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Trade and Non-trade Logistic Integrated Reporting in Metaverse Government within Cyber Forensic Accounting

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Abstract

Purpose: The governmental entities should conduct various responsibilities in the administrative aspect and trading sector. In the distribution process, those entities need quality information to decide. Furthermore, through a comprehensive blend of financial and non-financial data, integrated reporting aims to provide a clear, concise snapshot of how an organization creates value. This study aims to investigate the impact of cyber forensic accounting on the quality of metaverse integrated reporting in local government. **Research design, data and methodology:** The suggested model was empirically validated using partial least squares structural equation modeling with the support of SmartPLS 4.1.0.2 on a sample of public sector accountants. **Results:** Within the realm of cyber forensic accounting, the quality of metaverse integrated reporting was influenced the most by cyber anti-fraud policies and zero trust governance. The enhanced insights not only provide a strong basis for future investigations but also help policymakers and practitioners take advantage of opportunities to enhance and broaden metaverse integrated reporting quality for logistic trading or non-trading activities. **Conclusions:** Local governments could derive advantages from utilizing metaverse for their non-business perspective and trading affairs. The metaverse enables in-depth collaboration and co-creation, allowing citizens to collaborate with public service providers to enhance service quality.

Keywords : Cyber Security, Forensic Accounting, Local government, Metaverse, Logistic Integrated Reporting, Trade and Non-trade

JEL Classification Code: H83, M41, M20, M48

1. Introduction

The implementation of digital concepts and information and communication technologies has significantly altered the manner in which public services are provided (Lynn et al., 2022). In light of the ongoing public expectation for enhanced transparency, effectiveness, and agility from governmental entities (Lynn et al., 2022; Twizeyimana & Andersson, 2019), citizens expect their representatives to explore novel prospects and concepts that contribute to the development of sustainable, environmentally friendly, and expedient digital public services (Choi et al., 2022). Government regulations frequently impose distinctive criteria on technology usage, such as the necessity to ensure

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universal access, promote transparency, and ensure accountability. Citizen-public organization interactions may be improved through the implementation of the metaverse, which appears to be a promising digital concept (Wang et al., 2023; Xu et al., 2023). The increased accessibility of the metaverse to public is facilitated by advancements in hardware capabilities and performance, computational efficiency, content availability, and the emphasis placed on this by scientific and governmental organizations (Xu et al., 2023). Several governmental bodies have expressed their intentions to incorporate metaverse services into their e-government and smart city initiatives (Choi et al., 2022; Xu et al., 2023).

Based on the tasks and functions assigned by the State to public sector organizations (PSOs), they can carry out logistic business and production activities to meet national development that aims for growth in commercial perspective process. Governments of countries also require public units to ensure sustainable development in all activities. As suggested by Curto-Pagès et al. (2021), integrated reporting can substantially improve the disclosure of Sustainable Development Goals (SDGs) by providing the framework, strategy, and resources required to convert these objectives into quantifiable business initiatives. The integration of sustainable development principles into a range of international and regional initiatives has facilitated the transformation of society, the reorganization of markets, the prioritization of information technology progress, and social systems (Figurek & Thrassou, 2023). Simultaneously, the progression of Industry 4.0 is causing a profound revolution in business operations and communications across all sectors and levels (Ramadania et al., 2022). Consequently, there is a notable surge in innovation and a deeper integration of digital technologies into everyday existence (Saura et al., 2023).

Metaverse integrated reporting has been identified as the most suitable form of organizational reporting that empowers local governments to address the growing expectations of stakeholders amidst the swift advancement of digital technologies in the PSOs. Integrated reporting has undergone significant development in academic literature as a method of executing regulatory policy. Nevertheless, research has shown that compliance and conformity, not commitment and engagement, are the driving forces behind integrated reporting disclosures (Veltri & Silvestri, 2020). This implies that the disclosures included in integrated reporting fail to offer the relevant informational value that is desired by different stakeholders. In this regard, the importance of the quality of integrated reporting exceeds that of its standard implementation (AbuRaya, 2023). Preventing the manipulation of integrated reporting for the purpose of greenwashing by management by presenting superfluous and overly detailed information is accomplished by ensuring its quality (Velte, 2022). Although ensuring the disclosure of high-quality data is more crucial than disclosing large quantities (Songini et al., 2020), there is a scarcity of academic papers that explicitly examine this aspect (Pistoni et al., 2018).

