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Intellectual Capital Thrives, Tax Audit Drives? The Moderating Role of Information and Technology on Tax Audit Quality

Amalia Yusrifalda[1], Amrie Firmansyah[2]*
[1]Directorate General of Taxes Ministry of Finance, Indonesia
[2]Master of Accounting, Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia

***Correspondence**: amriefirmansyah@upnvj.ac.id

Research aims: This study examines the influence of intellectual capital on tax audit quality at the Directorate General of Taxes and explores the potential moderating role of information technology in the relationship between intellectual capital and tax audit quality.
Design/Methodology/Approach: Focusing on public human capital (PHC), public structural capital (PSC), and public relational capital (PRC), the study employs PLS-SEM analysis on primary data obtained from 35 Tax Auditors (FPP) in the DKI Jakarta region.
Research findings: The results show that PRC has a positive effect on tax audit quality, while PHC and PSC do not have a significant impact on tax audit quality. Furthermore, no moderating effect of information technology was found on the relationship between PHC, PSC, or PRC and tax audit quality.
Theoretical contribution/Originality: This study findings highlight the importance of building strong relationships to enhance tax audit quality, while human and structural capital plays no significant role in this context.
Practitioner/Policy implication: The study recommends integrating technology and optimizing business processes by the Directorate General of Taxes to achieve high-quality tax audits. Additionally, the findings can enrich policymakers' insights to improve the efficiency and effectiveness of the policies implemented and foster further discussion on managing intellectual capital to achieve sustainable public sector goals in Indonesia.
Keywords: Audit Quality; Intellectual Capital; Information Technology; Public Relational Capital; Tax Audit

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Introduction

In terms of the Directorate General of Taxes of Indonesia's achievements, remarkable results were achieved in 2023, with tax revenue realization reaching Rp1,869.2 trillion, surpassing the 2023 State Budget (APBN) target at 108.8% of APBN and 102.8% of Presidential Regulation Number 75/2023 (Direktorat Jenderal Pajak, 2024). However, a country's tax revenue performance is typically measured in nominal terms, the ratio of tax to Gross Domestic Product (GDP) and between tax revenue and its potential (Heinemann et al., 2010). The tax ratio serves as an indicator to assess the performance of the taxation sector by comparing tax revenue with GDP over a given period (Wahyuningsih & Setyowaty, 2020).

Despite Indonesia's outstanding tax revenue performance, its tax ratio has consistently remained below 11% of GDP over the past five years. According to the World Bank (2023), Indonesia's tax ratio stood at 10.24% in 2018, dropping to 9.76% in 2019. The COVID-19 pandemic further impacted this ratio, declining to 8.33% in 2020 and a rebound to 9.11% in 2021. In 2022, Indonesia's tax ratio was 10.38%, ranking seventh among ten ASEAN countries. Thailand held the highest tax ratio at 17.18%, followed by Vietnam at 16.21% and Singapore at 12.96% (World Bank, 2023).

It is important to note that a tax ratio of approximately 11% is insufficient for ensuring sustainable development funding. The International Monetary Fund (IMF) recommends a minimum tax ratio of 15% of GDP to guarantee a country's development continuity. Indonesia's relatively low tax ratio is highlighted in the Organisation for Economic Co-operation and Development's (OECD) 2023 report on Revenue Statistics in Asia and the Pacific, which stated that in 2021, Indonesia's tax-to-GDP ratio was 10.9%, 8.9 percentage points below the Asia and Pacific (29) average of 19.8%, and 23.2 percentage points below the OECD average of 34.1% (OECD, 2023).

Optimizing tax audits is essential to improve tax revenue and raise the tax ratio. Advani et al. (2023) found that audits increase subsequent tax revenues. DeBacker et al. (2018) and Advani et al. (2023) also discovered that tax audits can generate long-term revenue gains by altering taxpayer reporting behavior, with varying effects depending on income source stability. Boning et al. (2023) concluded that tax audits result in a sustained increase in future tax payments, generating additional taxes that are 3.2 times greater than those initially uncovered. Numerous studies in other countries, such as Norway (Hebous et al., 2023), Ekiti (Olaoye & Ekundayo, 2019), and Ethiopia (Mebratu, 2016), have demonstrated a strong correlation between tax audits and increased state revenue.

Optimal tax audits require high-quality indicators. The Directorate General of Taxes issued SE-15/PJ/2018, outlining key characteristics of high-quality tax audits, including timely resolution, minimal disputes, controlled restitution, and sustained tax compliance (SE-15/PJ/2018, pp. 5-6). However, tax audit quality remains suboptimal, as reflected in the number of disputes taxpayers win. In 2023, taxpayers won 7,399 disputes, a 16.0% increase compared to 2022. Out of 14,001 tax appeals and lawsuit decisions in 2023, taxpayers won 58.86%, while the tax authorities' victory rate was only 41.14%, down from 44.8% in 2022. This highlights that audit results continue to face significant legal challenges in court. Furthermore, the compliance ratio for employed individuals dropped from 98.73% in 2021 to 93.71% in 2022 (Directorate General of Taxes, 2022).

