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Examining Impact of Accounting Data Analysis with Generative AI on the Quality of Digital Sustainability Reporting with the Mediating Role of Green Sustainability Internal Control System

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Abstract

Purpose: The research aims to examine the impact of accounting data analysis using generative artificial intelligence on the quality of digital sustainability reporting. Additionally, this study seeks to investigate how a sustainable green internal control system facilitates the relationship between accounting data analysis and the quality of digital sustainability reporting.

Method: A questionnaire was used as a data collection tool. The questionnaire was distributed among 80 university professors and accounting Ph.D.s working in the profession, and 68 questionnaires were eventually collected. A snowball sampling method was used to sample the targetpopulation. Data analysis was conducted using the partial least squares structural equation modeling (PLS-SEM) technique.

Results: The statistical results rejected a positive and significant correlation between accounting data analysis and the quality of digital sustainability reporting. However, this relationship was mediated by a sustainable green internal control system, meaning that accounting data analysis has a positive and significant impact on the quality of digital sustainability reporting through the sustainable green internal control system. The study confirmed a positive and significant correlation betweenaccounting data analysis and a sustainable green internal control system. It also confirmed a positive and significant correlation between a sustainable green internal control system and the quality of digital sustainability reporting.

Conclusion: Organizations with AI-driven accounting data analysis have stronger sustainable green internal control systems. This robust internal control system enhances the quality of digital sustainability reporting.

Contribution: This research aims to examining the impact of accounting data analysis on sustainability reporting, focusing on the role of artificial intelligence (AI). The results indicate that AI has a significant influence on this relationship. Governments play a crucial role in implementing AI within organizations. [1] To enhance efficiency, effectiveness, and economic benefits, governments are expected to support organizations in their transition towards AI and facilitate the implementation process.

Keywords: Accounting Information System, Generative AI, Large Language Models,Sustainable Green Internal Control, Sustainability Reporting.

Research Article

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Introduction

Sustainability reporting serves as a crucial communication tool for organizations to demonstrate their commitment to sustainable development to various stakeholders. Paying attention to sustainability is, in fact, an investment in the future with the hope of gaining a long-term competitive advantage (Khozini, Talebnia, Gerkez, & Bani Mahd, 2021). Digital sustainability reporting refers to the act of integrating a relevant sustainability reporting framework into an organization's digital systems to provide timely and reliable information about sustainability performance to stakeholders (Karaenis & Mouraska, 2020). Zayd et al. (2022) conducted a study to investigate the use of artificial intelligence in accounting information systems to detect and prevent fraud. This study refers to the use of an accounting information system powered by generative artificial intelligence, which is based on a large language model. This system is used to collect, process, analyze, and track both structured and unstructured data. The digital economy facilitates the rapid transfer of knowledge and information sharing in innovation-focused networks (Wang, 2022). In this context, a sustainable green internal control system refers to the integration of sustainable development goals and green innovation into an organization's internal control methods to manage risk in terms of implementing sustainable development and ensuring the organization's achievement of green innovation.

Villiers, Dimse, and Molinari (2022) significantly investigated the application of artificial intelligence in sustainability reporting. These researchers emphasized the implications of employing generative artificial intelligence for accounting, reporting, and the use of sustainability reporting. Al-Rubei (2022) examined the impact of accounting information systems on improving the effectiveness of internal control in Jordanian commercial banks. The findings indicated a significant and positive correlation between accounting information systems, namely relevance, reliability, and internal control. Guo and Schenck (2022) stated that internal control systems, through control activities, risk assessment, control monitoring, and information and communication, improve organizational effectiveness.

Materials and Methods

A questionnaire was used as a data collection tool. The questionnaire used a 5-point Likert scale and was distributed among 22 university professors and accounting PhDs working in the profession. Ultimately, 82 questionnaires were collected. Subsequently, the data was analyzed using structural equation modeling. Moreover, the analysis was conducted using the statistical software SPSS 22 and PLS Smart at a significance level of 0.05.