A notable area of scholarly inquiry in literature is the development and enhancement of integrated reporting quality, an area that is attracting increasing attention. Presently, both policymakers and academics are encouraged to undertake purposeful inquiry and cultivate a substantial comprehension of this subject. Numerous scholarly proposals have been advanced concerning integrated reporting. These include the following: the participation of the audit committee and the engagement of auditors (Yahaya & Onyabe, 2022) and the participation of the chief executive officer (Onyabe et al., 2023) and so on. While numerous academic investigations have explored the ways in which forensic accounting enhances the quality of financial reporting (e.g., Metwaly et al. (2023); Osaloni and Ige (2023)), the extent to which cyber forensic accounting can improve the quality of integrated reporting, especially the quality of metaverse integrated reporting (QMIR) has yet to be extensively explored. Given the circumstances, it is critical to reassess existing accounting methods, acquire a more comprehensive comprehension of contemporary accounting principles, leverage the capabilities of metaverse integrated reporting, and ensure high quality of public service provided. The opportunities for both theoretical and practical contributions and the primary motivations for conducting this study stem from the absence of a solid academic foundation regarding the potential role of cyber forensic accounting in advancing QMIR. Thus, the contribution of cyber forensic accounting to QMIR will be investigated. The subsequent intriguing research questions are further motivated by this gap in theory.

- *RQ1. Does each component of cyber forensic accounting affect QMIR?*
- *RQ2. How far does each component of cyber forensic accounting affect QMIR?*

The existing knowledge vacuum in the literature on integrated reporting, which has been predominantly investigated by the private sector, was filled by the findings of this study, thereby expanding the current boundaries of understanding. The insights gained from this study would broaden the perspectives of scholars regarding the integration of reporting systems in the metaverse for local governments. This study establishes a precedent for research in developing nations regarding the relationship between cyber forensic accounting and QMIR as conducted by local governments. The current research contributes to the expanding corpus of literature concerning digital forensic accounting, as evidenced by the works of Awodiran et al. (2023) as well as Huy and Phuc (2024).

Expertise-level insights into the acquired findings would undeniably benefit practitioners, as they would provide guidance on how to identify and capitalize on opportunities for growth facilitated by digital technology. Practically speaking, practitioners would be able to improve not only the overall performance of local governments but also the quality of public services they provide if there were greater recognition and comprehension of the extent to which the metaverse is being implemented. Furthermore, it was noted that practitioners should prioritize increasing their focus on cyber forensic accounting, as doing so would effectively leverage the implementation of a more comprehensive solution. With the exception of the introduction, this study proceeds as follows. A concise overview of the theoretical foundation and conceptual respects can be found in Section 2. Subsequently, Section 3 delves into the hypothesis development and research model formulation. The detailed description of the research methodology utilized in this study can be found in Section 4. In Section 5, the analysis results are described in detail. Subsequently, this research is concluded in Section 6, which also delineates the implications and prospective orientations for forthcoming scholarly publications.

2. Literature Review and Theoretical Basis

2.1. Theoretical Underpinning

Practice-based view theory. The practice-based view theory, which was initially proposed by Bromiley and Rau (2014), has garnered considerable interest as an adjunctive theoretical framework to the resource-based view and dynamic capabilities. The aim of this theory was to elucidate the elements that contribute to variations in organizational performance when confronted with widely accessible practices that lack distinctiveness or comparability (Bromiley & Rau, 2014). According to the practice-based view theory, an organization's competitive advantage was derived not solely from its knowledge, but also from its operational procedures (Dubey et al., 2022).

Stakeholder theory. A multitude of stakeholders, including shareholders, employees, clients, financiers, political organizations, and others, were interested in the operations of an organization. These stakeholders frequently exerted pressure on organizations to adhere to societal norms of ethics and regulation (Freeman, 1997). Incorporating the viewpoints of Mu et al. (2024), stakeholder theory provided organizations with a novel perspective on their comprehensive obligations. Therefore, the stakeholder theory was the preeminent framework in organizational sustainable development, as stated by Chan and Oppong (2017).