These issues indicate a gap in audit quality, necessitating further research to identify factors influencing tax audits. This study explores the role of intellectual capital as a potential contributor to audit quality. Previous research on public sector performance has focused on overall performance (Yusrifalda et al., 2024; Ednoer et al., 2022; Tahar & Kuncahyo, 2020; Dwiningwarni & Dindah, 2017), expenditure performance (Dewabrata et al., 2022), financial performance (Ichsan et al., 2018), and individual performance (Hamdiah & Yulianti, 2016). Tax audit quality within Indonesian tax offices was previously examined by Supriyatin et al. (2019), who studied the effect of auditor competencies and job satisfaction under time pressure.

In the corporate sector, intellectual capital has been explored by Anggraeni and Indarti (2021), Gaol et al. (2021), and Firmansyah and Yusuf (2020), with a focus on intellectual capital and corporate disclosures. Information technology (IT) is also considered a factor influencing tax audit quality. Studies have investigated IT's role in tax audits in Indonesia (Nugrahanto & Alhadi, 2021) and Ethiopia (Azene, 2016; Nurebo et al., 2019), with mixed findings. Nugrahanto and Alhadi (2021), Nurebo et al. (2019), and Azene (2016) reported that IT positively impacts audit quality, while Al-Qudah et al. (2013) suggested that IT might negatively affect audit review processes. Supriadi et al. (2019) found that IT does not significantly affect audit quality when e-audit systems are not fully implemented.

Despite the emerging research on IT's direct relationship with tax audit quality, limited studies have explored IT's moderating effect. Furthermore, there is limited research on the relationship between intellectual capital and tax audit quality. Intellectual capital, encompassing auditors' knowledge, skills, and expertise, may lead to better risk identification and decision-making, contributing to higher audit quality. As suggested by Firmansyah (2017), organizations can leverage their employees' intellectual capital to gain a competitive advantage.

This study aims to address the gap in research by examining the impact of intellectual capital on tax audit quality and the moderating role of IT. The results can provide insights for the Directorate General of Taxes to design more efficient strategies to improve tax audit quality by developing intellectual capital and

strategic use of IT. This study differs from previous research in several significant ways. First, while much of the existing literature focuses on audits conducted by public accountants or corporate settings, this study uniquely addresses tax audits within the public sector, specifically at the Directorate General of Taxes in Indonesia. Second, previous studies primarily examined intellectual capital concerning corporate disclosures or financial performance (Anggraeni & Indarti, 2021; Gaol et al., 2021; Firmansyah & Yusuf, 2020). However, this research explores intellectual capital within the context of tax audits, which remains underexplored, particularly in the Indonesian public sector. Third, while earlier studies have evaluated the direct impact of information technology (IT) on audit quality (Nugrahanto & Alhadi, 2021; Azene, 2016), this study introduces a novel approach by investigating IT's moderating role between intellectual capital and tax audit quality, an area that has seen limited attention in the literature.

The novelty of this research lies in its integration of intellectual capital and IT as key factors in understanding tax audit quality, with a specific focus on their combined effects in the public sector. This study provides fresh insights by bridging the gap between intellectual capital, a concept more commonly applied in the private sector, and public sector audit quality, especially in tax audits. Furthermore, by examining the moderating role of IT, this research offers a more comprehensive analysis of how technology influences the relationship between intellectual capital and tax audit quality. The findings of this study not only contribute to the academic literature but offer practical recommendations for the Directorate General of Taxes in optimizing their audit processes, improving taxpayer compliance, and ultimately increasing tax revenue.

Literature Review and Hypotheses Development

Intellectual capital is a critical asset for private and public sector organizations, contributing significantly to their value and competitive advantage (Yusrifalda et al., 2024). It comprises intangible resources such as knowledge, expertise, and relationships that drive organizational success. As outlined by Campos et al. (2006), intellectual capital can be categorized into three main components: public human capital (PHC), public structural capital (PSC), and public relational capital (PRC). Each element plays a unique and interconnected role in shaping an organization's overall intellectual capital framework, reinforcing its ability to perform effectively.

According to Bontis (1998), human capital is the foundation of intellectual capital, as it is the only resource to generate and harbor knowledge. This underscores the necessity for continuous investment in employee development, as the knowledge and skills of individuals are vital in driving organizational performance. Kang and Snell (2009) and Subramaniam and Youndt (2005) further emphasize that fostering an environment of learning and skill enhancement improves organizational outcomes and enhances employee engagement and innovation. In the context of tax auditing, well-developed human capital is essential. Tax auditors must possess up-to-date knowledge of tax regulations and the analytical skills required to detect discrepancies, assess compliance, and ensure accurate audits. Thus, strong public human capital is directly linked to the ability of tax authorities to conduct high-quality audits.

As Sánchez‐Cañizares et al. (2007) describe, structural capital is the backbone of intellectual capital, linking various components to support organizational efficiency. Structural capital includes the organization's systems, processes, databases, and culture, all of which facilitate the effective execution of tasks. Bontis (1998) highlights that strong structural capital provides the infrastructure employees need to carry out their duties, creating a supportive environment that enhances operational effectiveness. In tax auditing, robust structural capital—manifested through efficient processes, well-maintained information systems, and a strong organizational culture—ensures that tax auditors have access to the tools and resources they need to perform thorough and accurate audits. Well-established structural capital contributes to the timely resolution of audits, fewer disputes, and overall audit quality.