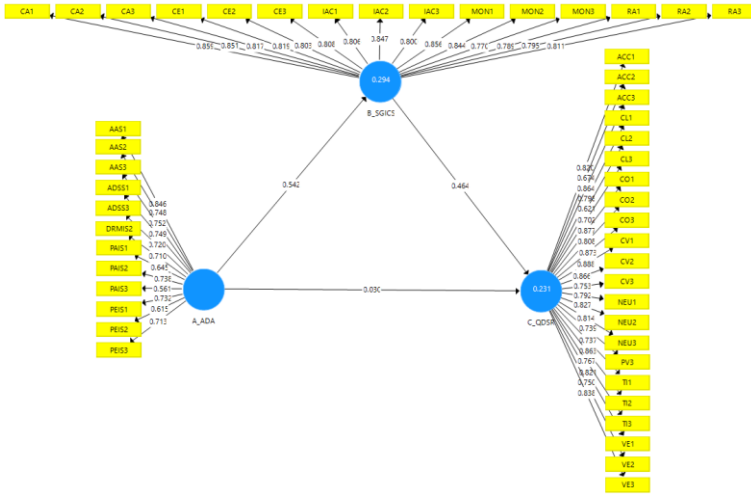
Table1.Cronbach's Alpha

Composite Reliability	rho_A	Cronbach's Alpha	
0.925	0.919	0.912	A_ADA
0.968	0.966	0.965	B_SGICS
0.975	0.977	0.972	C_QDSR

Table2. Costruct Reliability

QDSR	SGICS	ADA		QDSR	SGICS	ADA	
۰/٤۳۳	۰/۸٤٤	۰/٤۷۲	MON2	۰/۲٥٤	۰/٤۹	۰/۸٤٦	AAS1
۰/۳۳٥	۰/۷۷	۰/۳٤٥	MON3	۰/۲۹۷	۰/٤٥	۰/۷٤۸	AAS2
۰/۷۳۹	۰/۲٥۱	۰/۲۲۲	PV3	۰/۱۹۳	۰/۲۹٥	۰/۷٥۲	AAS2
۰/۸۸۸	۰/٤٥٤	۰/۲٤٦	CV1	۰/۲	۰/۳۹۷	۰/۷٤۹	ADSS1
۰/۸٦٦	۰/٤٤۸	۰/۲٦۸	CV2	۰/۲۲۱	۰/٤٤٥	۰/۷۲	ADSS3
۰/۷٥۳	۰/۳٥	۰/۲۲۷	CV3	۰/۱٦۹	۰/۲۸٤	۰/۷۳۲	PEIS1
۰/۷۹۸	۰/٤٤٤	۰/۳۱٥	CL1	۰/۱٥٦	۰/۲۳	۰/٦۱٥	PEIS2
۰/٦۲۱	۰/۲۳۸	۰/۱۳٥	CL2	۰/۲٥۱	۰/۳۱۳	۰/۷۱۳	PEIS3
۰/۷۰۲	۰/۳۱٥	۰/۱۸	CL3	۰/۰۹۳	۰/٤٤٥	۰/٦٤٥	PAIS1
۰/۷۹۲	۰/٤۱۱	۰/۱٦۳	NEU1	۰/۱۸۲	۰/۳٦	۰/۷۳۸	PAIS2
۰/۸۲۷	۰/۳۸۷	۰/۲	NEU2	۰/۰۸۹	۰/۳۸۳	۰/٥٦۱	PAIS3
۰/۸۱٤	۰/٤۳۷	۰/۲۸۱	NEU3	۰/۲٤۱	۰/٤۱۷	۰/۷۱	DRMIS2
۰/۸۲	۰/۳۳٤	۰/۲٥۲	ACC1	۰/۳٦۱	۰/۸۱۹	۰/٤۷٤	CE1
۰/٦۷٤	۰/۲۲٥	۰/۱۱۳	ACC2	۰/٤۱۳	۰/۸۰۳	۰/٤۰۷	CE2
۰/۸٦٤	۰/٤۳۲	۰/۳۱	ACC3	۰/۳٤۲	۰/۸۰۸	۰/٤۳٤	CE3
۰/۸۷۷	۰/۳۷۱	۰/۲٥۹	CO1	۰/۳٥۷	۰/۷۸۹	۰/٤۲٥	RA1
۰/۸۰۸	۰/٤۳٥	۰/۲۲٥	CO2	۰/۲۹۲	۰/۷۹٥	۰/٤۲٤	RA2
۰/۸۷۳	۰/٤۳۳	۰/۲۲۳	CO3	۰/۳۹٤	۰/۸۱۱	۰/٤۰۸	RA3
۰/۸۲۱	۰/۳۲	۰/۱٥٥	VE1	۰/۳۸۱	۰/۸٥۹	۰/٤٦۲	CA1
۰/۷٥	۰/۳٥٥	۰/۰۸۲	VE2	۰/٤۱٤	۰/۸٥۱	۰/۳۹۸	CA2
۰/۸۳۸	۰/٤۰٤	۰/۲۲۷	VE3	۰/٤٤٦	۰/۸۱۷	۰/٤۲۲	CA3
۰/۷۳۷	۰/۳۹٥	۰/۱۹	TI1	۰/٤۲	۰/۸۰٦	۰/٤٥۹	IAC1
۰/۸٦۳	۰/٤٤٦	۰/۳۱۳	TI2	۰/۳۸۲	۰/۸٤۷	۰/٥٥	IAC2
۰/۷٦۷	۰/۳٤٦	۰/۲۳	TI3	۰/٤٦۹	۰/۸	۰/٤۷۱	IAC3
				۰/٤۲٤	۰/۸٥٦	۰/٤۷۲	MON1