1.2. Conceptual Respects

Metaverse. The term "metaverse" emerged in computer science literature in the 1990s, namely in relation to advancements in interactive virtual worlds, real-time autonomous agents, and research on virtual humans (Barrera & Shah, 2023). This term was a combination of the words "meta" and "universe." It described a virtual environment that exists in three dimensions, where avatars participate in various activities related to politics, economics, society, and culture (Park & Kim, 2022). Anwar et al. (2024) defined the metaverse as an enthralling virtual realm in which users congregated to exchange experiences and participated in instantaneous exchanges within simulated settings. The metaverse was becoming a tangible reality, thanks to recent advancements in new technologies like extended reality, artificial intelligence, and blockchain (Wang et al., 2023).

Metaverse local government. Based on the perspectives of Lockard (1963), the local government could be understood as a public entity that was empowered to create and implement public policies within a certain area. However, it was important to note that the local government is a subdivision of the central government. Local government, as proposed by Hasluck (2010), was specified as the level of government where local authorities are legally empowered to enact laws or make decisions that control their jurisdiction. According to Stones (1968), local government was a component of a country's governance that specifically addresses the challenges and concerns related to the population residing in a particular region or location.

While Scholl (2020) argued that digital government was the utilization of information technology to facilitate government operations, involve the public, and deliver services, Fountain (2015) advocated that digital government was identified as the application of information and communication technologies to governance. Although digital transformation initiatives in the PSOs extend beyond the simple digitization or digitalization of pre-existing offline processes, scholars in this domain also aim to deploy the most optimal and efficient digital technologies to ensure the delivery of high-quality public services. In this regard, the Metaverse local government has developed novel digital strategies in order to address political, economic, social, and other pressures. The term "Metaverse local government" in this context is used to describe the creation and distribution of local government-related and public-facing information and services through Metaverse, which was shown at Figure 1. The advent of new paradigm-shifting technologies has empowered governments to deliver more personalized public services to citizens, simulate and forecast intricate systems encompassing the private sector of entire nations and military operations with enhanced precision.

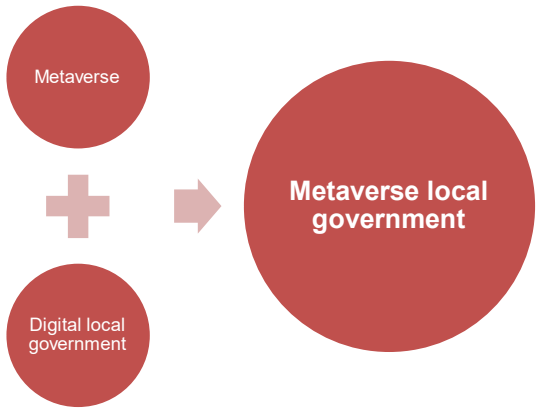

Figure 1: Framework of Metaverse Local Government

Metaverse integrated reporting. Integrated reporting's concurrent reporting and reasoning process may be essential for fostering novel perspectives on reporting and decision-making (Adams, 2015). Integrated reporting is a form of organizational reporting that aims to consolidate financial and non-financial data to provide a holistic understanding of the processes by which an organization creates, maintains, and exhausts value for various stakeholders (De Villiers et al., 2020). By integrating the appropriate integrated reporting framework into their metaverse platform, organizations are engaging in metaverse integrated reporting with the intention of delivering high-quality integrated reporting information to stakeholders.

Cyber forensic accounting. Forensic accounting, as described by Afriyie et al. (2023), is the utilization of accounting knowledge to examine cases of fraud, embezzlement, and other types of financial wrong doing. Furthermore, it entails the gathering of non-monetary data related to an organization. Cybercriminals leverage vast quantities of data, posing challenges in extracting pertinent information and discerning trends. Hossain et al. (2023) defined cyber forensic accounting as utilization of forensic accounting principles to investigate and deter cybercrimes.