Public relational capital, on the other hand, centers on the organization's external relationships and trust with stakeholders. Chanley et al. (2000) argue that public trust, a critical aspect of relational capital, is essential for the success of government programs. In the context of tax authorities, public relational capital includes relationships with taxpayers, partners, and other stakeholders. According to Campos et al. (2006), relational capital involves managing institutional reputation, media relations, and partnerships with external entities. Strong relational capital in tax auditing translates to better taxpayer engagement, trust, and compliance. When taxpayers trust that tax authorities are fair and competent, they are more likely to comply with tax regulations, enhancing audit efficiency and effectiveness. Therefore, relational capital ensures high-quality tax audits by promoting voluntary compliance and reducing disputes.

Given the importance of these three components—human capital, structural capital, and relational capital—it is evident that intellectual capital plays a crucial role in determining the quality of tax audits. Effective management and development of intellectual capital allow tax authorities to streamline their auditing processes, build stronger relationships with taxpayers, and achieve higher audit quality. The interplay between these components suggests a holistic approach to intellectual capital management is essential. Each element must be nurtured and developed to ensure tax authorities can meet their organizational objectives, particularly in conducting efficient and reliable tax audits.

Thus, intellectual capital management is fundamental to enhancing the quality of tax audits. Public human capital provides the knowledge and skills necessary for accurate and thorough audits. Public structural capital supports this process by offering the infrastructure, systems, and organizational culture required for effective functioning. Meanwhile, public relational capital fosters the trust and cooperation needed from taxpayers for a smooth auditing process. Together, these components form a robust intellectual capital framework that can significantly elevate the quality of tax audits, benefiting tax authorities and the public by ensuring compliance and reducing conflicts.

H_{1a} : *Public Human Capital (PHC) positively affects Tax Audit Quality (TAQ).*
H_{1b} : *Public Structural Capital (PSC) positively affects Tax Audit Quality (TAQ).*
H_{1c} : *Public Relational Capital (PRC) positively affects Tax Audit Quality (TAQ).*

Technology is broadly defined as a tool used to assist in executing various tasks and has significant potential to enhance individual performance (Goodhue & Thompson, 1995). In the context of information technology, it refers to tools designed to capture, manipulate, process, communicate, and present information that aids in decision-making (Bassellier et al., 2001). According to Sutabri (2014), as cited in Sundari and Rahayu (2019), information technology encompasses the processes of acquiring, organizing, processing, storing, and manipulating data through various methods to generate quality information that is relevant, accurate, and timely for decision-making purposes. The evolution of information technology has drastically transformed organizational operations, making it an essential component in modern business environments.

The theory of planned behavior suggests that effective information systems can positively influence auditors' ability to conduct thorough audits, thus improving audit quality and overall organizational performance (Arwianto et al., 2023). Accurate and timely information from robust information systems is critical for auditors to make informed decisions. These systems enable auditors to access comprehensive data, identify potential risks, and devise appropriate audit strategies. Specifically, in the Directorate General of Taxes, various information systems such as Sistem Informasi Direktorat Jenderal Pajak (SIDJP), Appportal, Approweb, and Desktop Pemeriksaan (Derik) play pivotal roles in supporting tax audit activities, as outlined in SE-49/PJ/2016 concerning Taxpayer Supervision Through Information Systems and SE-10/PJ/2020 concerning the Use of Desktop Pemeriksaan (Derik)

Application to Support Tax Audit Activities. These systems streamline audit processes, enhance data accessibility, and ultimately improve the efficiency and quality of tax audits.

Information technology is also considered a key component within the competency concept (Spencer & Spencer, 1993), helping tax auditors (as part of human capital) to conduct high-quality audits and achieve better job outcomes. By providing advanced tools for data analysis, audit planning, and evidence gathering, information technology enhances auditors' abilities to execute their responsibilities effectively. Research by Mustapha and Lai (2017) supports this view, showing that integrating information technology can boost audit efficiency by fostering positive organizational culture (structural capital) and enhancing employee interactions. A positive organizational culture, backed by robust information systems, encourages collaboration, knowledge sharing, and continuous improvement, benefiting audit performance.

Bierstaker et al. (2001) argue that information technology plays a crucial role in supporting audit functions such as planning, evidence collection, testing, and documentation, all of which increase the accountability of tax auditors. This heightened accountability strengthens the relational capital of the Directorate General of Taxes by building trust and confidence among taxpayers. When auditors are seen as competent, reliable, and efficient, the relationship between the tax authority and taxpayers improves, fostering greater compliance and cooperation.

Given the above discussion, it can be inferred that information technology moderates the relationship between intellectual capital and tax audit quality. Intellectual capital—human, structural, and relational capital—is essential to organizational success, but its impact can be significantly amplified through the effective use of information technology. Information technology enhances human capital by improving auditors' capabilities, optimizes structural capital by streamlining organizational processes, and strengthens relational capital by fostering trust and better relationships with stakeholders.

Thus, integrating advanced information technology within the tax audit framework significantly enhances the efficiency and effectiveness of audit processes. This integration leads to higher-quality audit outcomes and supports the broader mission of the Directorate General of Taxes by promoting accountability, trust, and compliance. Therefore, combining intellectual capital and information technology is key to achieving excellence in tax audits.

