Digital transformation and the quality of financial reports: Evidence from Saudi listed companies

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CHRONICLE	ABSTRACT
	This study aimed to determine the impact of digital transformation (DT) and digital accounting (DA) on the financial reports quality (FRQ) in companies listed in the Saudi capital market. Data were collected using a questionnaire distributed via email. The research sample consisted of 116 individuals, including accountants and executive directors in companies listed. The study adopted the smart PLS method to test hypotheses. The study found that there is an incomplete positive relationship between digital transformation and the quality of financial reports through the positive impact on the characteristics of relevance and understandability, as well as the existence of a complete positive relationship between digital accounting and the FRQ through the impact on all characteristics of accounting information.

1. Introduction

Nowadays, the world is witnessing a massive digital revolution due to the rapid and continuous development in information and communication technology, which has been directly reflected in the business environment with its various components to switch to the so-called digital economy (Berikol & Killi, 2021), which has led to an increased competition and the need of companies and businesses for creativity and innovation more than ever before (Phornlaphatrachakorn & Kalasindhu, 2021). Modern digital technologies are developing and growing so fast that neglecting them has been extremely risky for the organization (Hasan, 2023). Digital transformation in business organizations refers to a radical shift in the ways of carrying out the organization's financial and administrative activities (Rammal et al., 2023) through the integration of different models and innovative digital technology such as the Internet of items, AI, big data analysis and processing, and the use of cloud computing in the organization's daily activities (Ritter & Pedersen, 2020), this guarantees accuracy and speed in performing tasks and enhances the organization's efficiency (Khalil et al., 2022). The overspread of the Covid-19 pandemic in various parts of the world, its disastrous effects on countries and organizations, and the restrictions it imposed on moving made it inevitable to shift towards digital work, relying on more AI and robots (Khalil et al., 2022). This transformation had an impact on various functions in the organization, most notably the accounting function, to become what is known as digital accounting, which is mainly concerned with recording, creating, representing, transmitting, processing, and storing information and financial data in a purely electronic form (Phornlaphatrachakorn & Kalasindhu, 2021) through the use of computers, specialized accounting software, and the developed AI tools for the same purpose (Troshani et al., 2019). The use of digital accounting has accelerated the pace of recording, processing and storing data, and has enhanced the company's capabilities to interpret data in addition to preparing and disclosing financial reports faster and more effectively. Nowadays, digital accounting has become an indispensable approach for all business establishments aiming to enhance their competitive capabilities and achieve sustainability in their business, as it provides the opportunity to access the system for all those having authority from anywhere and at any time, and it also can provide accurate information and high-quality financial reports. It helps the company in making the right decisions (Meraghni et al., 2021). The FRQ is among the most important global demands owing to economic crises and accounting scandals of major international companies. Thus, it has become a necessity for the organization to provide high-quality financial reports to influence stakeholders (Siriyama & Norah, 2017). The QFR is a broad concept that is not limited

to financial information only, but it covers non-financial information as well, as it can be defined as those neutral and error-free reports that provide certain information about the company's position and performance (Shuraki et al., 2021). The FRQ is linked to the quality of the financial information contained therein, which provides the data and information needed by capital owners and interested parties to help them make sound, correct and timely decisions. The use of information technology and the multiple digital tools available to the company would contribute to raising the quality of the company's financial reports, as the use of information technology and digital transformation tools provides accurate, reliable and timely information. In other words, it can be said that digital transformation enhances the financial reports' quality especially in terms of accuracy, reliability, comparability and understandability (Wiralistari et al., 2021). Similarly, to other countries in the world, The Kingdom of Saudi Arabia was in the middle of this transformation, and even strived to be among the first to adopt it and benefit from the many advantages it has. For this reason, a Digital Transformation Unit was established in the KSA in 2017, which aims to lead the digital transformation as an enabling factor and a major motivate or to achieve the 2030 Vision. The Kingdom witnessed a rapid growth in the use of information and communication technology during the period from 2015-2022 (The World Bank, 2023); this enabled it to reach the 31st global rank of the countries in the e-government index prepared by the United Nations after It was 44th at the beginning of the establishment of the Digital Transformation Unit (UN, 2022). It occupied the 10th rank within the G20 in the Digital Economy Infrastructure Index (Arthur D. Little, 2021).