3. Basis Research Model Development and Hypothesis Formulation

As a result of the proliferation of threats brought about by the rapid implementation of information and communication technologies throughout the COVID-19 pandemic, the number of threats has increased. This is due to implementation process vulnerabilities, which facilitate the attacks. A significant increase in cyber-fraud and identity theft has ensued because of this circumstance (Buil-Gil et al., 2020). Accounting, notwithstanding its stringent security measures and legal oversight, is a recurring target of fraudulent activities (Trierweiler & Krumay, 2023). Policies against cyber fraud are crucial for preventing fraudulent activities. In addition to facilitating the evaluation of risks and the reduction of instances of financial misconduct in local governments, these policies are also flexible enough to accommodate the current economic climate. The adherence to this standard will guarantee accountants' professional skepticism and autonomy. Moreover, it ensures that financial institutions maintain strict compliance with internal management and reporting protocols, both of which are critical in the fight against financial fraud. In this regard, the first hypothesis that informs the current research is as follows.

- **H1:** Cyber anti-fraud policies significantly and positively impact QMIR.

The zero trust model, as described by Paul and Rao (2023), is a strategic cybersecurity approach that aims to protect organizations through the elimination of implicit trust and the continuous verification of every stage of their digital interactions. Organizational governance comprises a structured system of regulations, standards, and procedures that govern the supervision and control of the activities and decision-making procedures of an organization. While ensuring ethical, accountable, and responsible operations, the organization seeks to create long-term value for all of its stakeholders. Particularly with regard to zero trust security, zero trust governance comprises a collection of principles, protocols, and procedures that govern the direction and management of an organization. This involves guaranteeing that the organization complies with responsible and ethical practices and meets all obligations to stakeholders. In this regard, the second hypothesis that informs the current research is as follows.

- **H2:** Zero trust governance significantly and positively impacts QMIR.

Cyberspace is a virtual domain that may be entered by anybody with Internet access, without the requirement of physical contact. When using the internet, people are at risk of being targeted by cybercriminals. The objective of digital forensic methods is to collect, analyze, and protect digital evidence. The digitally designed forensic procedures comprise several sequential procedures to ensure the authenticity and reliability of digital forensic evidence and to establish a transparent record of custody during administrative, disciplinary, and judicial proceedings (Ogundele et al., 2023). In this regard, the third hypothesis that informs the current research is as follows.

- **H3:** Digitally designed forensic procedures significantly and positively impact QMIR.

Therefore, all the aforementioned hypotheses and variables were illustrated in Figure 2 as shown below:

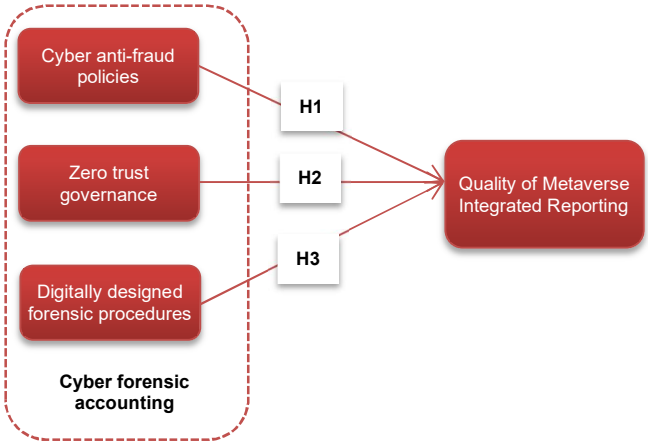

Figure 2: The Hypothesized Model

4. Methodology

4.1. Measurement Scale

In the beginning, fifteen experts, including PSOs chief accountants and leaders, university lecturers, participated in semi-structured interviews to provide their first-hand knowledge and perspectives on forensic accounting, cyber security, integrated reporting, metaverse implementation. The professionals imparted valuable insights pertaining to forensic accounting, cyber security, integrated reporting, and the implementation of the metaverse via comprehensive discussions. The attributes gleaned from the thematic content analysis of these interviews were crucial in formulating the questionnaire items for each variable in the proposed model. The interview data and existing literature were utilized to derive the attributes pertaining to QMIR. On the other hand, the attributes utilized for cyber forensic accounting were obtained and verified from well-established instruments documented in the literature. Thirty participants participated in a pilot study (Johanson & Brooks, 2010) to ascertain the instrument's validity and reliability (Malhotra et al., 2006). The Cronbach's α value of the pilot test was found to be above 0.7, proving that the questionnaire always filled with reliable and consistent answers.