Results and Discussion



Standardized Coefficients Model

Result	P Values	T-Value	Standardized Coefficients	Independent Varible	Dependent Varible	H
Reject	0.920	0.101	0.03	ADA	QDSR	1
Confirm	0.000	5.154	0.542	ADA	SGICS	2
Confirm	0.041	2.046	0.464	SGICS	QDSR	3

Conclusions

The results of the first hypothesis test indicated that, from the perspective of accounting experts, data analysis in accounting does not have a significant positive impact on the quality of digital sustainability reporting. The results of this hypothesis can be interpreted as follows: in Iran, data analysis in accounting is more of a financial issue, and the quality of sustainability reporting is more about information disclosure (Ahmadi & Rahmani, 2020; Darabi, Mohammadi, & Karimi, 2022; Masoumi, Faghani Makrani, & Zabih Zarinkalayi, 2023). Until now, sustainability reporting has not been measurable in financial statements, and therefore, a relationship between data analysis in accounting and digital sustainability reporting has not been formed. The statistical results of the fourth hypothesis showed that green sustainability internal control acts as a mediating variable in the relationship between data analysis in accounting and digital sustainability reporting. Management has the ability to implement control measures to prevent potential risks that could hinder the provision of reliable and relevant sustainability reports (Olsen, 2009).

References

Alrabei,A, (2021). The influence of accounting information systems in enhancing the efficiency of internal control at Jordanian commercial banks, *Journal-of-Applied-Mathematics-and-Decision-Sciences*. 24 (1) , 1–9.

Carayannis,E& Morawska-Jancelewicz,J, (2022) . The futures of Europe: society 5.0 and industry 5.0 as driving forces of future universities, *Journal of the Knowledge Economy*, 13, 3445–3471, doi.org/10.1007/s13132-021-00854-2.

Guo,K & Eschenbrenner,B,(2018). CVS pharmacy: an instructional case of internal controls for regulatory compliance and IT risks, *Journal of Accounting Education*, 42, 17–26, doi.org/10.1016/j.jaccedu.2017.11.001.

Khozein,A, Talebnia,G, Garkaz,M& Banimahd,B, (2018), The Impact of Ownership Structure on the Development of Sustainability Reporting, *Management Accounting*, 11(36), 1-13, (in Persian).

Villiers,C, Dimes,R & Molinari,M, (2024). How will AI text generation and processing impact sustainability reporting? Critical analysis, a conceptual framework and avenues for future research, *Sustainability Accounting Management and Policy Journal* , 15 (1) , 96–118, https://doi.org/10.1108/SAMPJ-02-2023-0097.

Wang,P, Bu,H, Liu,F,(2022). Internal control and enterprise green innovation, *Energies (Basel)*, 15 (6) , 1–20, https://doi.org/10.3390/en15062193.

Zayed,L.M, Nour,M, Al Attar,K & Almubaideen,H, (2024). Role of artificial intelligence (AI) in accounting information systems in detecting fraud,

in: A.M.A. Musleh Al-Sartawi, A.I. Nour (Eds.), *Artificial Intelligence and Economic Sustainability in the Era of Industrial Revolution 5.0*. Studies in Systems, Decision and Control, 528, Springer, Cham, pp. 397–409.