This research paper aims to demonstrate the extent to which Saudi companies are moving towards digitizing their businesses and their different activities, on the one hand, and to highlight the impact of digital transformation in KSA on the FRQ of companies listed in the Saudi capital market on the other hand. This is done by answering the following main questions:

- To what extent does DT contribute to improving the FRQ for companies listed?
- To what extent does DA contribute to improving the FRQ for companies listed?

2. Previous studies and development of hypothesis

In this study, Digital transformation plays an important role in increasing the quality of accounting information, which leads to improving the quality of the organization's financial reports. This makes the organization's digital transformation a valuable resource that can lead it to achieve sustainable competitive advantages and be able to make decisions more effectively and in appropriate time (Barney, 1991).

2.1 Digital transformation (DT)

Many researchers have studied DT and its impact on the adoption of digital accounting as well as its contribution to increasing the quality of financial reports, among which: Kucherenko et al. (2021), Kornchai and Khajit (2021), Khalil et al. (2022). DT is among the most important topics of interest to governments, businesses, society, researchers, and scholars (Soumia & Moussa, 2022). Thus, a distinction must be made between DT and digitization; digitization means the use of new technologies in the organization, while DT is a comprehensive idea that encompasses organizational and strategic adjustments in addition to digital technologies. (Spremic, 2017). In general, we can say that DT means using modern digital technologies such as cloud computing, big data, AI and the Internet of Things to create new businesses, cultures, and customer experiences. This enables the organization to keep pace with customer requirements and build new competitive advantages that contribute to increasing its efficiency and achieving its sustainability (Peter et al., 2020). DT provides an important opportunity for the organization to digitize its various functions, the most important of which is the accounting and financial function, to become able to collect, analyze process and store accounting information electronically (Hilali et al., 2020). Digital accounting (DA) has developed alongside the DT that organizations are witnessing (Guşe & Mangiuc, 2022). DA consists of conducting all accounting transactions, including recording, processing, storing, and preparing financial reports in a purely digital way, faster, more accurately, and in a more reliability; this increases the quality of accounting information and improves the efficiency and effectiveness of the organization (Phornlaphatrachakorn & Kalasindhu, 2021). Implementing DA requires accountants and professionals to have advanced digital skills and competencies, as well as knowledge of information systems security (Guşe & Mangiuc, 2022). DA uses many DT tools. For instance, DA relies on blockchain, which contributes to the development of more interconnected accounting systems that provide transparency and allow the transition from double to triple entry, which reduces errors and shortens the time and effort expended (Faccia & Mosteanu, 2019). Cloud computing also improves the performance of accounting work by saving effort and time, reducing cost, and ensuring speed and accuracy of data processing and storage (Asad, 2024). DA has a very significant impact on the accounting information and QFR generated by the organization's accounting information system (Kucherenko et al., 2021). DA contributes to increasing the FRQ, and it also contributes to increasing the effectiveness of strategic decision-making. The Kingdom of Saudi Arabia was among the countries taking the initiative to adopt DT in various fields in line with achieving Vision 2030. The Corona pandemic played a very important role in increasing the digitization of various sectors, both public and private, and the Kingdom was considered as the fastest growing G20 country in the field of the digital economy (MCIT, 2021). Saudis use the Internet at a rate of 93% of the total population, while the global average does not exceed 63%. Also, 81% of the Kingdom's population practices e-commerce and uses e-payment, compared to a global average that does not exceed 48%.