Cyber forensic accounting. The key framework for evaluating cyber forensic accounting consists of three secondary components namely cyber anti-fraud policies, zero trust governance, and digitally designed forensic procedures. The measurement scale for cyber anti-fraud policies was primarily rested on the criteria obtained from the research conducted by Lloyd Bierstaker (2009) and Hossain et al. (2023). The zero trust governance measurement scale was established according to criteria obtained from the research findings of Al-Zwyalif (2013), Vugec et al. (2017), and Al-Taee and Flayyih (2023). The measurement scale used for digitally designed forensic procedures was established according to criteria developed by Ogundele et al. (2023).

Quality of metaverse integrated reporting. Financial affairs and adherence to standards have been common topics covered in public sector reports (Flynn, 2012). This included an evaluation of the efficient use of financial resources and the satisfaction of internal stakeholders' requirements. The accurate and timely computation and disclosure of these indicators are fundamental elements of public responsibility. According to the comparative analysis of Rudzioniene and Juozapaviciute (2013) on qualitative characteristics of financial reports prepared and presented by private sector organizations and PSOs, revealed that qualitative characteristics were remarkably similar. Particularly, PSO's conceptual framework is comparable to that of the private sector in terms of a number of qualitative characteristics, including relevance, timeliness, understandability, faithfulness, verifiability, and comparability. Format and content of financial and budgetary reporting statements that PSOs in Vietnam prepared and disclosed were significantly altered as a result of the adoption of new accounting regimes and principles. The aforementioned adjustments were consistent with the general approach taken by public administrative agencies in Vietnam, which sought to harmonize their functioning with that of domestic businesses. In this study, the overall QMIR was assessed as a higher-level amalgamation of three fundamental constructs: verifiability, faithful representation, and timeliness and stakeholder engagement. These constructs were derived from the recommendations put forth by Sebrina et al. (2023) as well as Rudzioniene and Juozapaviciute (2013).

4.2. Target Population and Data Collection

Statistical data was collected from the employees in accounting department within PSOs in Vietnam. For the current investigation, convenience and snowball sampling techniques were employed in conjunction. According to Gupta (2021), the ideal sample size falls within the range of 5:1 to 20:1, with 5 and 20 denoting the sample size for each specific item, respectively. The collection of statistical data occurred during the time span from October 2023 to July 2024. Following an exhaustive examination and scrutiny of the questionnaires, the final sample size consisted of 806 cases, resulting in a 15.16 percent loss of data. In this investigation, SPSS 29.0 and SmartPLS 4.1.0.2 were

employed to analyze statistical data. The study's demographic information was comprehensively presented in Table 1.

Table 1: Demographic Information

Respondent's demographic profile	Variables	Usable Responses	Weight (%)
Gender of respondent			
	Female	435	53.97
	Male	371	46.03
Age of respondent			
	20 – under 30	65	8.06
	30 – under 40	339	42.06
	40 – under 50	387	48.02
	Over 50	15	1.86
Experience of respondent (years)			
	Under 10	71	8.81
	10 - under 20	431	53.47
	20 - under 30	296	36.73
	30 - under 40	8	0.99
Education			
	Undergraduate	709	87.97
	Postgraduate	97	12.03

5. Inferential Statistics

5.1. Common Method Bias

The first factor was found to explain approximately 19.588% of the variance, which was below the 50% criterion, using the Harman one-factor technique. This research also implemented Kock's (2015) guidelines. The variance inflation factor scores, which varied from 1.454 to 2.194, were below the recommended threshold of 3.3. Kock (2015) emphasized that these values indicated that the common method bias did not present any significant issues in the sample. These results reflected no significant issues regarding multicollinearity and common method bias.

5.2. Measurement Model Assessment

To precisely assess internal consistency, previous research has recommended employing Cronbach's alpha, composite reliability, and Dijkstra-Hensele's rho_a (Dijkstra & Henseler, 2015; Kuncoro & Suriani, 2018). The findings indicated that the Cronbach's alpha, composite reliability, and Dijkstra-Hensele's rho_a of all items above 0.7, indicating a high level of internal consistency (Hair et al., 2024). Based on the findings presented in Table 2, construct reliability was thus established.