H_{2a} : *Information Technology (IT) strengthens the positive effect of public human capital (PHC) and tax audit quality (TAQ).*

H_{2b} : *Information Technology (IT) strengthens the positive effect of public structural capital (PSC) and tax audit quality (TAQ).*

H_{2c} : *Information Technology (IT) strengthens the positive effect of public relational capital (PRC) and tax audit quality (TAQ).*

Methodology

This study utilizes primary data obtained through the distribution of questionnaires to tax auditors within the Directorate General of Taxes, covering various levels of positions. This approach allows for a comprehensive analysis of each role's different responsibilities and functions. The primary goal is to understand how intellectual capital contributes to the quality of tax audits and how information technology (IT) can either enhance or diminish that contribution. A random sampling technique was employed to ensure objectivity and representativeness, enabling unbiased data collection across a broad spectrum of tax auditors.

Data was collected through a self-administered online questionnaire chosen for its efficiency in reaching more participants across different regions and positions. The online approach provided respondents with flexibility, allowing them to participate at their convenience while simplifying data management for analysis. The questionnaire was made accessible through a designated link: https://bit.ly/Kuesioner_TaxAuditQuality. The questionnaire was structured into four distinct sections, each targeting different study aspects. The first section gathered demographic data from respondents, including their gender, age, educational background, and years of experience as tax auditors. This information helped contextualize the respondents' profiles and controlled for potential demographic factors that might influence the results. The second section focused on respondents' perceptions of intellectual capital within the Directorate General of Taxes, specifically exploring elements such as public human capital, public structural capital, and public relational capital. In the third section, the questionnaire examined the use and perceived effectiveness of information technology tools used by the tax authority, such as SIDJP, Appportal, Approweb, and Desktop Pemeriksaan (Derik). These tools were introduced to support audit functions as part of SE-49/PJ/2016 and SE-10/PJ/2020 directives, and their role in enhancing audit processes was a key area of interest. The final section of the questionnaire explored respondents' views on the quality of tax audits, assessing factors like accuracy, timeliness, and overall accountability in audit practices.

A six-point Likert scale was employed for each questionnaire item, ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). This scale provided a nuanced measurement of respondents' perceptions and allowed for a more in-depth data analysis. Additionally, the questionnaire underwent a pre-testing phase with a small group of tax auditors to ensure clarity and reliability. Feedback from the pre-test was used to refine the questions and improve the overall flow of the survey, making it easier for respondents to complete.

Data management and confidentiality were prioritized throughout the study. Collected data was securely stored, and statistical analysis was conducted using appropriate tools to evaluate the relationships between intellectual capital, IT, and tax audit quality. The random sampling approach and the convenience of online participation resulted in a high response rate, further ensuring the data's representativeness. This structured approach to data collection allowed the research team to capture in-depth insights into how intellectual capital and IT influence tax audit quality within the Directorate General of Taxes. The results from this study can provide valuable input for improving audit processes and achieving higher audit standards, ultimately supporting the broader mission of the tax authority.
The intellectual capital measurement component developed by Campos et al. (2006) is used, which includes public human capital (PHC), public structural capital (PSC), and public relational capital (PRC) outlined in 18 question items. IT variable was tested by adopting indicators within the relevant Information Technology usage model and adapting 6 questions instrument format of Firmansyah and Hollyson (2021), tailored to the tax audit context. The dependent variable, tax audit quality, was tested using 6 statement items developed from the Tax Audit Policy (SE-15/PJ/2018). Furthermore, this research adopts Partial Least Squares-Structural Equation Modeling (PLS-SEM) as the statistical technique for data analysis. PLS-SEM represents a second-generation multivariate analysis approach, particularly advantageous in overcoming potential limitations associated with sample size or non-normal data distribution (Hair et al., 2022). Its core strength lies in its ability to model complex relationships between latent variables (constructs) within a theoretical framework. Consequently, PLS-SEM has become a prevalent tool in research methodology, enabling researchers to test hypothesized relationships and assess the strength and direction of the associations between variables within the postulated model. The conceptual model related to this research is described in Figure 1.

The following stage involves rigorous methodological procedures to establish the accuracy and precision of the relationships between the independent and dependent variables. This entails applying validity and reliability tests to ensure the instruments accurately capture the intended constructs (PHC,

PSC, PRC, TAQ). Descriptive statistics will provide a detailed picture of the data's distribution. Subsequently, hypothesis testing will be conducted to assess the tenability of the proposed relationships and the moderating effect of IT. Through this multifaceted approach, the research will achieve a robust and comprehensive understanding of the interplay between intellectual capital and tax audit quality, considering the potential influence of information technology.