2.2 Financial Reporting Quality (FRQ)

The issue of the FRQ has drawn the interest of numerous academics and researchers, because of its great importance in highlighting the organization's financial position to stakeholders, as well as its role in the decision-making support. Through this part of the research, we will attempt to clarify the elements used to measure the FRQ. The FRQ is primarily linked to the quality of the financial and accounting data and information contained in these reports (Siriyama & Norah, 2017). The IASB defines the quality of financial reporting as the accuracy with which financial statements describe the entity's position and various operations, especially its cash flows, to inform investors and stakeholders (Tang et al., 2008). There is a set of characteristics that must be available in accounting data and information for financial reports to be of quality. These characteristics are divided into basic and enhanced, which are as follows: relevance, faithful representation, comparability, conceptuality, verifiability and appropriate timeliness (Gajevszky, 2015).

By **Relevance**, we mean the ability of accounting data and information to provide benefit to the beneficiary parties, including shareholders, investors, creditors, and others, by helping them make their various decisions efficiently and effectively. The organization should work to provide accounting information in a timely manner and make it capable of enhancing or correcting previous predictions, as well as reducing uncertainty for its users (Ahmad, 2007). Suitability is affected by the accounting methods used by the organization. Fair value is among the most important indicators that reflect suitability, and the availability of financial reports in a timely manner that makes them able to influence the decisions of stakeholders is considered an important indicator of suitability, not to mention revealing the opportunities and risks facing Organization (Beest et al., 2009). In addition to the above, financial reports should show some future data and information that describes management's expectations for the company's future years (IASB, 2008). Accordingly:

H$_{1a}$: *The maturity of DT in companies listed has a positive impact on the relevance of accounting information and FRQ.*

H$_{1b}$: *The maturity of DA in companies listed has a positive impact on the relevance of accounting information and FRQ.*

Faithful representation of accounting information goes beyond the concept of reliability, as indicated in the reports of the IASB and the FASB. Due to the change in information technology and the rapid digital transformation, it has become a must to integrate this into the accounting information system to obtain accurate financial information related to the honest representation of the organization's position and its various activities (Nguyen et al., 2021). We say that an organization's financial reports are characterized by faithful representation if they portray the organization in a complete, neutral, and free form of material errors (Ayman, 2016), and this is what digital transformation tools contribute to achieving. Blockchain contributes to reducing human error and preventing fraud and manipulation due to the availability of restrictions and automated transactions and the ability of all participants in the transaction to monitor and verify its authenticity (Al Shanti & Elessa, 2023). Accordingly:

H$_{2a}$: *The maturity of DT in companies listed has a positive impact on the faithful representation of accounting information and FRQ.*

H2b: *The maturity of DA in companies listed has a positive impact on the faithful representation of accounting information and FRQ.*

The **Comparability** feature allows users of financial reports to make comparisons between companies during a certain period of time in order to identify similarities and differences (Elsiddig, 2020), especially that the decisions of stakeholders are based on selection and comparison between available alternatives (Weichao et al., 2018). The complexity of measuring comparability at the firm level has led to research mainly on international accounting standards and the accounting policies used. The accelerated digital transformation has contributed to raising the performance of organizations and their ability to collect and use data using technology to make policies and decisions; this reduces management's ability to manipulate profits and thus improve the comparability of financial reports (Zhang et al., 2024; Al Shanti & Elessa, 2023). The ability of digital transformation to enhance the comparability of financial reports is more evident in non-state-owned companies or in those companies with low levels of corporate governance (Yang et al., 2024).

H$_{3a}$: *The maturity of DT in companies listed has a positive impact on the comparability of accounting information and FRQ.*

H$_{3b}$: *The maturity of DT in companies listed has a positive impact on the comparability of accounting information and FRQ.*

In addition to the above, **understandability** is one of the most important characteristics of accounting information. It means classifying information and data clearly and accurately (Hasan, 2023), and presenting it in accordance with applicable accounting standards. Understandability also refers to the ability of users of financial reports to know the comprehensive meaning of the information contained therein (Elsiddig, 2020).