Table 2: Results Summary of Construct Reliability

Constructs and operationalization		Cronbach's Alpha	Composite reliability (rho_c)	Composite reliability (rho_a)
Cyber anti-fraud policies	**CAFP**	0.854	0.911	0.855
Zero trust governance	**ZTG**	0.822	0.894	0.828
Digitally designed forensic procedures	**DDFP**	0.834	0.900	0.841
Quality of Metaverse integrated reporting	**QMIR**			
Faithful representation	FR	0.748	0.856	0.748
Timeliness and stakeholder engagement	TSE	0.799	0.882	0.801
Verifiability	VE	0.815	0.890	0.818

The outer loadings in this study were deemed highly acceptable, as all the loading values for the items were greater than 0.708. To evaluate convergent validity, the average variance extracted (AVE) was gauged. Each construct's AVE exceeded the threshold of 0.50 established by Sarstedt et al. (2022). Based on the findings presented in Table 3, convergent validity was thus established.

Table 3: Results Summary of Convergent Validity

Constructs and operationalization		Outer Loadings	AVE
Cyber anti-fraud policies	**CAFP**	0.876 - 0.883	0.774
Zero trust governance	**ZTG**	0.847 - 0.870	0.737
Digitally designed forensic procedures	**DDFP**	0.845 - 0.876	0.750
Quality of Metaverse integrated reporting	**QMIR**		
Faithful representation	FR	0.809 - 0.825	0.665
Timeliness and stakeholder engagement	TSE	0.818 - 0.861	0.714
Verifiability	VE	0.835 - 0.867	0.729

The evaluation of the constructs' discriminant validity in the comprehensive dataset was conducted by applying the Fornell-Larcker criterion and the heterotrait–monotrait ratio (HTMT). Fornell and Larcker (1981) asserted that the square root of AVE for each construct must exceed its correlation with every other construct in the model. Table 4 illustrated that the squared roots of AVE exceeded all inter-construct correlation values. Constructs can be differentiated from each other based on this criterion.

Table 4: Results summary of Discriminant Validity Using Fornell–Larcker Process

	CAFP	DDFP	FR	TSE	VE	ZTG
CAFP	0.880					
DDFP	0.285	0.866				
FR	0.262	0.072	0.815			
TSE	0.258	0.206	0.062	0.845		
VE	0.243	0.117	0.051	0.171	0.854	
ZTG	0.268	0.181	0.109	0.207	0.164	0.858

However, the Fornell–Larcker criterion was ineffective when indicator loadings were similar, as shown by Henseler et al. (2015); hence, the HTMT has been proposed as a substitute for assessing discriminant validity. The robustness of the HTMT has been validated by previous studies. An examination of the HTMT values in Table 5 indicated that all values fell below the conservative threshold of 0.85 for conceptually distinct conceptions (Henseler et al., 2015). The Fornell–Lacker criterion and the HTMT values in this investigation confirmed the model's reliability and discriminant validity.

Table 5: Results Summary for Discriminant Validity on Heterotrait–Monotrait Ratio

	CAFP	DDFP	FR	TSE	VE	ZTG
CAFP						
DDFP	0.336					
FR	0.329	0.089				
TSE	0.312	0.252	0.080			
VE	0.290	0.139	0.069	0.209		
ZTG	0.318	0.217	0.139	0.256	0.196	

5.2. Structural Model Assessment

The statistical findings presented in Table 6 demonstrated that the inner variance inflation factor (VIF) values for all variables were significantly lower than the critical threshold value of 3.3, suggesting the absence of significant collinearity issues (Kock, 2015). Based on the results obtained through bootstrapping (percentile bootstrapping, two-tailed test, significance level of 0.05, 10,000 resamples), the results in Table 6 highlighted that CAFP (Hypothesis 1 (H1); β= 0.317; t-value = 8.706; p-value = 0.000) had the greatest positive significant impact on QMIR, followed by ZTG (Hypothesis 2 (H2); β= 0.156; t-value = 4.518; p-value = 0.000) and DDFP (Hypothesis 3 (H3); β= 0.100; t-value = 2.939; p-value = 0.003). Thus, H1-H3 were supported. The value of R^2 for QMIR was 0.185. The analysis revealed that CAFP, ZTG and DDFP had a small effect size on QMIR (0.108; 0.027 and 0.011, respectively). The value of Q^2 for QMIR was 0.051 which was above zero.