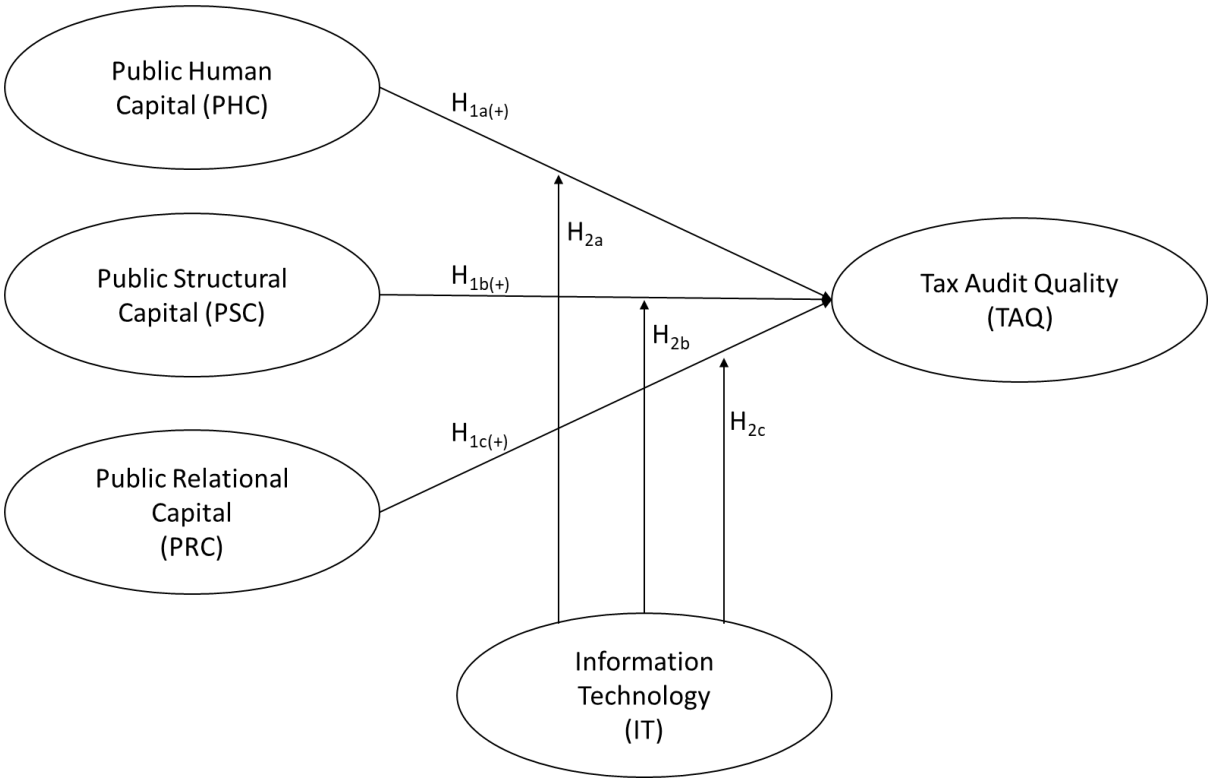

Figure 1 Conceptual Model

Results and Discussions

Table 1 summarizes descriptive statistics for the variables studied: Public Human Capital, Public Social Capital, Public Relational Capital, Information and Technology, and Tax Audit Quality. Each variable has a minimum and maximum value of 1.00 and 6.00, respectively. PHC has the highest mean value (mean = 5.08) with a median of 5.50 and a standard deviation of 1.01, indicating moderate variation among respondents. PSC has a mean value of 4.91 and a standard deviation of 1.11, while PRC has the lowest mean value of 4.77 and the highest standard deviation of 1.17, indicating greater variation. The IT variable has a mean value of 4.95 with a standard deviation of 0.89, suggesting relatively low variation. Finally, TAQ shows a mean value of 4.91 with a standard deviation of 0.97. Overall, this table provides an overview of data distribution and the variation of each variable in this study.

The data collection phase for this study was conducted within three months, from May to July 2024. This resulted in a sample size of 35 observations. Table 2 presents the validity test results for each variable employed in the research instrument. To establish the construct validity of the questionnaire items, an outer loadings factor value exceeding 0.6 was utilized as the benchmark criterion (Ghozali, 2016). As evident from Table 2, all variables satisfy this criterion, thereby supporting the validity of the measurement instrument.

Table 1 Summary of Descriptive Statistics

Variable	Min.	Max.	Mean	Median	Standar Deviation
PHC	1.00	6.00	5.08	5.50	1.01
PSC	1.00	6.00	4.91	5.00	1.11
PRC	1.00	6.00	4.77	5.00	1.17
IT	1.00	6.00	4.95	5.00	0.89
TAQ	1.00	6.00	4.91	5.00	0.97

Source: Processed Data, 2024

Table 3 summarizes the reliability test results for the research constructs, employing both Cronbach's Alpha and Average Variance Extracted (AVE) values. As established in prior research (Hajjar, 2018; Hair et al., 2022), the criteria for acceptable reliability include a Cronbach's Alpha value exceeding 0.6 and an AVE value greater than 0.5. Based on these benchmarks, the question items associated with each variable (PHC, PSC, PRC, IT, and TAQ) demonstrate satisfactory internal consistency and reliability.

Table 2 Validity Test Results

Item	PHC	PSC	PRC	IT	TAQ
PHC1	0.922				
PHC2	0.931				
PHC3	0.665				
PHC4	0.908				
PHC5	0.834				
PHC6	0.915				
PSC1		0.873			
PSC2		0.944			
PSC3		0.906			
PSC4		0.613			
PSC5		0.858			
PSC6		0.935			
PRC1			0.604		
PRC2			0.778		
PRC3			0.898		
PRC4			0.886		
PRC5			0.896		
PRC6			0.837		
IT1				0.610	
IT2				0.907	
IT3				0.792	
IT4				0.856	
IT5				0.925	
IT6				0.942	
TAQ1					0.669
TAQ2					0.938
TAQ3					0.712
TAQ4					0.877
TAQ5					0.891
TAQ6					0.896