H$_{4a}$: *The maturity of DT in companies listed has a positive impact on the ability to understand accounting information and FRQ.*

H₄b: *The maturity of DA in companies listed has a positive impact on the ability to understand accounting information and FRQ.*

3. Research methodology

3.1 Research sample and data collection

The current study belongs to descriptive studies, as it is a cause/effect study. It aims to test the impact of DT on the adoption of DA and its impact on the characteristics of accounting information and thus the FRQ. First, we reviewed the theoretical literature that studies the impact of DT of business organizations on the adoption of DA and researched the impact of this on increasing the FRQ. Data were collected from companies listed on the Saudi stock market; the respondents were corporate executives and accountants whose responsibility is to prepare high-quality financial reports. A total of 185 questionnaires were sent via email, and 123 responses were received, 116 of which were suitable for analysis. The data was then coded using Smart PLS software. After ensuring the normality, validity and reliability of the data, the necessary descriptive analysis and tests were conducted to confirm the validity of the hypotheses.

3.2 PLS-SEM implementation

We used partial least squares structural equation modeling (PLS-SEM) to assess the structural model. According to Hair et al. (2022); PLS-SEM is the recommended statistical method in SEM, which further supports PLS-SEM's suitability for the current investigation.
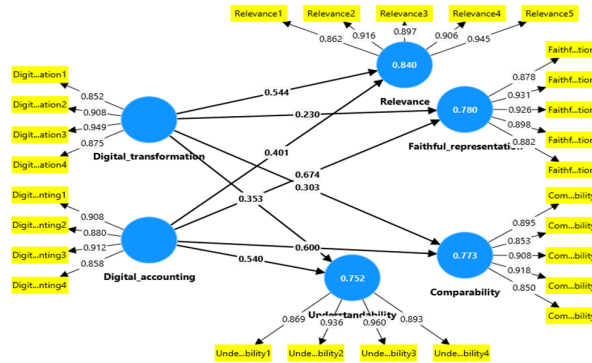
4. Results

4.1 Measurement model assessment

4.1.1 Construct reliability, indicator reliability, and convergent validity

The model fitness was first evaluated by looking at factor loadings (FL) in the (PLS-SEM) results (Ockey & Choi, 2015). Hair et al. (2019) state that FL values greater than 0.7 are deemed desirable.

Table 1
Construct reliability, indicator reliability, and convergent validity

		F L	Cronbach's alpha	Composite reliability	AVE
Comparability	Comparability1	0.895			
	Comparability2	0.853			
	Comparability3	0.908	0.931	0.948	0.784
	Comparability4	0.918			
	Comparability5	0.850			
Digital accounting	Digital_accounting1	0.908			
	Digital_accounting2	0.880			
	Digital_accounting3	0.912	0.912	0.938	0.792
	Digital_accounting4	0.858			
Digital Transformation	Digital_transformation1	0.852			
	Digital_transformation2	0.908			
	Digital_transformation3	0.949	0.918	0.943	0.804
	Digital_transformation4	0.875			
Faithful representation	Faithful_representation1	0.878			
	Faithful_representation2	0.931			
	Faithful_representation3	0.926	0.943	0.957	0.816
	Faithful_representation4	0.898			
	Faithful_representation5	0.882			
Relevance	Relevance1	0.862			
	Relevance2	0.916			
	Relevance3	0.897	0.945	0.958	0.820
	Relevance4	0.906			
	Relevance5	0.945			
Understandability	Understandability1	0.869			
	Understandability2	0.936			
	Understandability3	0.960	0.935	0.954	0.838
	Understandability4	0.893			

Table 1 shows that the measurement model assessment metrics yielded results that were higher above the minimum suggested requirements for convergent validity and composite reliability (AVE). Most FL values in Fig. 1 and Table 1 were greater than 0.7, indicating the validity of the study's measurements.

Fig. 2. The results of the Construct reliability, indicator reliability, and convergent validity

4.1.2. Discriminant validity

Diverse methods might be employed to verify the prerequisites of discriminant validity. The Heterotrait-Monotrait ratio (HTMT) is one such method.

Table 2
HTMT of correlations for Discriminant validity

	Comparability	Digital accounting	Digital transformation	Faithful representation	Relevance	Understandability
Comparability						
Digital accounting	0.835					
Digital transformation	0.898	0.859				
Faithful representation	0.875	0.843	0.885			
Relevance	0.846	0.846	0.860	0.836		
Understandability	0.870	0.818	0.895	0.858	0.^04	

4.1.3. Path collinearity

The formative first-order constructs' convergent validity was assessed by calculating the variance in fit (VIF) between the indicators of the outer weights' significance and relevance (Sarstedt et al., 2019). All the VIF scores were below the recommended maximum level of 5.0, and all the formative indications had sizes that were significant and meaningful.