Table 6: Results Summary of Hypotheses Acceptance

Relevant path	Path Coeffi-cient	SE	95% Confi-dence interval	VIF	t-value	p-value	Result
CAFP ➔ QMIR	0.317	0.036	[0.242 - 0.384]	1.149	8.706	0.000	Supported
ZTG ➔ QMIR	0.156	0.035	[0.089 - 0.224]	1.091	4.518	0.000	Supported
DDFP ➔ QMIR	0.100	0.034	[0.032 - 0.165]	1.102	2.939	0.003	Supported
R^2	R^2_{QMIR} = 0.185						
f^2	$f^2_{CAFP => QMIR}$ = 0.108; $f^2_{DDFP => QMIR}$ = 0.011; $f^2_{ZTG => QMIR}$ = 0.027						
Q^2	Q^2_{QMIR} = 0.051						

6. Final Deliberations

6.1. Practical Implications

It could be affirmed that the public sector has two main functions. The first one is to ensure social order through state management activities and the second thing is to produce together with provide public goods or services to serve the essential social needs by public service units. Therefore, the public sector plays a pivotal role, not only as a tool through which the state intervenes to ensure the development environment, but also to regulate, guide enhancement through the direct provision of commodities, and direct investment in the development of several areas related to national security. The scope of activities of the public sector is very broad, from implementing state management rights to providing goods and services to serve the consumption needs of citizens and organizations in society. Therefore, those entities should request the perfect trading process and distribution cycle for their daily activities. The research results provide a wide range of practical insights from the managers' viewpoint. Metaverse offers a virtual reality setting that allows for the execution of diverse operations without the need to physically visit locations of interest, such as public authorities. Therefore, local governments can derive advantages from utilizing metaverse in their non-business work together with trading activities. In order to sustain integrated reporting, senior managers in local government should actively promote and emphasize their abilities to meet the needs of many stakeholders. Local government managers must possess a thorough understanding of the notion of integrated reporting to effectively promote its internal and external benefits. Senior managers in local government are responsible for developing a cyber forensic accounting strategy for the organization. Managers must develop clear communication

channels inside the organization to ensure that both internal and external stakeholders are aware of the management control system and their respective duties.

Regarding zero trust governance, it is crucial for all local government managers to enhance their cognitive abilities as managers and give priority to this aspect. To facilitate the smooth implementation of zero trust governance, it is essential for local government leaders to devote tangible resources such as infrastructure and digital platforms, as well as other necessary resources, to support the execution of this initiative. Moreover, it is crucial for all managers in local government to prioritize improvement of their staff's proficiency through specialized training programs that guarantee they stay up to date with the most recent programming systems. The findings also emphasized the significance of digitally designed forensic procedures in identifying and thwarting various forms of fraud. In the practical aspect, local governmental bodies have basic and reliable information to boost application information technology into their activities. It should help the internal control system effectively with better governance.

Hence, it is crucial for organizations to implement digitally designed forensic procedures to reduce the repeated occurrence of cyber fraud. Similarly, policymakers and leaders in local governments should give high importance to implement cyber anti-fraud policies that focus on data analytics, digital forensics, and other digital technology applications in forensic accounting. It will guarantee the dependability and precision of inquiry outcomes. Therefore, legislators and government influencers should formulate and release standards for data analytics, procedures for cyber forensic accounting, and rules for forensic accounting related to the utilization of digital technology. Policymakers and government entities should emphasize the significance of complying with established standards aimed at preventing cyber fraud and other related forms of fraudulent activities. In order to effectively utilize emerging trends, it is imperative for practitioners and lawmakers to collaborate in the development of standards and best practices for forensic accounting.

6.2. Limitations and Future Scopes

There were several limitations that provided opportunities for establishing future foundations. Firstly, it may be challenging to generalize the findings from the sample collected in Vietnam to other contexts due to the emphasis on regional origin, so conducting replications and expansions across bigger geographical areas would evaluate the strength and applicability of the findings. The second limitation was the restricted data set obtained by an anonymous survey conducted among a convenience and snowball sample. Future researchers should utilize random sampling techniques to enhance the generalizability and validity of their results. Additionally, future studies may enhance data representation by employing a bigger sample size. The main obstacle to reaching definitive conclusions when evaluating outcomes was the utilization of cross-sectional design. Hence, it is advisable for future studies to include thorough longitudinal analysis, utilizing secondary data sources, and implementing modern statistical approaches.

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