Source: Processed Data, 2024

Table 3 Reliability Test Results

Variable	Cronbach's Alpha	Average Variance Extracted (AVE)	Results
PHC	0.933	0.753	Reliable
PSC	0.927	0.744	Reliable
PRC	0.901	0.678	Reliable
IT	0.928	0.716	Reliable
TAQ	0.915	0.700	Reliable

Source: Processed Data, 2024

In the following stage, Table 4 summarizes the hypothesis testing results, providing a comprehensive view of the significance of the findings. The hypothesis test in this study employed the Adjusted R Square value, which indicates the proportion of variation in the dependent variable after accounting for the number of predictors or independent variables in the analysis. The Adjusted R Square value in Table 4 is 0.501, indicating that 50.1% of the variation in tax audit quality can be explained by the independent variables: public human capital, public structural capital, public relational capital, and IT. The remaining 49.9% is due to other factors outside the research model, assuming all other conditions remain constant. A 0.1 or 10% P-value threshold is often used in scientific literature to determine statistical significance (Stevens et al., 2019). This measure helps researchers assess the results of hypothesis testing, with the P-value indicating the extent to which the observed data supports or contradicts the null hypothesis. Based on Table 4, all hypotheses are not supported except for the influence PRC positively affects TAQ.

Table 4 Hypothesis Test Results

Hypotheses		Original Sample	T Statistics	P Values	Conclusion
PHC → TAQ	H_{1a}	0.014	0.039	0.484	Not Supported
PSC → TAQ	H_{1b}	0.041	0.095	0.462	Not Supported
PRC → TAQ	H_{1c}	0.784	1.931	0.027*	Supported
IT → TAQ	NH	0.011	0.038	0.485	Not Significant
PHC*IT → TAQ	H_{2a}	-0.264	0.692	0.245	Not Supported
PSC*IT → TAQ	H_{2b}	0.116	0.173	0.431	Not Supported
PRC*IT → TAQ	H_{2c}	0.172	0.244	0.404	Not Supported
Adjusted R-Square	0.501				

Source: Processed Data, 2024

Note: *Significant Level 10% or 0.1; NH: Not Hypothesis

Public Human Capital and Tax Audit Quality

The result shows that PHC does not significantly impact the quality of tax audits, with a P-value of 0.484, leading to the rejection of H_{1a}. This finding is consistent with previous studies by Yusrifalda et al. (2024) and Ednoer et al. (2022), which suggest that while intellectual capital may enhance organizational performance, its direct effect on specific operational outcomes, such as tax audits, is less pronounced. These studies highlight the broader role of human capital in the public sector, but they also underscore the limitations of focusing solely on human resources without addressing organizational and systemic factors that could moderate or mediate this relationship. In the context of tax audits, it appears that the competencies of tax auditors alone are insufficient to guarantee improved audit quality.

Several explanations can account for this finding. First, while tax auditors may possess adequate skills and knowledge, their ability to apply these competencies in practice may be constrained by rigid organizational processes or external pressures. Research by Kang and Snell (2009) and Subramaniam and Youndt (2005) emphasizes the importance of aligning human capital with broader organizational

objectives and systems to achieve meaningful performance improvements. In the case of the Directorate General of Taxes, other factors—such as the integration of new audit technologies or the streamlining of audit procedures—may be more influential in shaping audit outcomes than individual competencies alone. Additionally, as discussed by Ednoer et al. (2022), employee motivation and job satisfaction could moderate the relationship between human capital and audit performance.

Descriptive statistics provide further insights into this result. With a mean of 5.08 for PHC, tax auditors generally perceive their human capital positively. However, the standard deviation of 1.01 suggests a degree of variability in these perceptions, indicating that while some auditors may feel well-equipped to perform their roles, others may lack confidence in their skills or feel unsupported by the organizational environment. This variability in human capital perceptions is likely a contributing factor to the non-significant impact of PHC on tax audit quality. As highlighted by Yusrifalda et al. (2024), focusing solely on enhancing human capital without addressing structural or systemic challenges may not yield the desired improvements in performance, especially in a highly regulated environment like tax auditing.

Public Structural Capital and Tax Audit Quality

The study finds that PSC does not significantly influence the quality of tax audits, as evidenced by a P-value of 0.462, leading to the rejection of H_{1b}. This result mirrors the findings of Anggraeni and Indarti (2021), who also observed that structural capital, while important, does not necessarily translate into performance improvements in the private sector. In the public sector context of tax auditing, the systems, processes, and organizational structures comprising structural capital may not directly impact audit quality unless they are fully optimized and aligned with the needs of tax auditors. This underscores the complexity of improving performance through structural capital alone, as Campos et al. (2006) noted.

One possible explanation for the lack of significance is that although organizational structures and processes exist, they may not be fully integrated into the day-to-day audit activities. Bontis (1998) suggests that structural capital is only valuable if employees effectively utilize it, and in the context of tax auditing, this may not always be the case. In addition, barriers such as bureaucratic inefficiencies or outdated systems may prevent auditors from leveraging the available structural resources to improve audit quality. Spencer and Spencer (1993) also highlight that competencies in using structural capital, such as IT systems or databases, must be developed with the capital itself to achieve meaningful results.