Table 3
Collinearity statistics (VIF)

	VIF		VIF
Comparability1	3.235	Faithful_representation1	3.884
Comparability2	2.894	Faithful_representation2	4.966
Comparability3	3.783	Faithful_representation3	4.816
Comparability4	4.111	Faithful_representation4	3.814
Comparability5	2.556	Faithful_representation5	3.362
Digital_accounting1	3.176	Relevance1	3.433
Digital_accounting2	2.880	Relevance2	4.490
Digital_accounting3	3.286	Relevance3	4.673
Digital_accounting4	2.360	Relevance4	4.029
Digital_transformation1	2.486	Relevance5	4.773
Digital_transformation2	3.447	Understandability1	3.142
Digital_transformation3	4.446	Understandability2	4.667
Digital_transformation4	2.970	Understandability3	4.871
		Understandability4	3.981

4.2. Assessing the Structural Model

Using previously published research, Hair et al. (2019) evaluated the structural model by looking at the connections between the various structures. We explicitly considered direct impacts in the model of our study. We used bias-corrected bootstrapping on 5000 subsamples to evaluate these direct effect hypotheses, yielding 95% confidence intervals. Please see Table 3 and Fig. 2 for additional information.

According to Hair Jr et al. (2022), the term R^2 denotes the variance in the dependent variable that is explained by the independent variable. If the R^2 is more than 0.67, the model is considered substantial. moderate if it is between 0.33 and 0.67, and weak if it is between 0.19 and 0.33. According to (Hair et al., 2019b), a model is deemed appropriate if its R2 value falls between 0.014 and 0.215. Table 4 and Fig. 2 shows that the R^2 confirming the structural model's substantial.
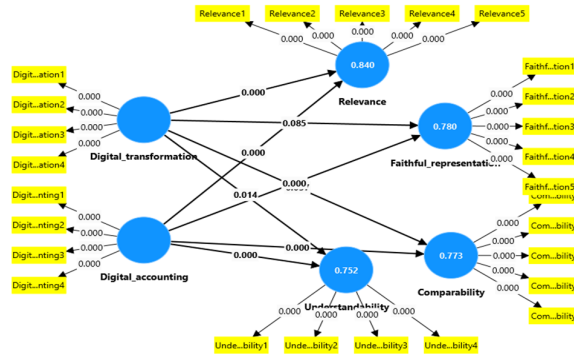
Fig. 2. The results of the composite reliability

Table 4
R-square

	R-square		R-square
Comparability	0.773	Relevance	0.840
Faithful representation	0.780	Understandability	0.752

The F^2 statistic measures the impact of independent variables on dependent variables (Hair et al., 2011). In our model, a large effect is defined as a F^2 value greater than 0.35, a medium effect as a F^2 between 0.15 and 0.35, a small effect as a range of 0.02 to 0.15, and no effect as a F^2 less than 0.02 (Hair, 2019). The F^2 values are displayed in Table 5 and Fig. 2.

Table 5
f-square

	f-square	Digital transformation → Comparability	**0.091**
digital accounting → Comparability	0.356	Digital transformation →Faithful representation	0.054
digital accounting →Faithful representation	0.463	Digital transformation → Relevance	0.414
digital accounting → Relevance	0.225	Digital transformation → Understandability	0.113
digital accounting → Understandability	0.265	Digital transformation → Comparability	0.091

Table 5 shows that the findings were statistically significant (95% confidence interval, 5,000 bootstrapping). So, as indicated by path coefficients and their significance levels.

4.3 Structural model evaluation

Path coefficients were partially significant in order to test the structural model results (the factors impact of DT on FRQ in the companies listed). Table 6 displays the results of the hypothesis tests along with a summary of the path coefficients and their significance levels.

