directorate, future research should examine larger samples and other Iraqi public institutions.

Recommendations

Upgrade the Directorate's digital infrastructure and integrate electronic auditing with financial, administrative, and oversight information systems. Prioritize digital participation by establishing formal feedback channels, assigning responsibility for participation, and reporting how suggestions and complaints are addressed. Strengthen digital accountability through clear procedures, access controls, audit trails, performance dashboards, and periodic reviews of responsibility and compliance. Enhance staff competencies in data analytics, cybersecurity, electronic evidence, and risk-based auditing, and evaluate the effect of these investments using operational performance indicators.

Future research

Future research should test the model with larger multi-site samples, examine the role of digital trust and leadership as mediators or moderators, and assess whether artificial

intelligence and continuous auditing improve the quality and timeliness of audit outputs in Iraqi public institutions.

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