Descriptive statistics for PSC show a mean of 4.91, indicating that auditors generally rate the structural capital of the organization positively. However, the relatively high standard deviation of 1.11 indicates significant variability in how different auditors perceive these systems and processes. This variability may reflect inconsistencies in how departments or regions within the Directorate General of Taxes utilize structural resources. For some auditors, well-established structures may provide valuable support, while others may find them less accessible or underutilized. As noted by Sánchez‐Cañizares et al. (2007), structural capital must be well-aligned with human and relational capital to produce optimal outcomes, and the lack of such integration may explain the non-significant effect of PSC on tax audit quality in this study.

Public Relational Capital and Tax Audit Quality

Unlike PHC and PSC, PRC significantly impacts tax audit quality, with a P-value of 0.027, supporting Hypothesis H_{1c}. This finding is consistent with Dewabrata et al. (2022) and Ednoer et al. (2022), who demonstrate the importance of strong external relationships in improving government performance. In tax auditing, PRC refers to the relationships and trust between the Directorate General of Taxes and

external stakeholders, such as taxpayers and other government agencies. This result suggests that well-developed relational capital is critical in facilitating smoother audit processes, better communication, and higher levels of taxpayer compliance, all essential to conducting thorough and accurate audits.

The positive impact of the PRC on audit quality aligns with the work of Chanley et al. (2000), who emphasize the importance of trust in the public sector. Tax audits inherently involve sensitive interactions with taxpayers, and when these relationships are characterized by trust and cooperation, the quality of audit outcomes improves. Relational capital can also foster better information sharing between auditors and taxpayers, which helps auditors make more informed decisions and reduce the likelihood of disputes. Campos et al. (2006) similarly argue that relational capital strengthens an organization's capacity to achieve its goals by leveraging external networks and partnerships.

Descriptive statistics for PRC show a mean of 4.77 and a standard deviation of 1.17, indicating that while auditors rate relational capital positively, there is notable variation in how different auditors experience these relationships. Some auditors may have stronger connections with stakeholders, while others may face challenges in building trust or fostering collaboration. Despite this variability, the overall positive relationship between PRC and audit quality highlights the critical role that external relationships play in enhancing audit outcomes. As Bontis (1998) suggests, relational capital is a key driver of organizational success, and in the case of the Directorate General of Taxes, strengthening these external relationships is likely to result in better audit processes and outcomes.

Information Technology as a Moderator

Hypothesis testing reveals that IT does not significantly moderate the relationship between intellectual capital—encompassing PHC, PSC, and PRC—and TAQ. The P-values for the interaction terms (PHCIT = 0.245; PSCIT = 0.431; PRC*IT = 0.404) indicate that IT does not substantially strengthen or weaken the impact of intellectual capital on tax audit outcomes. These findings align with the research by Supriadi et al. (2019), which suggests that IT, while important, does not automatically enhance audit quality unless it is fully integrated into the audit process and auditors are provided with sufficient training. Without these critical elements, the full benefits of IT in improving the audit process and leveraging intellectual capital cannot be realized.

One possible reason for this lack of moderating effect is that the IT infrastructure within the Directorate General of Taxes may not be sufficiently advanced or integrated to support and amplify intellectual capital's benefits fully. Although systems such as SIDJP and Desktop Pemeriksaan (Derik) are designed to support tax audit activities, their effectiveness depends heavily on how tax auditors adopt and utilize them. As Bierstaker et al. (2001) pointed out, IT can only improve audit functions if auditors are proficient in using the technology and if the systems themselves are designed to meet the specific needs of the audit process. Without proper system alignment and user proficiency, the potential of IT remains underutilized.

Furthermore, Mustapha and Lai (2017) emphasize that IT's ability to enhance audit efficiency is contingent upon integrating with a positive organizational culture and well-defined audit procedures. Without such an environment, IT systems may not significantly impact audit quality, even if they are technically advanced. In the case of the Directorate General of Taxes, it is possible that while IT tools are available, their use is not fully embedded within the organizational culture, or the auditors may not have the necessary skills to maximize the benefits of these tools. This lack of integration could be why IT fails to enhance the impact of intellectual capital on audit quality.

The descriptive statistics for IT in this study offer additional insights. With a mean score of 4.95 and a standard deviation of 0.89, the relatively high average score suggests that tax auditors generally perceive IT systems favorably, indicating that they are useful. However, the low variability in responses

implies a consensus that, while IT is appreciated, it is not seen as a transformative factor in the audit process. This finding reinforces that although IT is supportive, its potential is not fully realized in enhancing intellectual capital and improving tax audit quality.

To address this issue, the Directorate General of Taxes may need to invest in upgrading its IT infrastructure to ensure that the systems in place are both user-friendly and well-suited to the specific needs of tax auditors. This investment should focus not only on the technology itself but also the organizational processes surrounding it. For IT to act as an effective moderator, tax auditors must be adequately trained and provided with continuous support to ensure they are comfortable and proficient in using these systems. Without this, even the most advanced IT systems will fail to deliver their full potential in improving audit outcomes.

Additionally, fostering a culture that promotes the seamless integration of IT into daily auditing activities is crucial. Research by Goodhue and Thompson (1995) highlights that the mere presence of technology does not automatically lead to performance improvements; rather, technology must fit the tasks and be used effectively within the organizational workflow. In the context of tax auditing, this means that IT systems need to be closely aligned with the tasks of auditors, and there should be an ongoing effort to ensure that the use of IT is fully embedded in the audit process. This would help bridge the gap between the availability of IT and its impact on audit quality.