Table 6
The results of the hypothesis tests

	Path Coefficient	**T statistics**	**P values**	**Result**
digital accounting → Comparability	0.600	4.047	0.000	**Accepted**
digital accounting →Faithful representation	0.674	5.325	0.000	**Accepted**
digital accounting → Relevance	0.401	3.795	0.000	**Accepted**
digital accounting → Understandability	0.540	3.866	0.000	**Accepted**
Digital transformation → Comparability	0.303	1.907	0.057	**Rejected**
Digital transformation →Faithful representation	0.230	1.722	0.085	**Rejected**
Digital transformation → Relevance	0.544	5.529	0.000	**Accepted**
Digital transformation → Understandability	0.353	2.462	0.014	**Accepted**

A statistical analysis revealed that the outcomes were significant. Thus, as demonstrated by route coefficients and their levels of significance.

H1a Accepted: Digital transformation had a positive influence on Relevance (β = 0.544, t = 5.529, p < 0.000), with a large effect size (F2 = 0.414).
H1b Accepted: Digital accounting had a positive influence on Relevance (β = 0.401, t = 3.795, p < 0.000), with a large effect size (F2 = 0.225).
H2a Rejected: Digital transformation did not have a positive influence on Faithful representation (β = 0.230, t = 1.722, p < 0.085), with a small effect size (F2 = 0.054).
H2b Accepted: Digital accounting had a positive influence on Faithful representation (β = 0.674, t = 5.325, p < 0.000), with a large effect size (F2 = 0.463).

H₃ₐ Rejected: Digital transformation did not have a positive influence on Comparability (β = 0.303, t = 1.907, p < 0.057), with a small effect size (F2 = 0.091).

H₃ᵦ Accepted: Digital accounting had a positive influence on Comparability (β = 0.600, t = 4.047, p < 0.000), with a large effect size (F2 = 0.356).

H₄ₐ Accepted: Digital transformation had a positive influence on Understandability (β = 0.353, t = 2.462, p < 0.0014), with a medium effect size (F2 = 0.113).

H₄ᵦ Accepted: Digital accounting had a positive influence on Understandability (β = 0.540, t = 3.866, p < 0.000), with a large effect size (F2 = 0.265).

5. Discussion

Through this study, we found that there is a positive effect between digital transformation and the adoption of digital accounting practices for Saudi companies listed in the financial market on the FRQ. As DT in companies contributes to improving the characteristic of relevance and understandability, which is consistent with many previous studies such as the study of Pornlaphatrachakorn & Kalasindhu (2021), Hasan (2023), Rammal et al. (2023) and Wiralestari (2021). Which concluded the significant impact of DT in enhancing the characteristics of accounting information and the FRQ. While this study contradicted previous studies, as testing the hypotheses proved that there is no positive effect between DT and the characteristics of faithful representation and comparability? On the other hand, the study found a positive effect between DA and the FRQ, as the shift to DA contributes to improving various characteristics of accounting information, which increases the FRQ, which is what the studies of Phornlaphatrachakorn and Kalasindhu (2021) and Al Shanti & Elessa (2022) found.

6. Conclusion

This study has examined the impact of digital transformation on the characteristics of accounting information and the quality of financial reports, on the one hand, and on the other hand, the impact of digital accounting on increasing the quality of financial reports. The study found a positive relationship between digital transformation and the characteristics of relevance and understandability, with the absence of a clear and statistically significant effect on the characteristics of faithful representation and comparability. As for digital accounting, it contributes to improving all characteristics of accounting information, which increases the quality of financial reports.

As for the limitations of the research, it was represented in the estimated sample size of 116 accountants and executive directors at the level of companies listed in the Saudi financial market. Digital transformation and digital accounting were also adopted as two independent variables that affect the quality of financial reports, so future research can address digital accounting. As an intermediary variable, while increasing the sample size to include a larger number and from diverse countries, as well as research into the dimensions of digital accounting and its role in enhancing more benefits to relevant parties, in addition to research into the challenges that the organization may face about adopting digital transformation and digital accounting.

Acknowledgements

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