Thus, while IT is undoubtedly a valuable tool in supporting audit processes, its role as a moderator between intellectual capital and tax audit quality is currently limited. The findings suggest that IT needs to be more deeply integrated into the audit process, supported by comprehensive training, and aligned with organizational goals to enhance intellectual capital's impact significantly. Only through this holistic approach can the Directorate General of Taxes fully realize the potential of IT in improving tax audit quality and leveraging intellectual capital effectively.

Conclusion

By thoroughly investigating the tax auditors of the Directorate General of Taxes, this research identifies crucial factors that can be addressed to improve tax audit quality. The study underscores public relational capital as a cornerstone in enhancing the efficiency and effectiveness of tax audit processes. These findings highlight the pivotal role of fostering strong, trust-based relationships between the Directorate General of Taxes, taxpayers, and other external stakeholders. Building mutual trust and collaboration improves communication, increases transparency, and contributes to more effective tax audits. Strong relational capital can lead to higher taxpayer compliance and more accurate assessments, which are critical to boosting revenue collection.

While the importance of relational capital is well-supported, the study also finds that public human capital and public structural capital do not significantly impact tax audit quality. Contrary to initial expectations, these two forms of capital—often considered essential for organizational performance—do not exhibit a meaningful influence in this context. This unexpected result suggests that the capabilities and knowledge of individual auditors and the structural systems supporting audit work may not be as influential in determining audit outcomes as relational factors. This finding calls for further investigation to explore the complex dynamics between these forms of intellectual capital and their roles in the tax audit process.

The lack of significant influence from public human capital and public structural capital raises important questions about the underlying mechanisms that drive audit quality within the Directorate General of Taxes. Organizational processes, cultural barriers, or even external environmental factors may limit the potential of human and structural capital to impact tax audits. Future research should

investigate this issue, exploring whether other elements—such as organizational motivation, incentives, or external pressures—play a more critical role. Additionally, studies could examine how these forms of capital interact with one another to produce collective effects on performance.

Furthermore, the study finds that IT does not significantly moderate the relationship between intellectual capital and tax audit quality. Despite the potential of IT to streamline processes, improve data access, and enhance decision-making, its role in strengthening the relationship between intellectual capital and audit quality appears to be minimal. This outcome suggests that while IT tools are present within the Directorate General of Taxes, they may not be fully leveraged to enhance the impact of intellectual capital. Organizational processes, user proficiency, and system integration are crucial in determining how effectively IT contributes to tax audit quality. Thus, the expected synergy between IT and intellectual capital remains underutilized.

To address this gap, it is recommended that the Directorate General of Taxes adopt more comprehensive strategies to maximize the function of IT in its audit processes. This might involve investing in more advanced IT infrastructure, improving the alignment of IT tools with the specific needs of auditors, and offering continuous training to ensure that staff can fully utilize available technologies. The integration of IT into audit workflows should be seamless, ensuring that it complements the use of intellectual capital by facilitating better data analysis, enhancing communication, and supporting efficient decision-making. A strategic approach to IT adoption could help unlock its potential to enhance human and structural capital, thus improving audit quality.

A limitation of this study is the restricted sample size, which raises concerns about the generalizability of the findings. The research focused on tax auditors from the DKI Jakarta region, which may not reflect Indonesia's broader population of tax auditors. This limited geographic scope introduces potential biases, as auditors in different regions may operate under varying conditions and may have different experiences with intellectual capital and IT systems. Future research should aim to increase the sample size and diversify the respondent pool, including auditors from various regions and levels within the Directorate General of Taxes. Doing so would enhance the validity and reliability of the findings, ensuring that the conclusions drawn can be applied more broadly.

This study also highlights the lack of comprehensive research on intellectual capital in the public sector, especially compared to the private sector. While intellectual capital has been extensively studied in private organizations, its potential to enhance public sector performance remains underexplored. Strategically managing intellectual capital—particularly relational capital—can help public sector organizations like the Directorate General of Taxes achieve greater efficiency and innovation. This gap in research presents an opportunity for scholars to develop a more robust understanding of how intellectual capital can drive performance improvements in public institutions. A deeper exploration of this topic could inform future policy-making and best practices, ultimately leading to enhanced organizational performance across the public sector.

Moving forward, the Directorate General of Taxes should take practical steps to integrate the findings of this research into their policy-making processes. By strengthening relational capital, the organization can implement initiatives such as open communication channels, regular stakeholder engagement forums, and activities to build mutual trust. Additionally, investment in emotional intelligence training could empower employees to manage interpersonal interactions better, fostering empathy and effective communication. Training in conflict resolution would also equip auditors to handle disputes constructively, further strengthening relationships with taxpayers and other stakeholders. These initiatives would enhance tax audit quality and contribute to a more positive organizational culture within the Directorate General of Taxes.

Finally, future research should investigate the factors influencing the relationship between intellectual capital and tax audit quality, focusing on potential moderating or mediating variables. Identifying these variables will clarify how intellectual capital can be optimized to improve tax audit outcomes. By exploring these dynamics, researchers can offer more targeted recommendations for enhancing the performance of tax audit systems, ensuring that the Directorate General of Taxes can effectively leverage its intellectual capital to achieve organizational excellence.

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